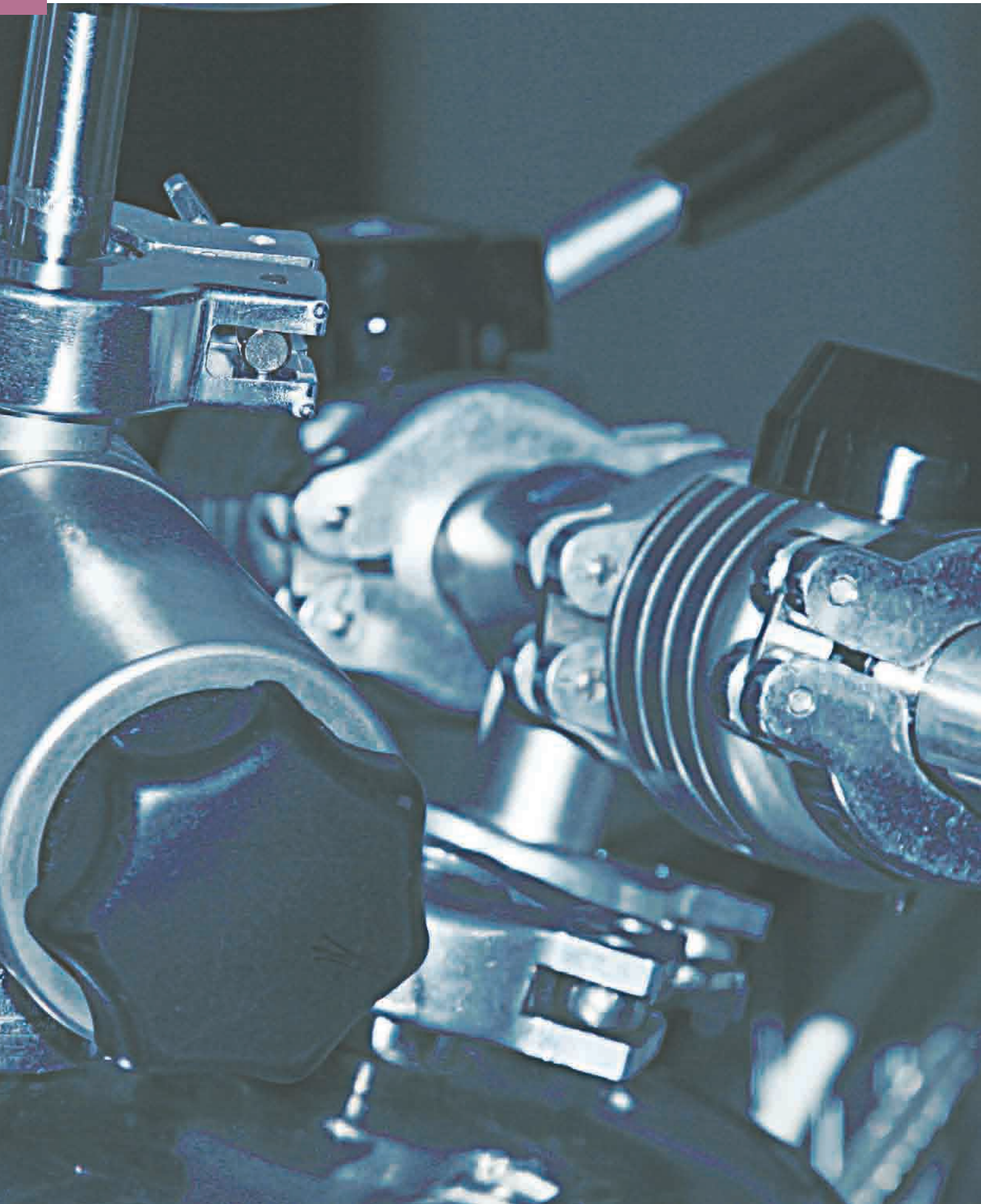


VACUUM VALVES AND SMALL FLANGE COMPONENTS



## VACUUM VALVES AND SMALL FLANGE COMPONENTS

At VACUUBRAND, we make our own valves and components and inspect them carefully before shipment to ensure integrity. Our wide range of vacuum valves and small-flange components can be used alone or in combination, in the most simple or complex vacuum systems. Our components are appropriate both for connections to VACUUBRAND pumps and for all valves and components with DIN 28403 (ISO 2861-1) small flange (KF) dimensions. Many components and subassemblies are available in stainless steel, aluminum, brass or plastic. We offer elastomer seals made of NBR and FKM as well as metallic seals made of aluminum or indium. We round out the line with a great variety of resilient connecting elements and small-flange components that serve most vacuum system needs.

VACUUBRAND offers besides solenoid operated valves the following lines of manual vacuum valves:

### ✦ **Ball valves**

They are the simplest type of shut-off device. They open up the entire cross-section. Therefore they can be used with load lock chambers.

### ✦ **Diaphragm valve**

VM diaphragm valves are engineered for applications with corrosive and aggressive gases and vapors. Stainless steel housings and PTFE diaphragms offer excellent resistance for use in chemistry laboratories.

### ✦ **High-vacuum bellows valves**

Stainless steel bellows-sealed angle valves with valve body made of aluminum or stainless steel (WIG). The VE WIG series valves with tungsten inert gas-welded valve body meet the toughest standards in terms of leak rate, outgassing and baking-out for the high vacuum range.

### ✦ **In-line valves**

VS series valves are space-saving butterfly-type in-line valves with good conductance.

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## VACUUM VALVES AND SMALL FLANGE COMPONENTS

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### ◆ Connection elements for small flange components

The sealing ring for the seal between two components is held in place by the centering ring. The clamping ring is used to hold and mechanically compress the sealing ring.

### ◆ Clamping rings

Aluminum clamping rings with a wing nut are a rapid connection that can be mounted without any tools for soft (primarily rubber-elastic) seals and indium seals.

### ◆ Centering rings

Centering rings made of stainless steel are self-centering with sealing ring at the outside

### ◆ VACUUBRAND trapped O-ring centering ring

The trapped O-ring centering ring is externally centered on the outside diameter of the small flange. The seal is pressed into a radius on the inside of the centering ring so that there are no gaps on the vacuum side. External centering allows the same ring to be used for two consecutive standard-rated widths (such as KF DN 10/16). This also makes transitional centering rings unnecessary.

### ◆ Small flange components

VACUUBRAND small flange components have particularly reliable sealing properties because the sealing surfaces are lathed for optimum surface roughness. Application range: Up to high vacuum at approximately  $10^{-6}$  mbar. Aluminum components are tested to a leakage rate of  $< 10^{-6}$  mbar l/s, stainless steel components are tested to  $< 10^{-9}$  mbar l/s.

### ◆ Flexible connection elements

Flexible hoses made of natural rubber or PVC are enjoying great popularity in laboratories. For more demanding applications VACUUBRAND offers special hoses made of antistatic PTFE with small flanges made of 1.4305 stainless steel. The PTFE tubing is virtually smooth-walled on the inside with high conductance and minimal surface area, which keeps condensate from accumulating like in corrugated hoses. The antistatic PTFE has excellent resistance to chemicals and antistatic properties ( $< 10^7$  Ohm resistance between the inside and flanges) to prevent electrostatic charging. Stainless steel bellows and corrugated hoses with TIG-welded small flanges meet high requirements in terms of outgassing and cleanliness. These metallic hoses are made of 1.4541 stainless steel and are vacuum annealed.

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## VACUUM VALVES AND SMALL FLANGE COMPONENTS



Clamping rings and centering rings



Vacuum valve VS



Stainless steel components



High-vacuum right angle bellow valve VE



Gas inlet valve VGL



Ball valve VKE

## VACUUM VALVES AND SMALL FLANGE COMPONENTS

Valves of the VK series are sturdy isolation devices for the rough and fine vacuum range. A precisely machined ball with a hole through the middle is rotated by means of shaft and lever. When the valve is open, the hole provides unimpeded passage of media over the entire nominal cross section. Ball valves are therefore also used for load locks, e.g., for sample holders, thermocouples or helium supply lines. The VKE series uses stainless steel for the metal parts and fiberglass reinforced PTFE seatings.



## BALL VALVES VK

TECHNICAL DATA		VK 16	VK 25	VK 40
Nominal width of flange	mm	16	25	40
Wetted materials		SS, PTFE, brass (partly hard chromium plated)	SS, PTFE, brass (partly hard chromium plated)	SS, PTFE, brass (partly hard chromium plated)
Leakage rate	mbar l/s	$1 \times 10^{-6}$	$1 \times 10^{-6}$	$1 \times 10^{-6}$
Fitting length between flanges	mm	80	100	130
Weight, approx.	kg	0.4	1.0	1.6

TECHNICAL DATA		VKE 16	VKE 25	VKE 40
Nominal width of flange	mm	16	25	40
Wetted materials		SS, PTFE	SS, PTFE	SS, PTFE
Leakage rate	mbar l/s	$1 \times 10^{-6}$	$1 \times 10^{-6}$	$1 \times 10^{-6}$
Fitting length between flanges	mm	80	100	130
Weight, approx.	kg	0.7	1.7	3.1

**ORDERING INFORMATION - VK VALVES MADE OF BRASS, HARD-CHROME PLATED BRASS BALL WITH REINFORCED PTFE SEAL SEAT**

VK 16	Small flange KF DN 16	665504
VK 25	Small flange KF DN 25	665505
VK 40	Small flange KF DN 40	665506

**ORDERING INFORMATION - VKE VALVES MADE OF STAINLESS STEEL WITH REINFORCED PTFE SEAL SEAT**

VKE 16	Small flange KF DN 16	675504
VKE 25	Small flange KF DN 25	675505
VKE 40	Small flange KF DN 40	675506



## VACUUM VALVES AND SMALL FLANGE COMPONENTS

The VS und VS C series valves are butterfly-type valves. A circular valve plate with a sealing ring on the circumference rotates around an axis at right angle to the valve axis. As a result, the valves leave virtually the entire cross section free, offering very good conductance. The valve bodies are made of one piece, machined from solid material, and require (in addition to the valve head seal) only one elastic shaft seal for rotational movement of the shaft. The valves provide low leakage and minimal degassing rate. The VS C series features a valve seal made of perfluorelastomer material (FFKM).



## BUTTERFLY VALVES VS

TECHNICAL DATA		VS 16	VS 25	VS 40
Nominal width of flange	mm	16	25	40
Wetted materials		SS, FKM, NBR	SS, FKM, NBR	SS, FKM, NBR
Leakage rate	mbar l/s	$1 \times 10^{-6}$	$1 \times 10^{-6}$	$1 \times 10^{-6}$
Fitting length between flanges	mm	65	65	65
Weight, approx.	kg	0.6	0.8	0.9

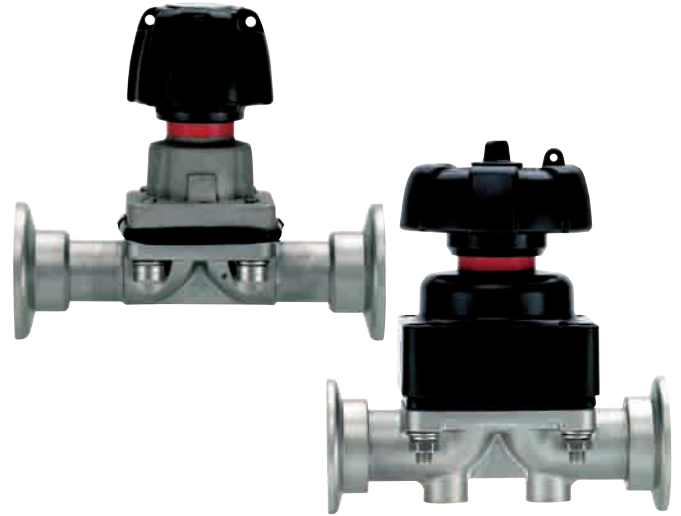
TECHNICAL DATA		VS 16C	VS 25C	VS 40C
Nominal width of flange	mm	16	25	40
Wetted materials		SS, FFKM, NBR	SS, FFKM, NBR	SS, FFKM, NBR
Leakage rate	mbar l/s	$1 \times 10^{-6}$	$1 \times 10^{-6}$	$1 \times 10^{-6}$
Fitting length between flanges	mm	65	65	65
Weight, approx.	kg	0.6	0.8	0.9

## ORDERING INFORMATION - VS VALVES MADE OF STAINLESS STEEL

VS 16	Small flange KF DN 16	665004
VS 25	Small flange KF DN 25	665005
VS 40	Small flange KF DN 40	665006
VS 16C	Small flange KF DN 16	665007
VS 25C	Small flange KF DN 25	665008
VS 40C	Small flange KF DN 40	665009

## VACUUM VALVES AND SMALL FLANGE COMPONENTS

VM series valves are hand-operated diaphragm valves. They are used, e.g., as isolation valves, air-admittance valves or manual-control valves. By rotation of the wheel a flexible PTFE diaphragm is moved and pressed against the stainless steel seating or removed from it, closing and opening the valve, respectively. The gas-contacting parts are made of stainless steel and PTFE offering a good resistance to corrosive gases and vapors.



## DIAPHRAGM VALVES VM

TECHNICAL DATA		VM 16	VM 25
Nominal width of flange	mm	16	25
Wetted materials		SS, PTFE	SS, PTFE
Leakage rate	mbar l/s	$1 \times 10^{-4}$	$1 \times 10^{-4}$
Fitting length between flanges	mm	80	100
Weight, approx.	kg	0.21	0.42

## ORDERING INFORMATION

VM 16	Small flange KF DN 16	664010
VM 25	Small flange KF DN 25	664011

## VACUUM VALVES AND SMALL FLANGE COMPONENTS

High vacuum, helium leak-tested right angle valves VE have stainless steel bellows which seals the drive mechanism without any gap on the vacuum side. Due to the screw-thread mechanism, these valves offer a certain control of conductance. They are mountable in any position because of their air tightness in both positions. The body is either made of solid aluminum or stainless steel (VE WIG). The stainless steel valves are tungsten inert gas welded from the inside for maximum gas tightness and minimum degassing rates.



## HIGH VACUUM BELLOW VALVES VE

TECHNICAL DATA		VE 16	VE 25	VE 40
Nominal width of flange	mm	16	25	40
Wetted materials		Aluminum, SS, FKM	Aluminum, SS, FKM	Aluminum, SS, FKM
Leakage rate of housing	mbar l/s	$1 \times 10^{-9}$	$1 \times 10^{-9}$	$1 \times 10^{-9}$
Leakage rate of seat	mbar l/s	$1 \times 10^{-7}$	$1 \times 10^{-7}$	$1 \times 10^{-7}$
Fitting dimension (flanges to center)	mm	40	50	65
Weight, approx.	kg	0.5	0.7	1.3

TECHNICAL DATA		VE 16 WIG	VE 25 WIG	VE 40 WIG
Nominal width of flange	mm	16	25	40
Wetted materials		SS, FKM	SS, FKM	SS, FKM
Leakage rate of housing	mbar l/s	$1 \times 10^{-9}$	$1 \times 10^{-9}$	$1 \times 10^{-9}$
Leakage rate of seat	mbar l/s	$1 \times 10^{-7}$	$1 \times 10^{-7}$	$1 \times 10^{-7}$
Fitting dimension (flanges to center)	mm	40	50	65
Weight, approx.	kg	1.0	1.1	2.9

## ORDERING INFORMATION - VALVES VE MADE OF ALUMINUM

VE 16	Small flange KF DN 16	664004
VE 25	Small flange KF DN 25	664005
VE 40	Small flange KF DN 40	664006

## ORDERING INFORMATION - VALVES VE WIG MADE OF STAINLESS STEEL

VE 16 WIG	Small flange KF DN 16	674020
VE 25 WIG	Small flange KF DN 25	674021
VE 40 WIG	Small flange KF DN 40	674022



## VACUUM VALVES AND SMALL FLANGE COMPONENTS

These valves are compact air admittance valves with small flange. The VB valve is manually operated. On rotating the knurled screw cap the valve disc is lifted off the seating and air enters through the holes. The valve disc is rotatable. Therefore the valve seat seal is prevented against wear during opening and closing.

The electromagnetic solenoid valve VB M-B with valve orifice diameter 2.4 mm and VACUU·BUS® control connection operates in conjunction with the vacuum controller CVC 3000 or the vacuum gauge DCP 3000. It is frequently used for remote-controlled systems like interlocking systems and inert gas flushing. The gas inlet has a tubing connection, e.g., for inert gas. Larger venting valves are available on request.



### AIR ADMITTANCE VALVES VB - VB M-B

#### TECHNICAL DATA

		VB 10	VB M-B
Flange connection		Small flange KF DN 10	Small flange KF DN 16 or hose nozzle DN 6/10 mm
Gas inlet connection			Tubing connection DN 8/6 mm
Wetted materials		SS, NBR	SS, FKM
Leakage rate	mbar l/s	$1 \times 10^{-6}$	$1 \times 10^{-3}$
Operation		Manual	VACUU·BUS®
Weight, approx.	kg	0.1	0.25

#### ORDERING INFORMATION

VB 10	Small flange KF DN 10	666800
VB M-B	Small flange KF DN 16 or hose nozzle DN 6/10 mm	674217

## VACUUM VALVES AND SMALL FLANGE COMPONENTS

Gas inlet valves are small hand operated valves for admitting gases into a vacuum system. By rotating a knurled screw cap the valve stem is raised from the valve seat. Thus gas enters at a controlled flow rate from the line connected to the gas inlet. The gas inlet valve VGS 10 is mounted with a small flange to the vacuum system and has a hose nozzle DN 8 mm for connection to, e.g., gas cylinders, air driers or for admitting air directly. The vacuum and atmospheric sides of the valve VGL are provided with hard-soldering brass connections, facilitating the valve to be used as a fixed, permanent fitting.



## GAS INLET VALVES VGS - VGL

## TECHNICAL DATA

		VGS 10	VGL
Flange connection		Small flange KF DN 10	Brass sleeve 5.1 mm
Gas inlet connection		Hose nozzle DN 8 mm	Brass sleeve 5.1 mm
Wetted materials		SS, FKM, NBR	SS, FKM, NBR, brass
Leakage rate of housing	mbar l/s	$1 \times 10^{-9}$	$1 \times 10^{-9}$
Leakage rate of seat	mbar l/s	$1 \times 10^{-6}$	$1 \times 10^{-6}$
Weight, approx.	kg	0.15	0.12

## ORDERING INFORMATION

VGS 10	Small flange KF DN 10	666000
VGL	Brass sleeve 5.1 mm	666400

## VACUUM VALVES AND SMALL FLANGE COMPONENTS

- ✦ version C with excellent chemical resistance
- ✦ high operating cycles
- ✦ significantly better long term tightness even after long operating time
- ✦ easy to clean
- ✦ versatile connection alternatives via small flange or hose nozzle



## SOLENOID-OPERATED VALVES VV - VV C

These straight-through valves with electromagnetic (solenoid) drive are used for operating cycles with short intervals and, therefore, are often used as vacuum control valves. The straightforward design provides a valve with low leakage rate. The valves in version VV C are made of materials with excellent chemical resistance. The valve sealing of the VV-B 6C is made of a special fluoroelastomer with better form stability than common PTFE, much higher chemical resistance than FKM and excellent long-term leak tightness characteristics.

TECHNICAL DATA		VV-B 6	VV 6
Flange connection		Small flange KF DN 16 or hose nozzle DN 6/10 mm	Small flange KF DN 16 or hose nozzle DN 6/10 mm
Wetted materials		SS, PP, FKM, PPS	SS, PP, FKM, PPS
Leakage rate	mbar l/s	$1 \times 10^{-5}$	$1 \times 10^{-5}$
Ambient temperature range	° C	0 - 50	0 - 50
Maximum gas temperature	° C	80	80
Max. switching frequency	/min	120	120
Supply voltage / Plug		VACUU-BUS®	Solenoid 230 V/~ 50-60 Hz IEC plug EN 60320
Cable length	m	2	2.5
Fitting length between flanges	mm	100	100
Weight, approx.	kg	0.53	0.53

## VACUUM VALVES AND SMALL FLANGE COMPONENTS

TECHNICAL DATA		VV-B 6C	VV-B 15C
Flange connection		Small flange KF DN 16 or hose nozzle DN 6/10 mm	Small flange KF DN 16
Wetted materials		SS, PVDF, PTFE, fluoroelastomer, PPS	SS, PVDF, PTFE
Leakage rate	mbar l/s	$1 \times 10^{-2}$	$1 \times 10^{-4}$
Ambient temperature range	°C	0 - 40	0 - 40
Maximum gas temperature	°C	100	100
Max. switching frequency	/min	50	50
Supply voltage / Plug		VACUU-BUS®	VACUU-BUS®
Cable length	m	2	2
Fitting length between flanges	mm	80	109
Weight, approx.	kg	0.35	1.2

TECHNICAL DATA		VV-B 15C	VV 25
Flange connection		Small flange KF DN 25	Small flange KF DN 25
Wetted materials		SS, PVDF, PTFE	SS, FKM, brass (Nickel plated)
Leakage rate	mbar l/s	$1 \times 10^{-4}$	$1 \times 10^{-4}$
Ambient temperature range	°C	0 - 40	0 - 50
Maximum gas temperature	°C	100	80
Max. switching frequency	/min	50	120
Supply voltage / Plug		VACUU-BUS®	Solenoid 230 V/~ 50 Hz IEC plug EN 60320
Cable length	m	2	2.5
Fitting length between flanges	mm	117	100
Weight, approx.	kg	1.2	1.4

## ORDERING INFORMATION VACUU-BUS® VALVES

VV-B 6	Small flange KF DN 16 or hose nozzle DN 6/10 mm	674290
VV-B 6C	Small flange KF DN 16 or hose nozzle DN 6/10 mm	674291
VV-B 15C	Small flange KF DN 16	674210
VV-B 15C	Small flange KF DN 25	674215

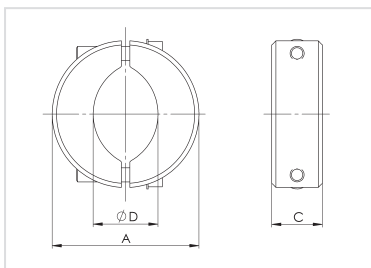
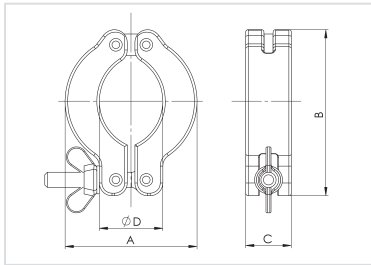
## ORDERING INFORMATION

(24 V/= VALVES WITH PLUG 3-POLE EN 60130-9, FOR CONTROLLERS CVC 2<sup>II</sup> AND VNC 1, ONLY)

VV 6	Small flange KF DN 16 or hose nozzle DN 6/10 mm	Solenoid 24 V/=	674090
VV 6	Small flange KF DN 16 or hose nozzle DN 6/10 mm	Solenoid 230 V/~ 50-60 Hz	674094
VV 6C	Small flange KF DN 16 or hose nozzle DN 6/10 mm	Solenoid 24 V/=	674091
VV 15C	Small flange KF DN 16	Solenoid 24 V/=	674110
VV 15C	Small flange KF DN 25	Solenoid 24 V/=	674115
VV 25	Small flange KF DN 25	Solenoid 230 V/~ 50 Hz	674105

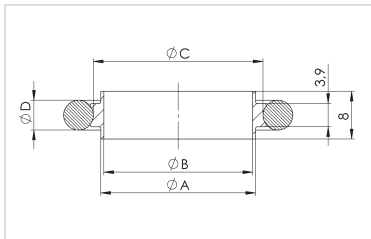
## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## CLAMPING RINGS FOR SMALL FLANGE KF



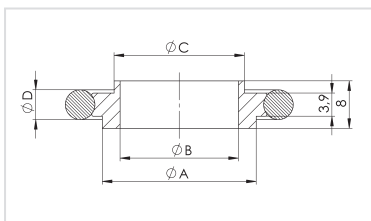
Size*	A	B	C	D	Order-no.
made of aluminum					
KF DN 10/16	45	62	16	22	660000
KF DN 20/25	55	73	16	32	660001
KF DN 32/40	70	90	16	47	660002
KF DN 50	95	120	25	63	660003
made of stainless steel					
KF DN 10/16	52		18	23	660010
KF DN 20/25	62		18	32	660011
KF DN 32/40	80		18	47	660012
KF DN 50	112		20	62	660013

## CENTERING RINGS FOR SMALL FLANGE KF MADE OF STAINLESS STEEL



Size*	A	B	C	D	Order-no.
with sealing ring made of FKM					
KF DN 10	12	10	15.3	15 x 5	660120
KF DN 16	17	16	18.5	18 x 5	660124
KF DN 20	22	20	25.5	25 x 5	660121
KF DN 25	26	25	28.5	28 x 5	660125
KF DN 32	34	32	40.5	40 x 5	660122
KF DN 40	41	39	43	42 x 5	660126
KF DN 50	52	50	55.5	55 x 5	660123

## ADAPTING CENTERING RINGS FOR SMALL FLANGE KF MADE OF STAINLESS STEEL

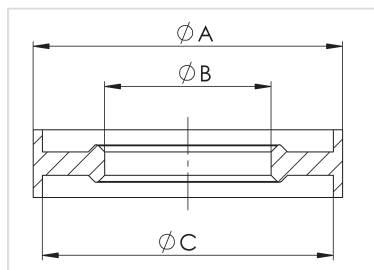


Size*	A	B	C	D	Order-no.
with sealing ring made of FKM					
KF DN 10/16	17	10	12	18 x 5	660127
KF DN 20/25	26	20	22	28 x 5	660128
KF DN 32/40	41	32	34	42 x 5	660129

\* Dimensions in millimeters

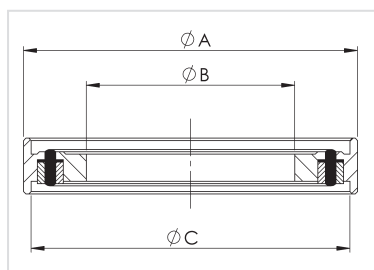
## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## CENTERING AND SEALING RINGS FOR SMALL FLANGE KF (FOR STAINLESS STEEL FLANGES ONLY)



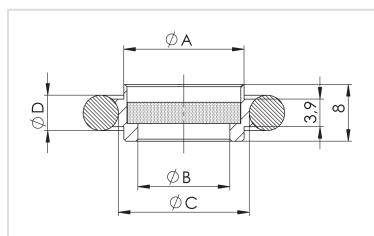
Size*	A	B	C	Order-no.
with aluminum sealing ring				
KF DN 10/16	32	17.2	30.1	660140
KF DN 20/25	42	26.2	40.1	660141
KF DN 32/40	57	41.2	55.1	660142
KF DN 50	77	52.2	75.1	660143

## INDIUM SEALING FOR KF - WITH STAINLESS STEEL/ALUMINUM CENTERING RINGS (INSIDE/OUTSIDE)



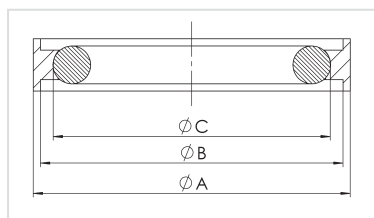
Size*	A	B	C	Order-no.
KF DN 10/16	32	17.2	30.1	660150
KF DN 20/25	42	26.2	40.1	660151
KF DN 32/40	57	41.2	55.1	660152

## FILTER CENTERING RINGS FOR SMALL FLANGE KF MADE OF STAINLESS STEEL



Size*	A	B	C	D	Order-no.
with sealing ring made of NBR					
KF DN 10	12	8	15.5	15 x 5	660160
KF DN 16	17	13	18.5	18 x 5	660161
KF DN 25	26	22	28.5	28 x 5	660162
KF DN 40	41	36	43	42 x 5	660163

## TRAPPED O-RING CENTERING RINGS FOR SMALL FLANGE KF MADE OF PBT (NON-WETTED)



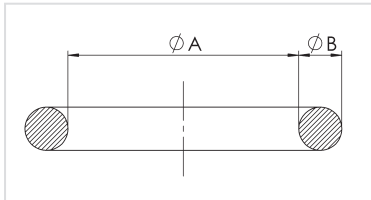
Size*	A	B	C	Order-no.
with sealing ring made of NBR				
KF DN 10/16	32	30.1	27.7	660190
KF DN 20/25	42	40.1	36.7	660191
KF DN 32/40	57	55.1	51	660192
KF DN 50	77	75.1	61	660193
with sealing ring made of FKM				
KF DN 10/16	32	30.1	27.7	660195
KF DN 20/25	42	40.1	36.7	660196
KF DN 32/40	57	55.1	51	660197
KF DN 50	77	75.1	61	660198

\* Dimensions in millimeters



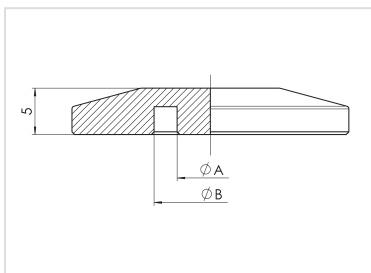
## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## SPARE SEAL RINGS FOR SMALL FLANGE KF



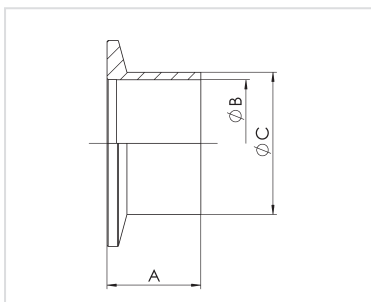
Size*	A	B	Order-no.
made of NBR			
KF DN 10	15	5	660110
KF DN 16	18	5	660115
KF DN 20	25	5	660111
KF DN 25	28	5	660116
KF DN 50	55	5	660113
made of FKM			
KF DN 10	15	5	660130
KF DN 16	18	5	660135
KF DN 20	25	5	660131
KF DN 25	28	5	660136
KF DN 32	40	5	660132
KF DN 40	42	5	660137
KF DN 50	55	5	660133

## BLIND SMALL FLANGES KF



Size*	A	B	Order-no.
made of aluminum			
KF DN 10	7.2	12.2	669000
KF DN 16	9.8	17.2	669004
KF DN 25	19.8	26.2	669005
KF DN 40	31.7	41.2	669006
KF DN 50	47.2	52.2	669003
made of stainless steel			
KF DN 10	7.2	12.2	671000
KF DN 16	9.8	17.2	671004
KF DN 25	19.8	26.2	671005
KF DN 40	31.7	41.2	671006
KF DN 50	47.2	52.2	671003

## SMALL FLANGES KF WITH WELD STUB SHORT

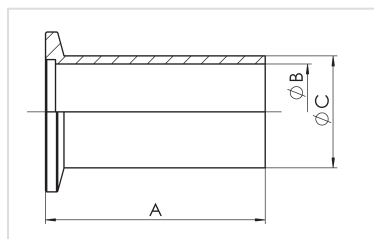


Size*	A	B	C	Order-no.
made of stainless steel (1.4541)				
KF DN 10	16	10	14	661300
KF DN 16	16	16	20	661304
KF DN 20	20	21	25	661301
KF DN 25	20	24	28	661305
KF DN 32	25	34	38	661302
KF DN 40	25	40.5	44.5	661306
KF DN 50	25	50.6	57	661303

\* Dimensions in millimeters

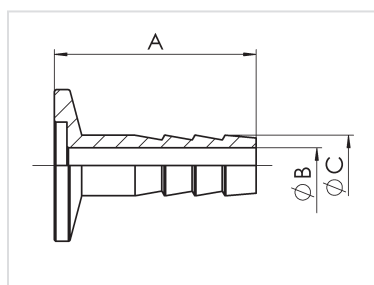
## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## SMALL FLANGES KF WITH WELD STUB LONG



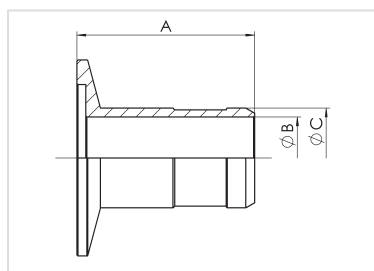
Size*	A	B	C	Order-no.
made of stainless steel (1.4541)				
KF DN 10	52	10	14	662100
KF DN 16	52	16	20	662104
KF DN 20	55	21	25	662101
KF DN 25	55	24	28	662105
KF DN 32	58	34	38	662102
KF DN 40	58	40.5	44.5	662106
KF DN 50	58	50.6	57	662103

## SMALL FLANGES KF WITH HOSE NOZZLE



Size*	A	B	C	Tubing ID	Order-no.
made of aluminum					
KF DN 10 / DN 6 mm	40	4	8	6	662500
KF DN 16 / DN 6 mm	40	4	8	6	662510
KF DN 16 / DN 10 mm	40	7	12	10	662511
KF DN 25 / DN 8 mm	40	6	10	8	662516
KF DN 25 / DN 10 mm	40	7	12	10	662517
KF DN 25 / DN 12 mm	40	10	15	12	662518
KF DN 25 / DN 15 mm	40	15	19	15	662519
KF DN 40 / DN 8 mm	40	6	10	8	662521
KF DN 40 / DN 10 mm	40	7	12	10	662522
KF DN 40 / DN 15 mm	40	15	19	15	662523
made of plastic PP (polypropylene)					
KF DN 16 / DN 10 mm	40	7	12	10	662806
KF DN 25 / DN 10 mm	43	7	12	10	662807
KF DN 25 / DN 15 mm	43	14	19	15	662808

## SMALL FLANGES KF WITH HOSE NIPPLE

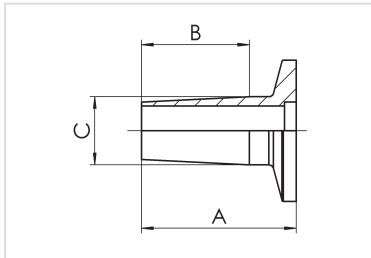


Size*	A	B	C	Tubing ID	Order-no.
made of aluminum					
KF DN 10 / DN 12 mm	50	9	14	12	662530
KF DN 16 / DN 19 mm	50	15	20	19	662531
KF DN 25 / DN 20 mm	50	15	22	20	662532
KF DN 25 / DN 25 mm	50	23	28	25	662533
KF DN 40 / DN 25 mm	50	23	28	25	662534
KF DN 40 / DN 40 mm	50	37	41	40	662535

\* Dimensions in millimeters

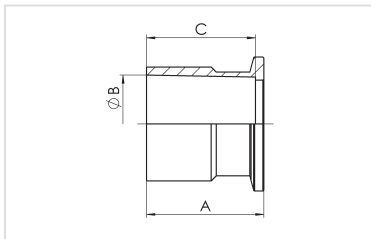
## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## SMALL FLANGES KF WITH MALE GROUND JOINT



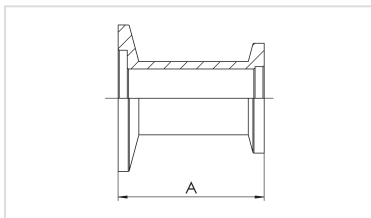
Size and grinding type* made of stainless steel	A	B	C	Order-no.
KF DN 10 / NS 14/23	33	23	14.2	662701
KF DN 10 / NS 19/38	47.5	38	18.8	662700
KF DN 25 / NS 19/38	49	38	18.8	662704
KF DN 25 / NS 29/32	41.5	32	29.2	662705
KF DN 40 / NS 29/32	43.5	32	29.2	662706
KF DN 40 / NS 45/40	49.5	40	45	662707

## SMALL FLANGES KF WITH FEMALE GROUND JOINT



Size and grinding type* made of stainless steel	A	B	C	Order-no.
KF DN 10 / NS 14/35	38	14.5	35	662800
KF DN 10 / NS 19/38	41	18.8	38	662801
KF DN 25 / NS 19/38	41	18.8	38	662802
KF DN 25 / NS 29/32	35	29.2	32	662803
KF DN 40 / NS 29/32	35	29.2	32	662804
KF DN 40 / NS 45/40	43	45	40	662805

## REDUCING PIECES WITH SMALL FLANGES KF

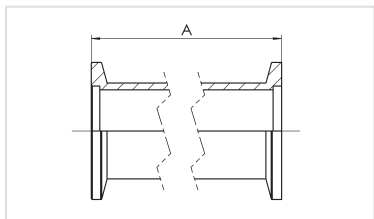


Size* made of aluminum	A	Order-no.
KF DN 25/10	40	669040
KF DN 25/16	40	669041
KF DN 40/10	40	669042
KF DN 40/16	40	669043
KF DN 40/25	40	669044
made of stainless steel		
KF DN 25/10	40	672910
KF DN 25/16	40	672911
KF DN 40/10	40	672912
KF DN 40/16	40	672913
KF DN 40/25	40	672914

\* Dimensions in millimeters

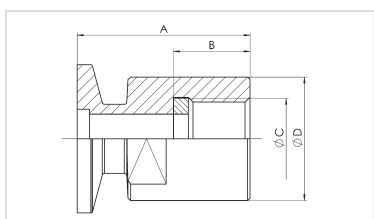
## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## VACUUM TUBING WITH SMALL FLANGES KF



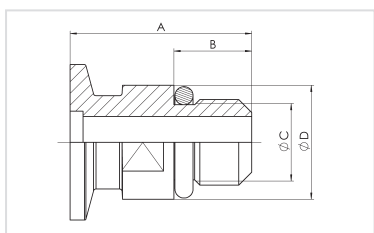
Size*	A	Order-no.
made of aluminum		
KF DN 10	60	669010
KF DN 16	80	669014
KF DN 25	100	669015
KF DN 40	130	669016
made of stainless steel (flange and tube TIG welded)		
KF DN 10	60	673000
KF DN 16	80	673014
KF DN 25	100	673015
KF DN 40	130	673016

## SCREW-ON SMALL FLANGE KF MADE OF STAINLESS STEEL (INTERNAL THREAD)



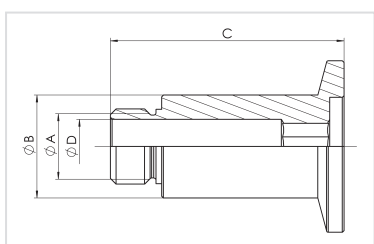
Size*	A	B	C	D	Order-no.
with sealing ring made of NBR					
KF DN 10 / G3/8"	35	15.5	G3/8"	20	672000
KF DN 16 / G1/2"	35	16	G1/2"	25	672001
KF DN 25 / G1"	45	22	G1"	38	672002

## SCREW-IN SMALL FLANGES KF MADE OF STAINLESS STEEL (MALE THREAD)



Size*	A	B	C	D	Order-no.
with sealing ring made of NBR					
KF DN 10 / G3/8"	35	15	G3/8"	22	672100
KF DN 16 / G1/2"	35	16	G1/2"	26	672101
KF DN 25 / G1"	45	24	G1"	39	672102

## SMALL FLANGES KF WITH THREAD

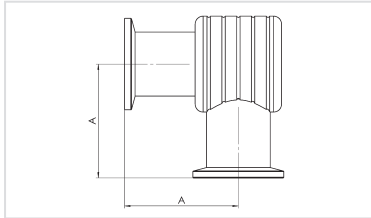


Size*	A	B	C	D	Order-no.
made of stainless steel					
KF DN 16 / G1/4"	G1/4"	18	41	9.5	662590
KF DN 10 / G1/8"	G1/8"	20	49	6	662600

\* Dimensions in millimeters

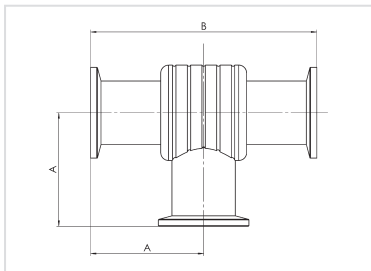
## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## ELBOW PIECES WITH SMALL FLANGES KF



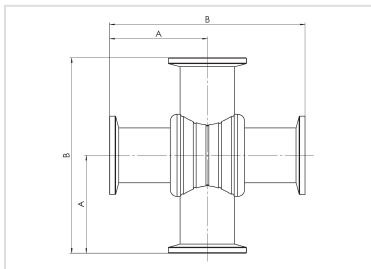
Size*	A	Order-no.
made of aluminum		
KF DN 10/10	30	669400
KF DN 16/16	40	669404
KF DN 25/25	50	669405
KF DN 40/40	65	669406
made of stainless steel		
KF DN 10/10	30	673400
KF DN 16/16	40	673414
KF DN 25/25	50	673415
KF DN 40/40	65	673416

## T-PIECES WITH SMALL FLANGES KF



Size*	A	B	Order-no.
made of aluminum			
KF DN 10/10/10	30	60	669500
KF DN 16/16/16	40	80	669504
KF DN 25/25/25	50	100	669505
KF DN 40/40/40	65	130	669506
made of stainless steel			
KF DN 10/10/10	30	60	673500
KF DN 16/16/16	40	80	673514
KF DN 25/25/25	50	100	673515
KF DN 40/40/40	65	130	673516

## CROSS PIECES WITH SMALL FLANGES KF

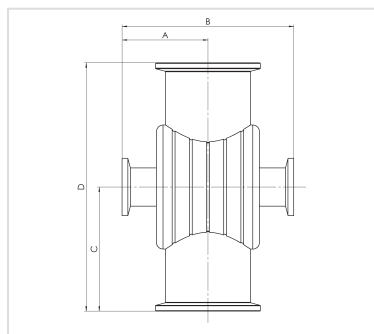


Size*	A	B	Order-no.
made of aluminum			
KF DN 10/10/10/10	30	60	669600
KF DN 16/16/16/16	40	80	669604
KF DN 25/25/25/25	50	100	669605
KF DN 40/40/40/40	65	130	669606
made of stainless steel			
KF DN 10/10/10/10	30	60	673600
KF DN 16/16/16/16	40	80	673614
KF DN 25/25/25/25	50	100	673615
KF DN 40/40/40/40	65	130	673616

\* Dimensions in millimeters

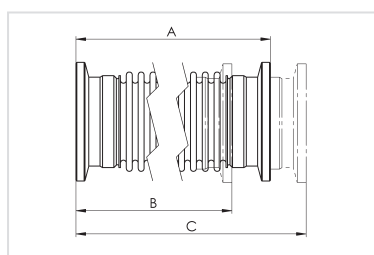
## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## REDUCING CROSS PIECES WITH SMALL FLANGES KF



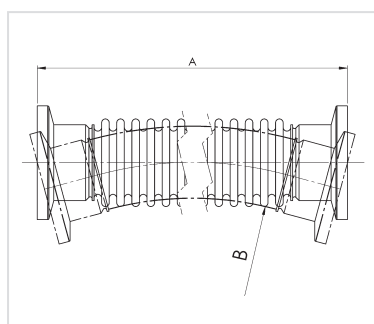
Size*	A	B	C	D	Order-no.
made of aluminum					
KF DN 25/25/16/16	35	70	35	70	669608
KF DN 40/40/16/16	45	90	65	130	669609
made of stainless steel					
KF DN 25/25/10/10	35	70	50	100	673617
KF DN 40/40/10/10	45	90	65	130	673619

## METAL BELLOWS WITH SMALL FLANGES KF



Size*	A	B	C	Order-no.
made of stainless steel				
KF DN 10	74	62	86	673210
KF DN 16	74	62	86	673220
KF DN 25	88	72	104	673221
KF DN 40	113	88	138	673222

## METAL VACUUM TUBINGS WITH SMALL FLANGES KF



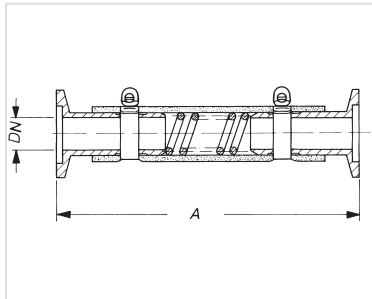
Size*	A	B: minimum bend radius for	Order-no.	
made of stainless steel (1.4541)				
		single	repeated	
		bending	bending	
KF DN 10	250	19	90	673305
KF DN 10	500	19	90	673315
KF DN 10	750	19	90	673325
KF DN 10	1000	19	90	673335
KF DN 16	250	29	120	673306
KF DN 16	500	29	120	673316
KF DN 16	750	29	120	673326
KF DN 16	1000	29	120	673336
KF DN 25	250	43	155	673307
KF DN 25	500	43	155	673317
KF DN 25	750	43	155	673327
KF DN 25	1000	43	155	673337
KF DN 40	250	65	200	673308
KF DN 40	500	65	200	673318
KF DN 40	750	65	200	673328
KF DN 40	1000	65	200	673338

\* Dimensions in millimeters



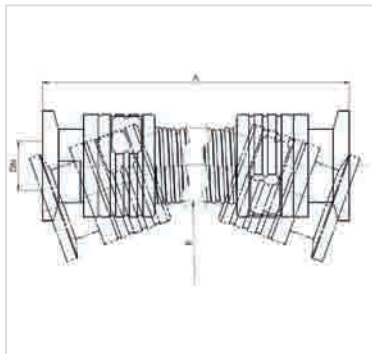
VACUUM VALVES AND SMALL FLANGE COMPONENTS

**PVC VACUUM TUBINGS WITH INTERNAL SPIRAL WITH SMALL FLANGES KF**



Size*	A	Order-no.
small flanges made of aluminum, with internal stainless steel spiral		
KF DN 16	500	686010
KF DN 16	1000	686020
KF DN 25	500	686011
KF DN 25	1000	686021
KF DN 40	500	686012
KF DN 40	1000	686022

**PTFE VACUUM TUBINGS WITH SMALL FLANGES KF**



made of antistatic PTFE, flanges made of stainless steel (1.4305)

Special features:

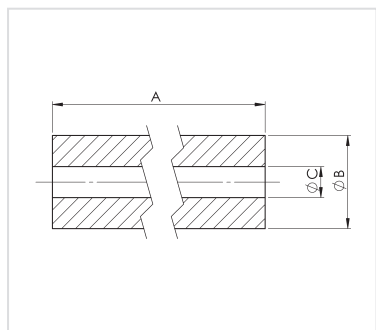
- ◆ hose ribbed only on the outside, almost smooth walls on the inside. Therefore no accumulation of liquids or particles like in corrugated hoses and high gas conductivity due to reduced turbulence.
- ◆ PTFE material with excellent chemical resistance
- ◆ PTFE material is antistatic according to BS 5958:1991 / EN ISO 8031, <math>< 10^7</math> Ohm resistivity between hose and flanges to prevent electrostatic charging on the inside or outside. However, the tubing must not be used for grounding of equipment.

Size*	A	B: minimum bend radius for		Order-no.
		single bending	repeated bending	
KF DN 16	500	150	300	686030
KF DN 16	1000	150	300	686031
KF DN 25	500	200	400	686032
KF DN 25	1000	200	400	686033

\* Dimensions in millimeters

## VACUUM VALVES AND SMALL FLANGE COMPONENTS

## RUBBER VACUUM TUBINGS AVAILABLE PER METER



Size*	B	C	Order-no.
DN 6 mm	12	6	686000
DN 8 mm	18	8	686001
DN 10 mm	30	10	686002
DN 15 mm	35	15	686003
DN 20 mm	45	19	686005

## PTFE TUBING AVAILABLE PER METER

PTFE tubing	DN 10/8 mm	638644
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## POWER CABLES

## IEC PLUG

Power cable KG CEE	612058
Power cable KG CH	676021
Power cable KG UK	676020
Power cable KG US	612065
Power cable KG CN	635997
Power cable KG IL	637353
Power cable LKG CEE	637652
Power cable LKG CH	637653
Power cable LKG UK	637654
Power cable LKG US	637655
Power cable LKG CN	635770
Power cable CEE, Y-shaped with 1 x KG and 1 x LKG (L)KG = (elbow) instrument coupling IEC 60320 C13	636273

\* Dimensions in millimeters