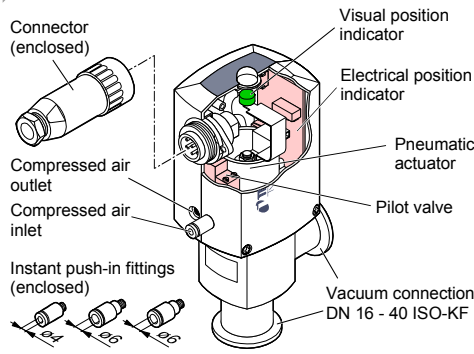


Description



Functional principle

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

When the pilot valve is deactivated, the angle valve is closed by the pressure spring. The position indicator is no longer visible.

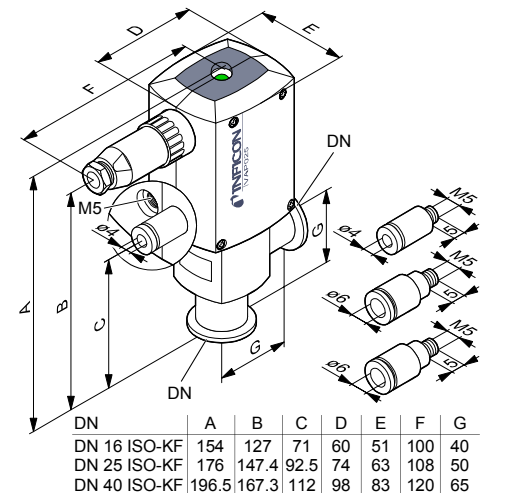
The final positions can be polled by the electrical position indicator.

Technical data

Pilot valve connection nominal voltage power duty cycle nominal diameter	soldered joints see product nameplate 1 W 100% 0.42		
Position indicator connection rating	soldered joints 250 VAC / 25 VA / 0.1 A 50 VDC / 12.5 W / 0.25 A		
Connection flange	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Actuation	opening: pneumatic closing: by pressure spring		
Compressed air supply tube connection pressure range piston displacement	ø 4 mm or ø 6 mm 3 ... 7 bar overpressure 5.5 cm ³ 12.1 cm ³ 26.2 cm ³		
Stroke of the valve plate	5 mm	10 mm	14 mm
Conductance ¹⁾	4.5 l/s	16 l/s	40 l/s
Switching frequency ²⁾	100 / min	100 / min	75 / min
Opening time ²⁾	100 ms	110 ms	250 ms
Closing time ²⁾	200 ms	290 ms	500 ms
Cycle life ³⁾	10 million		
Tightness	1 × 10 ⁻⁹ mbar l/s		
Pressure range	1 × 10 ⁻⁸ mbar ... 1.5 bar (absolute)		
Pressure difference Δp in closing direction in opening direction	1.5 bar 1.5 bar		
Opens to a pressure difference Δp ⁴⁾	1.5 bar		
Temperatures ambience bakeout housing aluminum stainless steel actuator / pilot valve	0 °C ... 50 °C 80 °C 150 °C 50 °C		
Type of protection Protection class	IP 50 according to DIN 40 050 II		
Installation angle Flow direction	any any		
Materials housing aluminum stainless steel bellows / valve plate pressure spring DN 16 + 25 ISO-KF DN 40 ISO-KF seals shell / cylinder unit protective lids packing material	3.2572 1.4301 1.4541 / 14301 1.4301 1.1200 FPM PBTP PE carton box, PE, PU		
Weight housing aluminum stainless steel	0.3 kg 0.4 kg	0.44 kg 0.75 kg	0.9 kg 1.6 kg

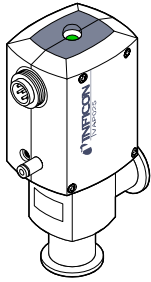
- ¹⁾ For air with molecular flow
- ²⁾ With pressure difference Δp=0 and compressed air = 5 bar (overpressure)
- ³⁾ Cycles without expendable parts (seals) and under clean operating conditions
- ⁴⁾ Compressed air = 5 bar (overpressure)

Dimensions



Angle valve

pneumatically actuated
bellows sealed
with position indicator and pilot valve
VAP016-040-A/X

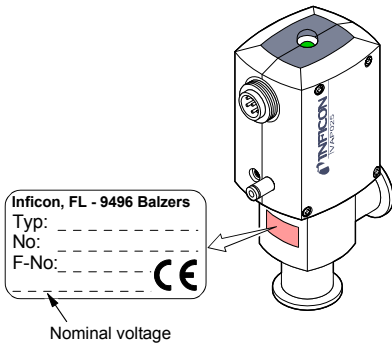


Instruction sheet
incl. Manufacturer's declaration

sima45e1 (0007)

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.

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:

DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF	Nominal voltage (pilot valve)
250-200	250-220	250-240	24 VDC (=)
250-201	250-221	250-241	24 VAC (-)
250-202	250-222	250-242	100-115 VAC (-)
250-203	250-223	250-243	200-240 VAC (-)

Stainless steel housing:

DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF	Nominal voltage (pilot valve)
250-210	250-230	250-250	24 VDC (=)
250-211	250-231	250-251	24 VAC (-)
250-212	250-232	250-252	100-115 VAC (-)
250-213	250-233	250-253	200-240 VAC (-)

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 25 ISO-KF. They apply to valves with other nominal diameters by analogy.

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

Intended use

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

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: 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: 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.

Note

Caution: vacuum component

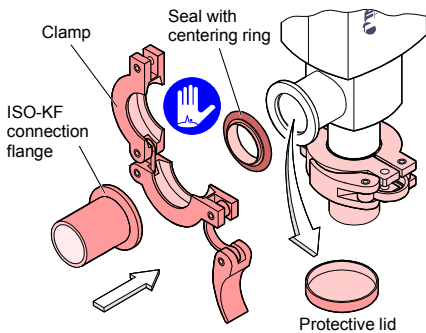
Dirt and damages impair the function of the vacuum component.

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 small 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 > 5 µm
- 3 ... 7 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 4 mm or ø 6 mm
- bursting pressure ≥ 10 bar overpressure (1 MPa)
- material: PA soft or PU.

Note

To ensure leak tightness of the instant push-in fitting

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

Note

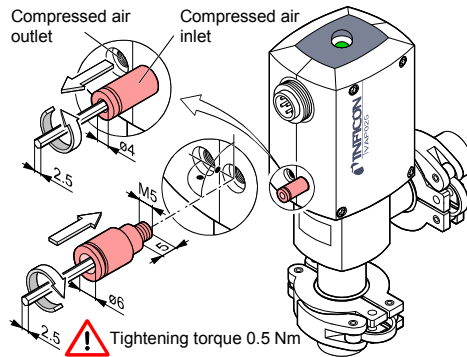
Caution: plastic thread

The plastic thread is damaged by tilting or overturning the instant push-in fitting.

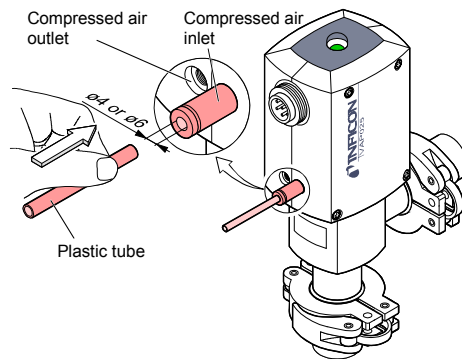
- use the enclosed instant push-in fitting (with extra-long thread) only.
- screw in the instant push-in fitting without tilting it and without exceeding the tightening torque of 0.5 Nm.

Compressed air inlet

For connection of a ø 6 mm plastic tube, exchange the instant push-in fitting.

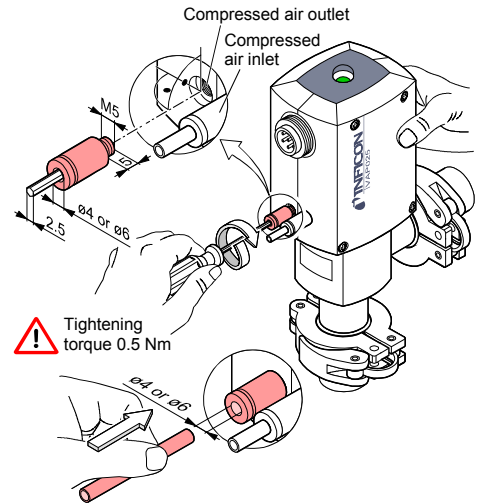


Push the tube into the instant push-in fitting until the mechanical stop is reached. Check that it is correctly mounted by slightly pulling.



Compressed air outlet

Screw in the enclosed instant push-in fitting for exhausting the compressed air if necessary. 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).

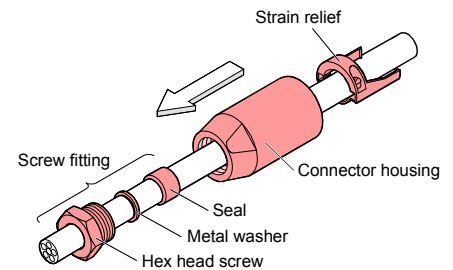
Note

The cable must meet the following specifications:

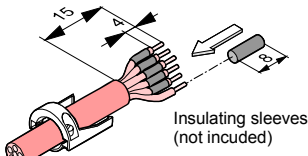
- flexible
- conductor cross-section ≤ 0.75 mm²
- cable cross-section ≤ 10 mm
- 6-pole without protective conductor or 7-pole with protective conductor.

Preparing the connector

Slide the screw fitting, connector housing, and strain relief on the cable.

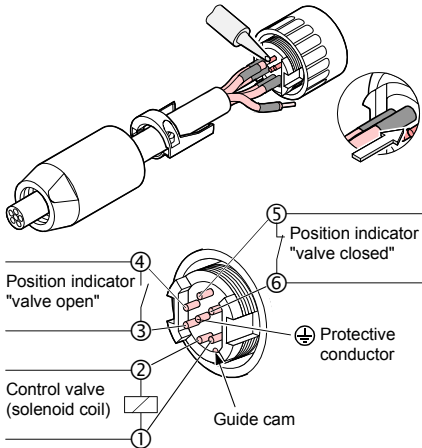


- 2 Skin the cable and mount the insulating sleeves if required.

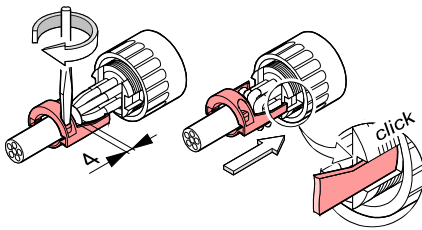


Insulating sleeves (not included)

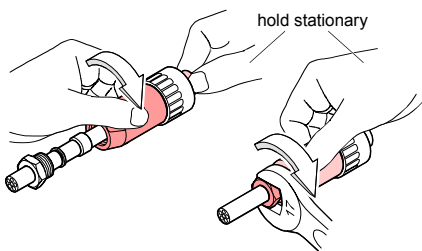
- 3 Solder the cable. Slide the insulating sleeve over the soldered connections. The polarity of the pilot valve (solenoid coil) need not be taken into consideration.



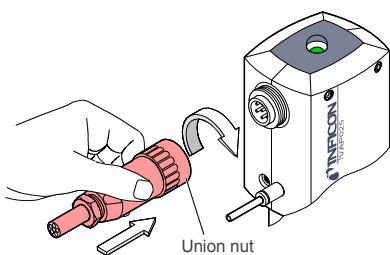
- 4 Tighten the strain relief and insert it (it will catch).



- 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
closed	available	deactivated	
	not available	activated	
	not available	deactivated	
open	available	activated	

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

Pressure difference Δp in closing direction

Note

Caution: pressure difference Δp

Closing direction

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

Opening direction

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

Opening against a pressure difference Δp

Note

Caution: pressure difference Δp

Opening

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

Deinstallation

Electrical connection

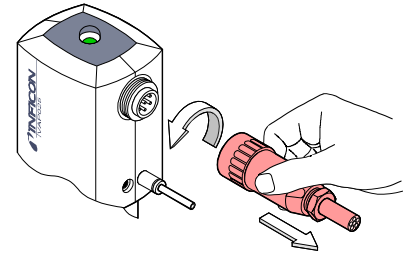
Skilled personnel

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

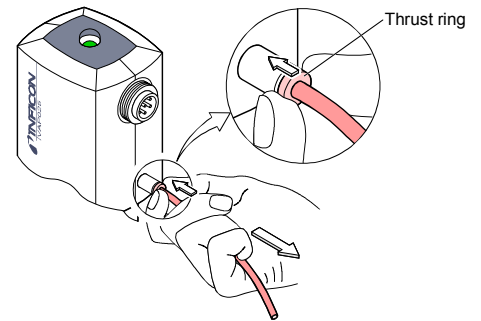
Skilled personnel

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.

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.

