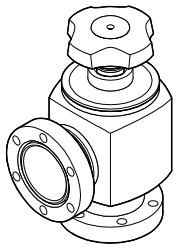
Angle Valve

DN 16 … 63 CF
manually operated
bellows sealed
Viton valve seat seal

VAH016 … 063-Z

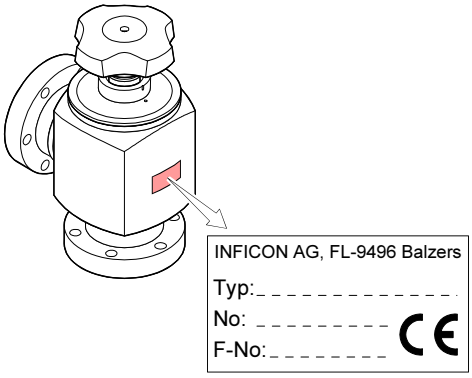


Instruction Sheet
Incl. Manufacturer's Declaration

sima02e1 (0010)

Product Identification

In all communications with INFICON, 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 the following part numbers:

250–731 (VAH016-Z DN 16 CF)
250–736 (VAH040-Z DN 40 CF)
250–741 (VAH063-Z DN 63 CF)

The part number can be taken from the product nameplate.

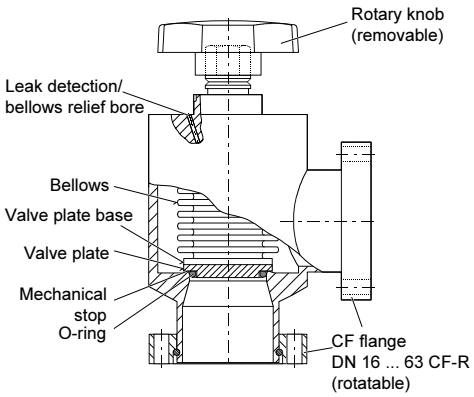
If not indicated otherwise in the legends, the illustrations in this document correspond to the valve with the nominal diameter DN 40. They apply to valves with other nominal diameters by analogy.

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

Intended Use

The product is used as shut-off valve for UHV and HV applications. It can be baked out at 180 °C. The welded housing is suited for high-purity and toxic gases.

Description



Functional Principle

The sealing effect is achieved by pressing an O-ring against an oblique sealing surface.

The housing is welded.

Trademarks

Viton™ DuPont Co.

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.

→ 🕮 See document ...

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

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 corresponding product documentation.

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

Technical Data

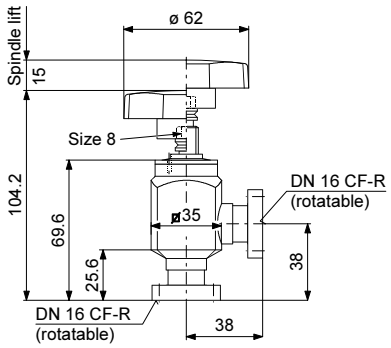
Connection flanges, rotatable	
VAH016-Z	DN 16 CF-R
VAH040-Z	DN 40 CF-R
VAH063-Z	DN 63 CF-R
Installation angle	any
Flow direction	any
Tightness	1×10^{-10} mbarl/s
Pressure range	1×10^{-9} mbar … 4 bar (absolute)
Bursting pressure	8 bar
Conductance [1]	
VAH016-Z	3 l/s
VAH040-Z	38 l/s
VAH063-Z	100 l/s
Temperatures	
ambiance	0 … 55 °C
operation	≤180 °C
bakeout	
without rotary knob	≤180 °C
with rotary knob	≤80 °C
rotary knob	
continuous	≤80 °C
temporary	80 … 110 °C
storage	+5 … +45 °C
	-15 … +45 °C [2]
Temperature increase	
VAH016-Z	≤4 °C/minute
VAH040-Z	≤4 °C/minute
VAH063-Z	≤4 °C/minute
Closing torque	
VAH016-Z	≤1.0 Nm
VAH040-Z	≤1.8 Nm
VAH063-Z	≤2.5 Nm
Service life of O-ring	
cold closing operations	50,000 cycles
Lift (opening)	
VAH016-Z	12 mm
VAH040-Z	23 mm
VAH063-Z	33 mm
Materials	
housing	stainless steel 1.4301
spindle	CuSn8 2.1030.26
spindle flange	stainless steel 1.4301
bellows	stainless steel 1.4541
valve plate base	st. steel 1.4301 ESU
valve plate	
sealing plate	stainless steel 1.4301
O-ring	FPM75
Rotary knob	PA 15% GF
Weight	
VAH016-Z	0.35 kg
VAH040-Z	1.8 kg
VAH063-Z	4.8 kg

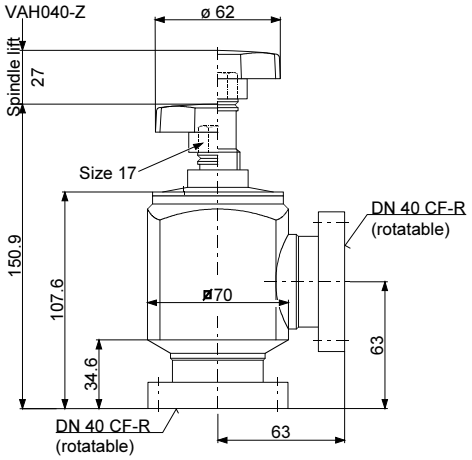
[1] For air with molecular flow.

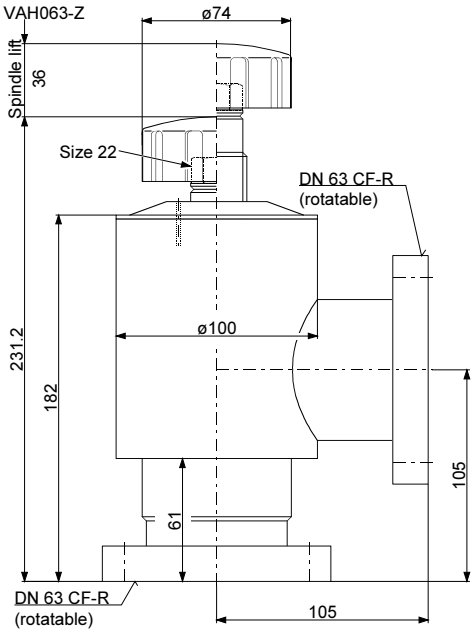
[2] Ambiance free of condensable gases.

Dimensions [mm]

VAH016-Z







Installation

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.

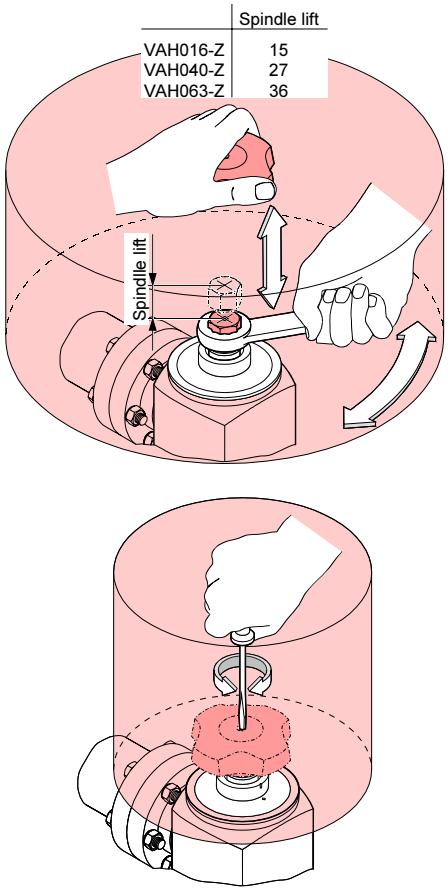
Always wear clean, lint-free gloves and use clean tools when working in this area.

- The valve is delivered in closed condition and with the rotary knob installed.
- The protective packaging should not be removed until shortly before installation. Even the slightest contamination could cause leaks.

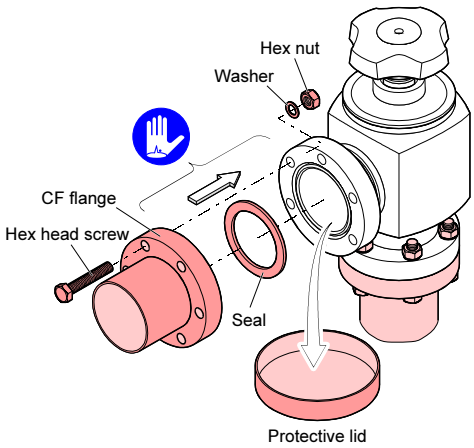
Installation

Space requirements

Make sure the valve can be operated without any risk of bodily injury.



Flange Connection



Keep the protective lids.

Flange	Seal	Pieces	Ordering number
DN 16 CF	copper	10	213-371
DN 40 CF	copper	10	213-372
DN 63 CF	copper	10	213-373

Flange	Hex nut	Number of screws	Required torque
DN 16 CF	M4 × 20 mm	6 per flange	4 Nm
DN 40 CF	M6 × 35 mm	6 per flange	10 Nm
DN 63 CF	M8 × 50 mm	8 per flange	20 Nm

Start-Up

Bakeout

It is good practice to bake out new valves and valves the inner parts of which have been exposed to atmosphere for some time, e.g. with a heating sleeve.

DANGER

Caution: hot surface

Touching the hot surface (>55 °C) can cause burns.

Do not touch the hot surface.

Caution

Caution: bakeout at atmosphere

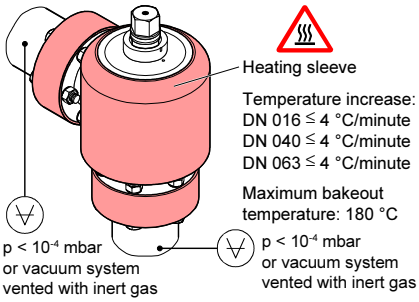
Baking out with the inner parts of the valve exposed to atmosphere may lead to the formation of oxides and thus cause leaks.

Bake out the valve only if

- the pressure in the vacuum system is $<1\times10^{-4}$ mbar or
- the vacuum system has been vented with inert gas.

1. Prior to baking the valve at temperatures >80 °C, remove the rotary knob (→ section "Operation", "Installing/Removing the Rotary Knob").

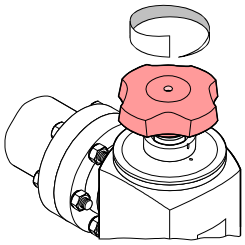
2. Bake the valve out.



3. If the rotary knob has been removed, wait until the valve has cooled down (<50 °C) and reinstall the rotary knob (→ section "Operation", "Installing/Removing the Rotary Knob").

Bringing the Valve Plate Into the Defined Position

Close the valve by turning the rotary knob until the stop position is reached.



The valve is closed and ready for use now.

Operation

Prevent the entry of dirt, dust, or other abrasive contamination into the valve. Even very small particles on the sealing surfaces may cause leaks.

DANGER

Caution: hot surface

Touching the hot surface (>55 °C) can cause burns.

Wear protective gloves.

Caution

Caution: bakeout at atmosphere

Baking out with the inner parts of the valve exposed to atmosphere may lead to the formation of oxides and thus cause leaks.

Bake out the valve only if

- the pressure in the vacuum system is $<1\times10^{-4}$ mbar or
- the vacuum system has been vented with inert gas.

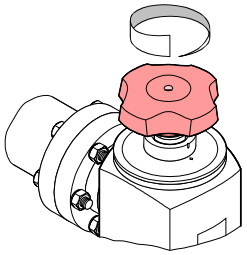
Closing the Angle Valve

Depending on the operating temperature, close the valve with the rotary knob or a ring wrench.

Procedure

Operating temperature ≤55 °C

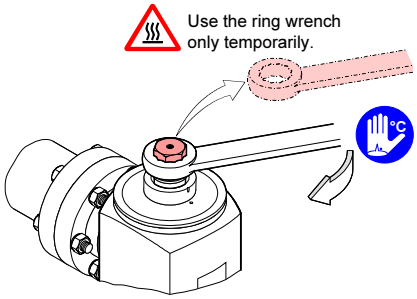
Close the valve by turning the rotary knob clockwise until the stop position is reached.



Operating temperature >55 °C

Precondition: rotary knob removed.

Close the valve by turning the ring wrench clockwise until the stop position is reached. Remove the ring wrench.



Caution

Caution: excessive closing force

Only little force is required to close the valve. If the hex head is turned beyond the stop position, the sealing surfaces and/or the spindle may get damaged.

Do not turn the hex head beyond the mechanical stop.

Opening the Angle Valve

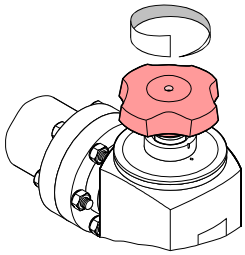
Depending on the operating temperature, close the valve with the rotary knob or a ring wrench.

The maximum opening of the valve is limited by a mechanical stop.

Procedure

Operating temperature ≤55 °C

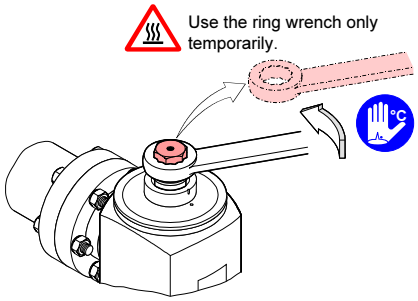
Open the angle valve by turning the rotary knob counter-clockwise.



Operating temperature >55 °C

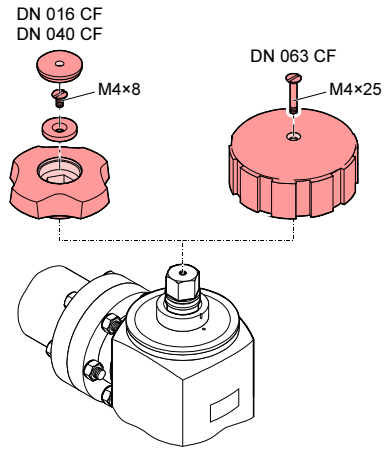
Precondition: rotary knob removed.

Open the valve by turning the ring wrench counter-clockwise. Remove the ring wrench.



Installing/Removing the Rotary Knob

Using a screwdriver (size 4 mm), loosen/fasten the screw.



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

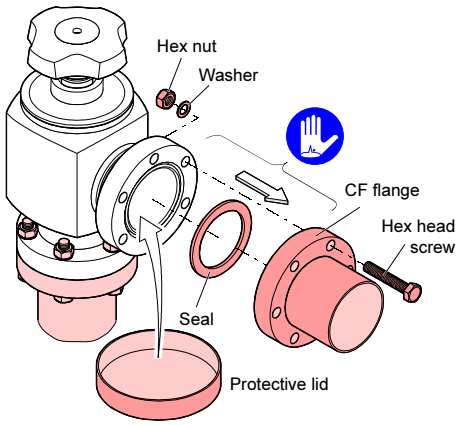
Caution: vacuum component

Dirt and damages impair the function of the vacuum component.

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

Vent the vacuum system and wait until the valve has cooled down to <50 °C.

Detach the flanges and put the protective lids in place.



When the valve is reinstalled, replacing the seals is recommended (→ "Installation").

Maintenance/Repair

→ 🕮 [1]

Storage

Caution

Caution: vacuum component

Inappropriate storage leads to an increase of the desorption rate and/or may result in mechanical damage of the product.

- Cover the vacuum ports of the product with protective lids or grease free aluminum foil.
- Close the valve up to the stop position (which ensures optimum storage).
- Do not exceed the admissible storage temperature range (→ Technical Data).

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 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.

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.

Further Information

[1] www.inficon.com
Operating Manual
Angle Valve VAH016 … 063-Z
sina02e1
INFICON AG, FL–9496 Balzers, Liechtenstein

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 _____
Article No. _____
Serial No. _____

2 Reason for return
_____
_____
_____

3 Operating fluid(s) used
_____
_____

4 Process related contamination of product:

toxic	no ❑	yes ❑
corrosive	no ❑	yes ❑
biological hazard	no ❑	yes ❑ *)
explosive	no ❑	yes ❑ *)
radioactive	no ❑	yes ❑ *)
other harmful substances	no ❑	yes ❑

*) Products thus contaminated will not be accepted without written evidence of decontamination!

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

5 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 manufacturer	Chemical name (or symbol)

Dangerous material class	Measures in case of spillage	First aid in case of contact

6 Legally binding declaration:

I/we hereby declare that the information on this form is complete and accurate and that I/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 _____

Company stamp

Date and legally binding signature _____

This form can be downloaded from our website.
Copies: Original for addressee
1 copy for accompanying documents
1 copy for file of sender

Manufacturer's Declaration

as defined by the Directive relating to machinery 98/37/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.

Angle Valve

DN 16 … 63 CF
manually operated
bellows sealed
Viton valve seat seal

VAH016 … 063-Z

Part numbers

250–731
250–736
250–741

Standards

Harmonized and international/national standards and specifications:

- ISO 3669

Signatures

INFICON AG, Balzers

28 September 2000

Dieter Flad
Product management

28 September 2000

Oskar Untermarzoner
Product development

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