œrlikon
leybold vacuum

Vacuum Valves

Manually Operated
Electropneumatically Operated
Electromagnetically Operated
Special Valves
Gate Valves

176.01.02
Excerpt from the Oerlikon Leybold Vacuum Full Line Catalog
Product Section C14
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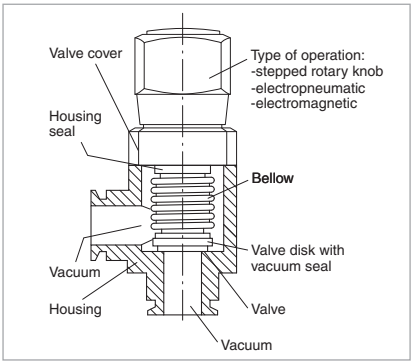
Contents

General

The Oerlikon Leybold Vacuum Valve Program

The long-standing experience of Oerlikon Leybold Vacuum in the area of vacuum engineering is reflected in the selection and the design of the valves and vacuum protection components for a wide variety of applications. The range of products is such that a reliable solution can be offered for every vacuum engineering application. Many years of service and the reliability of the valves is ensured by design. Oerlikon Leybold Vacuum valves are well-proven in many widely varying areas of research and industry.

The Design of a Vacuum Valve Scope of the Range of Valves



The range of Oerlikon Leybold Vacuum valves comprises:

- Small valves **micro**
- Right-angle and straight-through valves (no slanted seat valve) with a nominal width of DN 16 to DN 40 with ISO-KF flanges
- Right-angle valves with a nominal width of DN 63 to DN 250 with ISO-K flanges
- Gate valves with a nominal width of DN 16 to DN 250 with various flanges
- Ball valves
- Special valves

It is the aim of Oerlikon Leybold Vacuum to meet, through the offered range of isolation components and valves, the customers requirements regarding the design of such components. For this reason all valves are available with different driving systems.

With the exception of the special valves you may select between a stepped rotary knob manual drive, an electropneumatic drive or an electro-magnetic drive system.

Right-angle valves DN 16 ISO-KF to DN 40 ISO-KF as well as DN 63 ISO-K to DN 160 ISO-K are either available with an aluminium or stainless steel body (the latter up to DN 100 ISO-K only).

The special characteristics of the application in each case result in special requirements concerning features of the valves, for example:

- Coating
  - Short switching cycles (e.g. 1.5 s)
  - Very high number of opening and switching cycles (e.g. over 10 million cycles)
- Analytical engineering
  - High conductance (similar to the corresponding flange components, like bends, for example)
  - High integral leak tightness for the valves (leak rates below 10^{-9} mbar l/s)
- Lamps and tubes manufacture
  - Temperature resistant
  - Permissible ambient temperatures, 50 °C max.
- Accelerator technology
  - Materials capable of resisting radiation, high temperatures and corrosion at the same time
- Metallurgy and furnace manufacture
  - Rugged and insensitive to contamination
- Chemistry
  - Choice of materials in contact with the medium for the valve body

All applications have the following requirements in common:

- Quiet opening action with very little vibration
- Compact design, low weight
- Highly visible, unambiguous position indicator
- For use within the pressure range from 10^{-8} to 2500 mbar, if not stated otherwise
- Fully operational within the entire specified pressure range

Oerlikon Leybold Vacuum valves meet these requirements, unless otherwise stated by the technical data.

Quality Assurance

The various markets, like Analytical or Coating, for example are very demanding regarding certain important features for the valves which are to be used in the new generation of instruments currently under development. Demanded are, among other things, high reliability during the entire service life, high integral leak tightness, a high number of opening/closing cycles as well as a fast response.

The valves from Oerlikon Leybold Vacuum meet all these demanding requirements!

For further information on flange connections and flange components please refer to Product Section C13 “Vacuum Fittings ISO-KF, ISO-K, ISO-F, CF and Feedthroughs”.

Flange Designations

The flange designations used in this Product Section are in line with the international standards and the nomenclature used in practice:

Flange Type	Standard	Designation with standardized nominal width [1] (DN)
Small flanges	ISO 2861/I DIN 28 403	„KF“ e.g. DN 40 ISO-KF
Clamp flanges	ISO 1609 DIN 28 404	„ISO-K“ e.g. DN 100 ISO-K
Fixed flanges/ collar flanges with retaining ring	ISO 1609 DIN 28 404	„ISO-F“ „F“ for fixed flange e.g. DN 250 ISO-F

[1] The standardized nominal width (DN) corresponds approximately to the inside diameter, but need not necessarily be identical to the inside diameter.

In the case of gate valves equipped with CF flanges the following must be noted:
The designation DN 35 CF for UHV flanges has been changed to DN 40 CF with the sealing parameters remaining unchanged; the same applies to DN 150 CF which has changed to DN 160 CF.

Advantages to the User

- Compact design
- Integral leak rate less than 10^{-8} mbar l x s^{-1}
- FPM sealed
- For pressures up to 2000 mbar
- Seal in both directions [2]
- Principal dimensions comparable to Oerlikon Leybold Vacuum flange components of the same nominal width
- Reliable operation ensured regardless of the valve's orientation
- Optical valve position indicator as standard (not for valves of the “micro” range)
- Electrical valve position indicator as standard (not for valves of the “micro” range)
- Operation of electromagnetic ISO-KF valves off supply voltages ranging from 100 to 230 V AC
- The inside of the housing in contact with the medium is sealed off against the atmosphere by a bellows type seal which is absolutely free of any lubricants.

All further technical data as well possible deviations from the general specifications stated here can be found along with the descriptions for the individual valve types.

For various applications and special design requirements Oerlikon Leybold Vacuum offers a range of special valves:

- SECUVAC vacuum safety valves (DN 16 ISO-KF to DN 100 ISO-K)
- Venting valves / power failure venting valves
- Vacuum locks / sealing valves
- Variable leak valves
- Ball valves (straight-through valve)
- Right-angle valves for mobile systems which comply with the American standard of the Department of Transportation (DOT)

Accessories

All connecting components like centering rings, clamps or clamping rings needed to connect the valves must be ordered separately (see Product Section C13 “Vacuum Fittings ISO-KF, ISO-K, ISO-F, CF and Feedthroughs”).

Materials

The valve bodies and the inside parts are made of selected, vacuum compatible materials, like wrought aluminum or cast stainless steel.

The raw components are subjected to a 100% test before they are further processed.

The materials which are used are described in the tables at the end of the section “General”.

Gaskets

Shown in the table at the end of the section “General” are the types of gasket used in the valves together with their brief or chemical designations and their thermal ratings.

Other Materials

Plastic:	Polyamide 6 (PA 6)
Grey cast iron:	GG 20 (0.6020)
Brass:	Ms 58
Brass (nickel-plated):	CuZn39Pb3
Nimonic	
Bronze	
Spring steel	

[2] High vacuum systems are very demanding as to the leak tightness of the vacuum components used. For this reason each individual Oerlikon Leybold Vacuum valve is subjected to a helium leak test before delivery. The valves are only considered as leak tight, if a leak rate of less than 10^{-9} mbar x l x s^{-1} can be measured for the body and the valve seat.
In the case of our high vacuum valves with ISO-KF and ISO-K flanges a leak rate of less than 10^{-9} mbar x l x s^{-1} is maintained also during actuation.
This means that in the case of a gas flow of the mentioned order of magnitude the pressure would increase only by 3 mbar in a vessel of 1 liter and in 100 years.

Materials

Aluminum Alloys

Material No.		Brief Designation
DIN	AA	DIN
3.0615	–	AlMgSiPbF28
3.2153	–	G AlSi7Cu3
3.2315	6081	AlMgSi1F28
3.2341	–	G AlSi5Mg wa
3.2371	–	G AlSi7Mg06
3.2373	–	G AlSi9Mg
3.2381	–	G AlSi10Mg wa
3.3527	–	AlMg2Mn0,8F20

Stainless Steels

Material No.		Brief Designation
DIN	AISI	DIN
1.4034	420	X 46 Cr 13
1.4301	304	X5 CrNi 18 10
1.4305	303	X10 CrNi 51 89
1.4306	304 L	X2 CrNi 18 10
1.4308	–	G-X6 CrNi 18 1
1.4310	301	X12 CrNi 17 7
1.4404	316 L	X2 CrNiMo 17 13 3
1.4435	316 L	X2 CrNiMo 18 14 3
1.4541	321	X10 CrNiTi 18 10
1.4571	316 Ti	X6 CrNiMoTi 17 12 2

Standard Steels

Material No.	Brief Designation
DIN	DIN
1.0388	St4/St14
1.0425	H II

Materials used for the Gaskets

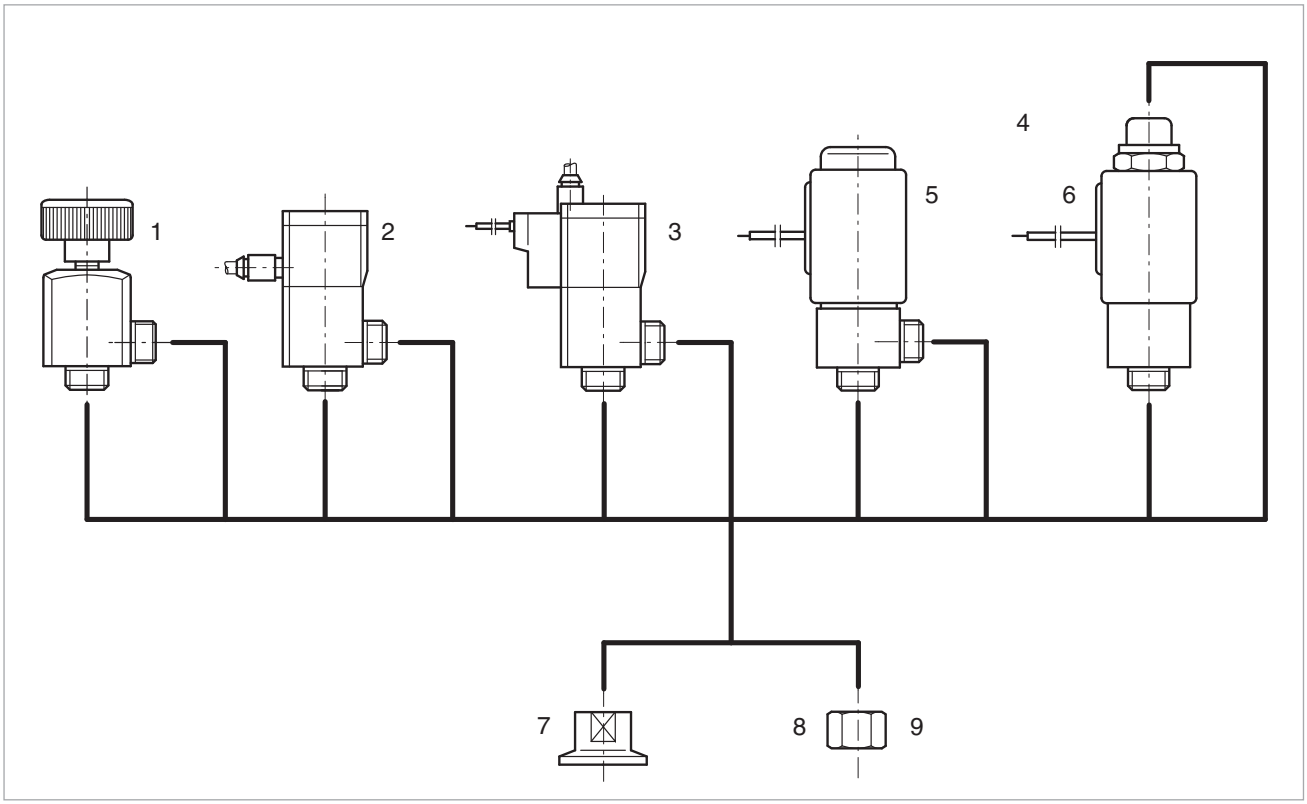
Brief Designation	Chemical Designation	Typical Trade Name	Degassing Temperature
FPM	Fluor caoutchouc	Viton	up to 150 °C
NBR	Acrylonitrile-butadiene rubber	Perbunan	up to 80 °C
PTFE	Polytetrafluor ethylene	Teflon	up to 250 °C
EPDM	Ethylene-propylenedien caoutchouc	–	up to 150 °C

Abbreviations used in the valve designations

Brief Designation	Valve Type
EMD	Solenoid straight-through valve
EME	Solenoid right-angle valve
EPD	Electropneumatic straight-through valve
EPE	Electropneumatic right-angle valve
MAN	Manual operation
PD	Pneumatic straight-through valve
PE	Pneumatic right-angle valve

Notes

Small Valves of the “micro” Range Overview



Oerlikon Leybold Vacuum small valves **micro** are available with any of four drive systems, two types of body and three adapters.

Types of drive

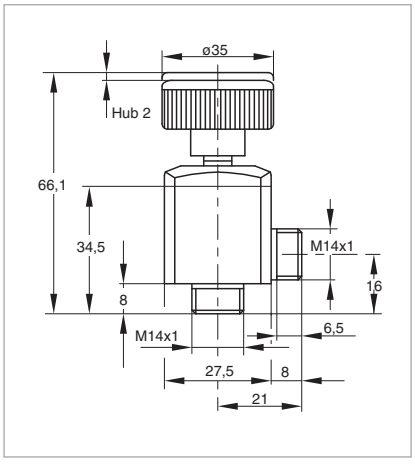
- Manual **(1)**
- Pneumatic **(2)**
- Electropneumatic **(3)**
- Electromagnetic **(4)**

Types of valve body

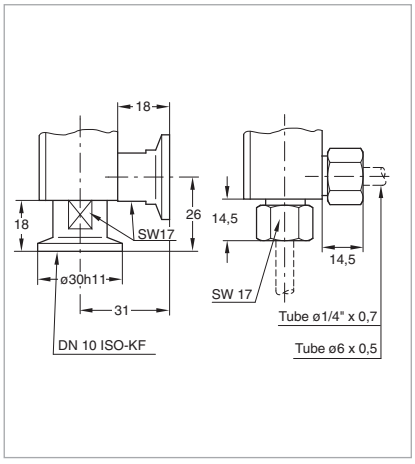
- Right-angle valve **(5)**
- Straight-through valve **(6)**

as well as adapter

- DN 10 ISO-KF flange **(7)**
- 1/4" tube **(8)**
- 6 mm tube **(9)**



Dimensional drawing for the **micro** MAN



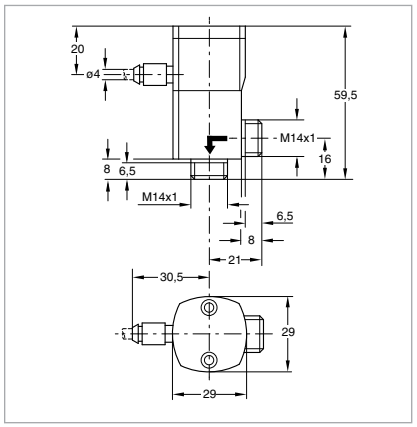
Connection dimensions for small valves **micro**

Technical Information

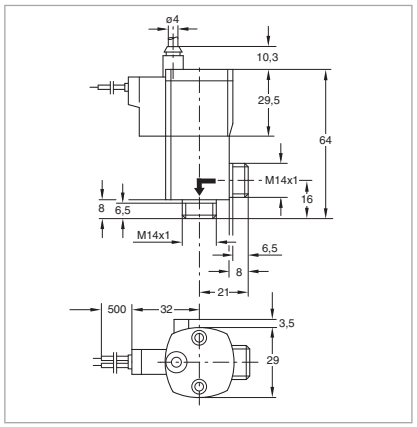
micro valves are supplied without adaptor.

The adaptors must be ordered additionally.

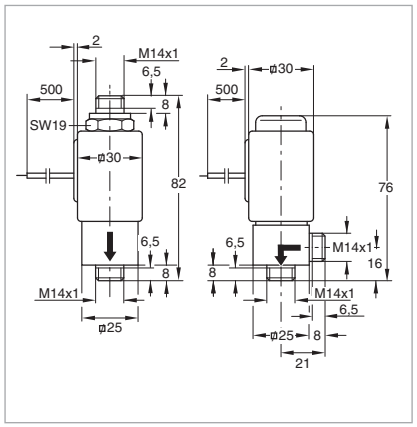
Right-Angle and Straight-Through Valves, Bellows-Sealed, Various Drives



Dimensional drawing for the pneumatically actuated small valves **micro**



Dimensional drawing for the electropneumatically actuated small valves **micro**



Dimensional drawing for the electromagnetic actuated small valves **micro**

Advantages to the User

- Small size
- High conductance in the molecular flow range
- Long service life of over 2 million switching cycles
- High switching frequency
- Protection class IP 50

Typical Applications

- Gas handling systems in production machines
- Latest generation analytical equipment

Technical Data

		Small Valves "micro"			
		Manual	**Electropneumatic**	**Pneumatic**	**Electromagnetic**
Nominal width	**mm**	5	5	5	5
Integral leak rate	**mbar x l/s**	10^{-9}	10^{-9}	10^{-9}	10^{-9}
Switching cycles		–	5 mio.	5 mio.	2 mio.
Max. pressure differential	**bar abs.**	4	3	3	1
Closure time	**ms**	–	35	35	7
Opening time	**ms**	–	35	35	30
Max. switching frequency	**min^{-1}**	–	150	150	300
Conductance, molecular	**l/s**	0.4	0.4	0.4	0.3
Supply voltage	**V DC**	–	24 (with pilot valve)	–	24
Max. power consumption	**W**	–	1	–	10
Material					
Valve body		stainless steel (1.4301)	stainless steel (1.4301)	stainless steel (1.4301)	stainless steel (1.4301)
Inside section		stainless steel (1.4301)	stainless steel (1.4301)	stainless steel (1.4301)	stainless steel (1.4301)
Gaskets		O-rings of FPM	O-rings of FPM	O-rings of FPM	O-rings of FPM
Drive		aluminum/ plastic	aluminum anodized	aluminum anodized	stainless steel 1.4105

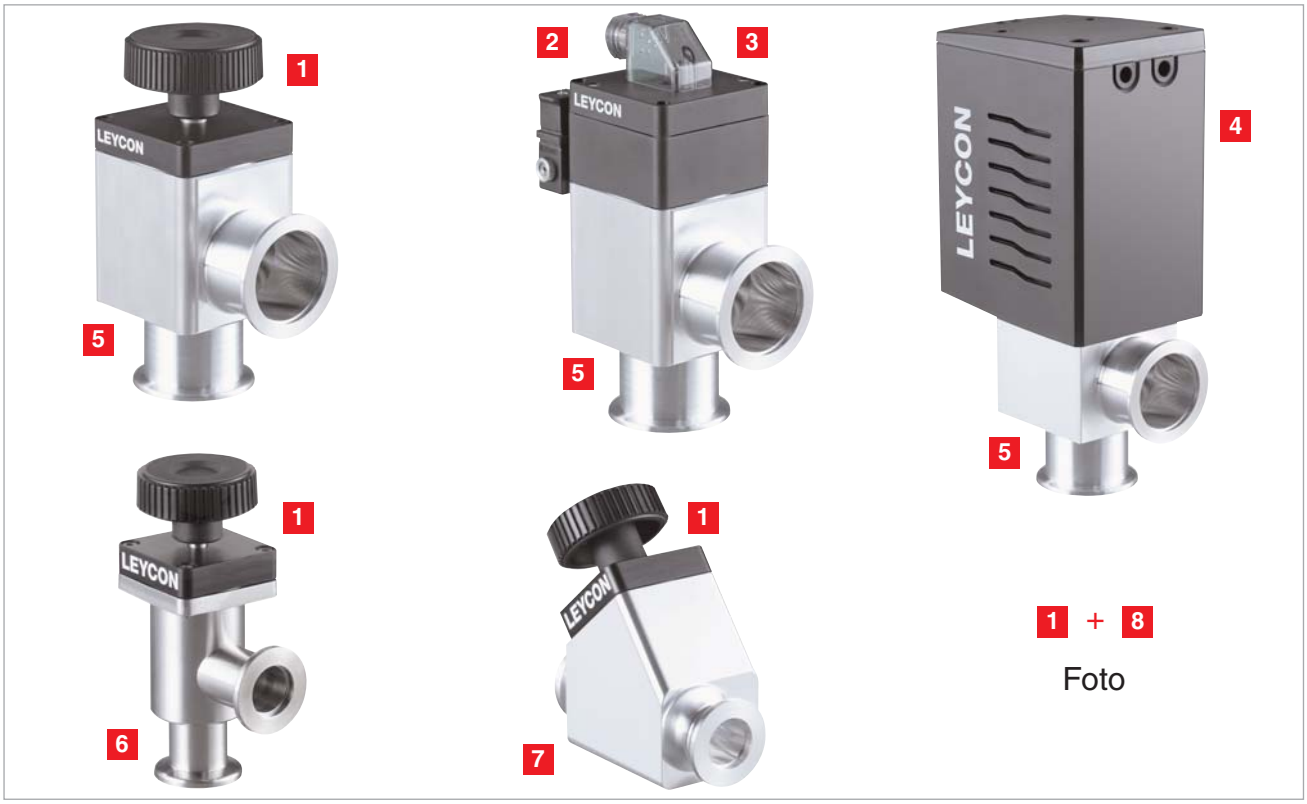
Ordering Information

Small Valves “micro”

		Manual	Electropneumatic	Pneumatic	Electromagnetic
Right-Angle Valves	Type				
Manual	MAN	**Part No. 284 48**	–	–	–
Without pilot valve, normally closed	PE	–	–	**Part No. 284 40**	–
With pilot valve, normally closed	EPE	–	**Part No. 284 41**	–	–
With pilot valve, normally open	EPE	–	**Part No. 284 42**	–	–
With pilot valve, normally closed, with flanges	PE DN 10 ISO-KF	–	–	**Part No. 284 47**	–
Electromagnetic, normally closed	EME	–	–	–	**Part No. 284 44**
Straight-Through Valves					
Electromagnetic, normally closed	EMD	–	–	–	**Part No. 284 45**
Electromagnetic, normally open	EMD	–	–	–	**Part No. 284 46**
Adapter (1 piece)					
Flange DN 10 ISO-KF		**Part No. 284 50**	**Part No. 284 50**	**Part No. 284 50**	**Part No. 284 50**
Tube 1/4"		**Part No. 284 51**	**Part No. 284 51**	**Part No. 284 51**	**Part No. 284 51**
Tube 6 mm		**Part No. 284 52**	**Part No. 284 52**	**Part No. 284 52**	**Part No. 284 52**
Spare parts					
Seal kit		**Part No. 105 80**	**Part No. 105 81**	**Part No. 105 81**	**Part No. 108 82**
Inside section		**Part No. 105 85**	**Part No. 105 82**	**Part No. 105 82**	**Part No. 105 83/84/89**

Notes

Valves with ISO-KF Flanges
Overview



Oerlikon Leybold Vacuum ISO-KF valves are available with any of four drive systems and four types of body having a nominal width of DN 16, 25, 40 and 50 ISO-KF.

Abbreviations used in connection with bellows sealed valves:

B Bellows sealed

A Angle (valve)

I Inline (valve)

V Valve

M Rotary knob

P Pneumatically actuated

EP Electropneumatically actuated

EM Electromechanically actuated

AL Aluminum body

SS Stainless steel body

BAV ... EP AL ...

Types of drive

- Rotary knob 1 with bellows seal
- Pneumatic 2 with bellows seal
- Electropneumatic 3 with bellows seal
- Solenoid with bellows seal 4

Types of valve body

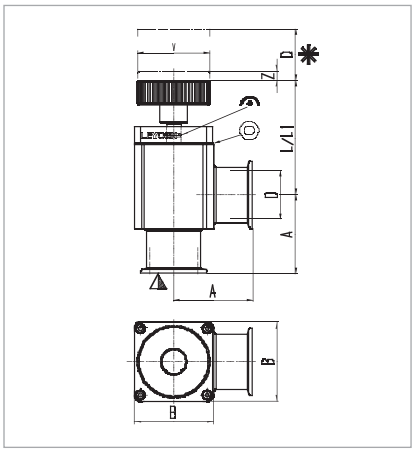
- Right-angle valve, aluminum body 5
- Right-angle valve, stainless steel body 6
- Straight-through valve, stainless steel body 7
- Straight-through valve, aluminum body 8

Materials Used

	Aluminum version	Stainless steel version
Housing	Aluminum (AlMgSi) EN-AW 6060 [1]	Stainless steel (AISI 304)
Inner section [1]	Aluminum (AlMgSi)	Stainless steel (AISI 304)
Drive unit [2]	Aluminum	Aluminum
Valve disk	AISI 316L	AISI 316L
Bellows	AISI 316L (1.4404)	AISI 316L (1.4404)
Head and disk O-ring	Viton	Viton
Rotary knob	Plastic	Plastic
Position indicating cover [2]	Plastic	Plastic
Housing cover [1]	Plastic	Plastic

[1] For the solenoid version only
[2] For pneumatic and electro-pneumatic version only

Right-Angle Valves, Bellows-Sealed, Manually Operated



Dimensional drawing for the manually operated, bellows-sealed, right-angle valves

Dimension Table

DN	ISO-KF	16	25	40	50
A	mm	40	50	65	70
B	mm	40	48	65	77
D	mm	16	25	40	50
L [1)]	mm	64.9	60.9	94.3	101.1
L1 [2)]	mm	67.4	64.3	97.3	104.1
Q	mm	46.0	44.0	73.5	85.5
V	mm	40	40	60	60
Z [3)]	mm	3.6	4.7	7.9	9.3

1) Aluminum version
2) Stainless steel version
3) Disk stroke is greater due to the transmission

Advantages to the User

Valves with Rotary Knob

- Allow also for reduced venting of systems
- Suited as a manually operated variable leak valve to roughly control gas flows
- Leak tight in both directions up to a pressure of 2.0 etc. 1.5 bar and easy to open
- Installation in any orientation

Connection Icons

- Side of the valve seat
- Required clearance
- Mechanical position indicator
- Leak detection bore

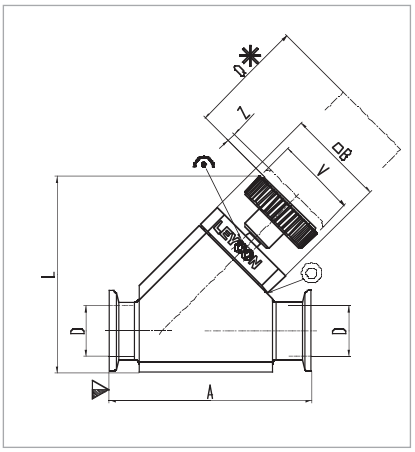
Technical Data

		DN 16 ISO-KF		DN 25 ISO-KF		DN 40 ISO-KF		DN 50 ISO-KF	
		Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel
Service life	cycles	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Conductance at molecular flow	l x s^{-1}	5	5	14	14	45	45	50	50
Leak rate	mbar x l x s^{-1}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x10^{-9}	1 x 10^{-9}
Operating pressure range	mbar	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000
Differential pressure, closing and opening direction	bar	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2
Ambient / operating temperature, max.	°C	80	80	80	80	80	80	80	80
Seal		FPM	FPM	FPM	FPM	FPM	FPM	FPM	FPM
Weight	kg	0.24	0.30	0.36	0.47	0.92	1.08	1.34	1.52

Ordering Information

	DN 16 ISO-KF		DN 25 ISO-KF		DN 40 ISO-KF		DN 50 ISO-KF	
	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel
Right-Angle Valve, rotary knob								
BAV ... M AL	**Part No. 215 375**	–	**Part No. 215 376**	–	**Part No. 215 377**	–	**Part No. 215 378**	–
BAV ... M SS	–	**Part No. 215 383**	–	**Part No. 215 385**	–	**Part No. 215 386**	–	**Part No. 215 387**
Spare parts								
Bellows feedthrough	**Part No. 242 292**	**Part No. 242 292**	**Part No. 233 014**	**Part No. 233 014**	**Part No. 229 542**	**Part No. 229 542**	**Part No. 244 980**	**Part No. 244 980**
Knob	**Part No. 245 912**	**Part No. 245 912**	**Part No. 245 912**	**Part No. 245 912**	**Part No. 245 913**	**Part No. 245 913**	**Part No. 245 913**	**Part No. 245 913**
Seal kit consisting of disc seal (O-ring) and head seal (O-ring)	**Part No. 242 324**	**Part No. 242 324**	**Part No. 241 077**	**Part No. 241 077**	**Part No. 241 079**	**Part No. 241 079**	**Part No. 245 556**	**Part No. 245 556**

Straight-Through Valves, Bellows-Sealed, Manually Operated



Dimensional drawing for the manually operated, bellows-sealed straight-through valves

Dimension Table

DN	ISO-KF	16	25	40	50
A	mm	87.6	100.0	130.0	178.0
B	mm	40	48	65	77
D	mm	16	25	40	50
L	mm	90.6	97.0	140.6	166.8
Q	mm	46.0	44.0	73.5	85.5
V	mm	40	40	60	60
Z [1]	mm	3.6	4.7	7.9	9.3

1) Aluminum version
2) Stainless steel version
3) Disk stroke is greater due to the transmission

Connection Icons

- Side of the valve seat
- Required clearance
- Mechanical position indicator
- Leak detection bore

Advantages to the User

Valves with Rotary Knob

- Allow also for reduced venting of systems
- Suited as a manually operated variable leak valve to roughly control gas flows
- Leak tight in both directions up to a pressure of 2.0 etc. 1.5 bar and easy to open
- Installation in any orientation

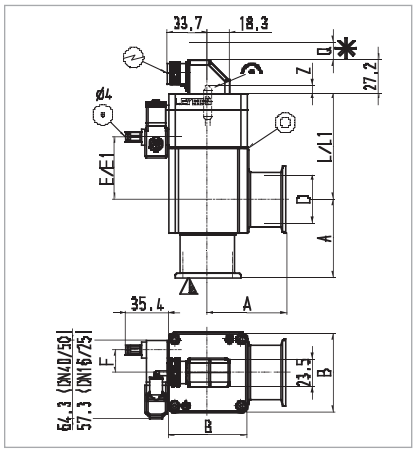
Technical Data

		DN 16 ISO-KF		DN 25 ISO-KF		DN 40 ISO-KF		DN 50 ISO-KF
		Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum
Service life	cycles	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Conductance at molecular flow	l x s^{-1}	5	5	14	14	45	45	50
Leak rate	mbar x l x s^{-1}	1 x 10^{-9}	1 x 10^{-9}	1 x· 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}
Operating pressure range	mbar	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000
Differential pressure, closing and opening direction	bar	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2
Ambient / operating temperature, max.	°C	80	80	80	80	80	80	80
Seal		FPM	FPM	FPM	FPM	FPM	FPM	FPM
Weight	kg	0.32	0.74	0.49	0.47	1.30	1.16	2.19

Ordering Information

	DN 16 ISO-KF		DN 25 ISO-KF		DN 40 ISO-KF		DN 50 ISO-KF
	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum
Straight-Through Valve, rotary knob							
BAV ... M AL	**Part No. 215 313**	–	**Part No. 215 388**	–	**Part No. 215 389**	–	**Part No. 215 390**
BAV ... M SS	–	**Part No. 215 379**	–	**Part No. 215 374**	–	**Part No. 215 381**	–
Spare parts							
Bellows feedthrough	**Part No. 242 292**	**Part No. 242 292**	**Part No. 233 014**	**Part No. 233 014**	**Part No. 229 542**	**Part No. 229 542**	**Part No. 244 980**
Knob	**Part No. 245 912**	**Part No. 245 912**	**Part No. 245 912**	**Part No. 245 912**	**Part No. 245 913**	**Part No. 245 913**	**Part No. 245 913**
Seal kit consisting of disc seal (O-ring) and head seal (O-ring)	**Part No. 242 324**	**Part No. 242 324**	**Part No. 241 077**	**Part No. 241 077**	**Part No. 241 079**	**Part No. 241 079**	**Part No. 245 556**

Right-Angle Valves, Bellows-Sealed, (Electro)pneumatically Operated



Dimensional drawing right-angle valves, with fitted pilot valve

Dimension Table

DN	ISO-KF	16	25	40	50
A	mm	40	50	65	70
B	mm	40	48	65	77
D	mm	16	25	40	50
L [1]	mm	65.2	60.6	87.7	96.0
L1 [2]	mm	67.7	64.0	90.7	99.0
Q	mm	46.0	44.0	73.5	85.5
F	mm	9	13	19	20
Z [1]	mm	2.0	4.0	9.5	10.0
E	mm	35.6	30.6	51.6	58.4
E1	mm	38.1	34.0	54.6	61.4

1) Aluminum version
2) Stainless steel version

Connection Icons

- Side of the valve seat
- Required clearance
- Mechanical position indicator
- Leak detection bore
- Electrical connection
- Compressed air connection

Advantages to the User

- Quiet opening and closing action with very little vibration
- Short opening and closing times
- Optical valve position indicator as standard
- Very low leak rate and insensitive to particles owing to bellows seal. Always closed in case the compressed air supply fails
- Electric position indicator is standard
- With and without pilot valve as standard
- Standard electrical and compressed air connections
- Protection class IP 50
- The valves are closed by the restoring force of a spring
- Installation in any orientation and no restrictions as to the direction of flow

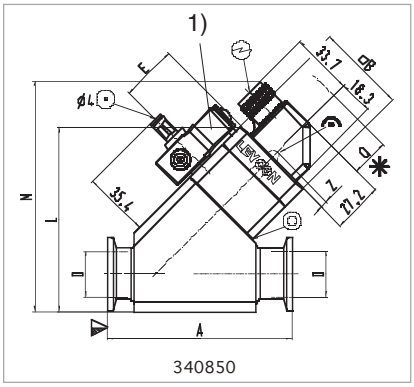
Technical Data

		DN 16 ISO-KF		DN 25 ISO-KF		DN 40 ISO-KF		DN 50 ISO-KF	
		Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel
Service life	cycles	10 mio.	10 mio.	10 mio.	10 mio.	10 mio.	10 mio.	10 mio.	10 mio.
Conductance at molecular flow	l x s^{-1}	5	5	14	14	45	45	80	80
Leak rate	mbar x l x s^{-1}	$1 \cdot 10^{-9}$	$1 \cdot 10^{-9}$	$1 \cdot 10^{-9}$	$1 \cdot 10^{-9}$	$1 \cdot 10^{-9}$	$1 \cdot 10^{-9}$	$1 \cdot 10^{-9}$	$1 \cdot 10^{-9}$
Operating pressure range	mbar	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000
Differential pressure. closing and opening direction	bar	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2
Opening against differential pressure at the valve disk	bar	4	4	4	4	2	2	2	2
Ambient / Operating temperature, max.	°C	80	80	80	80	80	80	80	80
Seal		FPM	FPM	FPM	FPM	FPM	FPM	FPM	FPM
Closing time / opening time	ms	100 / 100	100 / 100	210 / 120	210 / 120	550 / 250	550 / 250	650 / 400	650 / 400
Switching frequency	1/min	100	100	100	100	100	100	100	100
Electrical position indicator, load capacity	V AC / A V DC / A	50 / 0.1 50 / 0.1	50 / 0.1 50 / 0.1	50 / 0.1 50 / 0.1	50 / 0.1 50 / 0.1	50 / 0.1 50 / 0.1	50 / 0.1 50 / 0.1	50 / 0.1 50 / 0.1	50 / 0.1 50 / 0.1
Compressed air, overpressure	bar	4 to 8	4 to 8	4 to 8	4 to 8	4 to 8	4 to 8	4 to 8	4 to 8
Air cylinder, volume	cm^3	0.004	0.004	0.011	0.011	0.035	0.035	0.047	0.047
Compressed air connection	mm	4 and 6	4 and 6	4 and 6	4 and 6	4 and 6	4 and 6	4 and 6	4 and 6
Weight, with pilot valve	kg	0.24	0.30	0.36	0.47	0.92	1.08	1.34	1.52

Ordering Information

	DN 16 ISO-KF		DN 25 ISO-KF		DN 40 ISO-KF		DN 50 ISO-KF	
	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel
Right-angle valves, bellows sealed								
BAV ... P AL	**Part No. 215 315**	–	**Part No. 215 316**	–	**Part No. 215 317**	–	**Part No. 215 318**	
BAV ... P SS	–	**Part No. 215 335**	–	**Part No. 215 336**	–	**Part No. 215 337**	–	**Part No. 215 338**
BAV ... P AL 24 V AC	**Part No. 215 319**	–	**Part No. 215 320**	–	**Part No. 215 321**	–	–	**Part No. 215 322**
BAV ... P SS 24 V AC	–	**Part No. 215 339**	–	**Part No. 215 340**	–	**Part No. 215 341**	–	**Part No. 215 342**
BAV ... P AL 24 V DC	**Part No. 215 323**	–	**Part No. 215 324**	–	**Part No. 215 325**	–	**Part No. 215 326**	–
BAV ... P SS 24 V DC	–	**Part No. 215 347**	–	**Part No. 215 348**	–	**Part No. 215 349**	–	**Part No. 215 350**
BAV ... P AL 115 V AC	**Part No. 215 327**	–	**Part No. 215 328**	–	**Part No. 215 329**	–	–	**Part No. 215 330**
BAV ... P SS 115 V AC	–	**Part No. 215 351**	–	**Part No. 215 352**	–	**Part No. 215 353**	–	**Part No. 215 354**
BAV ... P AL 230 V AC	**Part No. 215 331**	–	**Part No. 215 332**	–	**Part No. 215 333**	–	**Part No. 215 334**	–
BAV ... P SS 230 V AC	–	**Part No. 215 343**	–	**Part No. 215 344**	–	**Part No. 215 345**	–	**Part No. 215 346**
Spare parts								
Bellows feedthrough	**Part No. 242 292**	**Part No. 242 292**	**Part No. 233 014**	**Part No. 233 014**	**Part No. 229 542**	**Part No. 229 542**	**Part No. 244 980**	**Part No. 244 980**
Seal kit consisting of disc seal (O-ring) and head seal (O-ring)	**Part No. 242 324**	**Part No. 242 324**	**Part No. 241 077**	**Part No. 241 077**	**Part No. 241 079**	**Part No. 241 079**	**Part No. 245 556**	**Part No. 245 556**

Straight-Through Valves, Bellows-Sealed, (Electro)pneumatically Operated



Dimensional drawing
for the straight-through valves
with fitted pilot valve (EP)
without pilot valve (P)
1) pilot valve

Dimension Table

DN	ISO-KF	16	25	40	50
A	mm	80	100	130	178
B	mm	40	48	65	77
D	mm	16	25	40	50
L	mm	91.5	100.3	140.9	170.1
Q	mm	46.0	44.0	73.5	85.5
E	mm	29.6	30.0	36.1	37.6
Z	mm	2.,0	4.0	9.5	10.0
M	mm	120	125	160	185

Connection Icons

- Side of the valve seat
- Required clearance
- Mechanical position indicator
- Leak detection bore
- Electrical connection
- Compressed air connection

Advantages to the User

- Quiet opening and closing action with very little vibration
- Short opening and closing times
- Optical valve position indicator as standard
- Very low leak rate and insensitive to particles owing to bellows seal – thus always closed in case the compressed air supply fails
- Electric position indicator is standard
- With and without pilot valve as standard
- Protection class IP 50
- Standard electrical and compressed air connections
- The valves are closed by the restoring force of a spring

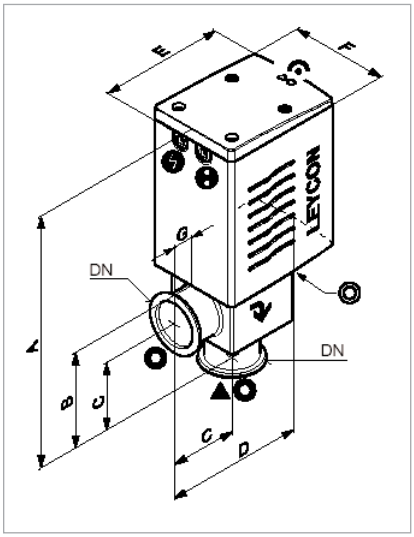
Technical Data

		DN 16 ISO-KF		DN 25 ISO-KF		DN 40 ISO-KF		DN 50 ISO-KF
		Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum
Service life	cycles	10 mio.	10 mio.	10 mio.	10 mio.	10 mio.	10 mio.	10 mio.
Conductance at molecular flow	l x s^{-1}	5	5	14	14	45	45	80
Leak rate	mbar x l x s^{-1}	1x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}
Operating pressure range	mbar	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000	10^{-8} - 5000
Differential pressure, closing and opening direction	bar	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2	5 / 2
Opening against differential pressure at the valve disk	bar	4	4	4	4	2	2	2
Ambient / Operating temperature, max.	°C	80	80	80	80	80	80	80
Seal		FPM	FPM	FPM	FPM	FPM	FPM	FPM
Closing time / opening time	ms	100 / 100	100 / 100	210 / 120	210 / 120	550 / 250	550 / 250	650 / 400
Switching frequency	1/min	100	100	100	100	100	100	100
Electrical position indicator, load capacity	V AC / A	50 / 0.1	50 / 0.1	50 / 0.1	50 / 0.1	50 / 0.1	50 / 0.1	50 / 0.1
	V DC / A	50 / 0.1	50 / 0.1	50 / 0.1	50 / 0.1	50 / 0.1	50 / 0.1	50 / 0.1
Compressed air, overpressure	bar	4 to 8	4 to 8	4 to 8	4 to 8	4 to 8	4 to 8	4 to 8
Air cylinder, volume	cm^3	0.004	0.004	0.011	0.011	0.035	0.035	0.047
Compressed air connection	mm	4 and 6	4 and 6	4 and 6	4 and 6	4 and 6	4 and 6	4 and 6
Weight, with pilot valve	kg	0.32	0.74	0.49	0.47	1.30	1.16	2.19

Ordering Information

	DN 16 ISO-KF		DN 25 ISO-KF		DN 40 ISO-KF		DN 50 ISO-KF
	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum	Stainl. Steel	Aluminum
Straight-through valve, bellows sealed							
BIV ... P SS	–	**Part No. 215 355**	–	**Part No. 215 356**	–	**Part No. 215 357**	–
BIV ... EP SS 24 V AC	–	**Part No. 215 359**	–	**Part No. 215 360**	–	**Part No. 215 361**	–
BIV ... EP AL 24 V DC	**Part No. 215 314**	–	**Part No. 215 391**	–	**Part No. 215 392**	–	**Part No. 215 393**
BIV ... EP SS 24 V DC	–	**Part No. 215 367**	–	**Part No. 215 368**	–	**Part No. 215 369**	–
BIV ... EP SS 115 V AC	–	**Part No. 215 371**	–	**Part No. 215 372**	–	**Part No. 215 373**	–
BIV ... EP SS 230 V AC	–	**Part No. 215 363**	–	**Part No. 215 364**	–	**Part No. 215 365**	–
Spare parts							
Bellows feedthrough	**Part No. 242 292**	**Part No. 242 292**	**Part No. 233 014**	**Part No. 233 014**	**Part No. 229 542**	**Part No. 229 542**	**Part No. 244 980**
Seal kit consisting of disc seal (O-ring) and head seal (O-ring)	**Part No. 242 324**	**Part No. 242 324**	**Part No. 241 077**	**Part No. 241 077**	**Part No. 241 079**	**Part No. 241 079**	**Part No. 245 556**

Right-Angle Valves, Bellows-Sealed, Electromagnetically Operated



Dimensional drawing for the bellows-sealed right-angle valves

Dimension Table

DN	ISO-KF	16	25	40
A	mm	170.9	193.0	246.0
B	mm	51.4	64.9	92.9
C	mm	40	50	65
D	mm	96.0	112.7	139.0
E	mm	86.0	97.3	119.5
F	mm	59	70	90
G	mm	10.0	15.4	19.5

Electromagnetic valves are particularly well suited for vacuum systems in which the valves need to be remotely controlled and where compressed air is not readily available.

Connection Icons

- Protection cap
- Side of the valve seat
- Required clearance
- Position sensor connection
- Flow direction
- Leak detection bore
- Position indicator

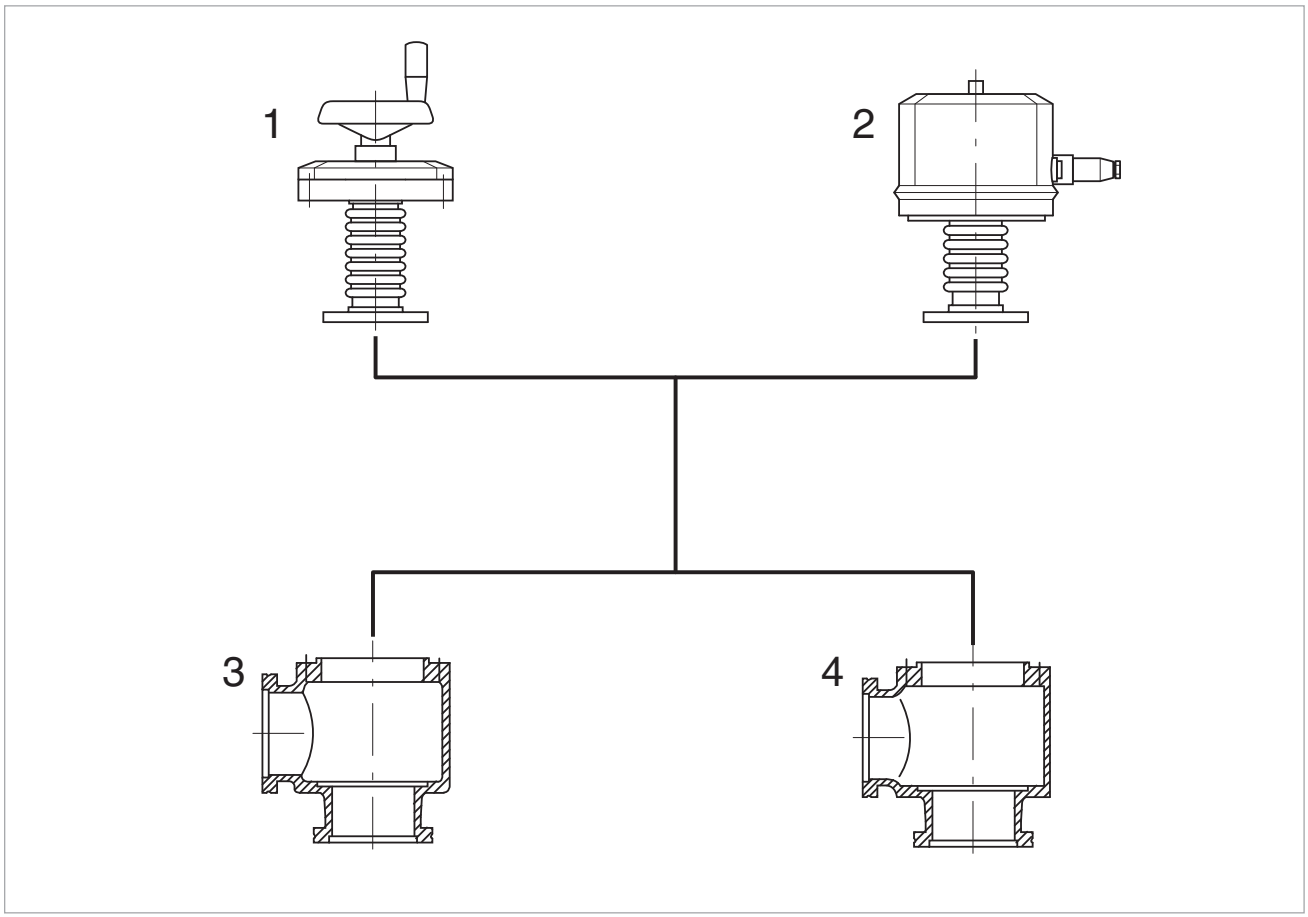
Advantages to the User

- Selectable operating mode:
  - Remote control via programmable control or personal computer
  - direct operation by switching the supply voltage on and off
- Well visible, unambiguous optical position indicator: open (green LED) and closed (red LED)
- Integrated electrically floating position indicator (opto-coupler for 24 V DC)
- Optical overload indicator (red flashing LED)
- Protection class IP 54
- Spring action closure, thus closed when the power fails
- Low operating temperature
- Inverting operation of the remote control logic
- Installation in any orientation and no restrictions as to the direction of flow

Technical Data		DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Service life	cycles	2 mio.	2 mio.	2 mio.
Conductance at molecular flow	l x s^{-1}	4	16	40
Leak rate	mbar x l x s^{-1}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}
Operating pressure range	mbar	10^{-8} - 1300	10^{-8} - 1300	10^{-8} - 1300
Differential pressure, closing and opening direction	bar	1.3	1.3	1.3
Ambient / operating temperature, max.	°C	50	50	50
Opening / closing time	ms	100 / 240	120 / 240	230 / 700
Switching frequency at ambient temperature	1/min °C	30, 20 40, 50	30, 20 40, 50	30, 20 40, 50
Switch-off delay	ms	50	170	500
Rating for the valve position indicator	V DC / mA	15 - 30 / 100	15 - 30 / 100	15 - 30 / 100
Power consumption, max.	W	400	400	400
Actuation and holding current	A	5.2 / 0.7	5.3 / 0.7	4.8 / 0.7
Supply voltage, max.	V AC	90 - 264	90 - 264	90 - 264
Frequency	Hz	50/60	50/60	50/60
Protection class		54	54	54
Weight Aluminum body Stainless steel body	 kg kg	 1.3 1.5	 2.2 2.9	 4.0 5.4

Ordering Information	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Right-angle valve, bellows-sealed, electromagnetic actuator, microprocessor controlled BAV ... EM AL 240 V AC BAV ... EM SS 240 V AC	 **Part No. 215 004** **Part No. 215 006**	 **Part No. 215 064** **Part No. 215 079**	 **Part No. 215 124** **Part No. 215 134**
Spare parts Seal kit Bellows feedthrough	 **Part No. EK 299 001** **Part No. EK 299 002**	 **Part No. EK 299 006** **Part No. EK 299 007**	 **Part No. EK 299 011** **Part No. EK 299 012**

Valves with ISO-K Flanges
Overview



Oerlikon Leybold Vacuum valves with ISO-K flanges are available with any of two drives and either of two bodies.

Types of drive

- Handwheel **(1)**
- Electropneumatic drive, bellows-sealed **(2)**

Body types

- Right-angle valve with aluminum body **(3)**
- Right-angle valve with stainless steel body **(4)**

From DN 63 ISO-K only right-angle valves are available.

Nominal widths DN 63 ISO-K and DN 100 ISO-K are available in aluminum and stainless steel,
DN 160 ISO-K in aluminum only.

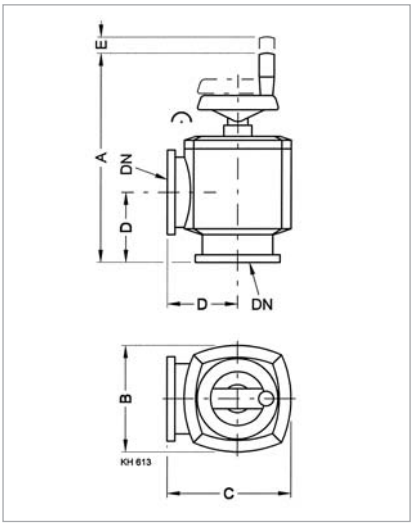
Advantages to the User

- Full exchangeability of the subassemblies
- Three types of drive
- Two body options
- Standard nominal widths to DIN 28 404 and ISO 1609
- Simplified stocking of spare parts

Connection Pictograms

- Position indicator connection
- Compressed air connection
- Power connection
- Position indicator

Right-Angle Valves, Bellows-Sealed, Manually Operated



Dimensional drawing for the right-angle valves, bellows-sealed, manually operated

These universal valves are ideal especially for smaller systems, where remote control is not essential. They may be also installed in larger systems, where backing pumps or condensate separators or similar units are to be cut off at longer intervals for maintenance purposes by maintenance personnel.

Dimension Table

DN	ISO-K	63	100
A	mm	266	320
B	mm	124	164
C	mm	150	190
D	mm	88	108
E	mm	20	25

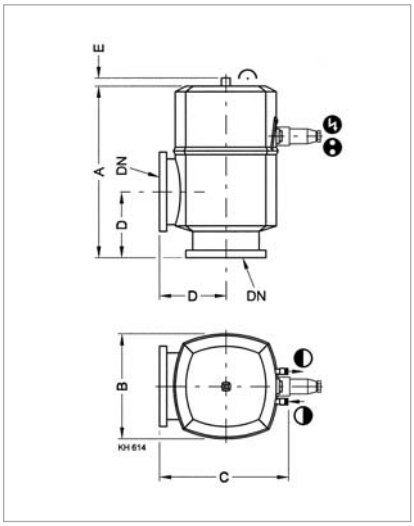
Advantages to the User

- Gentle venting of systems
- Seal in both directions up to a pressure difference of 1.5 bar
- Easy manual operation, for an effortless vacuum-tight seal
- May also be used as a variable leak valve to roughly control gas flows
- Installation in any orientation and no restrictions as to the direction of flow

Technical Data		DN 63 ISO-K	DN 100 ISO-K
Service life	cycles	> 1.5 mio.	> 1.5 mio.
Conductance at molecular flow	l x s^{-1}	140	330
Leak rate	mbar x l x s^{-1}	1 x 10^{-9}	1 x 10^{-9}
Operating pressure range	mbar	10^{-8} - 1500	10^{-8} - 1500
Differential pressure, closing and opening direction	bar	1.5	1.5
Opening against differential pressure at the valve disk	bar	1.5	1.5
Ambient / Operating temperature, max.	°C	60	60
Seal		FPM	FPM
Weight			
Aluminum body	kg	3.6	6.1
Stainless steel body	kg	6.5	11.1
Material			
Valve body		aluminum alloy (3.2373.63) or stainless steel (1.4305)	aluminum alloy (3.2373.63) or stainless steel (1.4305)
Inside section		stainless steel (1.4541/1.4301)	stainless steel (1.4541/1.4301)
Lid		grey cast iron (GG 20)	grey cast iron (GG 20)
Gaskets		O-rings made of FPM	O-rings made of FPM

Ordering Information	DN 63 ISO-K	DN 100 ISO-K
Right-angle valve, bellows-sealed, manually operated		
Aluminum body	**Part No. 107 80**	**Part No. 107 81**
Stainless steel body	**Part No. 107 83**	**Part No. 107 84**
Spare parts		
Seal kit	**Part No. 215 251**	**Part No. 215 271**
Inside section	**Part No. 215 254**	**Part No. 215 274**

Right-Angle Valves, Bellows-Sealed, Electropneumatically Operated



Dimensional drawing for the electropneumatically actuated right-angle valves

Electropneumatically actuated right-angle valves are used in automated vacuum systems which need to be controlled electrically.

Dimension Table

DN	ISO-K	63	100	160
A	mm	250	282	366
B	mm	130	170	221
C	mm	168	208	264
D	mm	88	108	138
E	mm	14	14	14
◑	mm	6	6	6

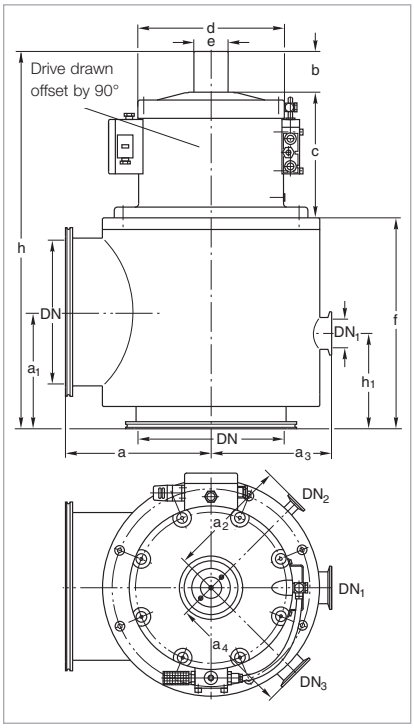
Advantages to the User

- Pneumatic or electropneumatic opening
- Short opening and closing times
- Optical position indicator
- Electric position indicator
- With and without pilot valve IP 54
- Protection class IP 54
- The valves are closed by the restoring force of a spring
- Installation in any orientation and no restrictions as to the direction of flow

Technical Data		DN 63 ISO-K	DN 100 ISO-K	DN 160 ISO-K
Service life, cycles	Million	1.5	1.5	1.5
Conductance for molecular flow	l x s^{-1}	140	330	800
Leak rate	mbar x l x s^{-1}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}
Operating pressure range	mbar	1 x 10^{-8} - 1500	1 x 10^{-8} - 1500	1 x 10^{-8} - 1500
Differential pressure, closing and opening direction	bar	1.5	1.5	1.5
Opening against differential pressure at the valve disk	bar	1.5	1.5	1.5
Ambient / operating temperature, max.	°C	60	60	60
Seal		FPM	FPM	FPM
Closing time / opening time	ms	250 / 300	300 / 450	550 / 450
Switching frequency	1/min	60	60	40
Position indicator, rating	V AC / A V DC / A	250 / 0.125 50 / 0.25	250 / 0.125 50 / 0.25	250 / 0.125 50 / 0.25
Compressed air, overpressure	bar	4 to 8	4 to 8	4 to 8
Compressed air volume	cm^3	75	195	570
Compressed air connection	mm	6	6	6
Weight with pilot valve Aluminum housing Stainless steel housing	 kg kg	 4.0 6.8	 6.7 11.7	 11.4 –

Ordering Information	DN 63 ISO-K	DN 100 ISO-K	DN 160 ISO-K
Right-angle valve, bellows-sealed, electropneumatic drive without solenoid coil Aluminum body Stainless steel body	 **Part No. 107 90** **Part No. 107 93**	 **Part No. 107 91** **Part No. 107 94**	 **Part No. 107 92** **–**
Valve with pilot valve 24 V DC Aluminum body Stainless steel body	 **Part No. 108 00** **Part No. 108 10**	 **Part No. 108 01** **Part No. 108 11**	 **Part No. 108 02** **–**
Valve with pilot valve 24 V AC Aluminum body Stainless steel body	 **Part No. 108 03** **Part No. 108 13**	 **Part No. 108 04** **Part No. 108 14**	 **Part No. 108 05** **–**
Valve with pilot valve 100 - 115 V AC Aluminum body Stainless steel body	 **Part No. 108 20** **–**	 **Part No. 108 21** **–**	 **Part No. 108 22** **–**
Valve with pilot valve 200 - 240 V AC Aluminum body Stainless steel body	 **Part No. 108 25** **Part No. 108 35**	 **Part No. 108 26** **Part No. 108 36**	 **Part No. 108 27** **–**
Pilot valve 24 V DC 24 V AC 200 - 240 V AC	 **Part No. 215 301** **Part No. 215 300** **Part No. 215 302**	 **Part No. 215 301** **Part No. 215 300** **Part No. 215 302**	 **Part No. 215 311** **Part No. 215 310** **Part No. 215 312**
Spare parts Seal kit Inside section	 **Part No. 215 251** **Part No. 215 253**	 **Part No. 215 271** **Part No. 215 273**	 **Part No. 215 291** **Part No. 215 293**

Right-Angle Valves, Bellows-Sealed, Electropneumatically Operated



Dimensional drawing for the right-angle valves with bellows

Right-angle valves of this size are used, for example in metallurgy, large coaters, in the area of space simulation.

Dimension Table

	DN	250 ISO-K
DN	mm	261
h, ca.	mm	650
a	mm	250
a_1	mm	200
a_2, a_4	mm	208
a_3	mm	205
h_1	mm	163
DN_1, for bypass 1		50 ISO-KF
DN_2, for bypass 2		40 ISO-KF
DN_3, for meas. conn.		16 ISO-KF
b	mm	69.5
c	mm	218
d	mm	250
e	mm	58
f	mm	363
Travel	mm	62.5
Travel/DN [1)]	mm	1/4

[1)] For example travel = 1/4 DN

Advantages to the User

- No vibrations when the valve open or closes
- Low leak rate (< 10^{-9} mbar x l x s^{-1}) – drive system basically insensitive to particles
- Non-contact valve position indicator for reliable indication of the valve's position (open/closed)
- Wide range of different solenoid coils for all commonly used control voltages
- Additional flange for bypass lines and for connecting vacuum gauges (see Product Section C16 "Total Pressure Gauges")

Technical Data

	DN 250 ISO-K
Service life, vertical — cycles, approx.	1 x 10^6
Conductance at molecular flow — l x s^{-1}	2700
Leak rate — mbar x l x s^{-1}	1 x 10^{-9}
Opening / closing time, at 6 bar compr. air pressure — s	6 / 6
Compressed air, overpressure — bar	4 to 8
Hose diameter — mm	6 x 1
Compressed air cylinder, volume — cm^3	2100
Max. ambient temperature — °C	40
Weight — kg	66
Supply voltage — V	Various voltages are possible; see section “Special Valves with ISO-KF / ISO-K / CF Flanges”, para. “Accessories for the Electropneumatically Operated Valves”, product “Solenoid Coils”
Material	
Body, valve disk	stainless steel
Drive / Compressed air cylinder	aluminum / cast aluminum (3.2153)
Piston rod, Intermediate flange	stainless steel (1.4305)
Gaskets	FPM
Lid	aluminum (3.2341)
Hood	plastic (PA 6)

Ordering Information

	DN 250 ISO-K
Right-angle valve, bellows-sealed, electropneumatic drive	
without solenoid coil	
Stainless steel body	**Part No. 281 84**
Solenoid coil for various supply voltages	**X**
Interference suppression kits for different voltages	**Y**
Spare parts	
Seal kit	**Part No. 105 65**
Inside section	**Part No. 105 75**

X = Part Nos. see section “Special Valves with ISO-KF / ISO-K / CF Flanges”, para. “Accessories for the Electropneumatically Operated Valves”, product “Solenoid Coil”
Y = Part Nos. see section “Special Valves with ISO-KF / ISO-K / CF Flanges”, para. “Accessories for the Electropneumatically Operated Valves”, product “Pilot Valves”

Special Valves with ISO-KF/ISO-K/CF Flange

Overview

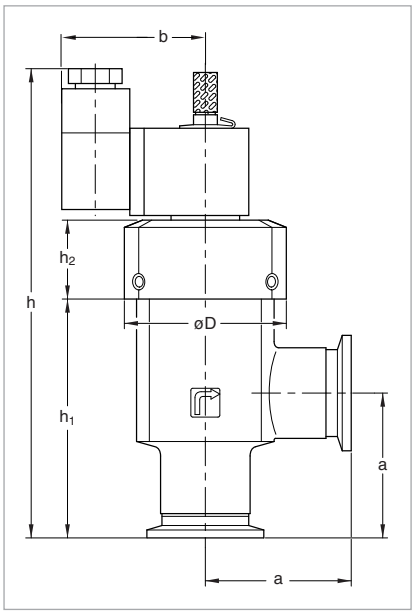
Oerlikon Leybold Vacuum offers a range of special valves for a variety of different applications and to meet special design requirements of customers.

Among these are:

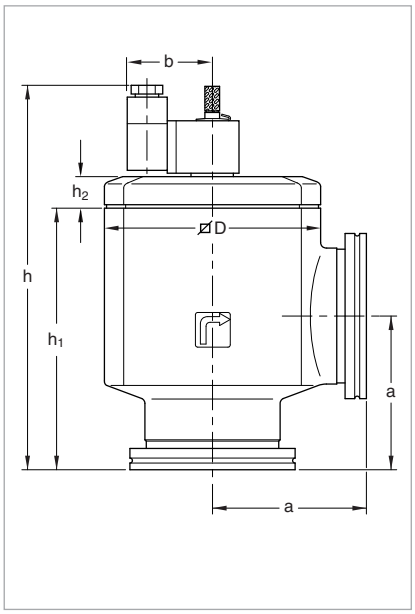
- SECUVAC vacuum safety valves (DN 16 ISO-KF to DN 100 ISO-K) 1
- Venting Valves 2
- Power failure venting valves 3
- Vacuum Locks 4
- Sealing Valves 4
- Variable leak valves 5
- Ball Valves 6
- Right-angle valves for mobile systems in accordance with the American standard of the Department of Transportation (DOT) 7

These valves ideally supplement our range of ISO-KF and ISO-K valves.

SECUVAC Vacuum Safety Valves



Dimensional drawing for the SECUVAC valves with ISO-KF small flanges



Dimensional drawing for the SECUVAC valves with ISO-K clamp flanges

These solenoid right-angle valves were specially developed for use with rotary vacuum pumps which are not equipped with a built-in anti-suckback valve. The SECUVAC safety valve protects the vacuum system against unplanned venting via the backing pump in case of a power failure **and** it ensures that the vacuum system remains sealed until the backing pump, after it has restarted, has evacuated the connecting lines.

Dimension Table (ISO-KF)

	DN	16 ISO-KF	25 ISO-KF	40 ISO-KF
a	mm	40	50	65
b	mm	49	49	49
D	mm	44	56	82
h	mm	138.6	161.8	178.3
h_1	mm	62.3	82.5	100.0
h_2	mm	24	27	26

Dimension Table (ISO-K)

	DN	63 ISO-K	100 ISO-K
a	mm	88	108
b	mm	49	49
D	mm	124	164
h	mm	220.5	263.5
h_1	mm	150	175
h_2	mm	18.2	36.2

Advantages to the User

Two valve functions in one:

- Fast-closing high vacuum isolation valve for separating the vacuum chamber or a vapor jet pump (a diffusion pump, for example) from the backing pump
- Venting valve for venting of the valve's chamber and thus the pump (backing pump)
- Immediate closing action upon power failure
- Opening action only after the intake line has been evacuated
- Delayed isolation of the vacuum chamber and venting the vacuum pump (negligible "gulp")

Typical Applications

- Safety isolation valve between backing pump and vacuum chamber or vapor jet pumps (protection of the vacuum chamber against venting in the event of a power failure)

Technical Data

SECUVAC Valve

		DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Conductance at molecular flow	l x s^{-1}	3.8	11.0	30.5
Current consumption DC	W	2.5	2.5	2.5
Actuation / holding AC	VA	5.0 / 3.7	5.0 / 3.7	5.0 / 3.7
Leak tightness, body	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Leak tightness, valve disk	mbar x l x s^{-1}	< 1 x 10^{-5}	< 1 x 10^{-5}	< 1 x 10^{-5}
Installation orientation		any	any	any
Operating pressure range	mbar	1 x 10^{-8} - 1000	1 x 10^{-8} - 1000	1 x 10^{-8} - 1000
Differential pressure Δ_p				
for opening	mbar	150	150	150
for closing	mbar	150	150	150
Opening time	s	< 15	< 15	< 15
Closing time / reaction time	ms	< 100 / < 50	< 100 / < 50	< 100 / < 50
Ambient temperature	°C	5 to 50	5 to 50	5 to 50
Protection	IP	65	65	65
Weight	kg	0.3	0.5	0.9
Material				
Body		aluminum	aluminum	aluminum
Gaskets		FPM	FPM	FPM

Technical Data

SECUVAC Valve

		DN 63 ISO-K	DN 100 ISO-K
Conductance at molecular flow	l x s^{-1}	126	300
Current consumption DC	W	2.5	2.5
Actuation / holding AC	VA	5.0 / 3.7	5.0 / 3.7
Leak tightness, body	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}
Leak tightness, valve disk	mbar x l x s^{-1}	< 1 x 10^{-5}	< 1 x 10^{-5}
Installation orientation		any	any
Operating pressure range	mbar	1 x 10^{-8} - 1000	1 x 10^{-8} - 1000
Differential pressure Δ_p			
for opening	mbar	150	150
for closing	mbar	150	150
Opening time	s	< 30	< 30
Closing time / reaction time	ms	< 100 / < 50	< 100 / < 50
Ambient temperature	°C	5 to 50	5 to 50
Protection	IP	65	65
Weight	kg	2.4	5.1
Material			
Body		aluminum	aluminum
Gaskets		FPM	FPM

Ordering Information	SECUVAC Valve DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
SECUVAC valve			
24 V DC	**Part No. 215 015**	**Part No. 215 065**	**Part No. 215 135**
100 - 115 V AC	**Part No. 215 016**	**Part No. 215 066**	**Part No. 215 136**
200 - 230 V AC	**Part No. 215 017**	**Part No. 215 067**	**Part No. 215 137**
Spare parts			
Seal kit	**Part No. 105 02**	**Part No. 105 04**	**Part No. 105 05**
Solenoid coils for SECUVAC valves and power failure venting valves			
24 V DC	**Part No. 215 242**	**Part No. 215 242**	**Part No. 215 242**
100 - 115 V AC / 50/60 Hz	**Part No. 215 241**	**Part No. 215 241**	**Part No. 215 241**
200 - 230 V AC / 50/60 Hz	**Part No. 215 240**	**Part No. 215 240**	**Part No. 215 240**
Filter for SECUVAC valves and power failure venting valves (set of 5 pcs.)	**Part No. 215 701**	**Part No. 215 701**	**Part No. 215 701**

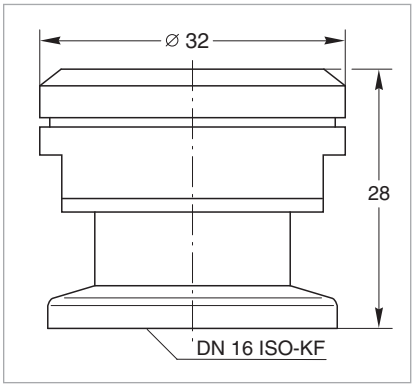
Ordering Information	SECUVAC Valve DN 63 ISO-K	DN 100 ISO-K
SECUVAC valve		
24 V DC	**Part No. 215 205**	**Part No. 215 225**
100 - 115 V AC	**Part No. 215 206**	**Part No. 215 226**
200 - 230 V AC	**Part No. 215 207**	**Part No. 215 227**
Spare parts		
Seal kit	**Part No. 105 07**	**Part No. 105 08**
Solenoid coils for SECUVAC valves and power failure venting valves		
24 V DC	**Part No. 215 242**	**Part No. 215 242**
100 - 115 V AC / 50/60 Hz	**Part No. 215 241**	**Part No. 215 241**
200 - 230 V AC / 50/60 Hz	**Part No. 215 240**	**Part No. 215 240**
Filter for SECUVAC valves and power failure venting valves (set of 5 pcs.)	**Part No. 215 701**	**Part No. 215 701**

Interference Suppression Kit - Illuminated

As an option for the solenoid coil, an interference suppression kit is offered which reliably prevents any interferences from affecting other equipment operating in the vicinity.

Ordering Information	Interference Suppression Kit
Interference suppression kit	
24 V DC	**Part No. 104 96**
110 - 230 V AC	**Part No. 104 95**

Safety Valve



Dimensional drawing for the safety valve

Typical Applications

- Protecting sealed vacuum systems like cryopumps, cryostats, lifting devices, for example against internal overpressures
- Mandatory for systems which are separated when cold, as a means of protection against overpressures

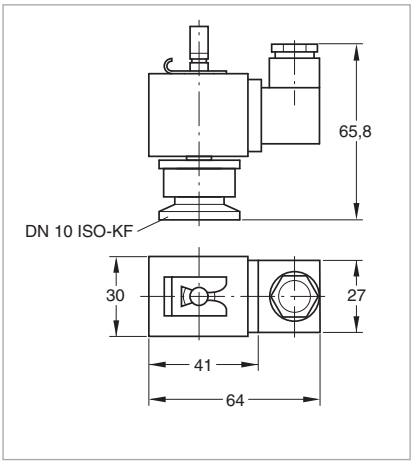
Technical Data

		Safety Valve
Responding pressure	mbar	120 to 160, over-pressure
Flow at 140 mbar	l x h^{-1}	500
Valve disk		Spring loaded, with O-ring seal
Leak rate in the closed state mbar x l x s^{-1} (Torr x l x s^{-1})		< 1 x 10^{-8} (< 0.75 x 10^{-8})
Connection	DN	16 ISO-KF
Diameter	mm	32
Overall height	mm	28
Weight	kg	0.3

Ordering Information

	Safety Valve
Safety valve on DN 16 ISO-KF flange	**Part No. 890 39**

Power Failure Venting Valves, Electromagnetically Actuated



Dimensional drawing for the power failure venting valve

Power failure venting valves are open when de-energised and are used to automatically vent pumps, systems or vacuum vessels in the event of a power failure.
Permissible pressure difference < 2.5 bar (0 bar on the vacuum side).

Advantages to the User

- Can be installed in any orientation
- Protection against being contaminated by filtering of the inflowing air
- Easy to install
- Simple filter exchange

Technical Data

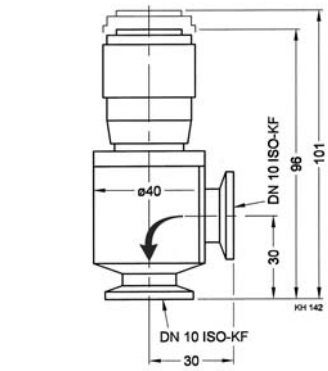
		Power Failure Venting Valves electromagnetically actuated
Leak tightness	mbar x l x s^{-1}	< 1 x 10^{-7}
Venting time for a 50 l vessel	s	270
Opening time / closing time [1]	ms	30 / 30
Protection class to DIN 40 050	IP	65
Permissible ambient temperature	°C	50
Weight	kg	0.1
Dimensions (W x H x D)	mm	64 x 66 x 30
Material		
Body		aluminum
Seal		NBR
Armature		brass
Filter		bronze

Ordering Information

	Power Failure Venting Valves electromagnetically actuated
Power failure venting valve DN 10 ISO-KF, electromagnetically actuated, with inlet filter	
230 V / 50/60 Hz	**Part No. 174 26**
24 V DC	**Part No. 174 46**
Centering ring DN 10 ISO-KF with sinter filter	**Part No. 883 50**
Spare solenoid valves	see SECUVAC valves
Filter for SECUVAC valves and power failure venting valves (set of 5 pcs.)	**Part No. 215 701**

[1] at a differential pressure of Δ_p = 0 bar

Coarse Variable Leak Valve without Isolation Valve

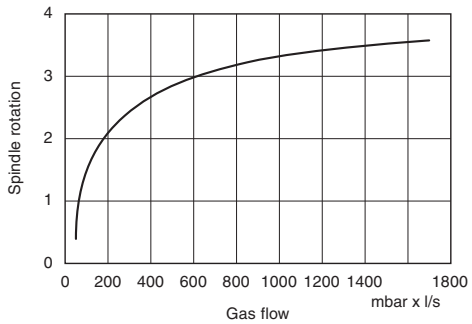


Dimensional drawing for the coarse variable leak valve without isolation valve

With coarse variable leak valves without isolation valve precisely defined quantities of gas may be admitted within a controllable period of time into evacuated vessels.

Applications

- Gas admission rates of 40 to 1700 mbar x l x s^{-1} allow coarse variable leak valves to be used in almost all applications



Variable leak characteristic for the coarse variable leak valve without isolation valve

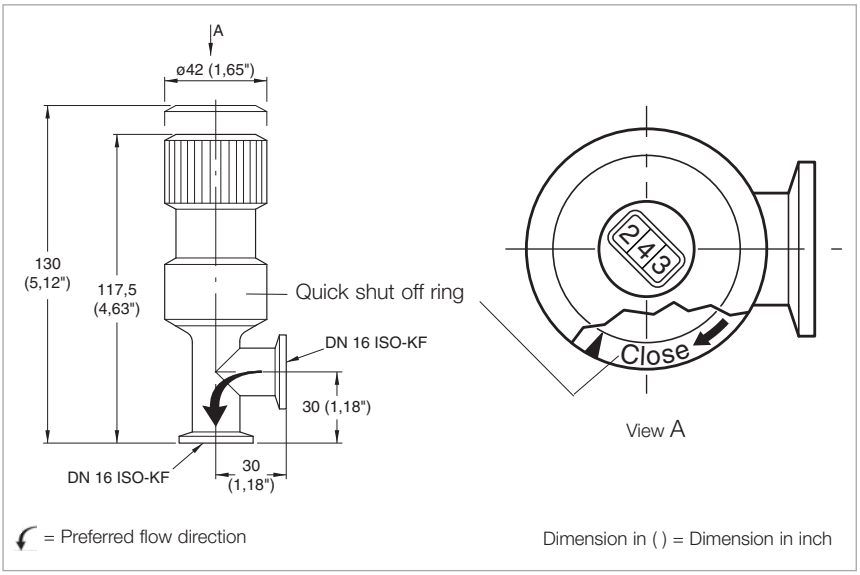
Technical Data

		Coarse Variable Leak Valve without Isolation Valve
Gas flow controllable	mbar x l x s^{-1}	40 - 1700
Tightness	mbar x l x s^{-1}	1 x 10^{-9}
Differential pressure	bar	3
Operating temperature	°C	100
Material (housing / valve disk)		aluminum / stainless steel
Seal		FPM
Weight	kg	0.2

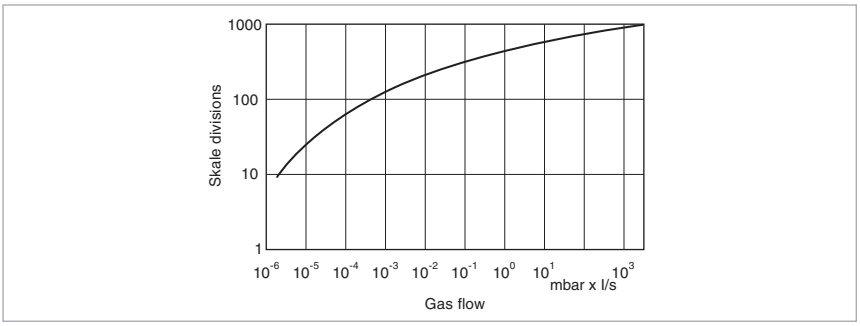
Ordering Information

	Coarse Variable Leak Valve without Isolation Valve
Coarse variable leak valve without isolation valve, DN 10 ISO-KF	**Part No. 215 020**

Variable Leak Valve with Isolation Valve



Dimensional drawing for the variable leak valve with isolation valve



Variable leak characteristic for the variable leak valve with isolation valve

Variable leak valves with a isolation valve permit an interruption of the gas supply without changing the gas admission rate setting.

Applications

- Gas admission rates of 1000 to 5 x 10^{-6} mbar x l x s^{-1} allow variable leak valves to be used in almost all applications
- Through the integrated digital display, the opening point may be accurately set at any time or a certain gas flow may be defined
- Blocking valve

Technical Note

When using helium as the process gas, it must be taken into account that the needle sleeve made of modified PTFE is to a certain extent permeable to helium.

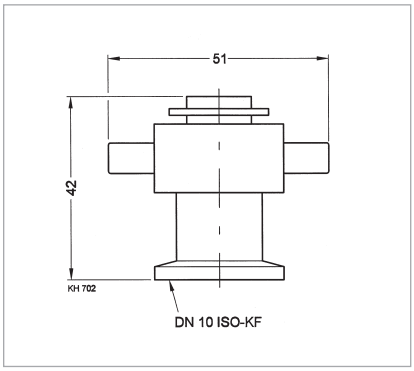
Technical Data

		Variable Leak Valve with Isolation Valve
Gas flow controllable	mbar x l x s^{-1}	5 x 10^{-6} - 1000
Tightness	mbar x l x s^{-1}	1 x 10^{-9}
Differential pressure	bar	2.5
Dead volume	cm^3	0.032
Operating temperature	°C	80
Bakeout temperature, flanges	°C	150
Material (housing, needle, filter)		stainless steel
Material (needle sleeve)		fluorplastomer
Seal		FPM
Weight	kg	0.4

Ordering Information

	Variable Leak Valve with Isolation Valve
Variable leak valve with isolation valve, DN 16 ISO-KF	**Part No. 215 010**

Venting Valves, Manually Operated



Dimensional drawing for the venting valve, manually operated

Venting valves are used to vent small vacuum systems.

Advantages to the User

- Simple opening and closing of the valve by loosening or tightening the screw cap

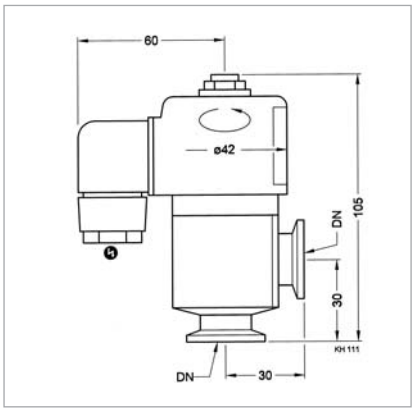
Technical Data

		Venting Valve manually operated
Tightness	mbar x l x s^{-1}	< 1 x 10^{-9}
Weight	kg	0.15
Dimensions (W x H x D)	mm	51 x 42 x 30
Material		
Body		aluminum (3.0615), stainless steel (1.4301)
Inside section		aluminum (3.0615), stainless steel (1.4301)
Seal		FPM
Screw cap		brass (nickel-plated)

Ordering Information

	Venting Valve manually operated
Venting valve DN 10 ISO-KF, manually operated (screw cap)	
Aluminum	**Part No. 173 24**
Stainless steel	**Part No. 173 37**

Venting Valves, Electromagnetically Actuated



Dimensional drawing for the venting valve, electromagnetically actuated

Venting valves are used to vent small vacuum systems and are closed when no power is applied.

Advantages to the User

- Open when power is applied, closed with no power
- Seals on one side against atmospheric pressure
- Protected against dirt by a filter

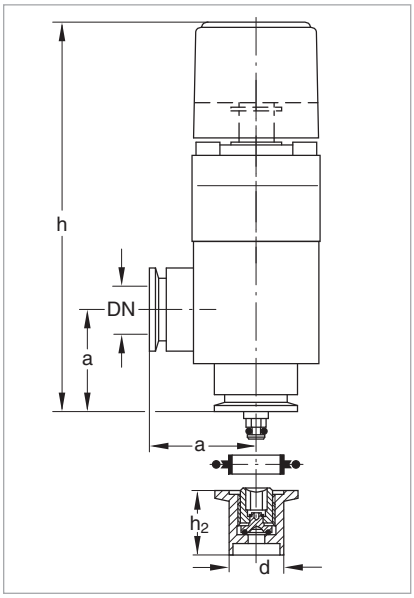
Technical Data

		Venting Valve electromagnetically actuated
Leak rate	mbar x l x s^{-1}	< 1 x 10^{-9}
Venting time for a 100 l chamber	s	23
Mains connection	V / Hz V / Hz V DC	230 / 50/60 115 / 50/60 24
Power consumption, actuation / holding	VA	35 / 15
Differential pressure in closing / opening direction	bar	10 / 1
Can be opened to a pressure difference of	bar	2
Service life	cycles	1.5 Mio.
Switching frequency	1/min	50
Opening / closing time	ms	60 / 45
Conductance for molecular flow	l x s^{-1}	1
Weight	kg	0.46
Dimensions (W x H x D)	mm	105 x 120 x 42
Material Valve body Gasket		 aluminum FPM

Ordering Information

	Venting Valve electromagnetically actuated
Venting valve DN 10 ISO-KF, electromagnetically actuated 24 V DC 115 V AC 230 V AC	 **Part No. 215 021** **Part No. 215 023** **Part No. 215 024**
Spare coil for 24 V DC for 230 V AC	 **Part No. 215 011** **Part No. 215 014**
Centering ring with sintered metal filter, DN 10 ISO-KF	**Part No. 883 50**
Seal kit	**Part No. 215 208**

Vacuum Locks and Sealing Valves



Dimensional drawing for the sealing valves

Dimension Table

	DN	16 ISO-KF	25 ISO-KF	40 ISO-KF
a	mm	40	50	65
d	mm	16	25	38
h	mm	124	160	190
h_2	mm	30	30	40

A screw-in sealing element with a hex. socket into which the spindle of the gas lock is inserted for actuation has been integrated within the tubulation.

After having filled in the gas or evacuated the chamber, the gas lock is detached from the small flange and may thus be reused for an unlimited number of times on other sealing valves.

Advantages to the User

- Simple to use, handy knob
- Compact, low weight
- Also well-suited for operating older types of sealing valves from Oerlikon Leybold Vacuum
- Long travel and high conductance, thus short pumpdown times
- Spindle can be arrested in its end position
- Double O-ring seal offering a very low leak rate (< 1 x 10^{-7} mbar x l x s^{-1}) and a long service life
- May be used in the entire rough and medium vacuum range
- Long service life
- Secured against inadvertent opening
- Temperature resistant
  Vacuum lock 60 °C
  Blocking valve 100 °C
- May be protected by a standard blank flange against becoming dirty

Typical Applications

- Sealing of evacuated or gas-filled chambers
- Post-evacuation of vessels
- Topping up and exchanging the gas filling in vessels
- Sealing valves with stainless steel ISO-KF connection and stainless steel tubulation for welding to the chamber

Technical Data

Vacuum Lock / Sealing Valve

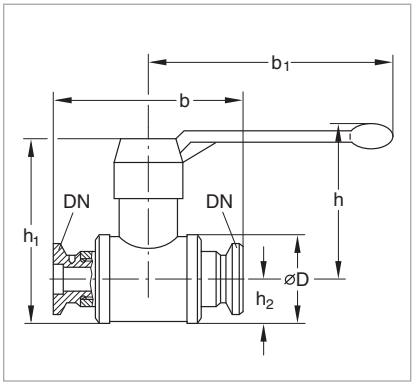
		DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Leak rate				
Sealing valve	mbar x l x s^{-1}	1 x 10^{-7}	1 x 10^{-7}	1 x 10^{-7}
Vacuum lock	mbar x l x s^{-1}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}
Travel for the vacuum lock	mm	56	76	108
Free passage in the sealing valve	mm	3	8	18
Absolute pressure	bar	2.5	2.5	2.5
Weight				
Vacuum lock	kg	0.5	1.0	1.8
Sealing valve	kg	0.04	0.1	0.12
Material				
Vacuum lock		aluminum	aluminum	aluminum
Seal		FPM	FPM	FPM

Ordering Information

Vacuum Lock / Sealing Valve

	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Vacuum lock, aluminum body	**Part No. 283 25**	**Part No. 283 26**	**Part No. 283 27**
Sealing valve with tubulation, stainless steel body	**Part No. 283 21**	**Part No. 283 22**	**Part No. 283 23**
Clamping ring	**Part No. 183 41**	**Part No. 183 42**	**Part No. 183 43**
Centering ring	**Part No. 883 46**	**Part No. 883 47**	**Part No. 883 48**
Repair kit			
Vacuum lock	**Part No. 215 055**	**Part No. 215 056**	**Part No. 215 057**
Sealing valve	**Part No. 107 70**	**Part No. 107 71**	**Part No. 107 72**

Ball Valves



Dimensional drawing for the ball valves

Dimension Table

	DN	10 ISO-KF	16 ISO-KF	25 ISO-KF	40 ISO-KF
b	mm	75	100	130	160
b_1	mm	80	80	110	138
h	mm	55	55	62	90
h_1	mm	55	58	80	110
h_2	mm	15.0	15.0	20.0	27.5
D	mm	26	30	42	60

Ball valves are rugged and cost-effective straight-through valves of small size, which are opened or closed simply by operating a lever. The valve position (OPEN/CLOSED) can be determined from the lever's position. The lever may be detached.

Ball valves are provided with lubricated gaskets and when open they permit an unobstructed passage.

Advantages to the User

- Leak tight on both sides against the atmosphere; can be opened against atmospheric pressure

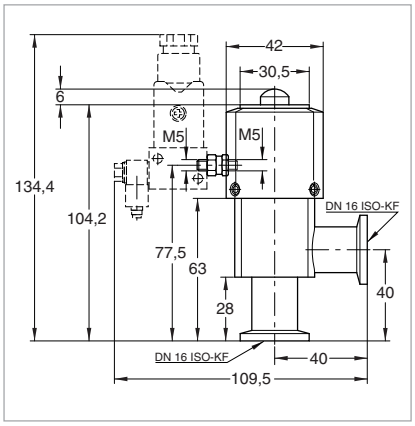
Technical Data

		Ball Valve			
		DN 10 ISO-KF	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Leak rate	mbar x l x s^{-1}	< 1 x 10^{-6}	< 1 x 10^{-6}	< 1 x 10^{-6}	< 1 x 10^{-6}
Conductance for molecular flow	l x s^{-1}	1.5	3	9	30
Pressure absolute, min. / max.	mbar / bar	10^{-5} / 5	10^{-5} / 5	10^{-5} / 5	10^{-5} / 5
Weight	kg	0.35	0.4	0.75	2.6
Material					
Body		brass (nickel-plated)	brass (nickel-plated)	brass (nickel-plated)	brass (nickel-plated)
Gaskets		PTFE	PTFE	PTFE	PTFE
Ball		brass (hard chromium-plated)	brass (hard (chromium-plated)	brass (hard chromium-plated)	brass (hard chromium-plated)
ISO-KF flanges		aluminum (3.0615)	aluminum (3.0615)	aluminum (3.0615)	aluminum (3.0615)

Ordering Information

	Ball Valve			
	DN 10 ISO-KF	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Ball valve Brass body (nickel-plated)	**Part No. 174 94**	**Part No. 174 95**	**Part No. 174 96**	**Part No. 174 97**

Right-Angle Valve for Mobile Systems according to DOT (Departement of Transportation)



Dimensional drawing for the stainless steel right-angle valves with pilot valve

This valve was especially developed for applications which involve brake fluid (in accordance with DOT) and with special attention regarding safety in the presence of increased differential pressures.

Advantages to the User

- High degree of reliability and safety due to EPDM gaskets at the valve disk as well as within the body
- Stronger spring action on the valve disk
- Long service life
- Pilot valves for adaptation to all common control voltages and the interference suppression kit can be retrofitted
- Visual valve position indicator is standard
- Installation in any orientation and no restrictions as to the direction of flow

Technical Data — Right-Angle Valves for Mobile Systems according to DOT

Service life	cycles	10 mio.
Conductance at molecular flow	l x s^{-1}	4.5
Leak rate	mbar x l x s^{-1}	1 x 10^{-9}
Operating pressure range	mbar	10^{-8} - 5000
Differential pressure, closing and opening direction	bar	5 / 5
Opening against differential pressure	bar	5
Ambient / Operating temperature, max.	°C	50
Protection class	IP	65
Opening / closing time for compressed air at 6 bar	ms	100 / 100
Switching frequency	1/min	100
Compressed air, overpressure	bar	4 - 8
Compressed air volume	cm^3	5.5
Compressed air connection	mm	4 and 6
Weight with pilot valve		0.3
Material Body Inside section Gaskets		 aluminum alloy (3.2381) stainless steel (1.4541 / 1.4301) EPDM

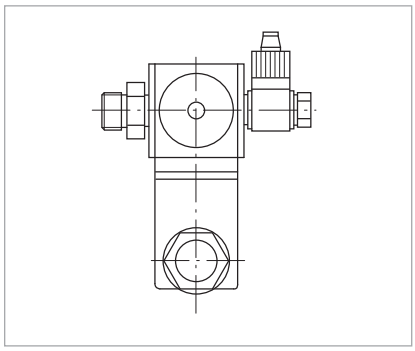
Ordering Information — Right-Angle Valves for Mobile Systems according to DOT

Right-angle valve, without pilot valve, aluminum body	**Part No. 215 009**
Pilot valves	**X**
Interference suppression kits for different voltages	**X**
Seal kit EPDM	**Part No. 215 012**

X = Part Nos. see section “Valves with ISO-KF/ISO-K flanges”, para “Accessories for the Electropneumatically Operated Valves”

Accessories for the Electropneumatically Operated Valves

Pilot Valves



Pilot valve

A range of pilot valves is available for actuation of the electropneumatic ISO-KF valves, which cover all commonly used control voltages.

Advantages to the User

- Easy to fit to the pneumatic cylinder, adapter is included with the DOT valve

Supplied Equipment

- Hose connection and gasket for connection to the compressed air supply

Ordering Information	ISO-KF Pilot Valves for DOT Valves (incl. Solenoid Coil)
ISO-KF pilot valve for DOT valves, incl. solenoid coil	
230 V AC / 50/60 Hz (normally closed)	**Part No. 280 70**
110 - 120 V AC / 50/60 Hz (normally closed)	**Part No. 280 72**
24 V DC (normally closed)	**Part No. 280 74**

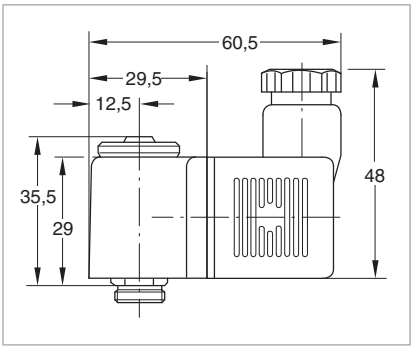
Ordering Information	Spare Pilot Valvefor ISO-K valves from DN 250 without coil
Spare pilot valve for DN 250 ISO-K to DN 630 ISO-K	**Part No. 200 07 927**

Interference Suppression Kit - Illuminated

As an option for the solenoid coil and the pilot valves an interference suppression kit is offered so as to reliably prevent any pick-up of interference by sensitive equipment in the vicinity of the solenoid coils.

Ordering Information	Interference Suppression Kit for different voltages
Interference Suppression Kit	
24 V DC/AC	**Part No. 287 84**
110 V AC	**–**
230 V AC	**Part No. 287 83**

Solenoid Coils for DN 250 ISO-K



Dimensional drawing for the solenoid coils

Oerlikon Leybold Vacuum is offering a range of solenoid coils for the purpose of adapting the electropneumatically operated valve to different commonly used control voltages.

Advantages to the User

- Easy to fit (plug on and tighten with a knurled screw)

Technical Data

		Solenoid Coils for Pilot Valves	
		V=	V≂
Voltage	V	24 DC	24/110/230 AC; 50/60 Hz
Permissible voltage variation	%	± 10	± 10 at nominal frequency
Permissible frequency variation	%	–	± 10 at nominal frequency
Power consumption at nominal operating voltage	W	4.1 at 12 V / 4.5 at 24 V	Actuate: 7.5 VA / Hold: 6.0 VA
Operating time		100 % ED	100 % ED
Type of protection to DIN 40 050	IP	65	65
Hose connection		Pg 9	Pg 9
Class of insulation material to VDE 0580		F	F
Test mark		VDE	VDE
Max. response time	ms	10	10
Weight	kg	0.065	0.055
Torque for the knurled screw, min. / max	Ncm	100 / 150	100 / 150

Ordering Information

	Solenoid Coils for Pilot Valves
Solenoid coils for pilot valves	
230 V AC / 50/60 Hz	**Part No. 280 77**
110 - 120 V AC / 50/60 Hz	**–**
24 V AC / 50/60 Hz	**Part No. 280 79**
24 V DC	**Part No. 280 80**

Special Valves for Turbomolecular Pumps

Solenoid Venting Valve

Technical Data		Venting Valve
Drive voltage	V DC	24
Power consumption	W	4
Connecting flange	DN	16 ISO-KF
Weight, approx.	kg	0.3

Ordering Information	Venting Valve
Solenoid venting valve, normally closed	**Part No. 800120V0011**

Further vent valves available in US. Please contact your US sales office

Power Failure Venting Valve

Technical Data		Power Failure Venting Valve
Drive voltage	V DC	24
Power consumption	W	4
Connecting flange	DN	16 ISO-KF
Weight, approx.	kg	0.3

Ordering Information	Power Failure Venting Valve
Power failure venting valve, normally open	**Part No. 800120V0021**

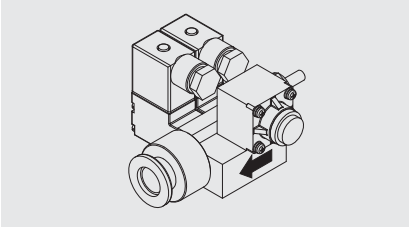
Further vent valves available in US. Please contact your US sales office

Purge Gas and Venting Valve

Technical Data		Purge Gas and Venting Valve
Connecting flange	DN	10 ISO-KF
Weight, approx.	kg	0.7

Ordering Information	Purge Gas and Venting Valve
Purge gas and venting valve, 230 V 0.2 mbar x l x s^{-1} (12 sccm) 0.4 mbar x l x s^{-1} (24 sccm)	**Part No. 855 19** **Part No. 855 29**
Purge gas and venting valve, 110 V 0.2 mbar x l x s^{-1} (12 sccm)	**Part No. 190 351 069**

Purge Gas and Venting Valve



Technical Data		Purge Gas and Venting Valve
Connecting flange Inlet Outlet		 1/4" pipe pump specific or DN 16 ISO-KF
Purge gas pressure, abs.	bar	1.5 to 6.0
Weight, approx.	kg	0.5

Ordering Information	Purge Gas and Venting Valve
Purge gas and venting valve, 24 V DC 0.6 mbar x l x s^{-1} (36 sccm)	**Part No. 121 33**

Further 0.6 mbar x l x s^{-1} valves upon request

UHV All-Metal Right-Angle Valves

The all-metal right-angle valves are of a fully welded design. The valve disk may be exchanged through the side flange.

Due to the selection of suitable materials, the valve stem need not be lubricated after every bake-out cycle.

The drive spindle of the valves transfers the motion via a pressure plate onto the sleeve-guided valve stem carrying the screwed-on valve disk. The valve disk consists of a copper plate.

Due to the specific properties of copper (ductility) this design offers great advantages over other materials: long service life and low closing forces when operating the valve.

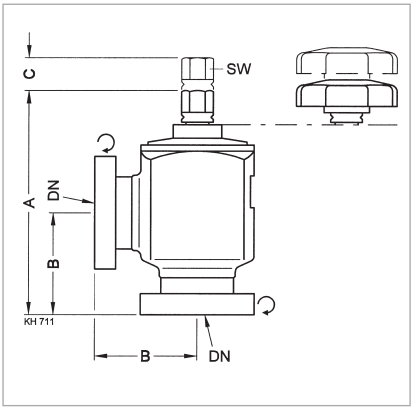
A very high leak tightness achieved, even with a low closing force.

The compact design offers good operational characteristics also in view of temperature changes, offers a short flow path and hence improved conductance.

Advantages to the User

- Leak rate at the valve seat below 10^{-11} mbar x l x s^{-1}
- Absolutely reliable sealing of valve seat
- Simplest operation
- No lubrication of the spindle is necessary after bakeout
- Large removable handwheel for easy operation

UHV All-Metal Right-Angle Valves, with Rotatable Flanges on Both Sides



Dimensional drawing for the UHV all-metal right-angle valve

Dimension Table

DN	A	B	C	SW
16 CF-R	88.0	38.0	15.5	8.0
40 CF-R	140	63	26	17
63 CF-R	211.0	105.0	36.4	22.0

Technical Data

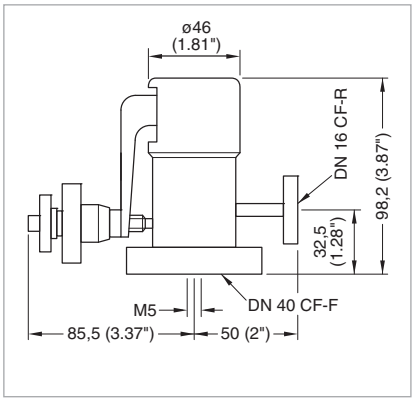
DN	CF	16	40	63
Connection flange rotatable	DN	16 CF-R	40 CF-R	63 CF-R
Service life	cycles	1000	1000	1000
Conductance for molecularflow	l/ s	3	38	100
Pressure, absolute min. max.	 mbar bar	 1 x 10^{-11} 4	 1 x 10^{-11} 4	 1 x 10^{-11} 4
Mounting orientation	mm	any	any	any
Bake out temperature without handwheel	°C	300	300	300
Bake out temperature with handwheel	°C	80	80	80
Max. heating and cooling rate	°C/min	4	4	2
Bellows	Material	Stainless steel 1.4541 [1]	Stainless steel 1.4541 [1]	Stainless steel 1.4541 [1]
Housing	Material	Stainless steel 1.4301 [2] welded	Stainless steel 1.4301 [2] welded	Stainless steel 1.4301 [2] welded
Valve disk	Material	Copper	Copper	Copper
Valve disk seal	Material	Copper	Copper	Copper
Weight	kg	0.4	2.0	5.0

Ordering Information

UHV all-metal right-angle valves	Part No.	**289 80**	**289 81**	**289 82**
Spare valve disk, 2 pieces	Part No.	**215 410**	–	–
Spare hand wheel, plastic	Part No.	**215 412**	**215 442**	–

[1] = AISI Type 316
[2] = AISI Type 304

UHV All-Metal Variable Leak Valves



Dimensional drawing for the all-metal variable leak valves

Technical Data — UHV All-Metal Variable Leak Valves

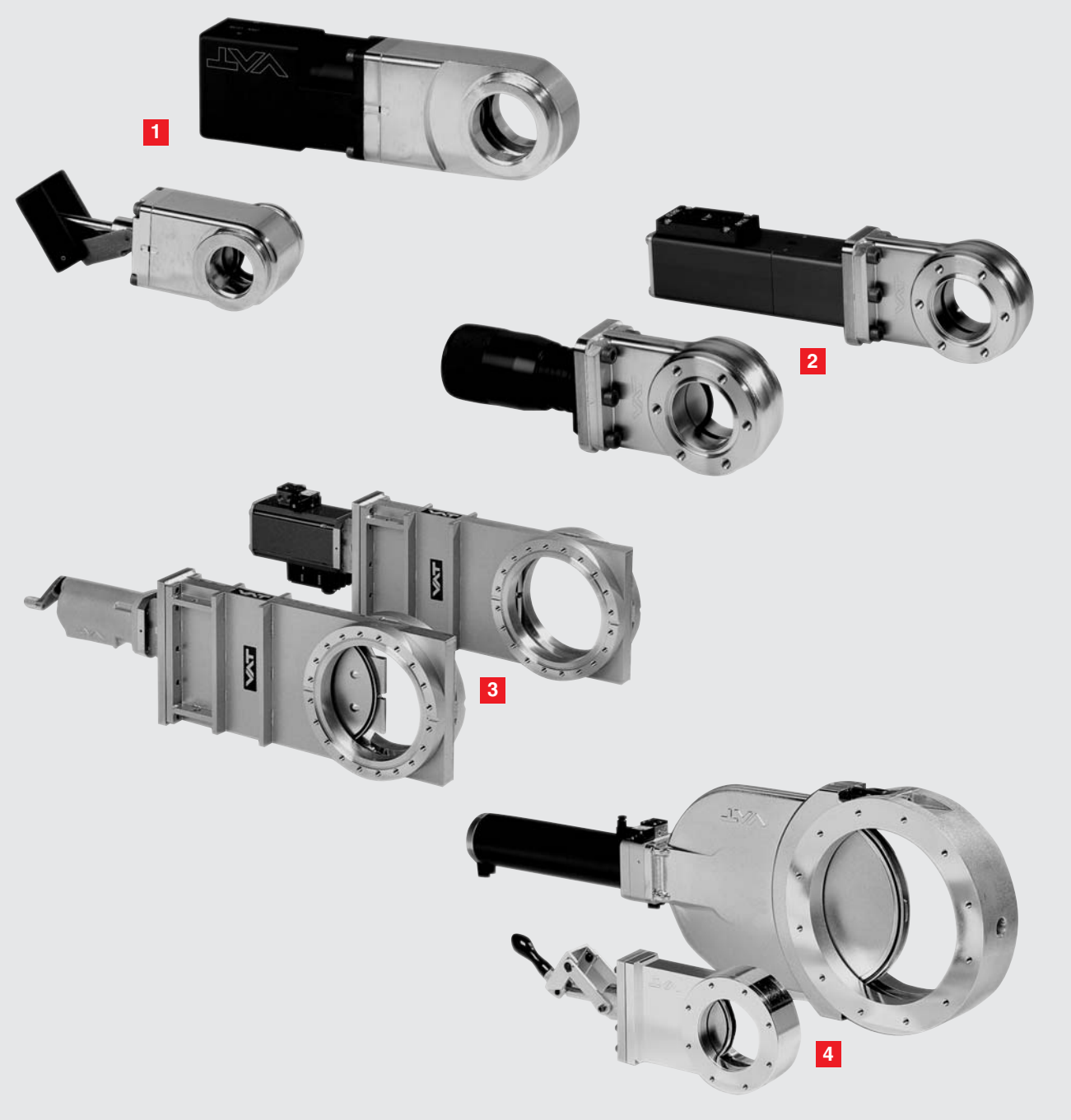
Connection flanges		
Input	DN	16 CF-R
Output	DN	40 CF-R
Gas flow, min. for		
Pure gas	mbar x l x s^{-1}	10^{-10}
Air	mbar x l x s^{-1}	10^{-9}
Gas flow		
max.	mbar x l x s^{-1}	600
adjustable, max.	mbar x l x s^{-1}	100
Tightness	mbar x l x s^{-1}	1 x 10^{-11}
Pressure absolute		
min.	mbar	1 x 10^{-10}
max.	bar	30
Conductance for molecular flow	l x s^{-1}	0,7
Operating temperature	°C	200
Bakeout temperature	°C	350
Valve seat	Material	Copper alloy
Valve plate	Material	Sapphire
Housing	Material	Stainless steel
Weight	kg	1.4

Ordering information — UHV All-Metal Variable Leak Valves

UHV all-metal variable leak valve	**Part No. 289 90**
Spare valve plate	**Part No. 289 87**
Spare valve seat	**Part No. 289 88**
Tool kit for valve seat	**Part No. 290 97**

Gate Valves with ISO-KF/CF/ISO-F Flanges

Overview



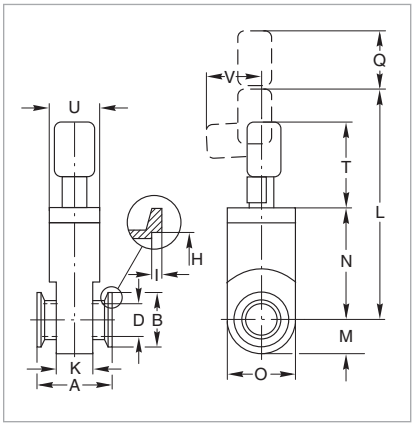
1 Miniature UHV gate valves, ISO-KF flange

2 Miniature UHV gate valves, CF flange

3 UHV gate valves

4 HV gate valves

Miniature UHV Gate Valves, ISO-KF, Manually Operated (Articulated Lever)



Dimensional drawing for the miniature UHV gate valves, articulated lever, ISO-KF flange

Dimension Table

	DN	16 ISO-KF	25 ISO-KF	40 ISO-KF
A	mm	40	50	51
B	mm	30	40	55
D	mm	15	24	39
H	mm	17.2	26.2	41.2
I	mm	3	3	3
K	mm	25	32	31
L	mm	100	139	208
M	mm	15.0	22.0	32.5
N	mm	39	59	93
O	mm	30	44	65
Q	mm	25	35	55
T	mm	37	50	85
U	mm	25	32	40
V	mm	30	30	50

Advantages to the User

- Manually actuated
- Valve technology with only one moving part
- Equipped with a mechanical position indicator
- Low particle generating and vibration free actuation
- Compact, light-weight design

Technical Data

Miniature UHV Gate Valve

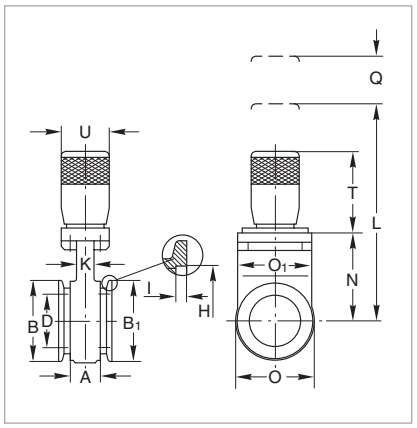
		DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Tightness				
Body	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-7} mbar to 2 bar	1 x 10^{-7} mbar to 2 bar	1 x 10^{-7} mbar to 2 bar
High vacuum conductance	l x s^{-1}	10	34	140
Differential pressure at the valve disk	bar	≤ 2 in both directions	≤ 2 in both directions	≤ 2 in both directions
Max. differential pressure during opening	mbar	≤ 30	≤ 30	≤ 30
Service life until first maintenance	cycles	50 000	50 000	50 000
Degassing temperature				
for the valve	°C	100 / 100	100 / 100	100 / 100
manual open / closed	°C	80	80	80
Installation orientation		any	any	any
Weight	kg	0.4	0.4	0.7
Material				
Valve body		AlMgSi1 (3.2315)	AlMgSi1 (3.2315)	AlMgSi1 (3.2315)
Valve disk		AISI 301 (1.4310)	AISI 301 (1.4310)	AISI 301 (1.4310)
Seal (head, disk)		Viton/Viton	Viton/Viton	Viton/Viton

Ordering Information

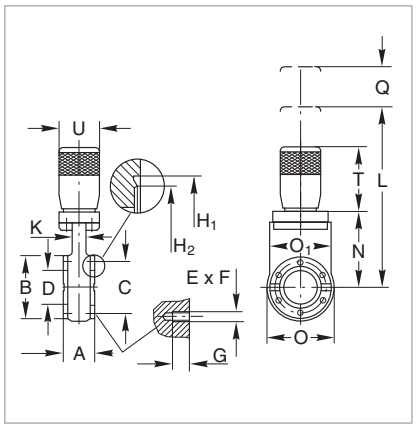
Miniature UHV Gate Valve

	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Miniature gate valve, manually operated, articulated lever	**Part No. 286 06**	**Part No. 286 08**	**Part No. 286 09**

Miniature UHV Gate Valves, ISO-KF and CF, Manually Operated (Handwheel)



Dimensional drawing for the miniature UHV gate valves, manually operated (handwheel), DN 40 ISO-KF



Dimensional drawing for the miniature UHV gate valves, manually operated (handwheel), DN 40 CF

Advantages to the User

- Bellows-sealed push gate feed-through
- Valve technology with only one moving part
- Equipped with a mechanical position indicator
- Low particle generating and vibration free actuation
- Compact, light-weight design

Dimension Table

	DN	40 ISO-KF	40 CF
A	mm	50	35
B	mm	72	72
B_1	mm	55	–
C	mm	–	58.7
D	mm	40	40
E x F		–	6 x M 6
G	mm	–	7
H	mm	41.2	–
H_1	mm	–	48.3
H_2	mm	–	42
I	mm	3	–
K	mm	16	16
L	mm	198	198
N	mm	82	82
O	mm	76	76
O_1	mm	70	70
Q	mm	55	55
T	mm	73	73
U	mm	45	45

Technical Data

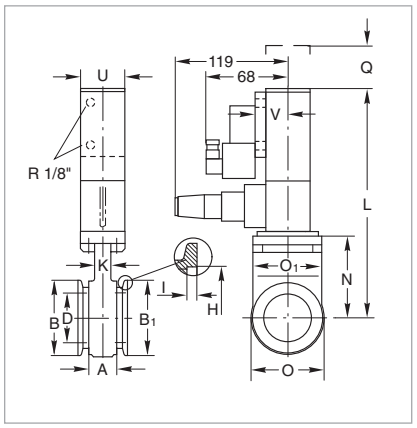
		Miniature UHV Gate Valve	
		DN 40 ISO-KF	DN 40 CF
Tightness			
Body	mbar x l x s^{-1}	< 5 x 10^{-10}	< 5 x 10^{-10}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-10} mbar to 2 bar	1 x 10^{-10} mbar to 2 bar
High vacuum conductance	l x s^{-1}	160	220
Differential pressure at the valve disk	bar	≤ 2 in both directions	≤ 2 in both directions
Max. differential pressure during opening	mbar	≤ 30	≤ 30
Service life until first maintenance	cycles	50 000	50 000
Degassing temperature			
valve open / closed	°C	250 / 200	250 / 200
manually operated	°C	250	250
Installation orientation		any	any
Weight	kg	1.5	1.5
Material			
Valve body		AISI 304 (1.4301)	AISI 304 (1.4301)
Valve disk		AISI 304 (1.4301)	AISI 304 (1.4301)
Bellows		AISI 316 L (1.4435)	AISI 316 L (1.4435)
Seal (head, disk)		Viton/Viton	Viton/Viton

Ordering Information

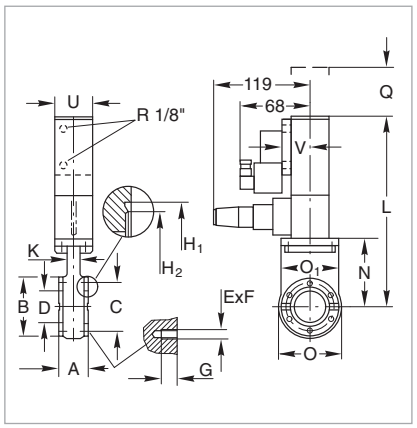
	Miniature UHV Gate Valve	
	DN 40 ISO-KF	DN 40 CF
Miniature gate valve, manually operated, handwheel	**Part No. 286 15**	**Part No. 286 84**
6 set screws with nuts and washers [1)]	**–**	**Part No. 839 11**

1) For dimensions E x F see table “Connections for CF”

Miniature UHV Gate Valves, ISO-KF / CF, Electropneumatically Operated



Dimensional drawing for the miniature UHV gate valves; electropneumatically operated, ISO-KF flange



Dimensional drawing for the miniature UHV gate valves; electropneumatically operated, CF flange

Dimension Table

	DN	40 ISO-KF	40 CF
A	mm	50	35
B	mm	72	72
B_1	mm	55	–
C	mm	–	58.7
D	mm	40	40
E x F	mm	–	6 x M 6
G	mm	–	7
H	mm	41.2	–
H_1	mm	–	48.3
H_2	mm	–	42
I	mm	3	–
K	mm	16	16
L	mm	198	230
N	mm	82	82
O	mm	76	76
O_1	mm	70	70
Q	mm	55	55
T	mm	73	73
U	mm	45	45
V	mm	–	32.5

Advantages to the User

- Double-acting electropneumatic actuator (with position indicator and pilot valve); bellows-sealed push gate feedthrough
- Valve technology with only one moving part
- Equipped with a mechanical position indicator
- Actuation free of particles and vibrations
- Short closing time, very long service life
- Compact, light-weight design

Technical Data

Miniature UHV Gate Valve

		DN 40 ISO-KF (Aluminum)	DN 40 ISO-KF (Stainless steel)	DN 40 CF (Stainless steel)
Tightness				
Body	mbar x l x s^{-1}	< 1 x 10^{-9}	< 5 x 10^{-10}	5 x 10^{-10}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-7} mbar to 2 bar	1 x 10^{-10} mbar to 2 bar	1 x 10^{-10} mbar to 2 bar
High vacuum conductance	l x s^{-1}	140	160	220
Differential pressure at the valve disk	bar	≤ 2 in both directions	≤ 2 in both directions	≤ 2 in both directions
Max. differential pressure				
during opening	mbar	≤ 30	≤ 30	≤ 30
at reduced service live	bar	1	1	1
Service life until first maintenance	cycles	50 000	50 000	50 000
Degassing temperature				
valve open / closed	°C	≤ 100 / 100	≤ 250 / 200	≤ 250 / 200
pneumatic actuation	°C	≤ 80	≤ 200	≤ 200
position indicator / pilot valve	°C	≤ 80 / 50	80 / 50	80 / 50
Warming-up and cooling down speed	°C x h^{-1}	80	80	80
Compressed air, min. / max.	bar	4.5 / 7.0	4.5 / 7.0	4.5 / 7.0
Closing / opening time	s	1.1	0.7	0.7
Pilot valve supply voltage / power consumption	– / W	24 V DC / 6 or 230 V AC, 50/60 Hz / 2	24 V DC / 6 or 230 V AC, 50/60 Hz / 2	24 V DC / 6 or 230 V AC, 50/60 Hz / 2
Switching capacity of the pos. indicator at 80 °C	A	0.5 at 50 V AC; max. 10 W / 0.5 at 75 V DC; max. 10 W	5 at 250 V AC; 3 at 50 V DC	5 at 250 V AC; 3 at 50 V DC
Installation orientation		any	any	any
Weight	kg	1.2	1.8	1.8
Material				
Valve body		AlMgSi1 (3.2315)	AISI 304 (1.4301)	AISI 304 (1.4301)
Disk		AISI 301 (1.4310)	AISI 304 (1.4301)	AISI 304 (1.4301)
Bellows		–	AISI 316 L (1.4435)	AISI 316 L (1.4435)
Seal (head, disk)		Viton/Viton	Metal/Viton	Metal/Viton

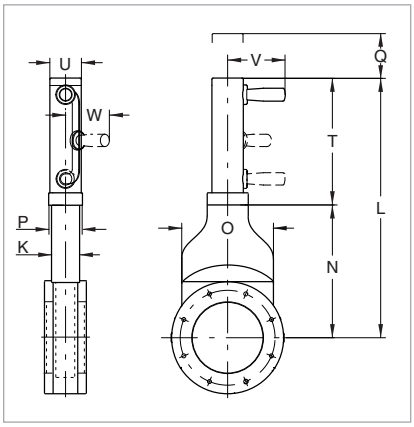
Ordering Information

Miniature UHV Gate Valve

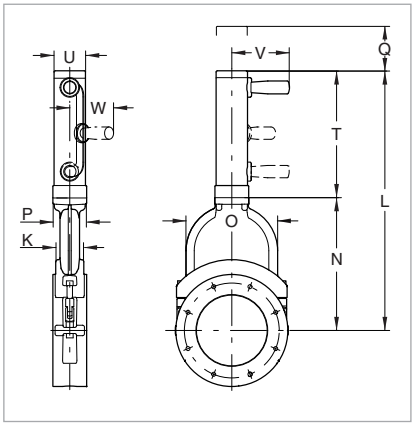
	DN 40 ISO-KF (Aluminum)	DN 40 ISO-KF (Stainless steel)	DN 40 CF (Stainless steel)
Miniature gate valve, electropneumatically operated			
24 V DC / 6 W	**Part No. 286 54**	**Part No. 286 36**	**Part No. 286 99**
230 V AC, 50/60 Hz / 2 W	**–**	**Part No. 286 35**	**Part No. 286 94**
6 set screws with nuts and washers [1]	**–**	**–**	**Part No. 839 11**

[1] For dimensions E x F see table “Connections for CF”

HV Gate Valves, ISO-F
Manually Operated



Dimensional drawing for the HV gate valves; manually operated, DN 63 ISO-F and DN 100 ISO-F



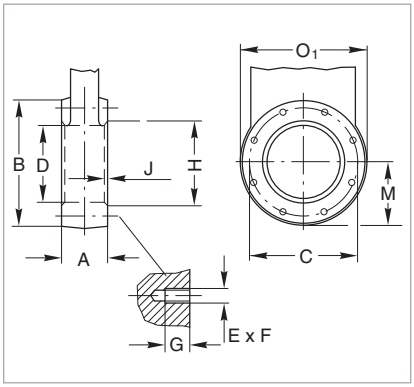
Dimensional drawing for the HV gate valves; manually operated, DN 160 ISO-F

Advantages to the User

- Cost-effective gate valve for industrial applications with elastomer-sealed push gate feedthrough
- Aluminum body
- Slim and light-weight
- Low play in the locked state and low wear

Dimension Table

	DN	63 ISO-F	100 ISO-F	160 ISO-F
K	mm	36	36	58
L	mm	329.5	413.0	547.0
N	mm	155.5	203.5	280.0
O	mm	100	140	192
P	mm	48	48	70
Q	mm	25	25	60
T	mm	174.0	209.5	267.0
U	mm	43	43	65
V	mm	94	94	122
W	mm	75	75	95



Connection dimensions for ISO-F flanges (HV gate valves)

Connections for ISO-F

	DN	63 ISO-F	100 ISO-F	160 ISO-F
A	mm	60	60	70
B	mm	130	165	235
C	mm	110	145	200
D	mm	65	100	150
E x F		4 x M8	8 x M8	8 x M10
G	mm	12	12	16
H	mm	70	102	153
J	mm	3	3	5
M	mm	65.5	83.0	117.5
O_1	mm	131	166	237

Technical Data

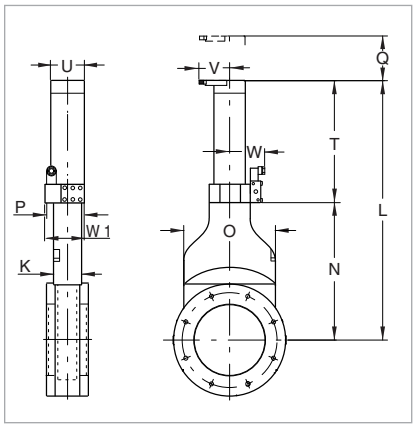
		HV Gate Valve		
		DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F
Tightness				
Body	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-7} mbar to 1.6 bar	1 x 10^{-7} mbar to 1.6 bar	1 x 10^{-7} mbar to 1.6 bar
High vacuum conductance	l x s^{-1}	550	2000	6000
Differential pressure at the valve disk	bar	1.6 in both directions	1.6 in both directions	1.6 in both directions
Max. differential pressure during opening	mbar	≤ 30	≤ 30	≤ 30
Service life until first maintenance	cycles	200000	200000	100000
Degassing temperature				
valve	°C	120	120	120
manually operated	°C	80	80	80
Installation orientation		any	any	any
Weight	kg	3.0	4.5	9.0
Material				
Valve body		AlMg4.5Mn	AlMg4.5Mn	G-AlSi7Mg
Valve disk		AISI 304 (1.4301)	AISI 304 (1.4301)	AlMgSi1
Mechanism		AISI 301 (1.4310), AISI 304 (1.4301), AISI 420 (1.4034)	AISI 301 (1.4310), AISI 304(1.4301), AISI 420 (1.4034)	AISI 301 (1.4310), AISI 304(1.4301), AISI 420 (1.4034)
Gaskets (head, disk)		Viton	Viton	Viton

Ordering Information

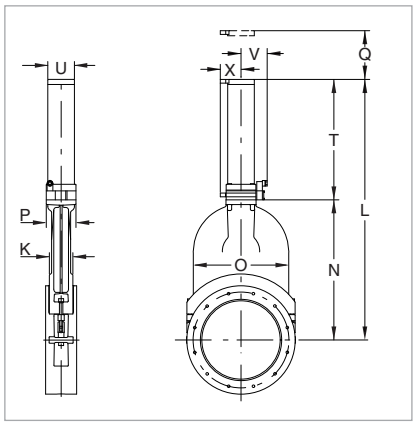
		HV Gate Valve		
		DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F
HV gate valve, manually operated		**Part No. 286 25**	**Part No. 286 26**	**Part No. 215 633**
Set screws with nuts and washers [1]		**Part No. 839 13**	**Part No. 839 13**	**Part No. 210 071**
(Package each containing)	pieces	16	16	12

[1] For dimensions E x F see table “Connections for ISO-F”

HV Gate Valves, ISO-F, Electropneumatically Operated



Dimensional drawing for the gate valves;
DN 63 ISO-F and DN 100 ISO-F



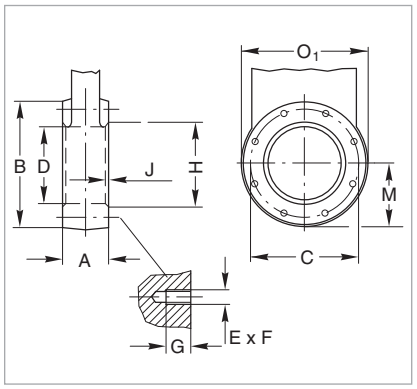
Dimensional drawing for the gate valves;
DN 160 ISO-F to DN 250 ISO-F

Advantages to the User

- Cost-effective gate valve for industrial applications with elastomer-sealed push gate feedthrough
- Aluminum body
- Slim and light-weight
- Low play in the locked state and low wear

Dimension Table

	DN	63 ISO-F	100 ISO-F	160 ISO-F	200 ISO-F	250 ISO-F
K	mm	36	36	58	66	76
L	mm	341.5	424.0	547.0	688.0	843.0
L_1	mm	155.5	203.5	280.0	363.5	453.0
N	mm	100	140	192	240	308
O	mm	58	58	70	80	96
P	mm	25	25	60	80	100
Q	mm	186.0	221.5	267.0	324.5	390.0
T	mm	55	55	65	75	86
U	mm	56.0	56.0	71.5	76.5	84.5
V	mm	72	72	–	–	–
W	mm	65.5	65.5	–	–	–
X	mm	59	59	57	62	67



Connection dimensions for ISO-F flanges
(HV Gate Valves)

Connections for ISO-F

	DN	63 ISO-F	100 ISO-F	160 ISO-F	200 ISO-F	250 ISO-F
A	mm	60	60	70	80	100
B	mm	130	165	235	288	350
C	mm	110	145	200	260	310
D	mm	65	100	150	200	261
E x F		4 x M8	8 x M8	8 x M10	12 x M10	12 x M10
G	mm	12	12	16	16	16
H	mm	70	102	153	213	–
J	mm	3	3	5	5	–
M	mm	65.5	83.0	117.5	144.0	175.0
O_1	mm	131	166	237	290	352

Technical Data

HV Gate Valve

		DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F	DN 200 ISO-F	DN 250 ISO-F
Tightness						
Body	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-7} mbar to 1.6 bar	1 x 10^{-7} mbar to 1.6 bar	1 x 10^{-7} mbar to 1.6 bar	1 x 10^{-7} mbar to 1.6 bar	1 x 10^{-7} mbar to 1.2 bar
High vacuum conductance	l x s^{-1}	550	2000	6000	12000	22000
Differential pressure						
at the valve disk, max.	mbar	≤ 1600 in both directions	≤ 1600 in both directions	≤ 1600 in both directions	≤ 1600 in both directions	≤ 1200 in both directions
during opening, max.	mbar	≤ 30	≤ 30	≤ 30	≤ 30	≤ 30
Compressed air, min. / max.	bar	4 / 7	4 / 7	4 / 7	4 / 7	4 / 7
Closing / opening time	s	1.5	2.0	2.0	3.0	5.0
Service life until first maintenance	cycles	200000	200000	100000	100000	100000
Degassing temperature						
valve	°C	120	120	120	120	120
pneumatic drive	°C	80	80	80	80	80
position indicator	°C	80	80	80	80	80
pilot valve	°C	50	50	50	50	50
Switching capacity for the position indicator	A	5 at 230 V AC; 3 at 50 V DC	5 at 230 V AC; 3 at 50 V DC	5 at 230 V AC; 3 at 50 V DC	5 at 230 V AC; 3 at 50 V DC	5 at 230 V AC; 3 at 50 V DC
Installation orientation		any	any	any	any	any
Weight	kg	3.0	4.5	9.0	18.0	25.0
Material						
Valve body		AlMg4.5Mn	AlMg4.5Mn	G-AlSi7Mg	G-AlSi7Mg	G-AlSi7Mg
Valve disk		AISI 304 (1.4301)	AISI 304 (1.4301)	AlMgSi1,	AlMgSi1,	AlMgSi1,
Mechanism		AISI 301 (1.4310), AISI 304 (1.4301), AISI 420 (1.4034)	AISI 301 (1.4310), AISI 304 (1.4301), AISI 420 (1.4034)	AISI 301 (1.4310), AISI 304 (1.4301), AISI 420 (1.4034)	AISI 301 (1.4310), AISI 304 (1.4301), AISI 420 (1.4034)	AISI 301 (1.4310), AISI 304 (1.4301), AISI 420 (1.4034)
Gaskets (head, disk)		Viton	Viton	Viton	Viton	Viton

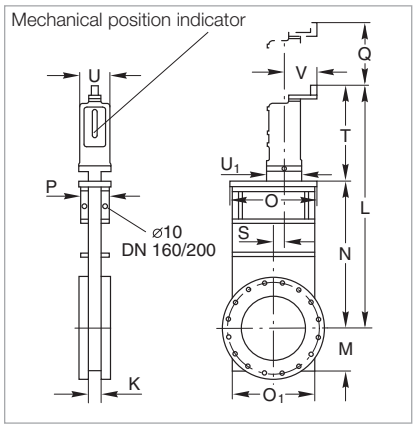
Ordering Information

HV Gate Valve

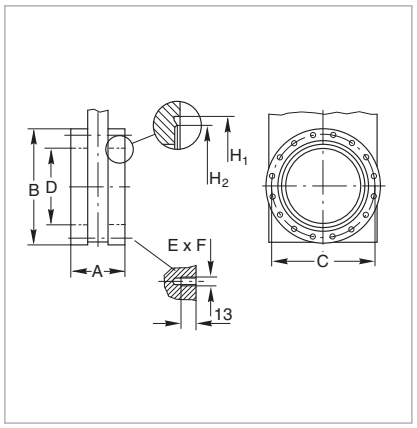
	DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F	DN 200 ISO-F	DN 250 ISO-F
HV gate valve, electropneumatically operated					
24 V DC / 2.5 W	**Part No. 286 55**	**Part No. 286 56**	–	–	–
24 V DC / 6 W	–	–	**Part No. 215 643**	**Part No. 215 644**	**Part No. 215 645**
230 V AC, 50 Hz / 7.1 W	**Part No. 286 45**	**Part No. 286 46**	**Part No. 215 653**	**Part No. 215 654**	**Part No. 215 655**
Set screws with nuts and washers [1]	**Part No. 839 13**	**Part No. 839 13**	**Part No. 210 071**	**Part No. 210 071**	**Part No. 210 071**
(Package each containing) pieces	16	16	12	12	12

[1] For dimensions E x F see table “Connections for ISO-F”

UHV Gate Valves, CF
Manually Operated



Dimensional drawing for the UHV gate valves DN 63 CF to DN 200 CF



Connection dimensions for CF flanges (UHV gate valves)

Dimension Table

	DN	63 CF	100 CF	160 CF	200 CF
K	mm	27	27	27	35
L	mm	408	462	552	660
M	mm	57	73	99	125
N	mm	192	247	336	430
O	mm	115	145	200	250
O_1	mm	112	142	192	240
P	mm	70	70	70	80
Q	mm	180	220	290	350
S	mm	11.0	9.0	25.0	38.5
T	mm	184	184	184	200
U	mm	70	70	70	90
U_1	mm	83	83	83	103
V	mm	77	77	77	94

Connections for CF

	DN	63 CF	100 CF	160 CF	200 CF
A	mm	70	70	70	80
B_2	mm	113.5	151.6	202.4	253.2
C	mm	92.1	130.2	181.0	231.8
D	mm	70	100	150	200
E x F		8 x M8	16 x M8	20 x M8	24 x M8
H_1	mm	82.5	120.65	171.45	222.3
H_2	mm	77.4	115.5	166.0	217.0

Advantages to the User

- Valve and wheel can be degassed at temperatures up to 250 °C
- Steel body (non-rusting)
- Bellows-sealed push gate feed-through
- Low play in the locked state and low wear
- Compact
- Mechanically locked in the closed state
- Mechanical position indicator

Technical Data

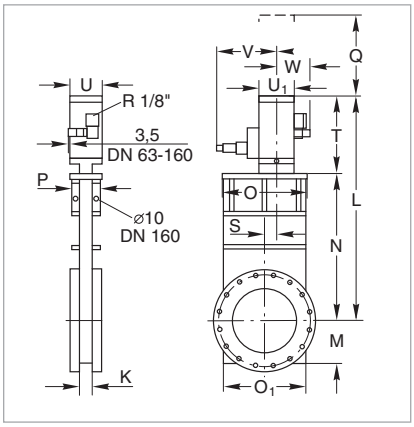
	UHV Gate Valve			
	DN 63 CF	DN 100 CF	DN 160 CF	DN 200 CF
Tightness				
Body mbar x l x s^{-1}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}
Valve seat mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.	1 x 10^{-10} mbar to 1.6 bar	1 x 10^{-10} mbar to 1.6 bar	1 x 10^{-10} mbar to 1.6 bar	1 x 10^{-10} mbar to 1.6 bar
High vacuum conductance l x s^{-1}	600	1700	6000	12000
Differential pressure at the valve disk bar	≤ 1.6 in both directions	≤ 1.6 in both directions	≤ 1.6 in both directions	≤ 1.6 in both directions
Max. differential pressure during opening mbar	≤ 30	≤ 30	≤ 30	≤ 30
Number of spindle turns for full travel	10	13	17	17
Service life until first maintenance cycles	50 000	50 000	50 000	50 000
Degassing temperature				
valve open / closed °C	250 / 200	250 / 200	250 / 200	250 / 200
manually operated °C	250	250	250	250
Warming-up / cooling down speed °C x h^{-1}	80	80	80	80
Installation orientation	any	any	any	any
Weight kg	9	12	18	28
Material				
Body	AISI 304 (1.4301)	AISI 304 (1.4301)	AISI 304 (1.4301)	AISI 304 (1.4301)
Bellows	AISI 316 L (1.4435)	AISI 316 L (1.4435)	AISI 316 L (1.4435)	AISI 316 L (1.4435)
Mechanism	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)
Gaskets (head, disk)	Metal / Viton	Metal / Viton	Metal / Viton	Metal / Viton

Ordering Information

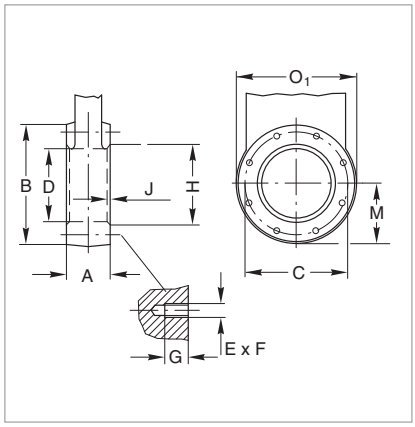
	UHV Gate Valve			
	DN 63 CF	DN 100 CF	DN 160 CF	DN 200 CF
UHV gate valve, manually operated	**Part No. 286 85**	**Part No. 286 86**	**Part No. 286 87**	**Part No. 286 88**
16 set screws with nuts and washers [1)]	**Part No. 839 13**	**Part No. 839 13**	**2 x Part No. 839 13**	**2 x Part No. 839 13**

1) For dimensions E x F see table “Connections for ISO-F”

UHV Gate Valves, ISO-F, Electropneumatically Operated



Dimensional drawing for the UHV gate valves ISO-F



Connection dimensions for ISO-F flanges (UHV gate valves)

Dimension Table

	DN	63 ISO-F	100 ISO-F	160 ISO-F	250 ISO-F
K	mm	27	27	27	41
L	mm	346	418	523	800
M	mm	57	73	99	161
N	mm	192	247	336	560
O	mm	115	145	200	345
O_1	mm	112	142	192	322
P	mm	70	70	70	80
Q	mm	180	220	290	450
S	mm	11	9	25	65
T	mm	154	171	187	240
U	mm	70	70	70	90
U_1	mm	83	83	83	103
V	mm	145	145	145	155
W	mm	77	77	77	87

Connections for ISO-F

	DN	63 ISO-F	100 ISO-F	160 ISO-F	250 ISO-F
A	mm	70	70	70	100
B	mm	130	165	225	350
C	mm	110	145	200	310
D	mm	70	100	150	261
E x F		4 x M8	8 x M8	8 x M10	12 x M10
G	mm	13	13	13	15
H	mm	–	102	153	–
J	mm	–	3	5	–

Advantages to the User

- Valve and pneumatic drive can be degassed at temperatures up to 250 °C and 200 °C respectively
- Steel body (non-rusting)
- Double-acting electropneumatic actuator (with position indicator and pilot valve)
- Bellows-sealed push gate feed-through
- Low play in the locked state and low wear
- Compact
- Mechanically locked in the closed state

Technical Data

UHV Gate Valve

		DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F	DN 250 ISO-F
Tightness					
Body	mbar x l x s^{-1}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-10} mbar to 1 bar	1 x 10^{-10} mbar to 1 bar	1 x 10^{-10} mbar to 1 bar	1 x 10^{-10} mbar to 1 bar
High vacuum conductance	l x s^{-1}	600	1700	6000	26000
Differential pressure at the valve disk	bar	1 in both directions	1 in both directions	1 in both directions	1 in both directions
Max. differential pressure during opening	mbar	30	30	30	30
Compressed air, min. / max.	bar	4 / 7	4 / 7	4 / 7	5 / 7
Closing / opening time	s	1.0	1.2	1.5	4.0
Compressed air cylinder, volume	l	0.08	0.11	0.14	0.35
Service life until first maintenance	cycles	50 000	50 000	50 000	50 000
Degassing temperature					
valve open / closed	°C	250 / 200	250 / 200	250 / 200	250 / 200
pneumatic drive	°C	200	200	200	200
position indicator / pilot valve	°C	80 / 50	80 / 50	80 / 50	80 / 50
Warming-up / cooling down speed	°C x h^{-1}	80	80	80	80
Pilot valve supply voltage / power consumption	- / W	24 V DC / 6 or 230 V AC, 50 Hz / 7.1	24 V DC / 6 or 230 V AC, 50 Hz / 7.1	24 V DC / 6 or 230 V AC, 50 Hz / 7.1	24 V DC / 6 or 230 V AC, 50 Hz / 7.1
Switching capacity for the position indicator at 80 °C	A	5 at 250 V AC; 3 at 50 V DC	5 at 250 V AC; 3 at 50 V DC	5 at 250 V AC; 3 at 50 V DC	5 at 250 V AC; 3 at 50 V DC
Installation orientation		any	any	any	any
Weight	kg	9	12	18	42
Material					
Body		AISI 304 (1.4301)	AISI 304 (1.4301)	AISI 304 (1.4301)	AISI 304 (1.4301)
Bellows		AISI 316 L (1.4435)	AISI 316 L (1.4435)	AISI 316 L (1.4435)	AISI 316 L (1.4435)
Mechanism		AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)
Gaskets (head, disk)		Metal / Viton	Metal / Viton	Metal / Viton	Metal / Viton

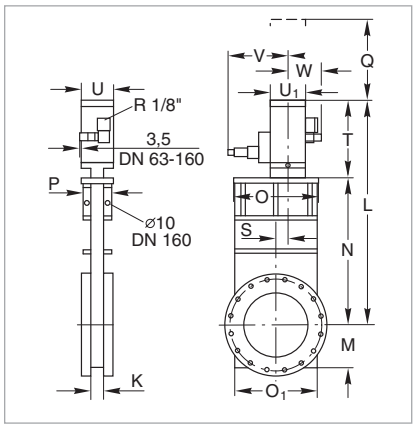
Ordering Information

UHV Gate Valve

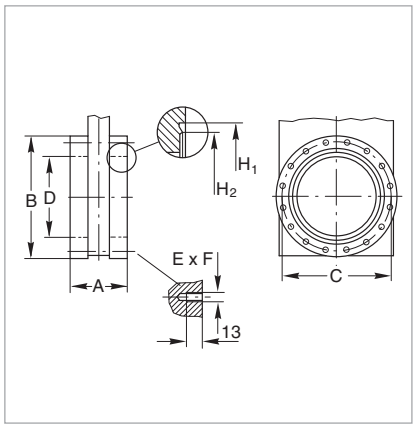
	DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F	DN 250 ISO-F
UHV gate valve, electropneumatically operated				
24 V DC / 6 W	–	**Part No. 286 73**	**Part No. 286 74**	**Part No. 286 81**
230 V AC, 50 Hz / 7.1 W	–	**Part No. 286 76**	**Part No. 286 77**	–
Set screws with nuts and washers [1]	**Part No. 839 13**	**Part No. 839 13**	**Part No. 210 071**	**Part No. 210 071**
(Package each containing) pieces	16	16	12	12

[1] For dimensions E x F see table “Connections for ISO-F”

UHV Gate Valves, CF, Electropneumatically Operated



Dimensional drawing for the UHV gate valves CF electropneumatically ooperated



Connection dimension for CF flanges (UHV Gate Valves)

Dimension Table

	DN	63 CF	100 CF	160 CF	200 CF
K	mm	27	27	27	35
L	mm	346	418	523	630
M	mm	57	73	99	125
N	mm	192	247	336	430
O	mm	115	145	200	250
O_1	mm	112	142	192	240
P	mm	70	70	70	80
Q	mm	180	220	290	350
S	mm	11	9	25	38,5
T	mm	154	171	187	200
U	mm	70	70	70	90
U_1	mm	83	83	83	103
V	mm	145	145	145	155
W	mm	77	77	77	87

Connections for CF

	DN	63 CF	100 CF	160 CF	200 CF
A	mm	70	70	70	80
B_2	mm	113.5	151.6	202.4	253.2
C	mm	92.1	130.2	181.0	231.8
D	mm	70	100	150	200
E x F		8 x M8	16 x M8	20 x M8	24 x M8
H_1	mm	82.5	120.65	171.45	222.3
H_2	mm	77.4	115.5	166.0	217.0

Advantages to the User

- Double-acting electropneumatic actuator (with position indicator and pilot valve)
- Bellows-sealed push gate feed-through
- Valve and pneumatic drive can be degassed at temperatures up to 250 °C and 200 °C respectively
- Steel body (non-rusting)
- Low play in the locked state and low wear
- Compact
- Mechanically locked in the closed state

Technical Data

		UHV Gate Valve			
		DN 63 CF	DN 100 CF	DN 160 CF	DN 200 CF
Tightness					
Body	mbar x l x s^{-1}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-10} mbar to 1 bar	1 x 10^{-10} mbar to 1 bar	1 x 10^{-10} mbar to 1 bar	1 x 10^{-10} mbar to 1 bar
High vacuum conductance	l x s^{-1}	600	1700	6000	12000
Differential pressure at the valve disk	bar	1 in both directions	1 in both directions	1 in both directions	1 in both directions
Max. differential pressure during opening	mbar	30	30	30	30
Compressed air, min. / max.	bar	4 / 7	4 / 7	4 / 7	5 / 7
Closing / opening time	s	1.0	1.2	1.5	4.0
Compressed air cylinder, volume	m^3	0.08	0.11	0.14	0.35
Service life until first maintenance	cycles	50 000	50 000	50 000	50 000
Degassing temperature					
valve open / closed	°C	250 / 200	250 / 200	250 / 200	250 / 200
pneumatic drive	°C	200	200	200	200
position indicator / pilot valve	°C	80 / 50	80 / 50	80 / 50	80 / 50
Warming-up / cooling down speed	°C x h^{-1}	80	80	80	80
Pilot valve					
supply voltage / power consumption	- / W	24 V DC / 6 or 230 V AC, 50 Hz / 7.1	24 V DC / 6 or 230 V AC, 50 Hz / 7.1	24 V DC / 6 or 230 V AC, 50 Hz / 7.1	24 V DC / 6 or 230 V AC, 50 Hz / 7.1
Switching capacity for the position indicator at 80 °C	A	5 at 250 V AC; 3 at 50 V DC	5 at 250 V AC; 3 at 50 V DC	5 at 250 V AC; 3 at 50 V DC	5 at 250 V AC; 3 at 50 V DC
Installation orientation		any	any	any	any
Weight	kg	9	12	18	28
Material					
Body		AISI 304 (1.4301)	AISI 304 (1.4301)	AISI 304 (1.4301)	AISI 304 (1.4301)
Bellows		AISI 316 L (1.4435)	AISI 316 L (1.4435)	AISI 316 L (1.4435)	AISI 316 L (1.4435)
Mechanism		AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)	AISI 304 (1.4301), AISI 316 L (1.4404), AISI 301 (1.4310), AISI 420 (1.4034)
Gaskets (head, disk)		Metal / Viton	Metal / Viton	Metal / Viton	Metal / Viton

Ordering Information

	UHV Gate Valve			
	DN 63 CF	DN 100 CF	DN 160 CF	DN 200 CF
UHV gate valve, electropneumatically operated				
24 V DC / 6 W	**Part No. 286 89**	**Part No. 286 90**	**Part No. 286 91**	**Part No. 286 92**
230 V AC, 50 Hz / 7.1 W	**Part No. 286 95**	**Part No. 286 96**	**Part No. 286 97**	**–**
16 set screws with nuts and washers [1]	**Part No. 839 13**	**Part No. 839 13**	**2 x Part No. 839 13**	**2 x Part No. 839 13**

[1] For dimensions E x F see table “Connections for ISO-F”

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