Angle Valve

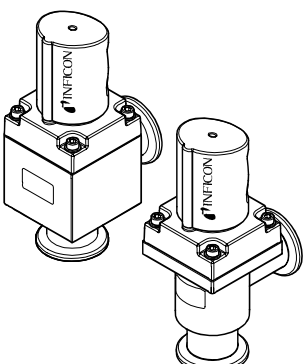
manually actuated
bellows sealed

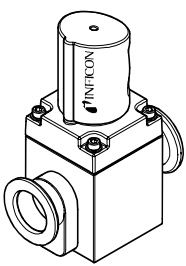
VAH016-A/X
VAH025-A/X
VAH040-A/X

Inline Valve

manually actuated
bellows sealed

VIH016-X
VIH025-X
VIH040-X

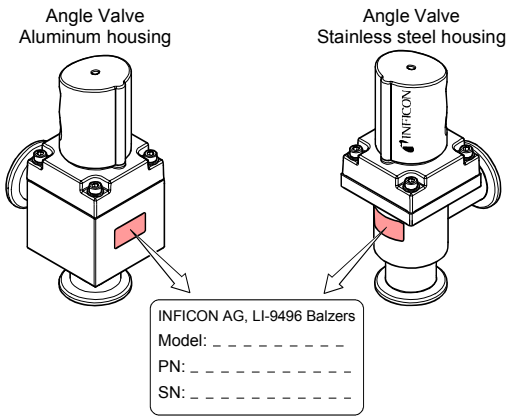


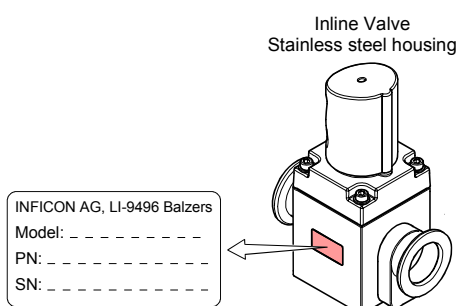


Operating Manual
Incl. Declaration of Incorporation

Product Identification

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





Validity

This document applies to products with the following part numbers:

Angle valves …

… with aluminum housing

253-200	(DN 16 ISO-KF)
253-300	(DN 25 ISO-KF)
253-400	(DN 40 ISO-KF)

… with stainless steel housing

253-245	(DN 16 ISO-KF)
253-345	(DN 25 ISO-KF)
253-445	(DN 40 ISO-KF)

Inline valves …

… with stainless steel housing

253-265	(DN 16 ISO-KF)
253-365	(DN 25 ISO-KF)
253-465	(DN 40 ISO-KF)

The part number (PN) 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.

Contents

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 (→ 🗎 8) 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

INFICON 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.

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 Inline valve	 5 l/s 2.5 l/s	 14 l/s 7 l/s	 45 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 Ambiance Bakeout Housing Aluminum Stainless steel Actuator	 0 °C … +50 °C 80 °C 150 °C 50 °C		
Use	altitude up to 2500 m NN		
Mounting orientation Flow direction [3)]	any, ensure swift access any		

1) For air with pressure difference Δp = 1 bar

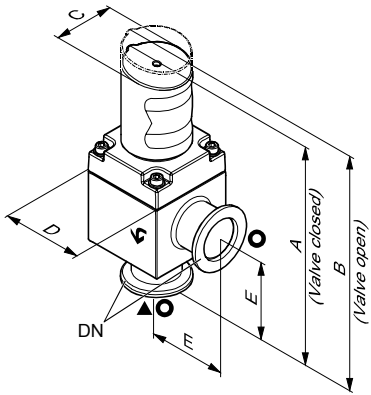
2) Cycles without expendable parts (seals) and under clean operating conditions

3) Recommended mounting orientation: valve seat toward vacuum chamber

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

Dimensions [mm]

- Angle valve



Protective lid

Valve seat site

Flow direction

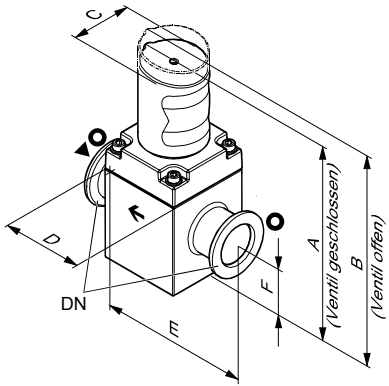
Aluminum housing

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.

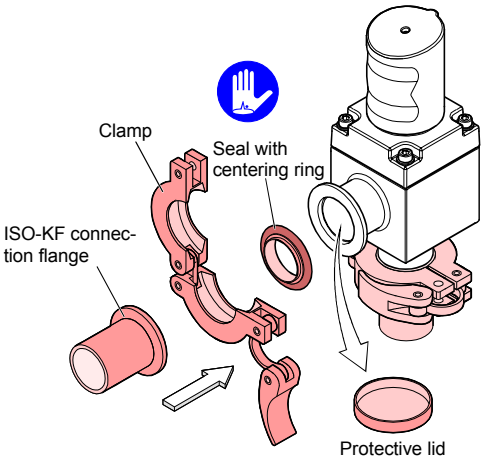
Caution

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.

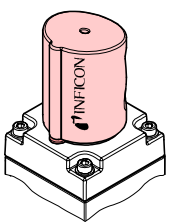


Keep the protective lids.

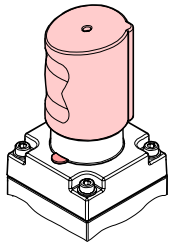
4 Operation

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.

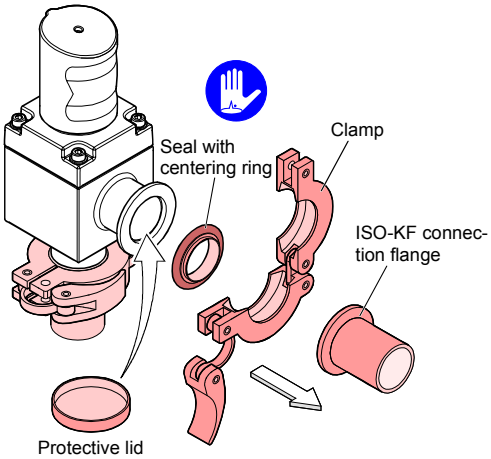
Caution

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

Precondition

The valve has been deinstalled (Deinstallation → 🗎 14).

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

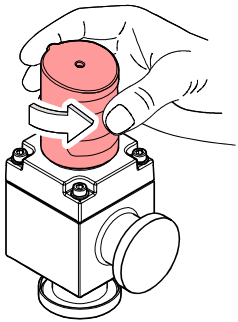
Caution: dirt sensitive area

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

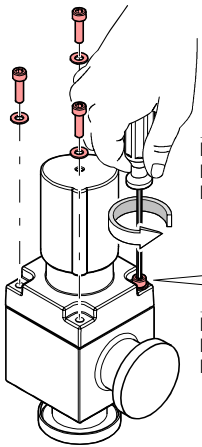
Always wear clean, lint-free gloves and use clean tools when working in this area.

Procedure

❶ Open the valve.



❷ Remove the cap screws.



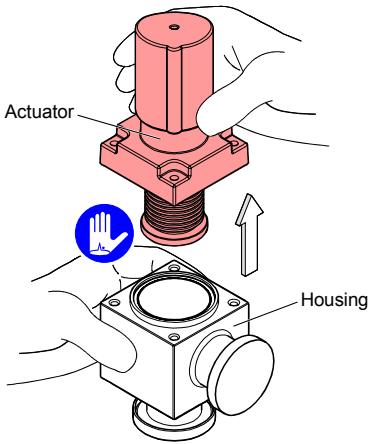
	Tightening torque
DN 16 ISO-KF	1 Nm
DN 25 ISO-KF	1.7 Nm
DN 40 ISO-KF	1.7 Nm

AF

		AF
DN 16 ISO-KF	M3×20	2.5
DN 25 ISO-KF	M4×20	3
DN 40 ISO-KF	M4×20	3

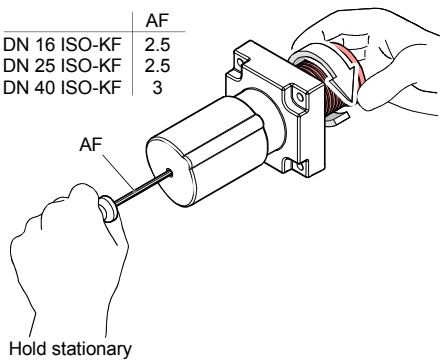
❸ Remove the actuator from the housing.

☞ The actuator can be rotated in steps of 90 °.

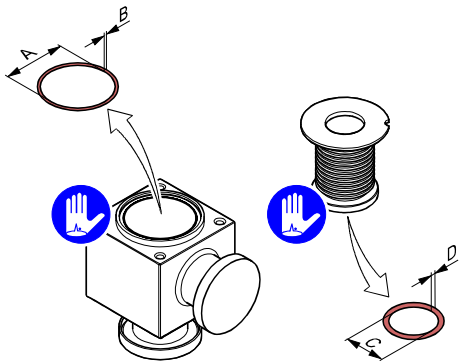


❹ Unscrew the bellows.

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



❺ Remove the O-rings.



O-ring, FPM	øA × B	øC × D
DN 16 ISO-KF	ø28.3×1.78	ø17.04×3.53
DN 25 ISO-KF	ø37.82×1.78	ø24.99×3.53
DN 40 ISO-KF	ø56.87×1.78	ø40.87×3.53

6 Remove the protective lids and clean the parts.

DANGER

DANGER: 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 (→ 🗎 8).

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 ≈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.

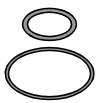
7 Reassemble the product by performing the above steps in reverse order.

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.

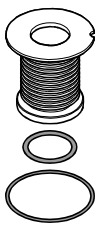
7 Spare Parts

Seal kit



	Ordering number
DN 16 ISO-KF, comprising 1 O-ring, ø17.04x3.53 1 O-ring, ø28.3x1.78	299-001
DN 25 ISO-KF, comprising 1 O-ring, ø24.99x3.53 1 O-ring, ø37.82x1.78	299-006
DN 40 ISO-KF, comprising 1 O-ring, ø40.87x3.53 1 O-ring, ø56.87x1.78	299-011

Bellows cpl.



	Ordering number
DN 16 ISO-KF, comprising 1 bellows 1 O-ring, ø17.04x3.53 1 O-ring, ø28.3x1.78	299-002
DN 25 ISO-KF, comprising 1 bellows 1 O-ring, ø24.99x3.53 1 O-ring, ø37.82x1.78	299-007
DN 40 ISO-KF, comprising 1 bellows 1 O-ring, ø40.87x3.53 1 O-ring, ø56.87x1.78	299-012

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 INFICON 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.

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.

9 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.

Declaration of Contamination

The service, repair, and/or disposal 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 may only be completed (in block letters) and signed by authorized and qualified staff.

1 **Description of product**

Type _____

Part number _____

Serial number _____

2 **Reason for return**

_____

_____

_____

3 **Operating fluid(s) used** (Must be drained before shipping.)

_____

4 **Used in copper process**

no ❑ yes ❑ → Seal product in plastic bag and mark it with a corresponding label.

5 **Process related contamination of product:**

toxic	no ❑ 1)	yes ❑
caustic	no ❑ 1)	yes ❑
biological hazard	no ❑	yes ❑ 2)
explosive	no ❑	yes ❑ 2)
radioactive	no ❑	yes ❑ 2)
other harmful substances	no ❑ 1)	yes ❑

The product is free of any substances which are damaging to health. yes ❑

1) or not containing any amount of hazardous residues that exceed the permissible exposure limits

2) Products thus contaminated will not be accepted without written evidence of decontamination.

6 **Harmful substances, gases and/or by-products**

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

Trade/product name	Chemical name (or symbol)	Precautions associated with substance	Action if human contact

7 **Legally binding declaration:**

We hereby declare that the information on this form is complete and accurate and that we will assume any further costs that may arise. The contaminated product will be dispatched in accordance with the applicable regulations.

Organization/company _____

Address _____ Post code, place _____

Phone _____ Fax _____

Email _____

Name _____

Date and legally binding signature

_____

Company stamp

This form can be downloaded from our website.

Copies:
Original for addresee - 1 copy for accompanying documents - 1 copy for file of sender

Declaration of Incorporation

as defined by the Directive relating to machinery 2006/42/EC, Appendix IIB

We, INFICON, hereby declare that putting the incomplete equipment mentioned below into operation is not permitted until evidence is given that the system into which that incomplete equipment shall be installed is in conformity with the provisions of the EC Directive relating to machinery.

Products

Angle Valve	Inline Valve
manually actuated bellows sealed	manually actuated bellows sealed
VAH016-A/X	VIH016-X
VAH025-A/X	VIH025-X
VAH040-A/X	VIH040-X

Part numbers

253-200	253-245	253-265
253-300	253-345	253-365
253-400	253-445	253-465

Standards

Harmonized and international/national standards and specifications:

- EN ISO 12100-1/-2 (Safety of machinery)
- EN 294 (Safety distances to prevent danger zones being reached by the upper limits)
- EN 349 (Minimum gaps to avoid crushing of parts of the human body)

Signatures

INFICON AG, Balzers

3 October 2006

Marko Kern
Product Manager

3 October 2006

Dr. Georg Sele
Quality Representative

Notes

Notes

Notes

Original: German sinb01d1 (2006-10)

si nb01e1

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