

AVC 016 ... 040 SA/X

DVC 016 ... 040 SX

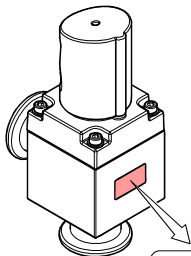
Angle & Inline valve, manually actuated, bellows sealed

Operating Instructions

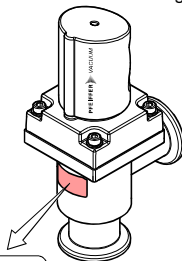
Product Identification

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

Angle Valve
Aluminum housing

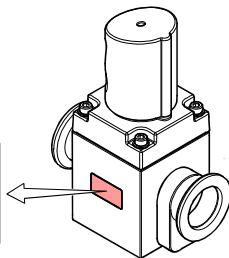


Angle Valve
Stainless steel housing



Pfeiffer Vacuum, D-35614 Asslar
 Typ:
 No:
 F-No:

Inline Valve
Stainless steel housing



Pfeiffer Vacuum, D-35614 Asslar
 Typ:
 No:
 F-No:

Validity

This document applies to products with the following part numbers:



Angle valves ...

... with aluminum housing

PF A31 003 (DN 16 ISO-KF)

PF A41 003 (DN 25 ISO-KF)

PF A51 003 (DN 40 ISO-KF)



... with stainless steel housing

PF A31 033 (DN 16 ISO-KF)

PF A41 033 (DN 25 ISO-KF)

PF A51 033 (DN 40 ISO-KF)



Inline valves ...

... with stainless steel housing

PF D31 033 (DN 16 ISO-KF)

PF D41 033 (DN 25 ISO-KF)

PF D51 033 (DN 40 ISO-KF)

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

If not indicated otherwise in the legends, the illustrations in this document correspond to the angle valve with aluminum housing and DN 16 ISO-KF vacuum connection. They apply to other valves by analogy.

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

All dimensions in mm.

Intended Use


The valves are used as shut-off, dosing and venting devices for vacuum applications.

Scope of Delivery

- 1x Valve
- 1x Operating Instructions German
- 1x Operating Instructions English
- 1x Safety Guide

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For cross-references within this document, the symbol (→  XY) is used.

1 Safety

1.1 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.


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 (→  9) 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.

1.4 Liability and Warranty

Pfeiffer Vacuum 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 product documentation.

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

Failures due to contamination or wear and tear, as well as expendable parts (e.g. seals), are not covered by the warranty.

2 Technical Data

Vacuum connection	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Stroke of the valve plate	6.5 mm	8.5 mm	13.5 mm
Conductance ¹⁾			
Angle valve	5 l/s	14 l/s	45 l/s
Inline valve	2.5 l/s	7 l/s	20 l/s
Service life ²⁾	10'000 cycles		
Tightness	1×10 ⁻⁹ mbar l/s		
Pressure max.	4 bar (absolute)		
Operating pressure min.	1×10 ⁻⁸ mbar		
Operating pressure max.	2 bar	1.5 bar	
Pressure difference Δp in closing direction	4 bar	2 bar	
Pressure difference Δp in opening direction	2 bar	1.5 bar	
Temperatures	0 °C ... +50 °C		
Ambiance			
Bakeout			
Housing			
Aluminum	80 °C		
Stainless steel	150 °C		
Actuator	50 °C		
Use	altitude up to 2500 m NN		

¹⁾ For air with pressure difference Δp = 1 bar.

²⁾ Cycles without expendable parts (seals) and under clean operating conditions.

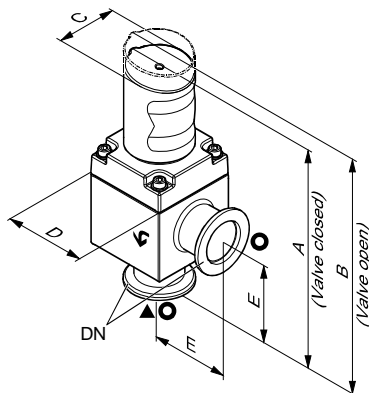
If the valve is operated under harsh or dirty conditions, it should be cleaned / maintained before the specified service time to maintenance has been reached.

Mounting orientation	any, ensure swift access		
Flow direction ³⁾	any		
Materials			
Housing			
Aluminum	EN AW-6082 T6		
Stainless steel	1.4301		
Bellows / valve plate	1.4404 / 1.4435		
Pressure spring	1.4310		
Seals	FPM		
Adapter flange	PBT GF10		
Rotary knob	ABS / POM		
Protective lid	PE		
Packing material	carton box, PE		
Weight			
Angle valve			
Aluminum	0.31 kg	0.42 kg	0.85 kg
Stainless steel	0.34 kg	0.49 kg	0.96 kg
Inline valve			
Stainless steel	0.71 kg	1.09 kg	1.83 kg

³⁾ Recommended mounting orientation: valve seat toward vacuum chamber.

Dimensions [mm]

- Angle valve



- Protective lid
- ▼ Valve seat site

↻ Flow direction

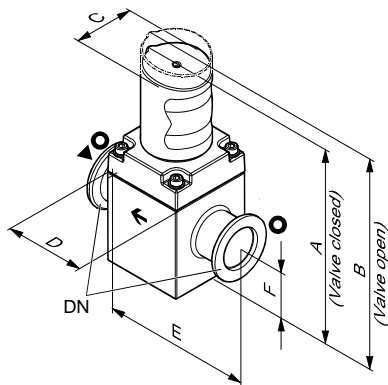
Aluminum housing

DN	A	B	C	D	E
DN 16 ISO-KF	141.3	149.5	39.6	45	40
DN 25 ISO-KF	145.3	155.7	39.6	54	50
DN 40 ISO-KF	186.2	201.4	50	69	65

Stainless steel housing

DN	A	B	C	D	E
DN 16 ISO-KF	143.9	152.1	39.6	45	40
DN 25 ISO-KF	148.7	159.1	39.6	54	50
DN 40 ISO-KF	189.2	204.4	50	69	65

- Inline valve



-  Protective lid
-  Valve seat site
-  Flow direction

DN	A	B	C	D	E	F
DN 16 ISO-KF	125.4	133.6	39.6	45	80	20
DN 25 ISO-KF	132	142.4	39.6	54	100	31.8
DN 40 ISO-KF	166.5	181.7	50	69	130	40.8

3 Installation

 **DANGER**

DANGER: 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.

 **DANGER**

DANGER: overpressure in the vacuum system
>2.5 bar

KF flange connections with elastomer seals (e.g. O-rings) cannot withstand such pressures. Process media can thus leak and possibly damage your health.

Use O-rings provided with an outer centering ring.

 **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.

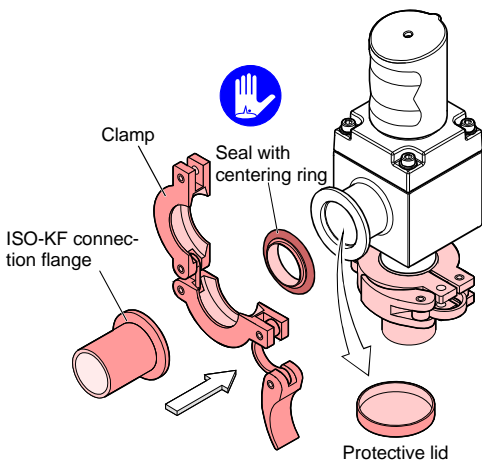
**Caution**

Caution: dirt sensitive area

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

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

Remove the protective lids and connect the product to the vacuum system.

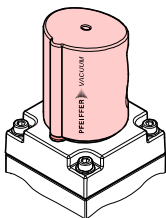


Keep the protective lids.

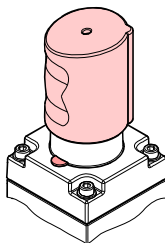
4 Operation

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

Valve closed



Valve open



5 Deinstallation

Precondition

Vacuum system vented.



 **DANGER**

DANGER: 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

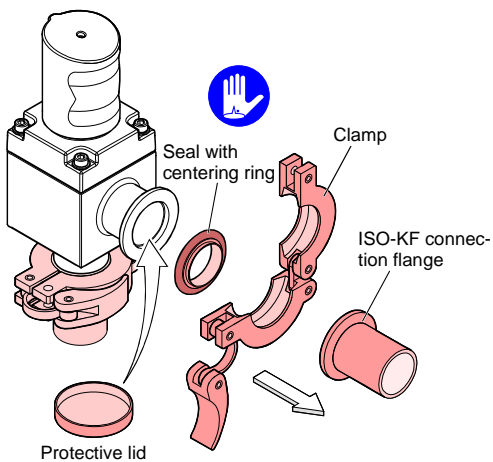


Caution: dirt sensitive area

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

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

Remove the valve from the vacuum system and install the protective lids.



6 Maintenance, Repair



Failures due to contamination or wear and tear, as well as expendable parts (e.g. seals), are not covered by the warranty.

Precondition

The valve has been deinstalled (Deinstallation →  15).



DANGER



DANGER: 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**

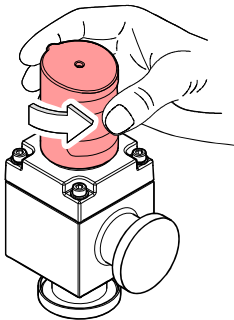
Caution: dirt sensitive area

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

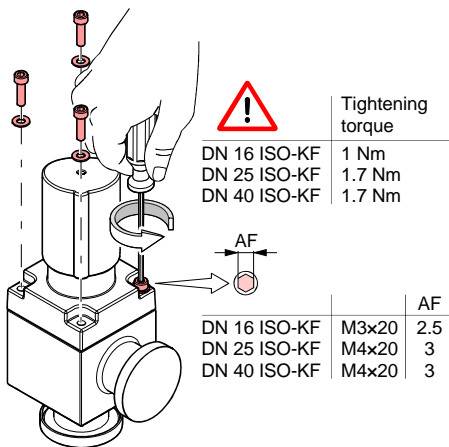
Always wear clean, lint-free gloves and use clean tools when working in this area.

Procedure


- 1 Open the valve.

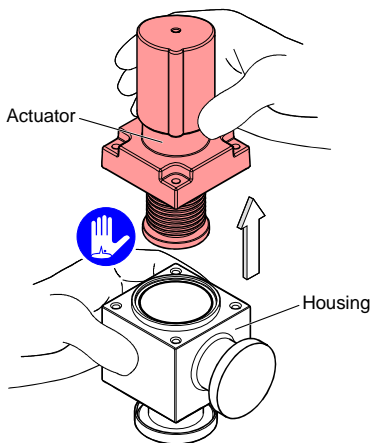


2 Remove the cap screws.



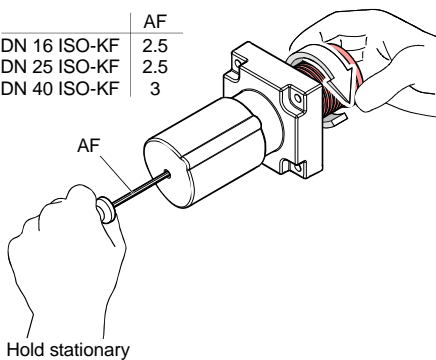
- 3** Remove the actuator from the housing.

 The actuator can be rotated in steps of 90 °.

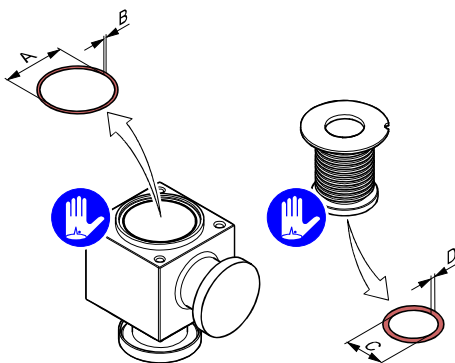


4 Unscrew the bellows.

	AF
DN 16 ISO-KF	2.5
DN 25 ISO-KF	2.5
DN 40 ISO-KF	3






5 Remove the O-rings.



O-ring, FPM	$\varnothing A \times B$	$\varnothing C \times D$
DN 16 ISO-KF	$\varnothing 28.3 \times 1.78$	$\varnothing 17.04 \times 3.53$
DN 25 ISO-KF	$\varnothing 37.82 \times 1.78$	$\varnothing 24.99 \times 3.53$
DN 40 ISO-KF	$\varnothing 56.87 \times 1.78$	$\varnothing 40.87 \times 3.53$

- 6** Remove the protective lids and clean the parts.

	 DANGER
	<p>DANGER: cleaning agents Cleaning agents can be detrimental to health and environment.</p> <p>Adhere to the relevant regulations and take the necessary precautions when handling and disposing of cleaning agents. Consider possible reactions with the product materials (→  9).</p>

Procedure

- 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 $\approx 50^{\circ}\text{C}$ 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.

- 7** Reassemble the product by performing the above steps in reverse order.




Be careful to insert the O-rings level into the grooves without twisting them.

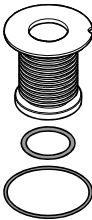
After reassembly, a few switching cycles should be performed in order for the O-rings to perfectly adapt to the sealing surfaces.

7 Spare Parts

Seal kit

	Ordering No.	
	DN 16 ISO-KF, comprising 1 O-ring, FPM75, $\varnothing 17.04 \times 3.53$ 1 O-ring, FPM75, $\varnothing 28.3 \times 1.78$	PT 130 300-T
	DN 25 ISO-KF, comprising 1 O-ring, FPM75, $\varnothing 24.99 \times 3.53$ 1 O-ring, FPM75, $\varnothing 37.82 \times 1.78$	PT 130 301-T
	DN 40 ISO-KF, comprising 1 O-ring, FPM75, $\varnothing 40.87 \times 3.53$ 1 O-ring, FPM75, $\varnothing 56.87 \times 1.78$	PT 130 302-T

Bellows cpl.

	Ordering No.	
	DN 16 ISO-KF, comprising 1 bellows 1 O-ring, FPM75, $\varnothing 17.04 \times 3.53$ 1 O-ring, FPM75, $\varnothing 28.3 \times 1.78$	PT 130 303-T
	DN 25 ISO-KF, comprising 1 bellows 1 O-ring, FPM75, $\varnothing 24.99 \times 3.53$ 1 O-ring, FPM75, $\varnothing 37.82 \times 1.78$	PT 130 304-T
	DN 40 ISO-KF, comprising 1 bellows 1 O-ring, FPM75, $\varnothing 40.87 \times 3.53$ 1 O-ring, FPM75, $\varnothing 56.87 \times 1.78$	PT 130 305-T

8 Returning the Product



WARNING



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

Products returned to Pfeiffer Vacuum 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 ⁴⁾.

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.

⁴⁾ Form under www.pfeiffer-vacuum.net

9 Disposal



DANGER



DANGER: 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



WARNING: 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.

Notes

**Leading. Dependable.
Customer Friendly.**

Pfeiffer Vacuum stands for innovative and custom vacuum solutions worldwide. For German engineering art, competent advice and reliable services.

Ever since the invention of the turbopump, we've been setting standards in our industry. And this claim to leadership will continue to drive us in the future.

**You are looking for a
perfect vacuum solution?
Please contact us:**

Germany
Pfeiffer Vacuum GmbH
Headquarters
Tel.: +49 (0) 6441 802-0
info@pfeiffer-vacuum.de

Benelux
Pfeiffer Vacuum GmbH
Sales & Service Benelux
Tel.: +800-pfeiffer
benelux@pfeiffer-vacuum.de

China
Pfeiffer Vacuum
(Shanghai) Co., Ltd.
Tel.: +86 21 3393 3940
info@pfeiffer-vacuum.cn

France
Pfeiffer Vacuum France SAS
Tel.: +33 169 30 92 82
info@pfeiffer-vacuum.fr

Great Britain
Pfeiffer Vacuum Ltd.
Tel.: +44 1908 500600
sales@pfeiffer-vacuum.co.uk

India
Pfeiffer Vacuum India Ltd.
Tel.: +91 40 2775 0014
pfeiffer@vsnl.net

Italy
Pfeiffer Vacuum Italia S.p.A.
Tel.: +39 02 93 99 05 1
contact@pfeiffer-vacuum.it

Korea
Pfeiffer Vacuum Korea Ltd.
Tel.: +82 31 266 0741
sales@pfeiffer-vacuum.co.kr

Austria
Pfeiffer Vacuum Austria GmbH
Tel.: +43 1 894 17 04
office@pfeiffer-vacuum.at

Sweden
Pfeiffer Vacuum Scandinavia AB
Tel.: +46 8 590 748 10
sales@pfeiffer-vacuum.se

Switzerland
Pfeiffer Vacuum (Schweiz) AG
Tel.: +41 44 444 22 55
info@pfeiffer-vacuum.ch

United States
Pfeiffer Vacuum Inc.
Tel.: +1 603 578 6500
contact@pfeiffer-vacuum.com

