Leybold

Valves

Valves

Manually Operated
Electropneumatically Operated
Electromagnetically Operated
Special Valves
Gate Valves
UHV Valves

300.00.02
Excerpt from the Leybold Full Line Catalog 2016
Catalog Part Valves
Edition: Fall 2016

Contents

Valves

Nominal Width DN 16 CF to DN 63 CF

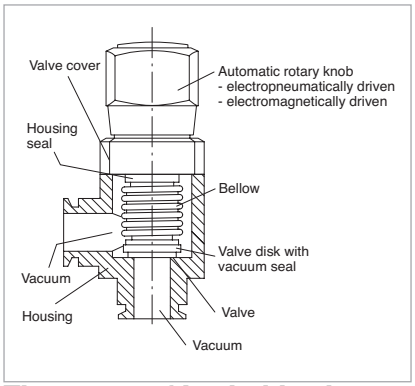
Gate Valves with ISO-KF / CF / ISO-F Flange

General

The Leybold Valve Program

The long-standing experience of Leybold 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. Leybold 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 Leybold valves comprises:

- Small valves **micro**
- Right-angle and straight-through valves 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 Leybold 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 an electro-pneumatic 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

Leybold 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 Leybold meet all these demanding requirements!

For further information on flange connections and flange components please refer to Catalog Parts “Flanges and Fittings” and “Feedthroughs”.

Flange Designations

The flange designations used in this Catalog Part 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	"ISO-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

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 (FKM) sealed
- For pressures up to 2000 mbar
- Seal in both directions [2]
- Principal dimensions comparable to Leybold 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 free of 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 Leybold 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)

Accessories

All connecting components like centering rings, clamps or clamping rings needed to connect the valves must be ordered separately (see Catalog Parts "Flanges and Fittings" 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 chapter "General".

Gaskets

Shown in the table at the end of the chapter "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	

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

[2] High vacuum systems are very demanding as to the leak tightness of the vacuum components used. For this reason each individual Leybold 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 (FKM)	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

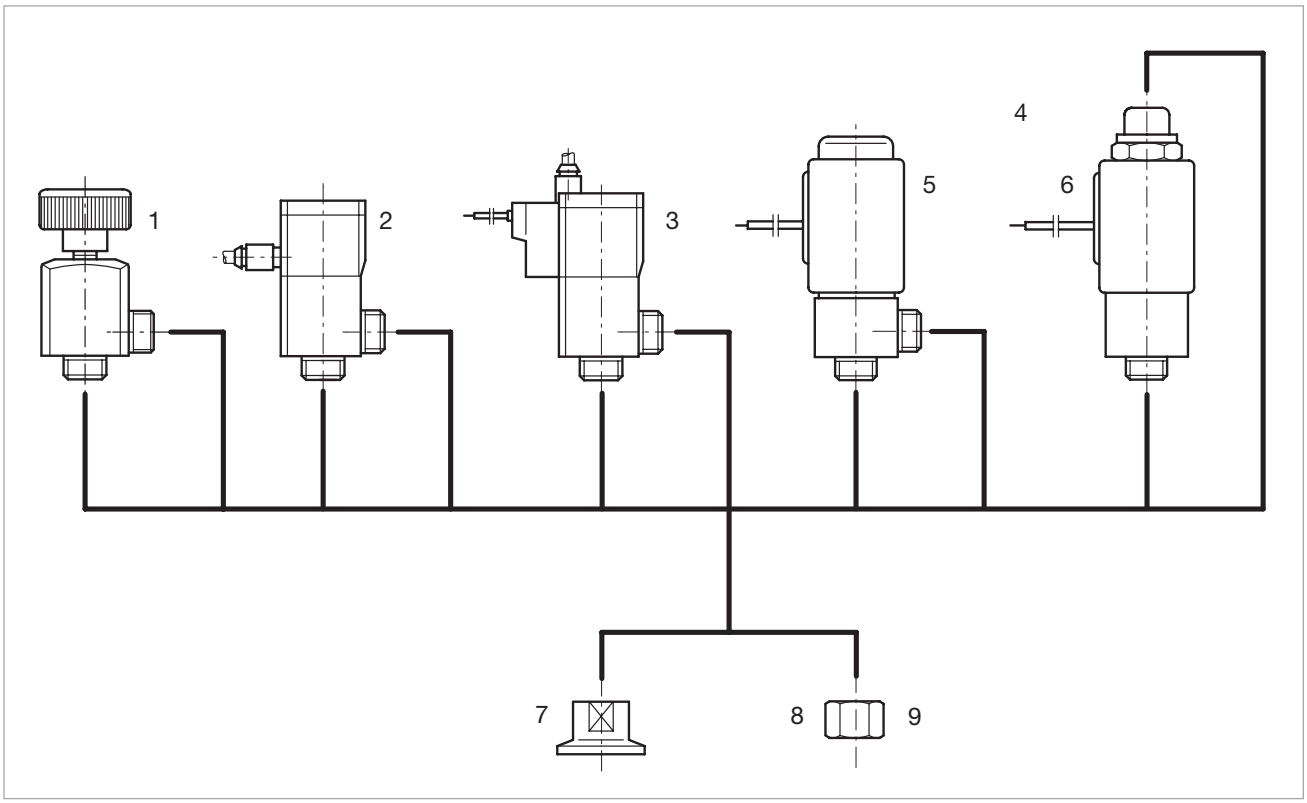
Brief Designation	Valve Type
EMD	Solenoid straight-through valve
EME	Solenoid right-angle valve
EPD	Electropneumatic straight-through valve
EPE	Electropneumatic right-angle valve
MAN	Manual operation
PD	Pneumatic straight-through valve
PE	Pneumatic right-angle valve

Notes

Products

Small Valves of the “micro” Range

Overview



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

Types of drive

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

Types of valve body

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

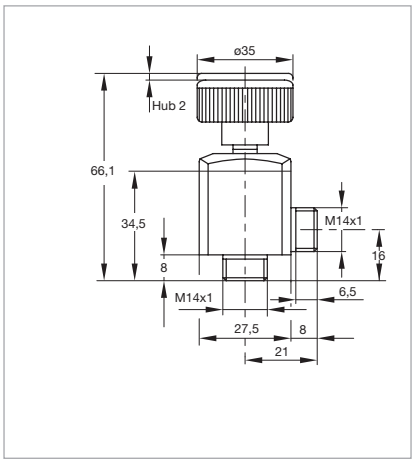
as well as adaptor

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

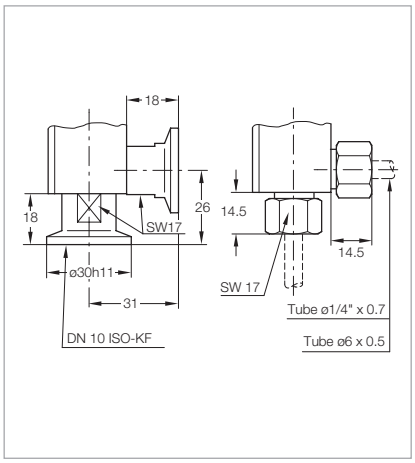
Technical Information

micro valves are supplied without adaptor.

The adaptors must be ordered additionally.

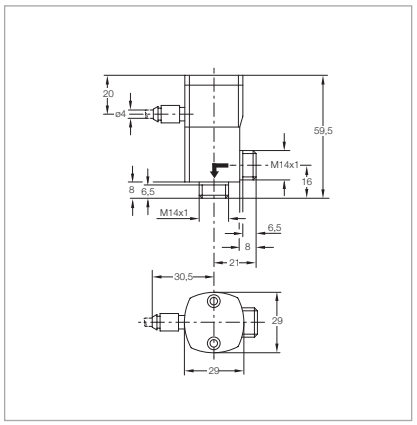


Dimensional drawing for the **micro** MAN

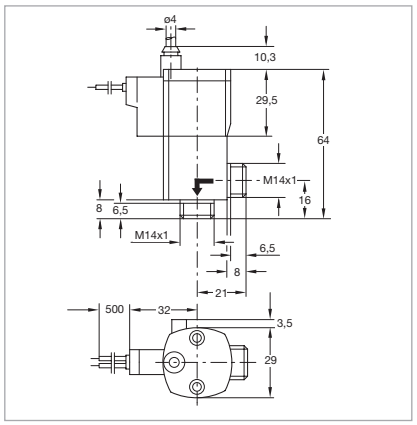


Connection dimensions for small valves **micro**

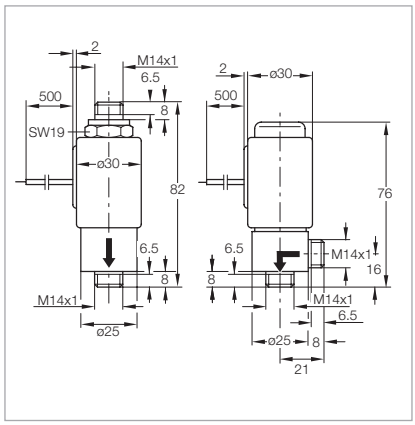
Right-Angle and Straight-Through Valves, Bellows-Sealed, Various Drives



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 (FKM)	O-rings of FPM (FKM)	O-rings of FPM (FKM)	O-rings of FPM (FKM)
Drive		aluminum/ plastic	aluminum anodized	aluminum anodized	stainless steel 1.4105

Ordering Information

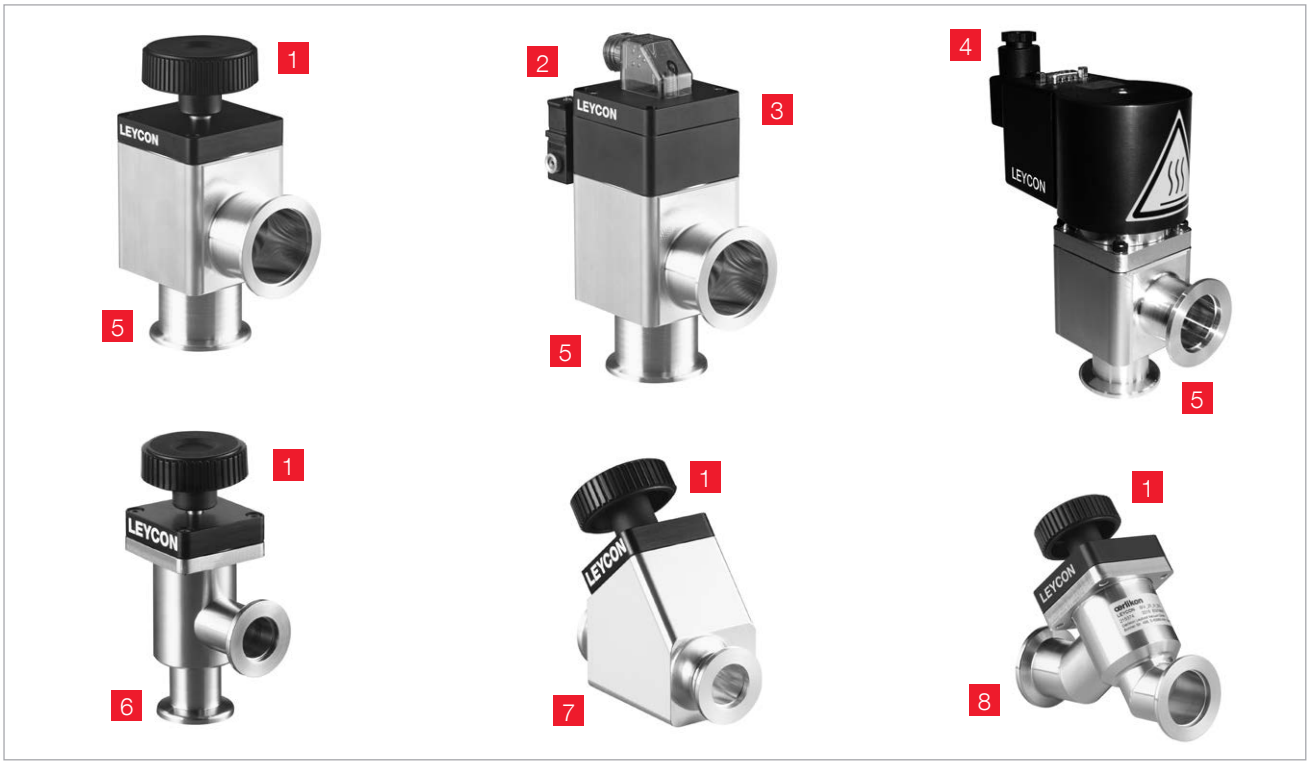
Small Valves “micro”

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

Notes

Valves with ISO-KF Flanges

Overview



Leybold 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 (without pilot valve)
- **EP** Electropneumatically actuated (with pilot valve)
- **EM** Electromagnetically 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
- Electromagnetic 4

Types of valve body

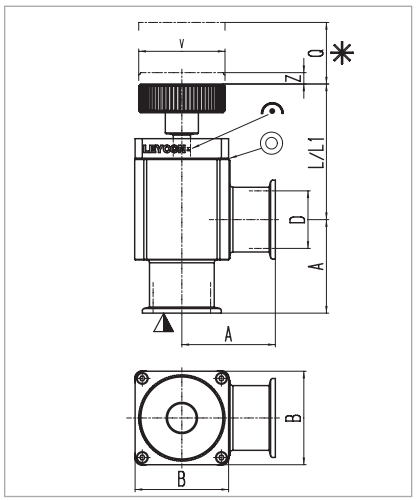
- Right-angle valve, aluminum body 5
- Right-angle valve, stainless steel body 6
- Straight-through valve, aluminum body 7
- Straight-through valve, stainless steel body 8

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 316	AISI 316
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 electropneumatic 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

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 bar and easy to open
- Installation in any orientation

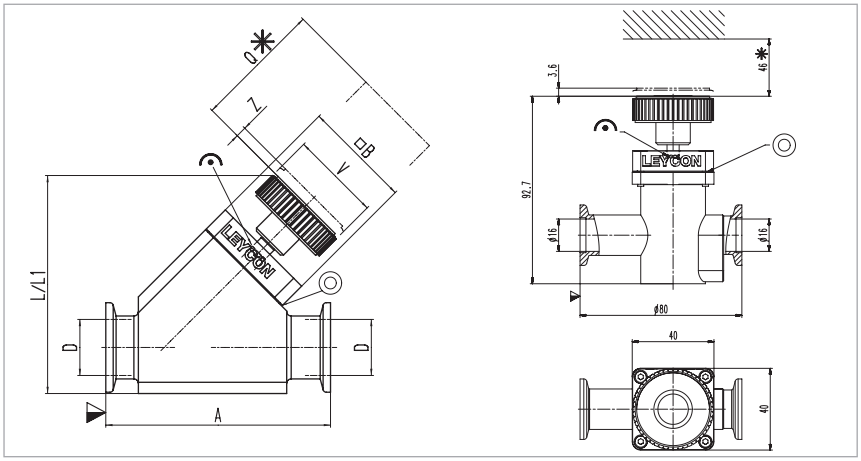
Technical Data

		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	Stainl. Steel
Service life	cycles	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
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 (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)
Weight	kg	0.3	0.3	0.4	0.5	1.0	1.1	1.4	1.5

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
	Part No.	**Part No.**	**Part No.**	**Part No.**	**Part No.**	**Part No.**	**Part No.**	**Part No.**
Right-angle valve, rotary knob								
BAV ... M AL	**215 375**	**–**	**215 376**	**–**	**215 377**	**–**	**215 378**	**–**
BAV ... M AL EPDM	**215 384 V01**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
BAV ... M SS	**–**	**215 383**	**–**	**215 385**	**–**	**215 386**	**–**	**215 387**
Spare parts								
Bellows feedthrough	**E 242 292**	**E 242 292**	**E 233 014**	**E 233 014**	**E 229 542**	**E 229 542**	**E 244 980**	**E 244 980**
Knob	**E 245 912**	**E 245 912**	**E 245 912**	**E 245 912**	**E 245 913**	**E 245 913**	**E 245 913**	**E 245 913**
Seal kit consisting of disk seal (O-ring) and head seal (O-ring)	**EK 242 324**	**EK 242 324**	**EK 241 077**	**EK 241 077**	**EK 241 079**	**EK 241 079**	**EK 245 556**	**EK 245 556**

Straight-Through Valves, Bellows-Sealed, Manually Operated



Dimensional drawing for the manually operated, bellows-sealed straight-through valves; right DN 16 ISO-KF

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 [1]	mm	90.6	97.0	143.5	167.2
L1 [2]	mm	92.8	105.8	152.5	172.1
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 bar and easy to open
- Installation in any orientation

Connection Icons

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

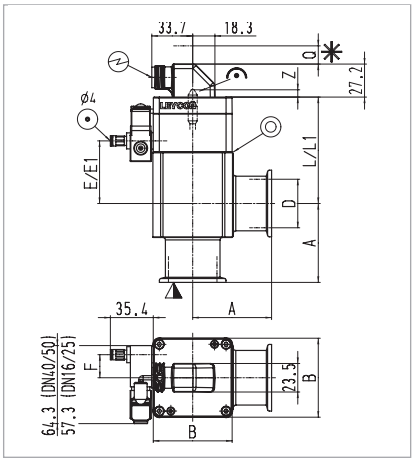
Technical Data

		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
Service life	cycles	30,000	30,000	30,000	30,000	30,000	30,000	30,000
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 (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)
Weight	kg	0.4	0.8	0.5	0.5	1.3	1.2	2.2

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
	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
Straight-through valve, rotary knob							
BAV ... M AL	215 313	–	215 388	–	215 389	–	215 390
BAV ... M SS	–	215 379	–	215 374	–	215 381	–
Spare parts							
Bellows feedthrough	E 242 292	E 242 292	E 233 014	E 233 014	E 229 542	E 229 542	E 244 980
Knob	E 245 912	E 245 912	E 245 912	E 245 912	E 245 913	E 245 913	E 245 913
Seal kit consisting of disk seal (O-ring) and head seal (O-ring)	EK 242 324	EK 242 324	EK 241 077	EK 241 077	EK 241 079	EK 241 079	EK 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	mm	2.0	4.0	9.5	10.0
E [1]	mm	35.6	30.6	51.6	58.4
E1 [2]	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

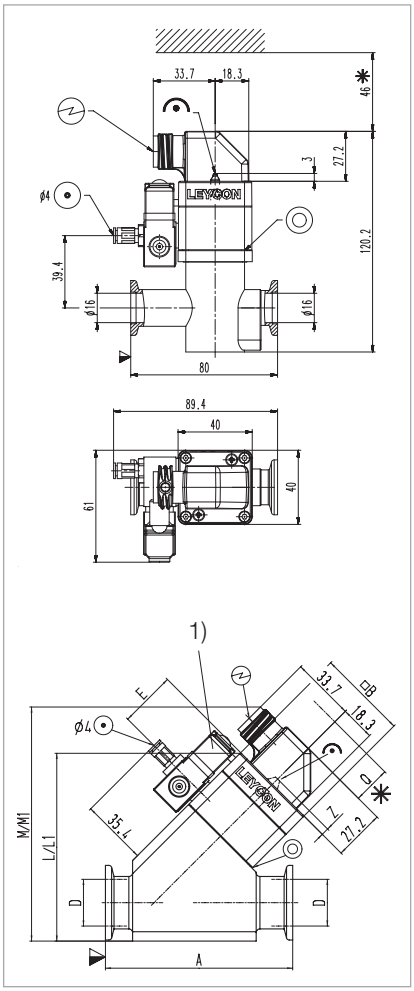
Technical Data

	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 $l \times s^{-1}$	5	5	14	14	45	45	80	80
Leak rate mbar x $l \times s^{-1}$	1×10^{-9}	1×10^{-9}	1×10^{-9}	1×10^{-9}	1×10^{-9}	1×10^{-9}	1×10^{-9}	1×10^{-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 (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)
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
Position indicator, switching capacity								
Voltage V AC / V DC	≤ 50	≤ 50	≤ 50	≤ 50	≤ 50	≤ 50	≤ 50	≤ 50
Current mA	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100
Power W	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Control valve V DC / W	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5
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	0.3	0.3	0.4	0.5	1.0	1.1	1.4	1.5

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
	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
Right-angle valves, bellows sealed								
BAV ... P AL	215 315	–	215 316	–	215 317	–	215 318	
BAV ... P SS	–	215 335	–	215 336	–	215 337	–	215 338
BAV ... EP AL 24 V AC	215 319	–	215 320	–	215 321	–	215 322	–
BAV ... EP SS 24 V AC	–	215 339	–	215 340	–	215 341	–	215 342
BAV ... EP AL 24 V DC	215 323	–	215 324	–	215 325	–	215 326	–
BAV ... EP AL 24 V DC, normally open	215 395 V01	–	215 394 V01	–	215 130	–	–	–
BAV ... EP SS 24 V DC	–	215 347	–	215 348	–	215 349	–	215 350
BAV ... EP AL 115 V AC	215 327	–	215 328	–	215 329	–	215 330	–
BAV ... EP SS 115 V AC	–	215 351	–	215 352	–	215 353	–	215 354
BAV ... EP AL 230 V AC	215 331	–	215 332	–	215 333	–	215 334	–
BAV ... EP SS 230 V AC	–	215 343	–	215 344	–	215 345	–	215 346
Spare parts								
Bellows feedthrough	E 242 292	E 242 292	E 233 014	E 233 014	E 229 542	E 229 542	E 244 980	E 244 980
Seal kit consisting of disk seal (O-ring) and head seal (O-ring)	EK 242 324	EK 242 324	EK 241 077	EK 241 077	EK 241 079	EK 241 079	EK 245 556	EK 245 556
Mating plug (included with the valve)	599998003	599998003	599998003	599998003	599998003	599998003	599998003	599998003

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



Dimensional drawing
for the straight-through valves
with fitted pilot valve (EP)
without pilot valve (P)
(on top DN 16 ISO-KF, stainless steel)
[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

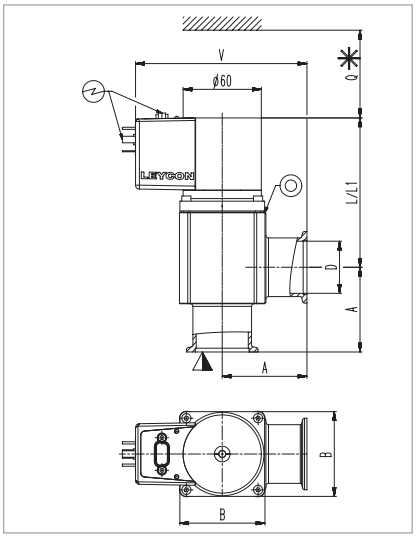
Technical Data

		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}	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 (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)	FPM (FKM)
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
Position indicator, switching capacity								
Voltage	V AC / V DC	≤ 50	≤ 50	≤ 50	≤ 50	≤ 50	≤ 50	≤ 50
Current	mA	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100
Power	W	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Pilot valve	V DC / W	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5	24 / 2.5
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	l	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	0.3	0.8	0.5	0.5	1.3	1.2	2.2

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
	Part No.	**Part No.**	**Part No.**	**Part No.**	**Part No.**	**Part No.**	**Part No.**
Straight-through valve, bellows sealed							
BIV ... P SS	–	**215 355**	–	**215 356**	–	**215 357**	–
BIV ... EP SS 24 V AC	–	**215 359**	–	**215 360**	–	**215 361**	–
BIV ... EP AL 24 V DC	**215 314**	–	**215 391**	–	**215 392**	–	**215 393**
BIV ... EP SS 24 V DC	–	**215 367**	–	**215 368**	–	**215 369**	–
BIV ... EP SS 115 V AC	–	**215 371**	–	**215 372**	–	**215 373**	–
BIV ... EP SS 230 V AC	–	**215 363**	–	**215 364**	–	**215 365**	–
Spare parts							
Bellows feedthrough	**E 242 292**	**E 242 292**	**E 233 014**	**E 233 014**	**E 229 542**	**E 229 542**	**E 244 980**
Seal kit consisting of disk seal (O-ring) and head seal (O-ring)	**EK 242 324**	**EK 242 324**	**EK 241 077**	**EK 241 077**	**EK 241 079**	**EK 241 079**	**EK 245 556**
Mating plug (included with the valve)	**599998003**	**599998003**	**599998003**	**599998003**	**599998003**	**599998003**	**599998003**

Right-Angle Valves, Electromagnetically Operated



Dimensional drawing for the electromagnetically operated right-angle valves

Dimension Table

DN	ISO-KF	16	25	40
A	mm	40	50	65
B	mm	40	48	65
D	mm	16	25	40
L	mm	100	93	114
L1	mm	102.5	103.4	117.0
Q	mm	46.0	44.0	73.5
V	mm	106.5	116.5	131.5

Connection Icons

- Side of the valve seat
- Required clearance
- Leak detection bore
- Electrical connection

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.

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 (orange LED)
- Integrated electrically floating position indicator (opto-coupler for 48 V DC)
- Optical error indicator (LEDs flash)
- Protection class IP 40
- Spring action closure, thus closed when the power fails
- Low operating temperature
- 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	200,000	200,000	200,000
Conductance at molecular flow	l x s^{-1}	5	14	45
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} to 2 bar	10^{-8} to 2 bar	10^{-8} to 2 bar
Differential pressure, closing and opening direction	bar	≤ 2	≤ 2	≤ 2
Ambient / operating temperature, min. / max.	°C	0 to +50	0 to +50	0 to +50
Opening / closing time	s	0.2	0.2	0.2
Switching frequency	1/min	15	15	15
at ambient temperature	°C	20	20	20
Rating, max.	V AC / V DC	48	48	48
Rating for the valve position indicator, max.	mA	500	500	500
Power consumption, max.				
Actuation	W	700 (~100 ms)	700 (~100 ms)	700 (~100 ms)
Hold	W	10	10	10
Supply voltage, max.	V AC	100 - 115 / 200 - 240	100 - 115 / 200 - 240	100 - 115 / 200 - 240
Frequency	Hz	50/60	50/60	50/60
Protection class	IP	40	40	40
Weight	kg	1.3	1.5	1.8

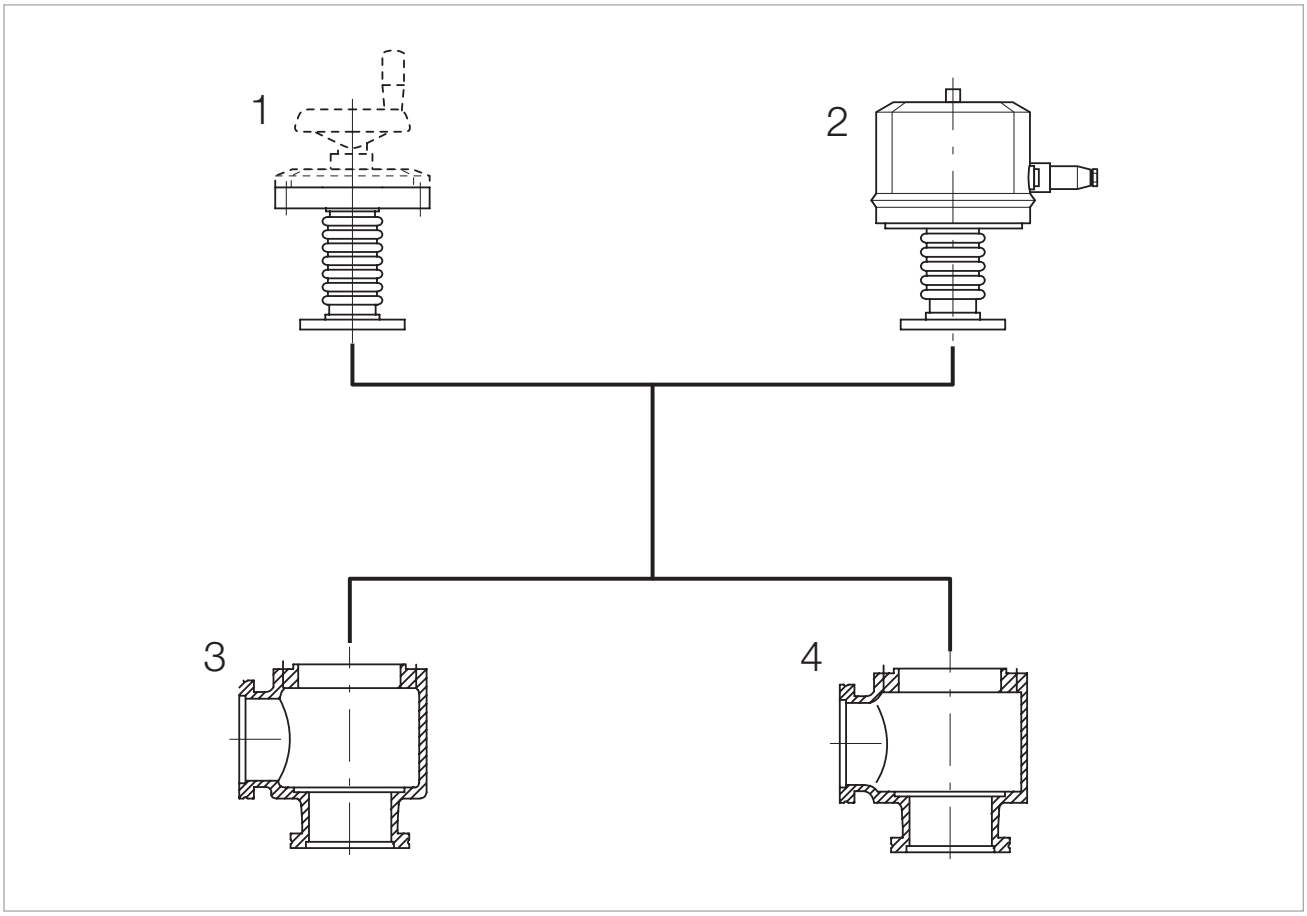
Ordering Information

	DN 16 ISO-KF		DN 25 ISO-KF	DN 40 ISO-KF
	Part No.		Part No.	Part No.
Right-angle valve, bellows-sealed, electromagnetic actuator, microprocessor controlled	**Aluminum**	**Stainless steel**		
BAV ... EM AL				
100-120 V, 50/60 Hz	**215 004 V02**	-	**215 064 V02**	**215 124 V02**
200-240 V, 50/60 Hz	**215 004 V01**	-	**215 064 V01**	**215 124 V01**
BAV ... EM SS				
100-120 V, 50/60 Hz	-	**215 006 V02**	**215 079 V02**	**215 134 V02**
200-240 V, 50/60 Hz	-	**215 006 V01**	**215 079 V01**	**215 134 V01**
Spare parts				
Seal kit	**EK 396 788**		**EK 388 499**	**EK 388 450**

Notes

Right-Angle Valves with ISO-K Flanges

Overview



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

Types of drive

- Handwheel **(1)**
- Electropneumatic drive **(2)**

Body types

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

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.
Nominal width DN 100 ISO-K only with pneumatic or electropneumatic drive.

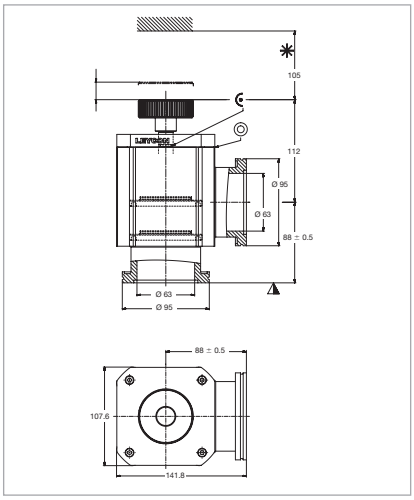
Advantages to the User

- Full exchangeability of the subassemblies
- Two 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, dimensions in mm

The universal valves are particularly well suited for systems where remote control is not mandatory. Moreover, the valves may be used for maintenance purposes in connection with backing pumps or condensate separators.

Advantages to the User

- Removable handle
- Modular design
- Rugged and compact
- Easy to clean
- 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

Service life	**cycles**	3 millions
Conductance at molecular flow	**l x s^{-1}**	160
Leak rate	**mbar x l x s^{-1}**	1 x 10^{-9}
Operating pressure range	**mbar**	1 x 10^{-8} to 5000 (abs.)
Differential pressure, closing and opening direction	**bar**	≤ 5 / ≤ 2
Opening against differential pressure	**bar**	< 1 in both directions
Ambient / Operating temperature, max.	**°C**	80
Seal		FKM (Viton)
Weight		
Aluminum body	**kg**	2.9
Stainless steel body	**kg**	2.8
Material		
Valve body		aluminum (AlMgSi) or stainless steel AISI 304 (1.4301, 1.4305)
Disk		stainless steel AISI 316L (1.4404,1.4435)
Bellows		stainless steel AISI 316L (1.4404,1.4435), 316 Ti (1.4571)

Ordering Information

DN 63 ISO-K

	Part No.
Right-angle valve, bellows-sealed, manually operated	
Aluminum body	**107 80 V01**
Stainless steel body	**107 83 V01**
Spare parts	
Seal kit	**EK 357 196**
Bellows feedthrough	**EK 248 442**

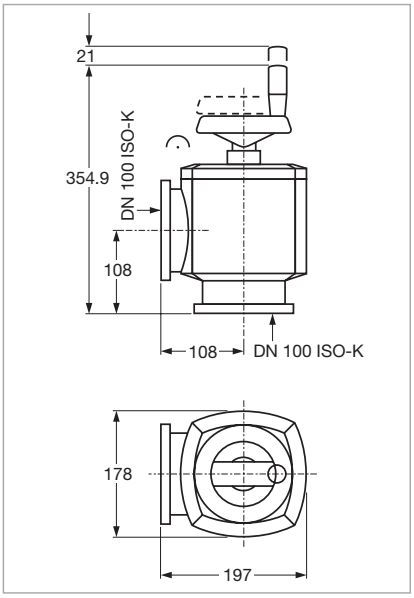
Right-Angle Valves, Bellows-Sealed, Manually Operated

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.

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



Dimensional drawing (all dimensions in mm)

Technical Data — DN 100 ISO-K

Service life	cycles	10.000
Conductance at molecular flow	l x s^{-1}	330
Leak rate	mbar x l x s^{-1}	1 x 10^{-9}
Operating pressure range	mbar	10^{-8} - 1500
Differential pressure, closing and opening direction	bar	1.5
Opening against differential pressure at the valve disk	bar	1.5
Ambient / Operating temperature, max.	°C	60
Seal		FPM (FKM)
Weight		
Aluminum body	kg	6.0
Stainless steel body	kg	6,5
Material		
Valve body		aluminum alloy (3.2373.63) or stainless steel (1.4305)
Inside section		stainless steel (1.4541/1.4301)
Lid		grey cast iron (GG 20)
Gasket		O-rings made of FPM (FKM)

Ordering Information — DN 100 ISO-K

	Part No.
Right-angle valve, bellows-sealed, manually operated	
Aluminum body	**107 81**
Stainless steel body	**107 84**
Spare parts	
Seal kit	**ES 215 271**
Inside section	**215 274**

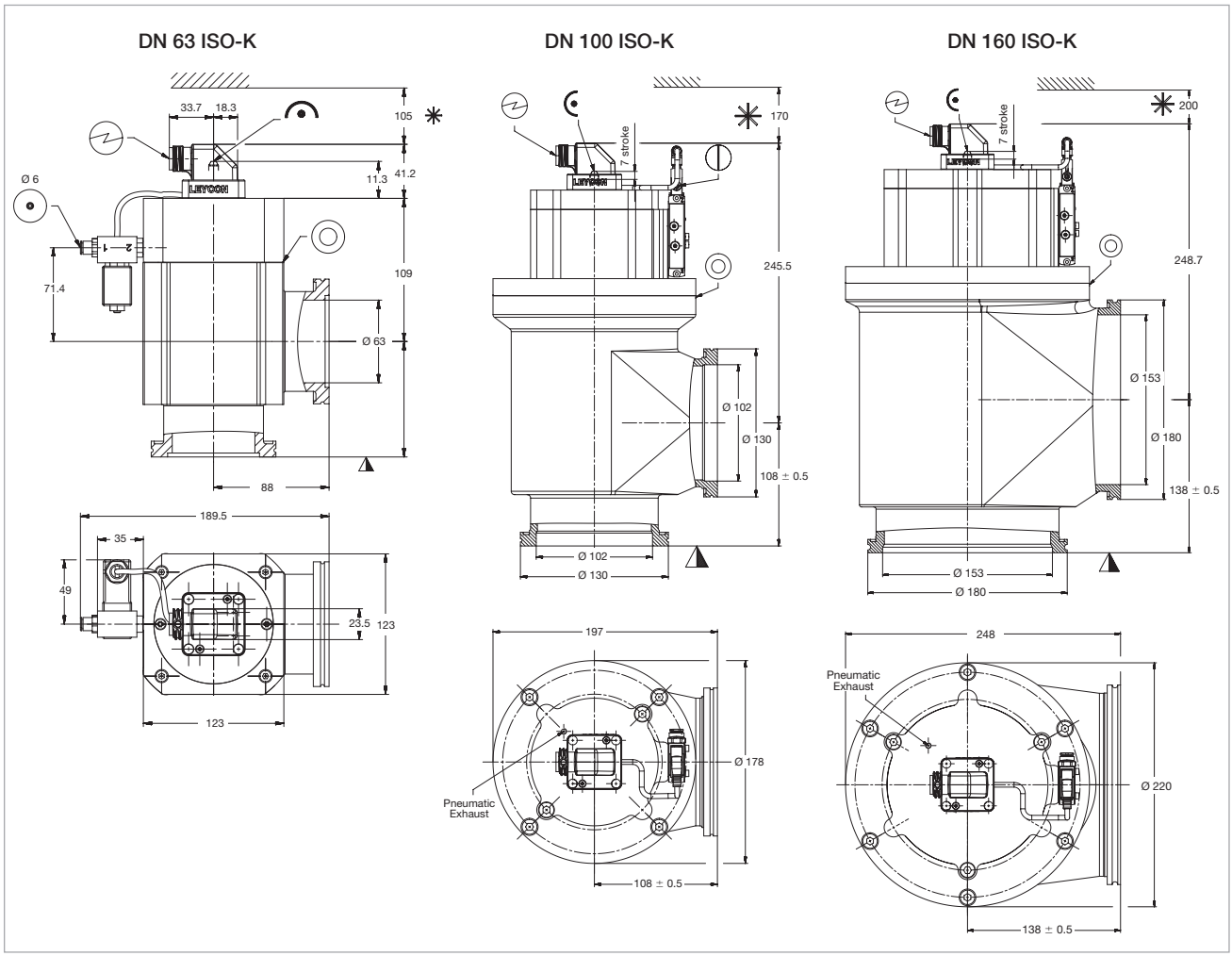
Right-Angle Valves, Bellows-Sealed, Electropneumatically Operated

Electropneumatically actuated right-angle valves, bellows sealed, stainless steel, DN 100 ISO-K (left), aluminum DN 160 ISO-K (right)

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

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 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



Dimensional drawing (all dimensions in mm)

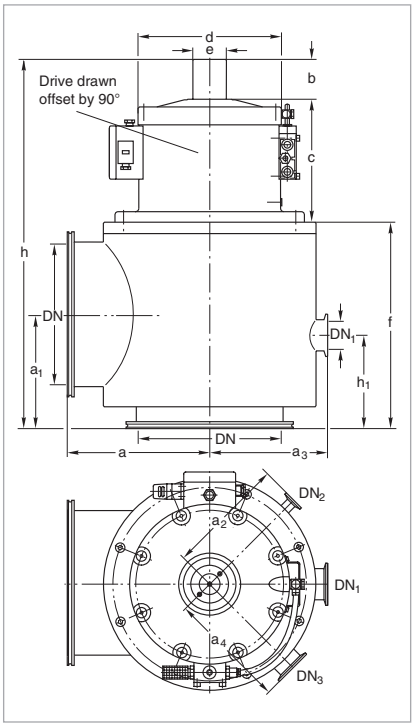
Technical Data

		DN 63 ISO-K	DN 100 ISO-K	DN 160 ISO-K
Service life	cycles	1 mio.	1 mio.	1 mio.
Conductance for molecular flow	l x s^{-1}	160	440	1000
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} - 5000 (abs.)	1 x 10^{-8} - 2000 (abs.)	1 x 10^{-8} - 2000 (abs.)
Differential pressure, closing / opening direction	bar	≤ 4 / ≤ 1.2	≤ 2 / ≤ 1.2	≤ 2 / ≤ 1.2
Opening against differential pressure at the valve disk	bar	≤ 1	≤ 1	≤ 1
Ambient / operating temperature, max.	°C	80	80	80
Seal		FKM (Viton)	FKM (Viton)	FKM (Viton))
Closing time / opening time	s	≤ 1	≤ 1	≤ 1,5
Switching frequency	1/min	≤ 30	≤ 30	≤ 20
Position indicator, rating	V AC / DC mA	≤ 50 5 - 100	≤ 50 5 - 100	≤ 50 5 - 100
Compressed air, overpressure	bar	4 to 8	4.5 to 7	4.5 to 7
Compressed air volume	cm^3	112	330	650
Compressed air connection	mm	6	6	6
Weight with pilot valve Aluminum housing Stainless steel housing	 kg kg	 3.9 3.7	 9 9	 14 -

Ordering Information

	DN 63 ISO-K	DN 100 ISO-K	DN 160 ISO-K
	Part No.	**Part No.**	**Part No.**
Right-angle valve, bellows-sealed, electropneumatic drive without pilot valve Aluminum body Stainless steel body	 **107 90 V01** **107 93 V01**	 **107 91 V01** **107 94 V01**	 **107 92 V01** **–**
Valve with pilot valve 24 V DC Aluminum body Stainless steel body	 **108 00 V01** **108 10 V01**	 **108 01 V01** **108 11 V01**	 **108 02 V01** **–**
Valve with pilot valve 24 V AC Aluminum body Stainless steel body	 **108 03 V01** **108 13 V01**	 **108 04 V01** **108 14 V01**	 **108 05 V01** **–**
Valve with pilot valve 100 - 115 V AC Aluminum body Stainless steel body	 **108 20 V01** **–**	 **108 21 V01** **–**	 **108 22 V01** **–**
Valve with pilot valve 200 - 240 V AC Aluminum body Stainless steel body	 **108 25 V01** **108 35 V01**	 **108 26 V01** **108 36 V01**	 **108 27 V01** **–**
Spare parts Seal kit Bellows feedthrough	 **EK 357 196** **E 248 442**	 **ES 215 271** **E 215 273**	 **ES 215 291** **E 215 293**
Mating plug (included with the valve)	**599998003**	**599998003**	**599998003**

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 Catalog Part "Vacuum - measuring,controlling")

Technical Data

DN 250 ISO-K

Service life, vertical	cycles, approx.	1×10^6
Conductance at molecular flow	$l \times s^{-1}$	2700
Leak rate	$mbar \times l \times s^{-1}$	1×10^{-9}
Opening / closing time, at 6 bar compressed 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 chapter “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 (FKM)
Lid		aluminum (3.2341)
Hood		plastic (PA 6)

Ordering Information

DN 250 ISO-K

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

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

Y = Part Nos. see chapter “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

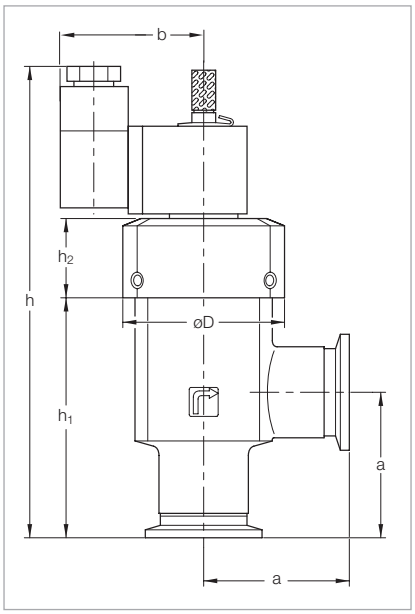
Leybold offers a range of special valves for a variety of different applications and to meet special design requirements of customers.

Among these are:

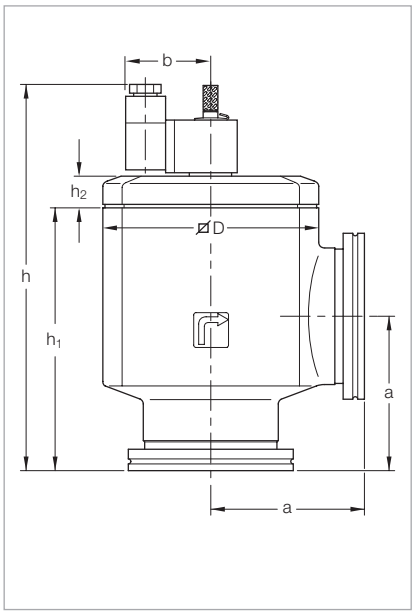
- SECUVAC vacuum safety valves (DN 16 ISO-KF to DN 100 ISO-K) 1
- Venting Valves 2
- Power failure venting valves 3
- Vacuum Locks 4
- Sealing Valves 4
- Variable leak valves 5
- Ball Valves 6

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 Special Valves (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 Special Valves (ISO-KF)

	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 in-take 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	SECUVAC Valve DN 25 ISO-KF	SECUVAC Valve 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				
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 (FKM)	FPM (FKM)	FPM (FKM)

Technical Data

		SECUVAC Valve DN 63 ISO-K	SECUVAC Valve 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			
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 (FKM)	FPM (FKM)

Ordering Information

SECUVAC Valve

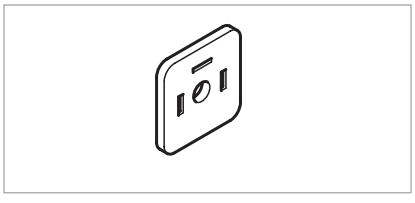
	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
	Part No.	Part No.	Part No.
SECUVAC valve			
24 V DC	215 015	215 065	215 135
100 - 115 V AC	215 016	215 066	215 136
200 - 230 V AC	215 017	215 067	215 137
Spare parts			
Seal kit	E 105 02	E 105 04	E 105 05
Solenoid coils for SECUVAC valves and power failure venting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

Ordering Information

SECUVAC Valve

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

Interference Suppression Kit - Illuminated



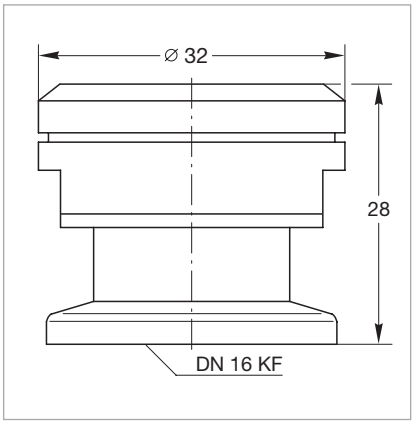
As an option for the solenoid coil, an interference suppression kit is offered which reliably prevents any interferences from affecting other equipment operating in the vicinity.

Ordering Information

Interference Suppression Kit

	Part No.
Interference suppression kit 24 V DC	104 96

Pressure Relief Valve



Dimensional drawing for the pressure relief 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

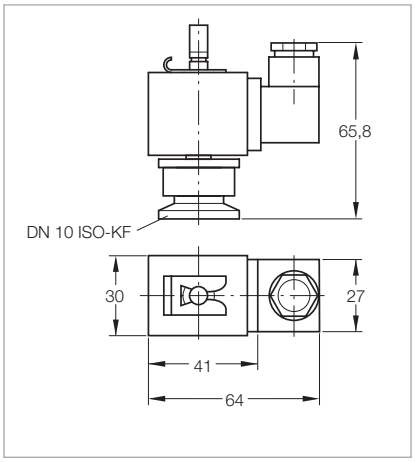
Technical Data — Pressure Relief Valve

Responding pressure	**mbar**	1150 ±40
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 — Pressure Relief Valve

	Part No.
Pressure Relief Valve on DN 16 ISO-KF flange	**890 39**

Power Failure Venting Valves, Electromagnetically Actuated



Dimensional drawing for the power failure venting valve

Power failure venting valves are open when de-energized 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

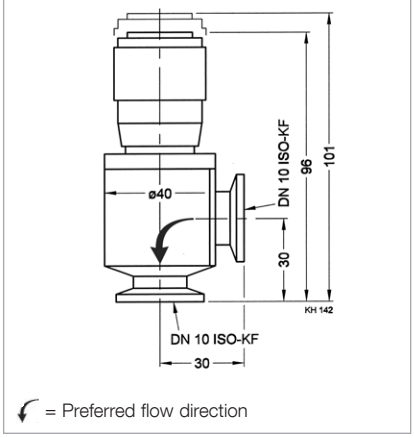
		Power Failure Venting Valves electromagnetically actuated
Leak tightness	mbar x l x s^{-1}	< 1 x 10^{-7}
Venting time for a 50 l vessel	s	270
Opening time / closing time [1]	ms	30 / 30
Protection class to DIN 40 050	IP	65
Permissible ambient temperature	°C	50
Weight	kg	0.1
Dimensions (W x H x D)	mm	64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

Ordering Information

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

[1] At a differential pressure V_p = 0 bar

Coarse Variable Leak Valve without Isolation Valve

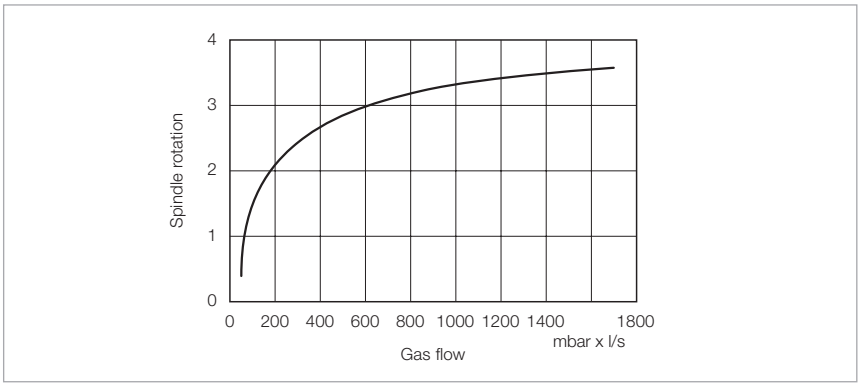


Dimensional drawing for the coarse variable leak valve without isolation valve

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

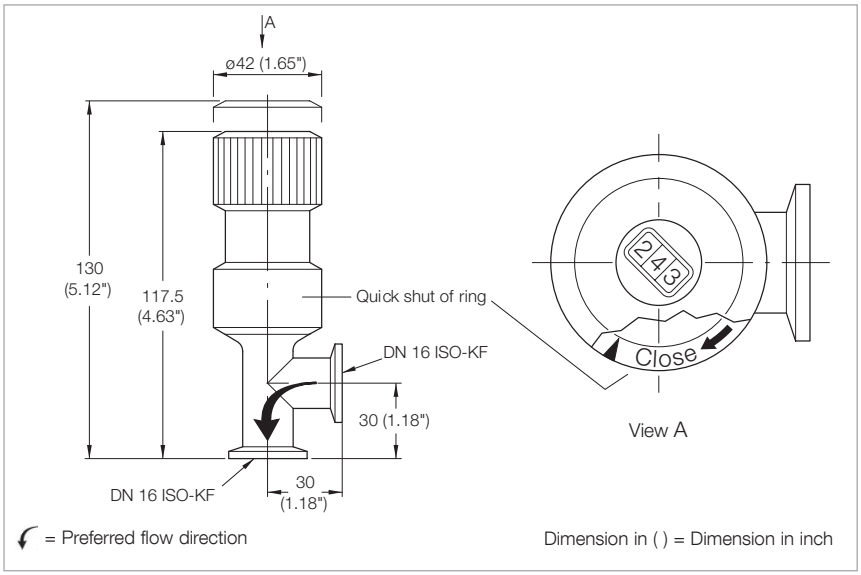
Technical Data

		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^{-8}
Differential pressure	bar	3
Bake out temperature, housing	°C	100
Material (housing / valve disk)		aluminum / stainless steel
Seal		FPM (FKM)
Weight	kg	0.2

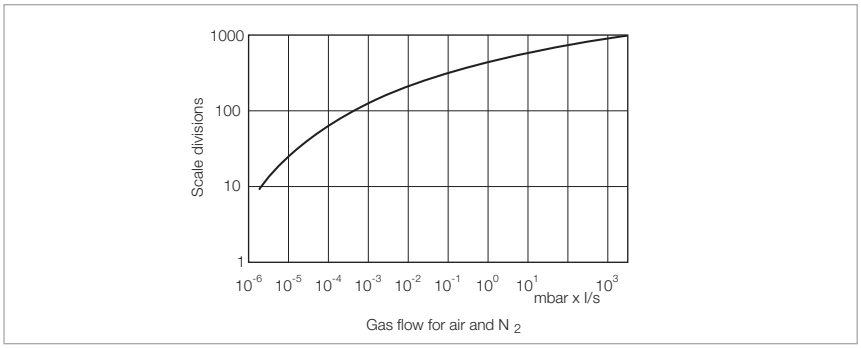
Ordering Information

	Coarse Variable Leak Valve without Isolation Valve Part No.
Coarse variable leak valve without isolation valve, DN 10 ISO-KF	**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 digital display, the opening point may be accurately set at any time or a certain gas flow may be defined
- Blocking valve

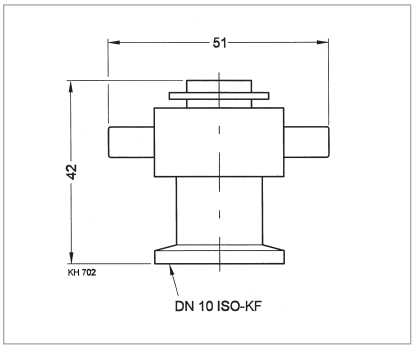
Technical Data

		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 (FKM)
Weight	kg	0.4

Ordering Information

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

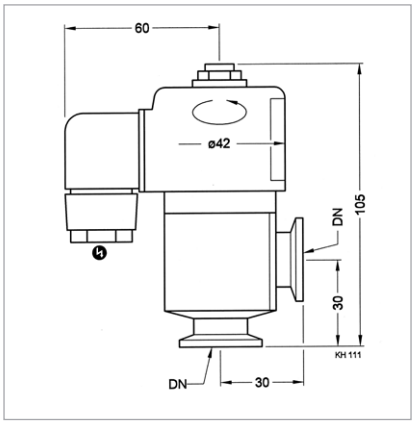
Technical Data

		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 (FKM)
Screw cap		brass (nickel-plated)

Ordering Information

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

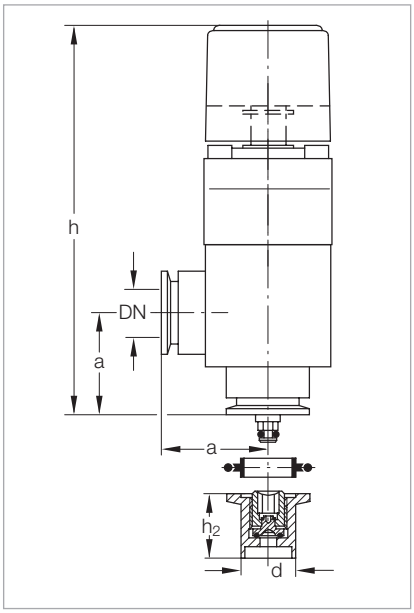
Technical Data

		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	5 / 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 (FKM)

Ordering Information

	Venting Valve electromagnetically actuated Part No.
Venting valve DN 10 ISO-KF, electromagnetically actuated 24 V DC 230 V AC	 **215 021** **215 024**
Centering ring with sintered metal filter, DN 10 ISO-KF	**883 50**

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 Leybold
- 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

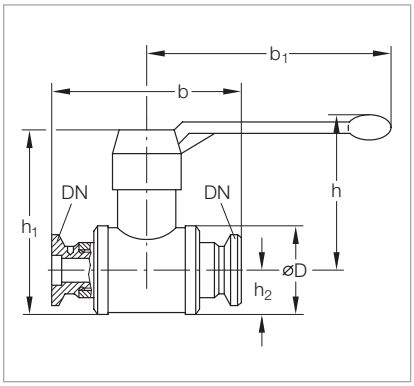
		DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Leak rate				
Sealing valve	mbar x l x s^{-1}	1 x 10^{-7}	1 x 10^{-7}	1 x 10^{-7}
Vacuum lock	mbar x l x s^{-1}	1 x 10^{-9}	1 x 10^{-9}	1 x 10^{-9}
Travel for the vacuum lock	mm	56	76	108
Free passage in the sealing valve	mm	3	8	18
Absolute pressure	bar	2.5	2.5	2.5
Weight				
Vacuum lock	kg	0.35	1.0	1.8
Sealing valve	kg	0.04	0.1	0.12
Material				
Vacuum lock		aluminum	aluminum	aluminum
Seal		FPM (FKM)	FPM (FKM)	FPM (FKM)

Ordering Information

Vacuum Lock / Sealing Valve

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

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)

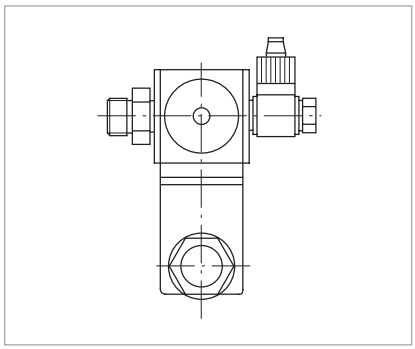
Ordering Information

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

Notes

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, adaptor 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)

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

Ordering Information

Spare Pilot Valve for ISO-K valves from DN 250 without coil

	Part No.
Spare pilot valve for DN 250 ISO-K to DN 630 ISO-K	**E 200 07 927**

Interference Suppression Kit – Illuminated

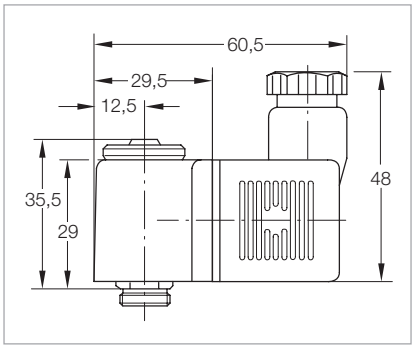
As an option for the solenoid coil and the pilot valves an interference suppression kit is offered so as to reliably prevent any pick-up of interference by sensitive equipment in the vicinity of the solenoid coils.

Ordering Information

Interference Suppression Kit for different voltages

	Part No.
Interference Suppression Kit 110 V AC	**upon request**

Solenoid Coils for DN 250 ISO-K



Dimensional drawing for the solenoid coils

Leybold 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

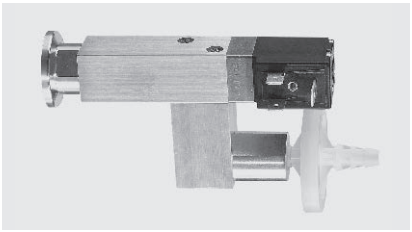
Ordering Information

Solenoid Coils for Pilot Valves

	Part No.
Solenoid coils for pilot valves	
230 V AC / 50/60 Hz	**E 280 77**
110 - 120 V AC / 50/60 Hz	**upon request**
24 V AC / 50/60 Hz	**E 280 79**
24 V DC	**E 280 80**

Special Valves for Turbomolecular Pumps

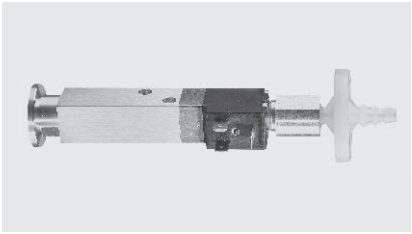
Solenoid Venting Valve



Technical Data		Venting Valve
Drive voltage	V DC	24
Power consumption	W	4
Connecting flange	DN	16 ISO-KF
Weight, approx.	kg (lbs)	0.3 (0.66)

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

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 (lbs)	0.3 (0.66)

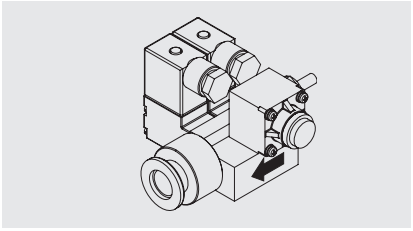
Ordering Information	Power Failure Venting Valve
	Part No.
Power failure venting valve, normally open	**800120V0021**

Purge Gas and Venting Valve

Technical Data		Purge Gas and Venting Valve
Connecting flange	DN	10 ISO-KF
Weight, approx.	kg (lbs)	0.7 (1.55)

Ordering Information	Purge Gas and Venting Valve
	Part No.
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)	 **855 19** **855 29**

Purge Gas and Venting Valve



Technical Data		Purge Gas and Venting Valve
Connecting flange Inlet Outlet		 1/4" tube pump specific or DN 16 ISO-KF
Purge gas pressure, abs.	bar	1.5 to 6,0
Weight, approx.	kg (lbs)	0.5 (1.1)

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

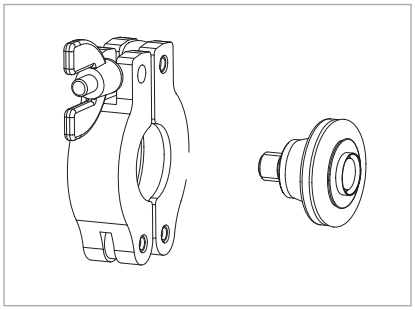
Further 0.6 mbar x l x s^{-1} valves upon request

Purge Gas and Venting Valve for ClassicLine and SL Pumps

Technical Data		Purge Gas and Venting Valve
Connecting flange		
Pump side	DN	10 ISO-KF
Gas connection	G	1/4"
Seal gas pressure, abs.	bar	1
Weight, approx.	kg (lbs)	0.3 (0.66)

Ordering Information	Purge Gas and Venting Valve
	Part No.
Purge gas and venting valve at 1 bar	
0.2 mbar x l x s^{-1} (12 sccm), 24 V DC	**113 50**
0.2 mbar x l x s^{-1} (12 sccm), 110 - 115 V DC	**800152V0041**
0.2 mbar x l x s^{-1} (12 sccm), 230 V DC	**800152V0019**
0.4 mbar x l x s^{-1} (24 sccm), 24 V DC	**800152V0013**
0.4 mbar x l x s^{-1} (24 sccm), 110 - 115 V DC	**800152V0042**
0.4 mbar x l x s^{-1} (24 sccm), 230 V DC	**800152V0014**
0.6 mbar x l x s^{-1} (36 sccm), 24 V DC	**800152V0012**
0.6 mbar x l x s^{-1} (36 sccm), 110 - 115 V DC	**800152V0043**
0.6 mbar x l x s^{-1} (36 sccm), 230 V DC	**800152V0040**

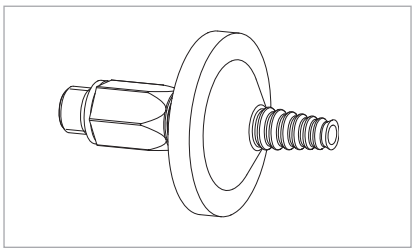
Adaptor Set for Seal Gas and Venting Valve for the SL pumps



Technical Data	Adaptor Set
Pump flange adaptor M8/DN 10 ISO-KF including adaptor centering ring DN 10/DN 16 ISO-KF with sinter filter insert and clamping ring	

Ordering Information	Adaptor Set
	Part No.
Adaptor set for purge gas and venting valve	**800110V0011**

Gas Filter to G 1/4" for Purge Gas and Venting Valve



Technical Data	Gas Filter
Gas filter including fitting G 1/4" and 2 gaskets	

Ordering Information	Gas Filter
	Part No.
Gas filter to G 1/4" for seal gas and venting valve	**800110V0012**
Replacement filter for gas filter to G 1/4" for seal gas and venting valve	**E 200 18 515**

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.

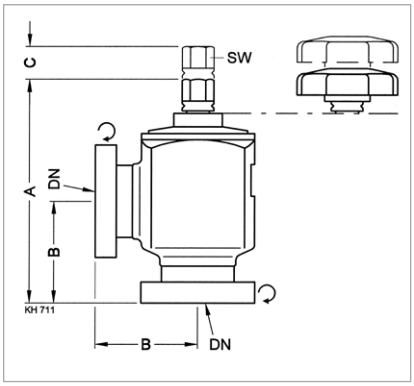
A very high leak tightness achieved, even with a low closing force.

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

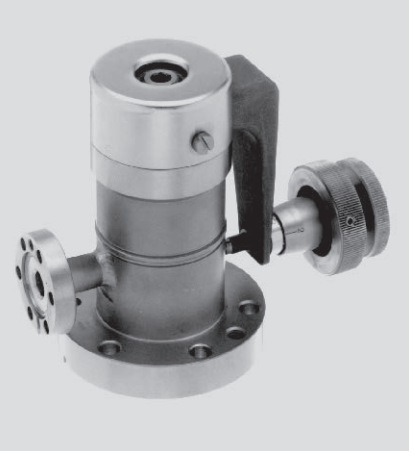
		UHV All-Metal Right-Angle Valves, with Rotatable Flanges on Both Sides		
DN	**CF**	16	40	63
Connection flange rotatable	**DN**	16 CF-R	40 CF-R	63 CF-R
Service life	**cycles**	1000	1000	1000
Conductance for molecular flow	**l/ s**	3	38	100
Pressure, absolute				
min.	**mbar**	1×10^{-11}	1×10^{-11}	1×10^{-11}
max.	**bar**	4	4	4
Mounting orientation	**mm**	any	any	any
Bake out temperature without handwheel	**°C**	350	350	350
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

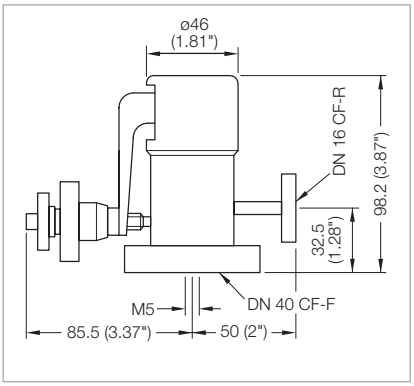
Ordering information

	UHV All-Metal Right-Angle Valves, with Rotatable Flanges on Both Sides		
	Part No.	**Part No.**	**Part No.**
UHV all-metal right-angle valves	**289 80**	**289 81**	**289 82**
Spare valve disk, 2 pieces	**215 410**	**–**	**–**
Spare hand wheel, plastic	**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

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

Notes

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

Overview

1 Miniature UHV gate valves, ISO-KF flange

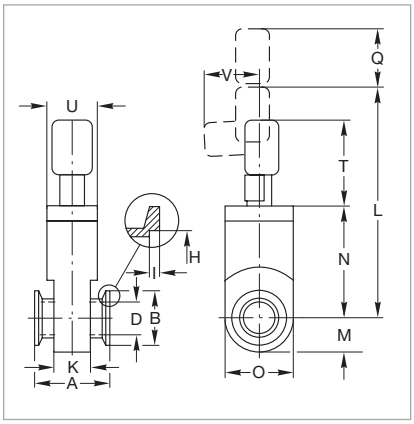
2 Miniature UHV gate valves, CF flange

3 UHV gate valves

4 HV gate valves

For the precise installation dimensions, please refer to the product's Operating Instructions.

Miniature 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				
T	mm	25	35	55
U	mm	37	50	85
V	mm	25	32	40
	mm	30	30	50

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

Technical Data

Miniature Gate Valve

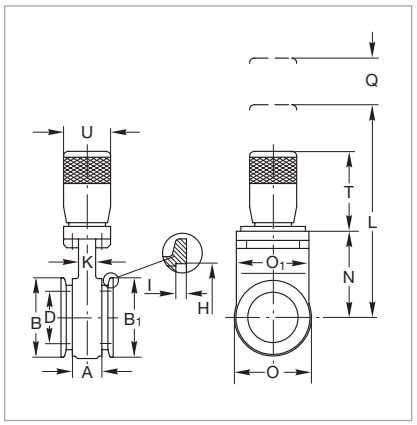
	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
Tightness			
Body mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Valve seat mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.	1 x 10^{-7} mbar to 2 bar	1 x 10^{-7} mbar to 2 bar	1 x 10^{-7} mbar to 2 bar
High vacuum conductance l x s^{-1}	10	34	140
Differential pressure at the valve gate 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 gate	AISI 301 (1.4310)	AISI 301 (1.4310)	AISI 301 (1.4310)
Seal (head, gate)	Viton/Viton	Viton/Viton	Viton/Viton

Ordering Information

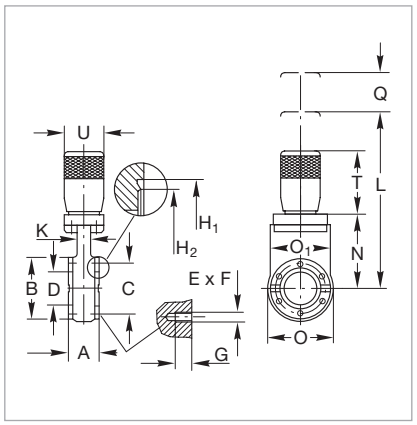
Miniature Gate Valve

	DN 16 ISO-KF	DN 25 ISO-KF	DN 40 ISO-KF
	Part No.	**Part No.**	**Part No.**
Miniature gate valve, manually operated, articulated lever	**286 06**	**286 08**	**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 feedthrough
- Valve technology with only one moving part
- Equipped with a mechanical position indicator
- Low particle generating and vibration free actuation
- Compact 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

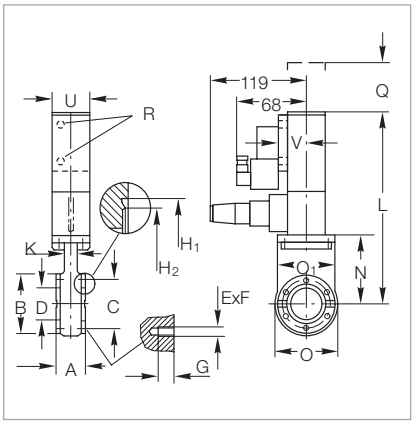
		Miniature UHV Gate Valve	
		DN 40 ISO-KF	DN 40 CF
Tightness			
Body	mbar x l x s^{-1}	< 5 x 10^{-10}	< 5 x 10^{-10}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-10} mbar to 2 bar	1 x 10^{-10} mbar to 2 bar
High vacuum conductance	l x s^{-1}	160	220
Differential pressure at the valve gate	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 gate		AISI 304 (1.4301)	AISI 304 (1.4301)
Bellows		AISI 316 L (1.4435)	AISI 316 L (1.4435)
Seal (head, gate)		Viton/Viton	Viton/Viton

Ordering Information

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

Dimension Table

	DN	40 ISO-KF	40 CF
A	mm	51	35
B	mm	55	72
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	31	16
L	mm	196	230
M	mm	32.5	–
N	mm	88	82
O	mm	65	76
O_1	mm	–	70
Q	mm	55	55
T	mm	–	73
U	mm	40	45
V	mm	65	32.5
W	mm	61	–
W_1	mm	50	–

Advantages to the User

- Double-acting electropneumatic actuator (with position indicator and pilot valve); bellows-sealed 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 design

Technical Data

Miniature UHV Gate Valve

		DN 40 ISO-KF (Stainless Steel)	DN 40 CF (Stainless Steel)
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 gate	bar	≤ 2 in both directions	≤ 2 in both directions
Max. differential pressure			
during opening	mbar	≤ 30	≤ 30
at reduced service live	bar	1	1
Service life until first maintenance	cycles	50,000	50,000
Degassing temperature			
valve open / closed	°C	≤ 250 / 200	≤ 250 / 200
pneumatic actuation	°C	≤ 200	≤ 200
position indicator / pilot valve	°C	80 / 50	80 / 50
Warming-up and cooling down speed	°C x h^{-1}	50	50
Compressed air, min. / max.	bar	4.5 / 7.0	4.5 / 7.0
Closing / opening time	s	0.7	0.7
Pilot valve			
supply voltage / power consumption		24 V DC / 6 W or 230 V AC, 50/60 Hz / 2 W	24 V DC / 6 W or 230 V AC, 50/60 Hz / 2 W
Switching capacity of 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
Installation orientation		any	any
Weight	kg	1.8	1.8
Material			
Valve body		AISI 304 (1.4301)	AISI 304 (1.4301)
Gate		AISI 304 (1.4301)	AISI 304 (1.4301)
Bellows		AISI 316 L (1.4435)	AISI 316 L (1.4435)
Seal (head, gate)		Metal/Viton	Metal/Viton

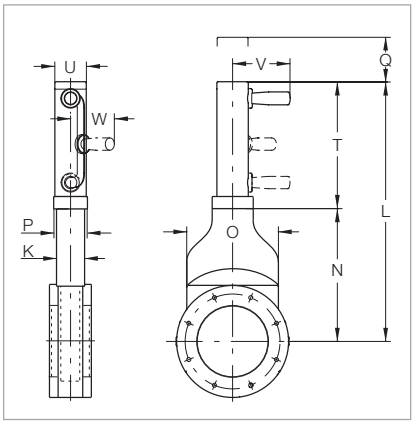
Ordering Information

Miniature UHV Gate Valve

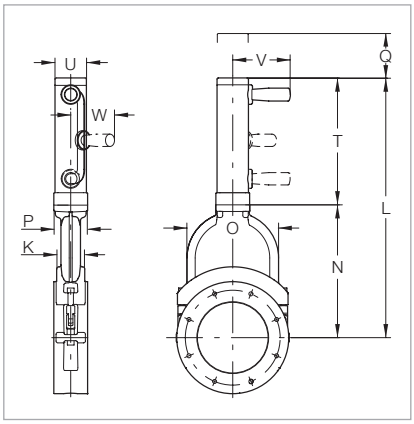
	DN 40 ISO-KF (Stainless Steel)	DN 40 CF (Stainless Steel)
	Part No.	**Part No.**
Miniature gate valve, electropneumatically operated		
24 V DC / 6 W	**286 36**	**286 99**
230 V AC, 50/60 Hz / 2 W	**286 35**	**286 94**
6 set screws with nuts and washers [1]	**–**	**839 11**

[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



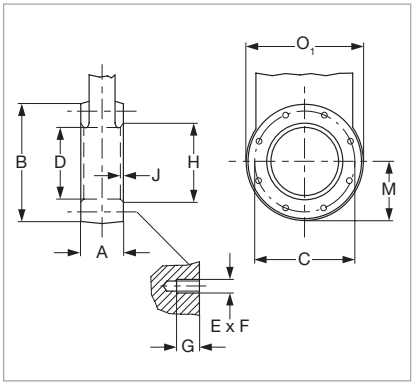
Dimensional drawing for the HV gate valves; manually operated, DN 160 ISO-F

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

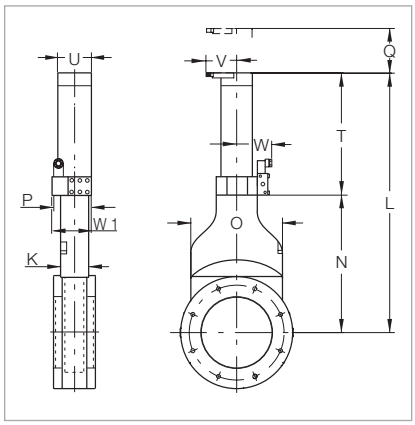
		HV Gate Valve		
		DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F
Tightness				
Body	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-7} mbar to 1.6 bar	1 x 10^{-7} mbar to 1.6 bar	1 x 10^{-7} mbar to 1.6 bar
High vacuum conductance	l x s^{-1}	550	2000	6000
Differential pressure at the valve gate	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	200,000	200,000	100,000
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 gate		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, gate)		Viton	Viton	Viton

Ordering Information

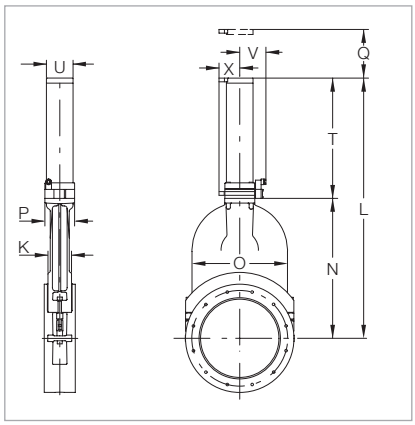
		HV Gate Valve		
		DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F
		Part No.	Part No.	Part No.
HV gate valve, manually operated		**286 25**	**286 26**	**215 633**
Set screws with nuts and washers [1]		**839 13**	**839 13**	**210 071**
(Package each containing)	pieces	16	16	12

[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



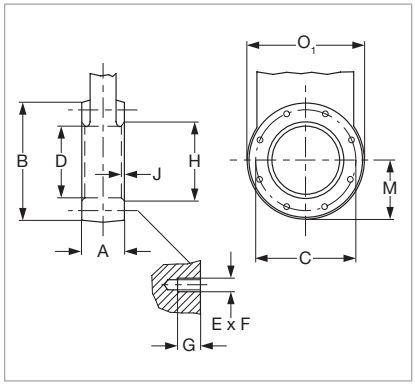
Dimensional drawing for the gate valves;
DN 160 ISO-F to DN 250 ISO-F

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 gate, 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	200,000	200,000	100,000	100,000	100,000
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 gate		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, gate)		Viton	Viton	Viton	Viton	Viton

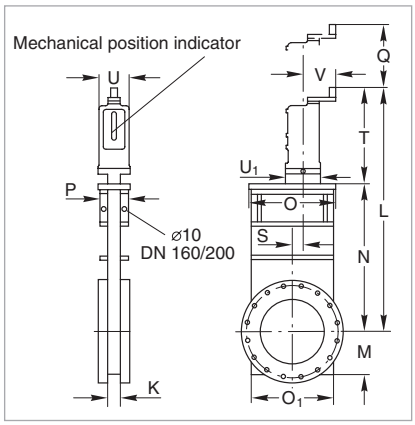
Ordering Information

HV Gate Valve

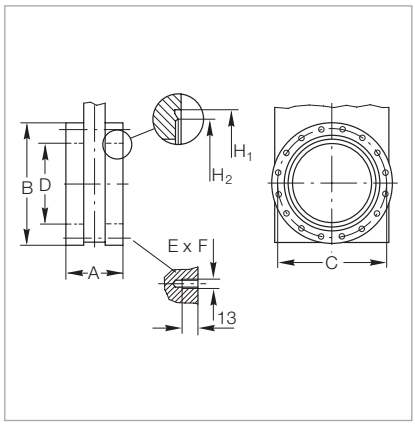
	DN 63 ISO-F	DN 100 ISO-F	DN 160 ISO-F	DN 200 ISO-F	DN 250 ISO-F
	Part No.	**Part No.**	**Part No.**	**Part No.**	**Part No.**
HV gate valve, electropneumatically operated					
24 V DC / 2.5 W	**286 55**	**286 56**	–	–	–
24 V DC / 6 W	–	–	**215 643**	**215 644**	**215 645**
230 V AC, 50 Hz / 7.1 W	**286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

Advantages to the User

- Valve and wheel can be degassed at temperatures up to 250 °C (up to 200 °C when closed)
- Stainless steel body (non-rusting)
- Bellows-sealed feedthrough
- Low play in the locked state and low wear
- Compact
- Mechanically locked in the closed state
- Mechanical position indicator

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

Technical Data

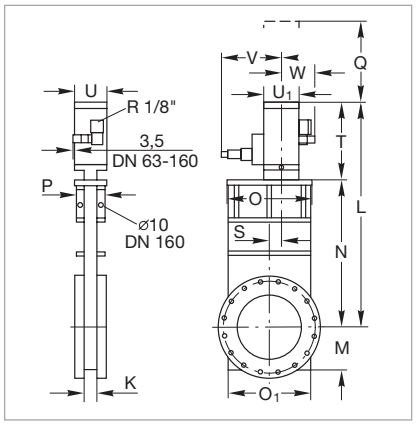
		UHV Gate Valve			
		DN 63 CF	DN 100 CF	DN 160 CF	DN 200 CF
Tightness					
Body	mbar x l x s^{-1}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-10} mbar to 1.6 bar	1 x 10^{-10} 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 gate	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}	50	50	50	50
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, gate)		Metal / Viton	Metal / Viton	Metal / Viton	Metal / Viton

Ordering Information

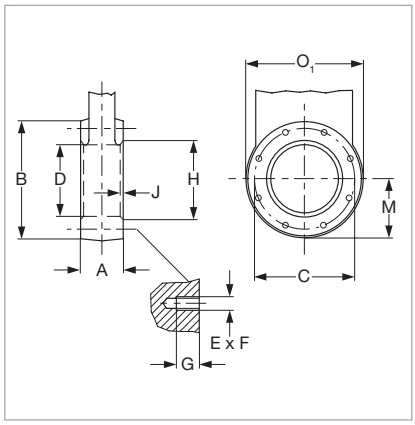
	UHV Gate Valve			
	DN 63 CF	DN 100 CF	DN 160 CF	DN 200 CF
	Part No.	**Part No.**	**Part No.**	**Part No.**
UHV gate valve, manually operated	**286 85**	**286 86**	**286 87**	**286 88**
16 set screws with nuts and washers [1]	**839 13**	**839 13**	**2 x 839 13**	**2 x 839 13**

[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)

Advantages to the User

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

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	–

Technical Data

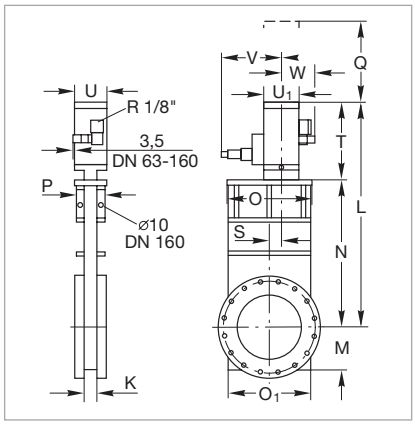
		UHV Gate Valve		
		DN 100 ISO-F	DN 160 ISO-F	DN 250 ISO-F
Tightness				
Body	mbar x l x s^{-1}	< 5 x 10^{-10}	< 5 x 10^{-10}	< 5 x 10^{-10}
Valve seat	mbar x l x s^{-1}	< 1 x 10^{-9}	< 1 x 10^{-9}	< 1 x 10^{-9}
Pressure range, abs.		1 x 10^{-10} mbar to 1 bar	1 x 10^{-10} mbar to 1 bar	1 x 10^{-10} mbar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

Ordering Information

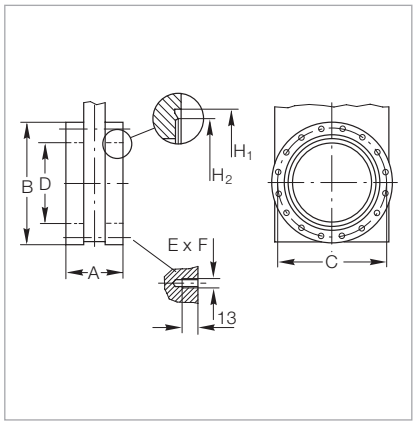
		UHV Gate Valve		
		DN 100 ISO-F	DN 160 ISO-F	DN 250 ISO-F
		Part No.	Part No.	Part No.
UHV gate valve, electropneumatically operated				
24 V DC / 6 W		**286 73**	**286 74**	**286 81**
230 V AC, 50 Hz / 7.1 W		**286 76**	**286 77**	**–**
Set screws with nuts and washers [1]		**839 13**	**210 071**	**210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



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 feedthrough
- Valve and pneumatic drive can be degassed at temperatures up to 250 °C and 200 °C respectively
- Stainless 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 gate 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}	50	50	50	50
Pilot valve				
supply voltage / power consumption	24 V DC / 6 W or 230 V AC, 50 Hz / 7.1 W	24 V DC / 6 W or 230 V AC, 50 Hz / 7.1 W	24 V DC / 6 W or 230 V AC, 50 Hz / 7.1 W	24 V DC / 6 W or 230 V AC, 50 Hz / 7.1 W
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, gate)	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
	Part No.	Part No.	Part No.	Part No.
UHV gate valve, electropneumatically operated				
24 V DC / 6 W	**286 89**	**286 90**	**286 91**	**286 92**
230 V AC, 50 Hz / 7.1 W	**286 95**	**286 96**	**286 97**	–
16 set screws with nuts and washers [1]	**839 13**	**839 13**	**2 x 839 13**	**2 x 839 13**

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

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