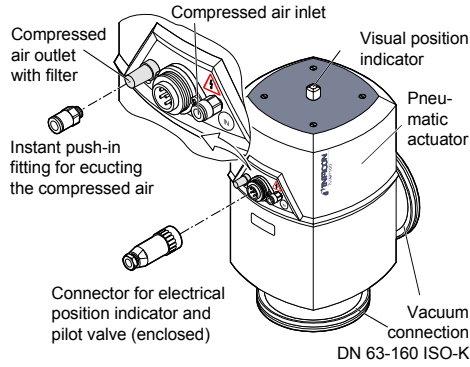


Description



Functional principle

When the pilot valve is activated, the angle valve is closed by the pressure spring. The position indicator is invisible.

When the pilot valve is deactivated, the angle valve is opened by the pneumatic actuator. The green position indicator becomes visible.

The final positions can be polled by the electrical position indicator.

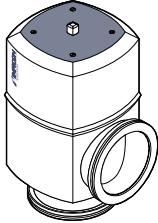
Technical data

Pilot valve connection type	soldered joints normally open
nominal voltage	24 VDC $\pm 10\%$
pickup / holding power	1.6 / 1.6 W
duty cycle	100 %
nominal diameter	4
Position indicator connection rating	soldered joints 250 VAC / 30 VA / 0.125 A 50 VDC / 12.5 W / 0.25 A
Connection flange	DN 63 ISO-K DN 100 ISO-K DN 160 ISO-K
Actuator	opening: pneumatic closing: by pressure spring
Compressed air supply tube connection	\varnothing 6 mm
pressure range	4 ... 8 bar overpressure
piston displacement	75 mm ³ 195 cm ³ 570 cm ³
Stroke of valve plate	20 mm 25 mm 35 mm
Conductance ¹⁾	140 l/s 330 l/s 800 l/s
Switching frequency ²⁾	60 / min 60 / min 40 / min
Opening time ²⁾	300 ms 450 ms 450 ms
Closing time ²⁾	250 ms 300 ms 550 ms
Cycle life ³⁾	1.5 million
Tightness	1×10^{-9} mbar l/s (He)
Pressure range	1×10^{-8} mbar ... 1.5 bar (abs.)
Bursting pressure	4 bar
Pressure difference Δp in closing direction	1.5 bar
in opening direction	1.5 bar
Opens to a pressure difference Δp ⁴⁾	1.5 bar
Temperatures ambience	5 °C ... 60 °C
bakeout	
housing	150 °C
actuator	60 °C
pilot valve	60 °C
Type of protection	IP 54 according to DIN 40 050
Protection class	II
Installation angle	any
Flow direction	any
Materials housing	
aluminum	3.2373.62
stainless steel	1.4305
bellows / valve plate	1.4541 / 1.4301
pressure spring	1.1200
seals	FPM
shell	styrol / butadiene
cylinder unit	3.2371.61
protective lids	PE
packing material	carton box, PE, PU
Weight housing	
aluminum	4 kg
stainless steel	6.8 kg
	6.7 kg
	11.7 kg
	11.4 kg
	-

Angle valve

pneumatically actuated bellows sealed with electrical position indicator with pilot valve 24 VDC normally open

VAP063-160-A/X

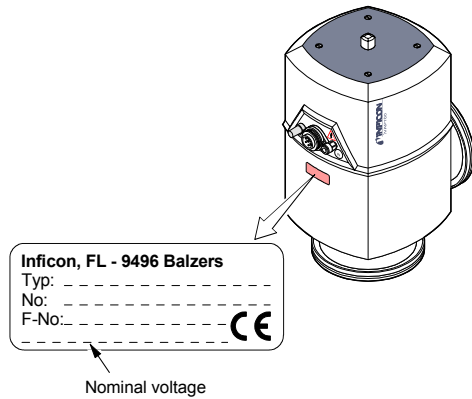


Instruction sheet
incl. Manufacturer's declaration

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Product identification

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



Safety

Symbols used

	DANGER
Information on preventing any kind of physical injury.	
	WARNING
Information on preventing extensive equipment and environmental damage.	
	Note
Information on correct handling or use. Disregard can lead to malfunctions or minor equipment damage.	

\rightarrow Dimensions in mm

General safety instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used. Consider possible reactions between the materials 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 end-users or third parties

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of changes (modifications, alterations etc.) to the product
- use the product with accessories and options not listed in the corresponding product documentation.

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

Validity

This document applies to products with the following part numbers:

Aluminum housing:

- 250-406 (DN 63 ISO-K)
- 250-426 (DN 100 ISO-K)
- 250-446 (DN 160 ISO-K)

Stainless steel housing:

- 250-416 (DN 63 ISO-K)
- 250-436 (DN 100 ISO-K)

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 100 ISO-K. They apply to valves with other nominal diameters by analogy.

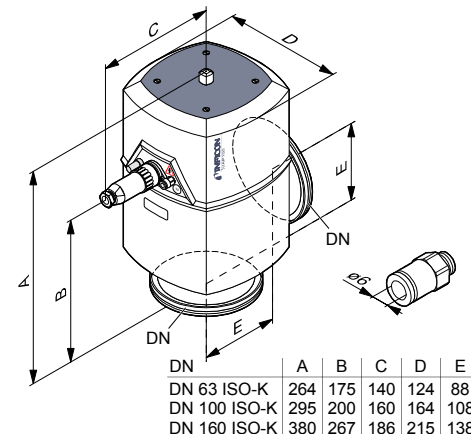
We reserve the right to make technical changes without prior notice.

Intended use

The inline valves are used as shut-off and venting devices in vacuum applications.

- For air with molecular flow
- In a vacuum and compressed air = 6 bar (overpressure)
- Cycles without expendable parts (seals) and under clean operating conditions
- Compressed air = 4 bar (overpressure)

Dimensions



Installation

Vacuum connection

Skilled personnel

The vacuum connection may only be established by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

DANGER

Caution: movement of the valve plate
When the valve is in operation, the valve plate can catch parts of the body and thus cause injuries.

Take appropriate measures (e.g. protective grid) to prevent access to the inside of the installed valve.

Note

Caution: dirt sensitive area
Dirt increases the desorption rate.
Always wear clean, lint-free gloves and use clean tools when working in this area.

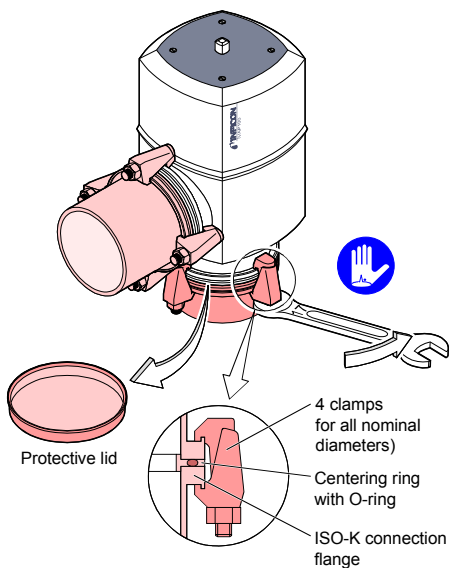
Note

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.

Note

Keep the protective lids and put them in place again when removing the product from the vacuum system.

Remove the protective lids and install the valve to the vacuum system by means of the clamping flange fittings. Any installation angle and flow direction may be chosen.



Compressed air connection

Skilled personnel

The compressed air connection may only be established by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

Note

Specifications for the compressed air:

- free of particles > 50 µm
- 4 ... 8 bar overpressure
- dry, free of oil or containing oil (Keep using the same quality.)

If using compressed air which contains oil, dispose of it in accordance with the relevant regulations.

Note

Specifications for the plastic tube:

- ø 6 mm
- bursting pressure ≥ 10 bar overpressure
- material: PA soft or PU

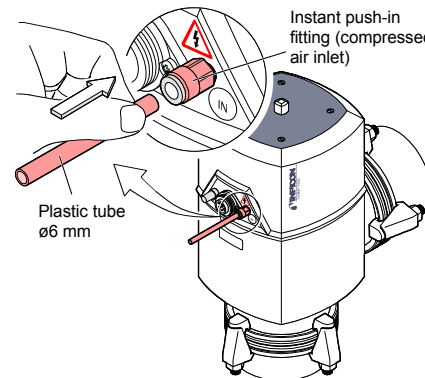
Note

To ensure leak tightness,

- cut the plastic tube square
- make sure the outside of the plastic tube is not damaged.

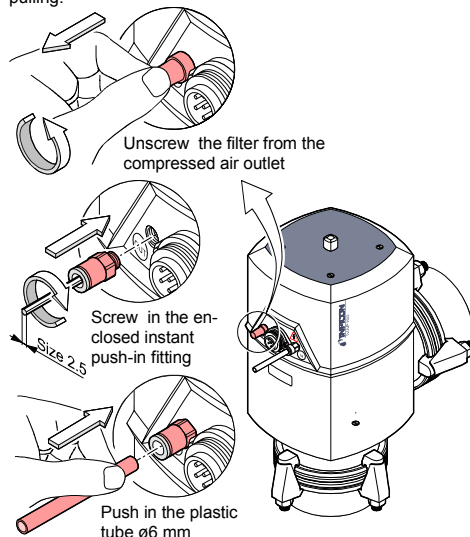
Compressed air inlet

Push the tube into the instant push-in fitting until the mechanical stop is reached. Check that it is correctly mounted by slightly pulling.



Compressed air outlet

If necessary, unscrew the filter and screw in the enclosed instant push-in fitting for educting the compressed air. Push the tube into the instant push-in fitting until the mechanical stop is reached. Check that it is correctly mounted by slightly pulling.



Electrical connection

Skilled personnel

The electrical connection, in accordance with the VDE 0100 guidelines, may be made only by a licensed electrician, qualified as per VDE 0105. The line cables shall be isolated from the line supply during all electrical work.

WARNING

Caution: mains voltage
The pilot valve can get destroyed if a wrong mains voltage is applied.
The local mains power rating must correspond with the nominal voltage of the pilot valve (see product nameplate). If they do not correspond, exchange the pilot valve (→ Further information).

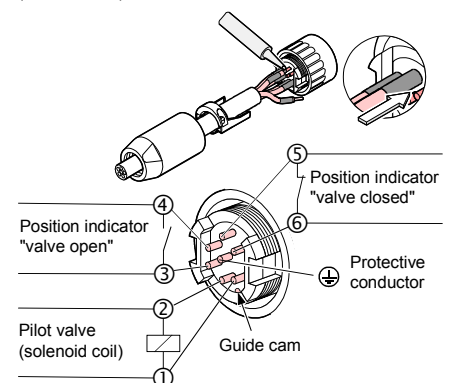
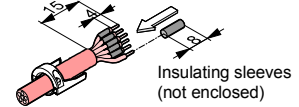
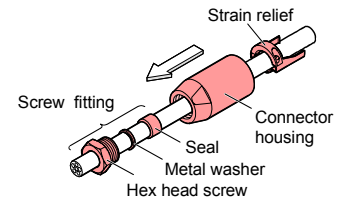
Note

The cable must meet the following specifications:

- flexible
- conductor cross-section ≤ 0.75 mm²
- cable cross-section ≤ 10 mm
- 7-pole with protective conductor

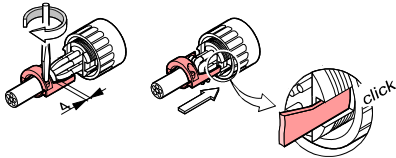
Preparing the connector:

- Slide the screw fitting, connector housing, and strain relief on the cable.
- Skin the cable and mount insulating sleeves if required.
- Solder the cable. Slide the insulating sleeves over the soldered connections. The polarity of the pilot valve (solenoid coil) need not be taken into consideration.

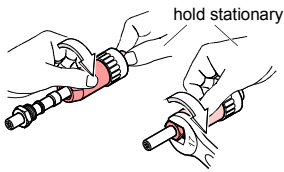


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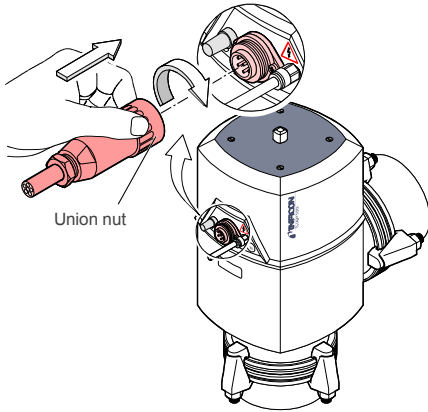
- 4 Tighten the strain relief and insert it (it will catch).



- 5 Reassemble the connector and tighten the screw fitting (width across 17 mm).



- 6 Plug in the connector and secure it with the union nut.



Operation

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

Valve position

Valve position	Compressed air	Pilot valve	Position indicator
open	available	deactivated	
closed	available	activated	
	not available	activated	
	not available	deactivated	

Pressure range: 1×10^{-8} mbar ... 1.5 bar (absolute)

Pressure difference Δp in closing direction

Note

Caution: pressure difference Δp

At $\Delta p > 1.5$ bar the valve may no longer be tight. Avoid pressure differences $\Delta p > 1.5$ bar.

Pressure difference Δp in opening direction

Note

Caution: pressure difference Δp

At $\Delta p > 1.5$ bar the valve is opened. Avoid pressure differences $\Delta p > 1.5$ bar.

Opening against a pressure difference Δp

Note

Caution: pressure difference Δp

At $\Delta p > 1.5$ bar the valve cannot open. Avoid pressure differences $\Delta p > 1.5$ bar.

Deinstallation

Electrical connection

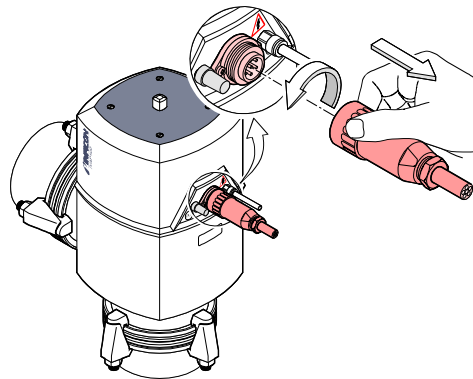
Skilled personnel

The electrical power must be disconnected by a skilled electrician.

Note

The control system must be disconnected from the power source before any connection to the product is made or interrupted.

Loosen the connector and unplug it.



Compressed air connection

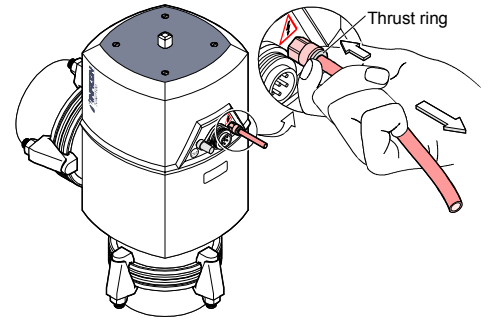
Skilled personnel

The compressed air may only be disconnected by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

DANGER

Caution: compressed air
Physical injury can result if a pressurized compressed air line is disconnected. Before doing any work, turn off the compressed air supply and relieve the compressed air lines.

Pull out the tube while depressing the thrust ring.



Vacuum connection

Skilled personnel

The vacuum connection may only be disassembled by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

DANGER

Caution: contaminated parts
Contaminated parts can be detrimental to health. 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.

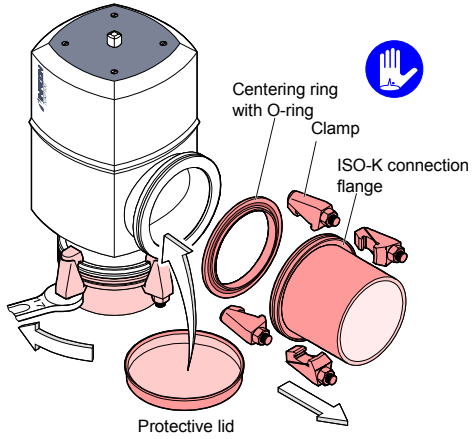
Note

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.

Note

Caution: dirt sensitive area
Dirt increases the desorption rate. Always wear clean, lint-free gloves and use clean tools when working in this area.

Vent the vacuum system and disassemble the clamping flange connection. Place the protective lids.



Further information

Refer to the Operating manual with regard to maintenance, repair, and spare parts.

- The Operating manual sina44e1 can
- be downloaded from our website or
- or ordered at Inficon.

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.

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 _____
 Article No. _____
 Serial No. _____
- 2 Reason for return**

- 3 Operating fluid(s) used**

- 4 Process related contamination of product:**

toxic	no <input type="checkbox"/>	yes <input type="checkbox"/>	 *) Products thus contaminated will not be accepted without written evidence of decontamination!
corrosive	no <input type="checkbox"/>	yes <input type="checkbox"/>	
biological hazard	no <input type="checkbox"/>	yes <input type="checkbox"/> *)	
explosive	no <input type="checkbox"/>	yes <input type="checkbox"/> *)	
radioactive	no <input type="checkbox"/>	yes <input type="checkbox"/> *)	
other harmful substances	no <input type="checkbox"/>	yes <input type="checkbox"/>	
- 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 _____

Manufacturer's declaration

as defined by the Council 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 accordance with the provisions of the EC Council Directive relating to machinery.

We also declare that the equipment mentioned below complies with the provisions of the Council Directive relating to electrical equipment designed for use within certain voltage limits 73/23/EEC.

Angle valve

pneumatically actuated
bellows sealed
with electrical position indicator
with pilot valve 24 VDC
normally open
VAP063-160-A/X

Part numbers:

- 250-406
- 250-426
- 250-446
- 250-416
- 250-436

Standards

Harmonized and international/national standards and specifications:
DIN 28 404

Signatures

Inficon AG, Liechtenstein
12 April 2000

Hans-Christoph Gehlhar
Product management
Components and valves

12 April 2000

Hugo Frei
Product development
Components and valves

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