

 Chambers and components

Part **3.3**



Chambers and components

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Vacuum chambers

Vacuum chambers meeting the greatest of demands



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Vacuum chambers

Vacuum chambers meeting the greatest of demands

At the heart of a vacuum system is the vacuum chamber that has been customized for the application. Pfeiffer Vacuum's vacuum chambers meet the highest quality and engineering standards providing vacuum solutions precisely designed to meet our customers' needs. They are used for medium vacuum to ultra-high vacuum applications and can also be designed, produced and tested as pressure chambers for overpressure of more than 500 hPa in accordance with the Pressure Equipment Directive (97/23/EC).

The range of vacuum chambers extends from small recipients for lab applications to large-sized space simulation and coating chambers.

Pfeiffer Vacuum offers full service from a single source: Application consultation, design, production, quality assurance, assembly and on-site service. From the design to project management and finishing, we will provide you a perfect vacuum solution: high quality vacuum chambers in single item and serial production.



Overview of series and applications

| | Analytics | Semiconductor | Coating | Industry | R & D | |
|------------------------------|---|---------------|---------|----------|-------|------|
| | Electron microscopy | | | | | |
| | Leak detection | | | | | |
| | Mass spectrometry | | | | | |
| | Surface analysis | | | | | |
| | Plasma monitoring | | | | | |
| | Residual gas analysis | | | | | |
| | Lithography | | | | | |
| | PVD (Physical Vapor Deposition) | | | | | |
| | CVD (Chemical Vapor Deposition) | | | | | |
| | Plasma etching | | | | | |
| | Implantation – source | | | | | |
| | Implantation – beamline | | | | | |
| | Inspection | | | | | |
| | Bonding | | | | | |
| | MBE (Molecular Beam Epitaxy) | | | | | |
| | Load locks, transfer chambers, handling systems | | | | | |
| | Flat panel displays (FPD) | | | | | |
| | LED / OLED | | | | | |
| | Hard disk coating | | | | | |
| | Photovoltaics | | | | | |
| | Glass coating (PVD) | | | | | |
| | CD, DVD, Blu-ray production (PVD) | | | | | |
| | Optical coating (PVD) | | | | | |
| | Wear protection (PVD, CVD) | | | | | |
| | Hard coating | | | | | |
| | Medical technology | | | | | |
| | Industrial leak detection | | | | | |
| | Electron beam welding | | | | | |
| | Insulation vacuums | | | | | |
| | Bulb and tube manufacture | | | | | |
| | Heat treatment | | | | | |
| | Vacuum drying | | | | | |
| | Vacuum furnaces | | | | | |
| | Nuclear research | | | | | |
| | Fusion technology | | | | | |
| | Plasma research | | | | | |
| | Particle accelerators | | | | | |
| | Space simulation | | | | | |
| | Low temperature research | | | | | |
| | Elementary particle physics | | | | | |
| | Nanotechnology | | | | | |
| | Biotechnology | | | | | |
| | | | | | | Page |
| ■ = recom- mended | | | | | | |
| TrinosLine | | | | | | |
| High vacuum chambers | ■ | ■ | ■ | ■ | ■ | 18 |
| Medium vacuum chambers | ■ | ■ | ■ | ■ | ■ | 21 |
| Modular vacuum chambers | ■ | ■ | ■ | ■ | ■ | 22 |
| Custom vacuum chambers | ■ | ■ | ■ | ■ | ■ | 36 |

Features at a glance

| | Nominal size | | | | | | | Pressure range | | | Temperature range | | Page |
|---|--------------|--------|--------|--------|--------|--------|--------|---|--|---|-------------------|-----------|------|
| | DN 250 | DN 300 | DN 320 | DN 400 | DN 500 | DN 600 | DN 750 | 1 · 10 ⁻⁷ hPa up to ambient pressure | 1 · 10 ⁻⁷ hPa to 500 hPa overpressure | 1 · 10 ⁻⁵ hPa up to ambient pressure | -15 to 150°C | 0 to 40°C | |
| TrinosLine standard vacuum chambers | | | | | | | | | | | | | |
| High vacuum chambers, cubical with stainless steel door | | ■ | | | ■ | | ■ | ■ | | | ■ | | 18 |
| High vacuum chambers, cubical with acrylic glass door | | ■ | | | ■ | | ■ | | | ■ | | ■ | 18 |
| High vacuum chambers, horizontal | | | ■ | ■ | ■ | ■ | | ■ | | | ■ | | 19 |
| High vacuum chambers, vertical | | | ■ | ■ | ■ | ■ | | ■ | | | ■ | | 20 |
| Medium vacuum chambers, vertical with acrylic glass cover | ■ | | ■ | ■ | | | | | | ■ | | ■ | 21 |
| Modular vacuum chambers | | | ■ | ■ | ■ | | | | ■ | | ■ | | 22 |



Customer benefits

- Full service from a single source
- Vacuum solutions designed precisely for your application
- Versatile applications
- Safe and reliable



Standard vacuum chambers

Standardized chambers for your vacuum applications



Standard vacuum chambers

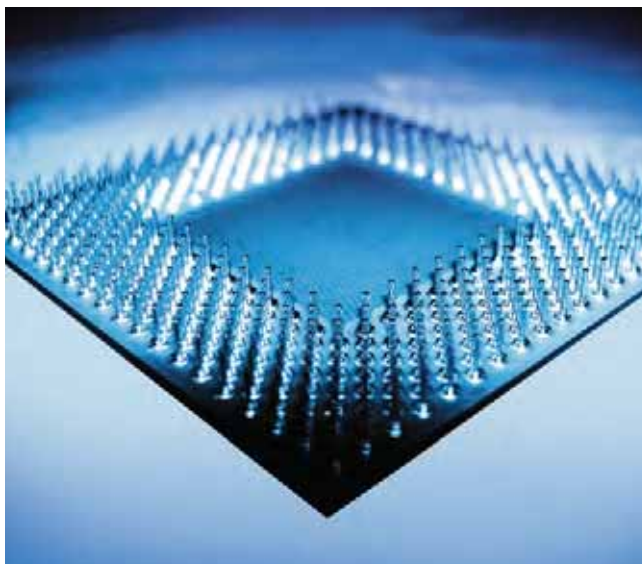
Standard vacuum chambers are standardized shapes where you can select the port types and locations. They can be configured to the vacuum solution you need.

Customer benefits

- Pre-configured shapes
- Customized ports
- Proven robust design

Typical applications

- Research & development
- Semiconductor
- Coating
- Analytics
- Industry



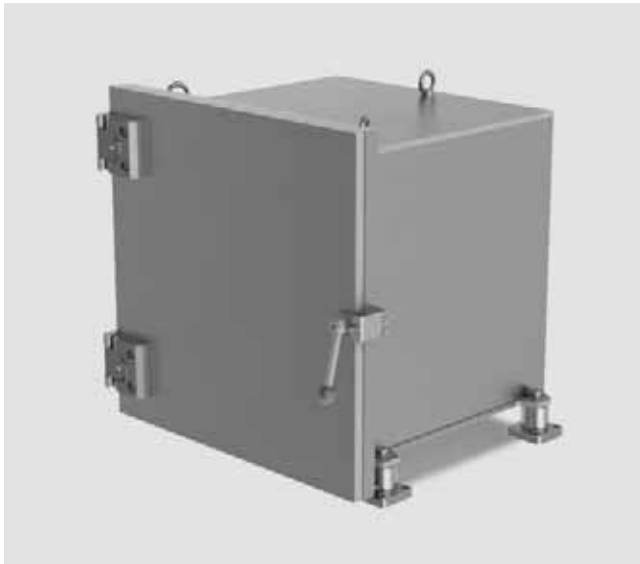
Semiconductor



Coating



Analytics



High vacuum chamber



Medium vacuum chamber



Modular chamber components

Series

High vacuum chambers

High vacuum chambers are designed for a pressure range from ambient pressure up to $1 \cdot 10^{-7}$ hPa. Standardized base bodies are available in three versions. Cubical, cylindrical-horizontal and cylindrical vertical. The nominal sizes range from 300 mm to 800 mm.

Medium vacuum chambers

Designed for a pressure range from $1 \cdot 10^{-5}$ hPa to ambient pressure, the medium vacuum chambers are equipped with a transparent acrylic glass cover. Basic bodies are available in the nominal sizes of 320 mm to 500 mm.

Modular chamber components

Modular chambers offer a wide range of possible combinations and a great degree of flexibility at all times. Starting from a base plate, the chamber can be designed with a bell-shaped top and an extension. A cover is available for the extension, thus making it possible to flexibly expand the chamber. All the modules are ideally adapted to each other and designed for a pressure range of 10^{-7} hPa to 500 hPa. The modules are based on ISO-K base flanges in accordance with DIN 28404 and ISO 1609. Accessories include centering rings, claws clamps and double claw clamps from our ISO-K product range. The nominal diameter of the base bodies range from DN 320 to DN 500 ISO-K.

General information

The lowest possible final pressure in the overall system depends on a number of factors, in particular the pump system, the outgassing rate of the interior surfaces and the pump-down time. The minimum pressures in the product description are based on experience of what can be attained with a well designed vacuum system. The values may be exceeded or may not be achieved in individual cases. The gas permeability needs to be taken into consideration when using elastomer seals. This depends on the materials, temperature and gas type.

Important information relating to the technical data

The permissible upper and lower temperature limits for the overall system are based on the lowest upper value and the highest lower value for the system components involved.

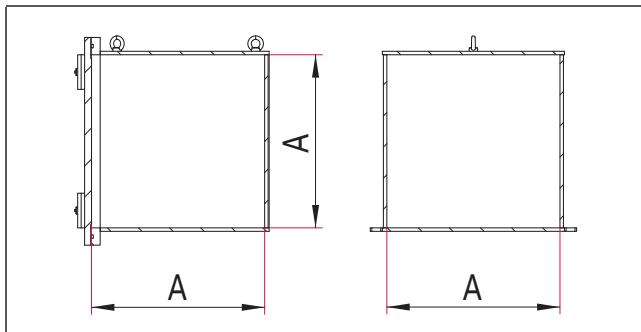
Flange connections and components have been developed to provide vacuum-sealed connections. They are able to bear only limited mechanical loads. Therefore, it is necessary to examine whether structural or dynamic loads need to be borne by additional elements (e.g. brackets) when designing a vacuum system.

TrinosLine High Vacuum Chamber, Cubical, KBH



- Cubical chamber body
- Hinged door and FKM seal
- Surface: inside and outside glass bead blasted
- Chamber with foot-plates and ring bolts
- Feet available separately (accessories)
- Chamber ports available (accessories)
- Tightness: $< 1 \cdot 10^{-9}$ Pa m³/s

Dimensions



Note

Accessories: chamber feet, chamber ports, mounting table
 When you place an order, we will prepare a technical drawing of the chamber with your ports and any other options selected.
 Once you have approved the drawing, we will begin manufacturing your chamber.
 Optional support bracket inside
 Optional inside surface finish: electropolished or pickled and passivated
 Wide range of uses through our extensive selection of pumping and measuring technology and other vacuum accessories.

Stainless Steel Door

- Pressure range: $1 \cdot 10^{-7}$ hPa to ambient pressure
- Materials: Chamber body made from stainless steel 304 (1.4301); stainless steel door
- Temperature range: -15 to 150 °C

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 300 | 300 | 820KBH0300-S |
| DN 500 | 500 | 820KBH0500-S |
| DN 750 | 750 | 820KBH0750-S |

Acrylic Glass Door

- Pressure range: $1 \cdot 10^{-5}$ hPa to ambient pressure
- Materials: Chamber body made from stainless steel 304 (1.4301); acrylic glass door (PMMA)
- Temperature range: 0 to 40 °C

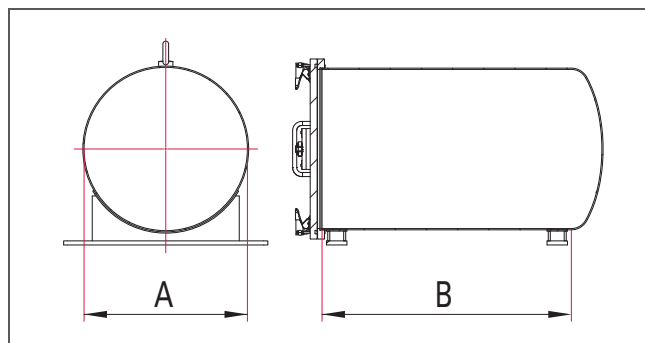
| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 300 | 300 | 820KBH0300-G |
| DN 500 | 500 | 820KBH0500-G |
| DN 750 | 750 | 820KBH0750-G |

TrinosLine High Vacuum Chamber, Horizontal, KHH



- Cylindrical, horizontal body, one side welded dished end
- Stainless steel door with hinges and quick clamps to prestress the FKM-door seal
- Surface: inside and outside glass bead blasted
- Chamber with feet and ring bolts
- Chamber ports available (accessories)
- Tightness: $< 1 \cdot 10^{-9}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-7}$ hPa to ambient pressure
- Materials: Chamber body and door made from stainless steel 304 (1.4301)
- Temperature range: -15 to 150 °C

Dimensions



Note

Accessories: chamber ports

When you place an order, we will prepare a technical drawing of the chamber with your ports and any other options selected.

Once you have approved the drawing, we will begin manufacturing your chamber.

Options: additional chamber lengths, support bracket inside

Optional inside surface finish: electropolished or pickled and passivated

Wide range of uses through our extensive selection of pumping and measuring technology and other vacuum accessories.

KHH

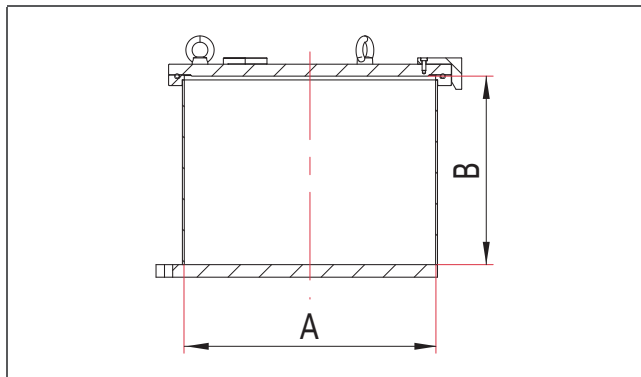
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|----------------|
| DN 320 | 320 | 500 | 820KHH0320-500 |
| DN 400 | 400 | 600 | 820KHH0400-600 |
| DN 500 | 500 | 750 | 820KHH0500-750 |
| DN 600 | 600 | 900 | 820KHH0600-900 |

TrinosLine High Vacuum Chamber, Vertical, KVH



- Cylindrical, vertical body with a welded flat bottom and top flange with FKM seal
- Cover with ring bolts and external guides for easy installation and protection of the sealing surface
- Surface: inside and outside glass bead blasted
- Chamber with foot-plates
- Chamber ports available (accessories)
- Tightness: $< 1 \cdot 10^{-9}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-7}$ hPa to ambient pressure
- Materials: Chamber body and cover made from stainless steel 304 (1.4301)
- Temperature range: -15 to 150 °C

Dimensions



Note

Accessories: chamber ports, mounting table

When you place an order, we will prepare a technical drawing of the chamber with your ports and any other options selected.

Once you have approved the drawing, we will begin manufacturing your chamber.

Options: additional chamber heights

Wide range of uses through our extensive selection of pumping and measuring technology and other vacuum accessories.

KVH

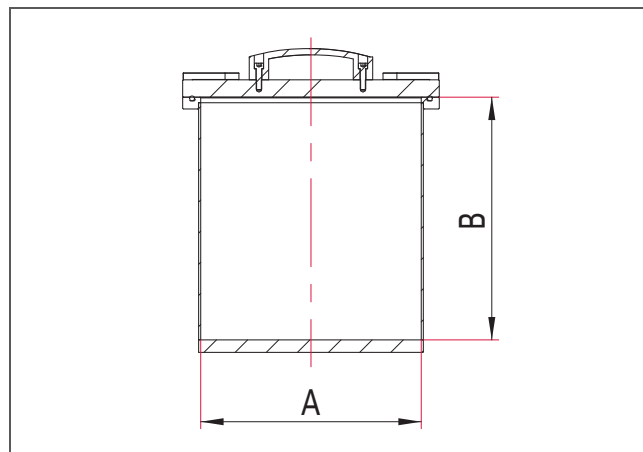
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|----------------|
| DN 320 | 318 | 250 | 820KVH0320-250 |
| DN 400 | 400 | 300 | 820KVH0400-300 |
| DN 500 | 500 | 350 | 820KVH0500-350 |
| DN 600 | 600 | 400 | 820KVH0600-400 |

TrinosLine Medium Vacuum Chamber, Vertical, KVG



- Cylindrical, vertical body with a welded flat bottom and top flange with FKM seal
- Acrylic glass cover (PMMA) with handles and external guides for easy installation and protection of the sealing surface
- Surface inside and outside glass bead blasted
- Chamber with foot-plates
- Chamber ports available (accessories)
- Tightness: $< 1 \cdot 10^{-9}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-5}$ hPa to ambient pressure
- Materials: Chamber body made from stainless steel 304 (1.4301), acrylic glass cover (PMMA)
- Temperature range: 0 to 40 °C

Dimensions



Note

Accessories: chamber ports, mounting table

When you place an order, we will prepare a technical drawing of the chamber with your ports and any other options selected.

Once you have approved the drawing, we will begin manufacturing your chamber.

Options: additional chamber heights

Wide range of uses through our extensive selection of pumping and measuring technology and other vacuum accessories.

KVG

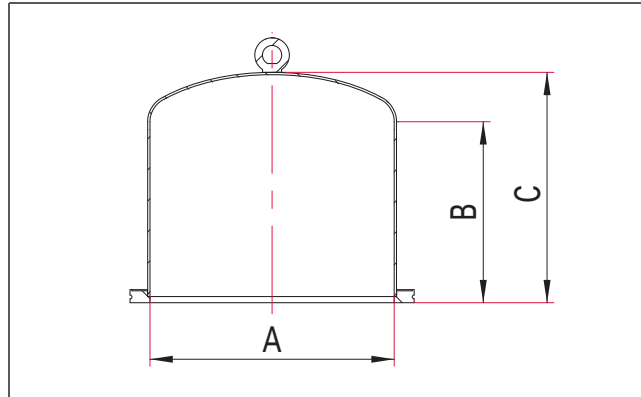
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------|
| DN 250 | 250 | 300 | 820KVG250-300 |
| DN 320 | 318 | 350 | 820KVG320-350 |
| DN 400 | 400 | 400 | 820KVG400-400 |

TrinosLine Modular Vacuum Chamber, Bell



- Modular design layout for maximum flexibility at any time
- Cylindrical, vertical body welded with dished end and ISO-K base flange
- Ring bolt
- Surface: inside and outside glass bead blasted
- Chamber ports available (accessories)
- Tightness: $< 1 \cdot 10^{-9}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-7}$ hPa to 500 hPa over pressure
- Materials: Stainless steel 304 (1.4301)
- Temperature range: -15 to 150 °C

Dimensions



Note

Accessories: chamber ports, ISO-K centering ring, ISO-K claw clamps or double claw clamps
 Combinable with the base plate (mounting with claw clamps) and the extension (mounting with double claw clamps)

When you place an order, we will prepare a technical drawing of the chamber with your ports.
 Once you have approved the drawing, we will begin manufacturing your chamber.

Options: additional chamber heights

Wide range of uses through our extensive selection of pumping and measuring technology and other vacuum accessories.

Stainless Steel 304/1.4301

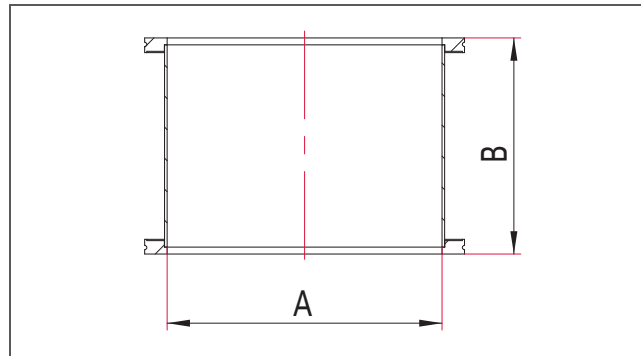
| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|---------------|
| DN 320 ISO-K | 318 | 235 | 300 | 820KMG320-300 |
| DN 400 ISO-K | 400 | 320 | 400 | 820KMG400-400 |
| DN 500 ISO-K | 500 | 400 | 500 | 820KMG500-500 |

TrinosLine Modular Vacuum Chamber, Extension



- Modular design layout for maximum flexibility at any time
- Cylindrical, vertical body, both sides are welded to ISO-K base flange
- Surface: inside and outside glass bead blasted
- Chamber ports available (accessories)
- Tightness: $< 1 \cdot 10^{-9}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-7}$ hPa to 500 hPa over pressure
- Materials: Stainless steel 304 (1.4301)
- Temperature range: -15 to 150 °C

Dimensions



Note

Accessories: chamber ports, ISO-K centering ring, ISO-K claw clamps or double claw clamps
 Combinable with the base plate (mounting with claw clamps) and the bell (mounting with double claw clamps).

When you place an order, we will prepare a technical drawing of the chamber with your ports.

Once you have approved the drawing, we will begin manufacturing your chamber.

Options: additional chamber heights

Wide range of uses through our extensive selection of pumping and measuring technology and other vacuum accessories.

Stainless Steel 304/1.4301

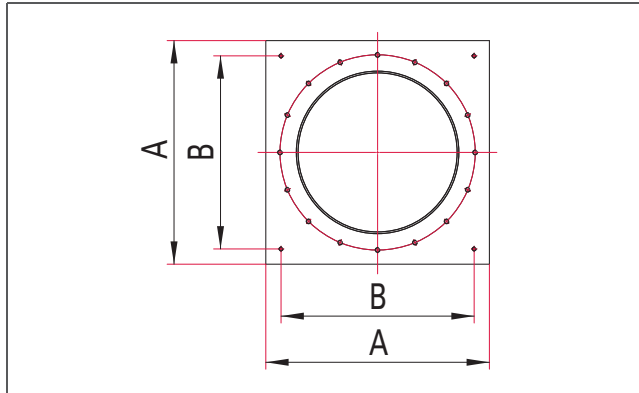
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------|
| DN 320 ISO-K | 318 | 250 | 820KMV320-250 |
| DN 400 ISO-K | 400 | 300 | 820KMV400-300 |
| DN 500 ISO-K | 500 | 400 | 820KMV500-400 |

TrinosLine Modular Vacuum Chamber, Base Plate



- Modular design layout for maximum flexibility at any time
- Square base plate with centering groove and sealing surface for an ISO-K centering ring and bolt circle with threaded holes for ISO-K claw clamps
- Fixing holes for mounting
- Ground surface
- Tightness: $< 1 \cdot 10^{-9}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-7}$ hPa to 500 hPa over pressure
- Materials: Stainless steel 304 (1.4301)
- Temperature range: -15 bis 150 °C

Dimensions



Note

Accessories: chamber ports, ISO-K centering ring, ISO-K claw clamps, mounting tables

Combinable with the bell and the extension (fixing each with claw clamps)

When you place an order, we will prepare a technical drawing of the chamber with your ports.

Once you have approved the drawing, we will begin manufacturing your chamber.

Wide range of uses through our extensive selection of pumping and measuring technology and other vacuum accessories.

Stainless Steel 304/1.4301

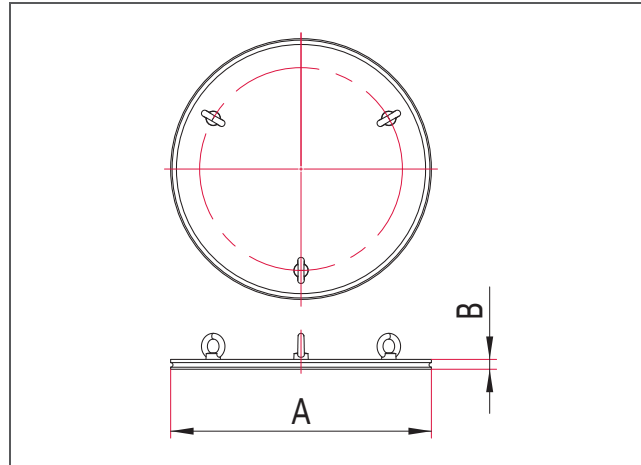
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 320 ISO-K | 430 | 390 | 820KMB320 |
| DN 400 ISO-K | 520 | 480 | 820KMB400 |
| DN 500 ISO-K | 620 | 580 | 820KMB500 |

TrinosLine Modular Vacuum Chamber, Cover



- Modular design layout for maximum flexibility at any time
- ISO-K blind flange with handles (DN320) or ring bolts (DN400/500)
- Smoothed surface
- Tightness: $< 1 \cdot 10^{-9}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-7}$ hPa to 500 hPa over pressure
- Materials: Stainless steel 304 (1.4301)
- Temperature range: -15 bis 150 °C

Dimensions



Note

Accessories: chamber ports, ISO-K centering ring, ISO-K double claw clamps
 Combinable with the bell and the extension (fixing with double claw clamps)
 When you place an order, we will prepare a technical drawing of the chamber with your ports.
 Once you have approved the drawing, we will begin manufacturing your chamber.
 Wide range of uses through our extensive selection of pumping and measuring technology and other vacuum accessories.

Stainless Steel 304/1.4301

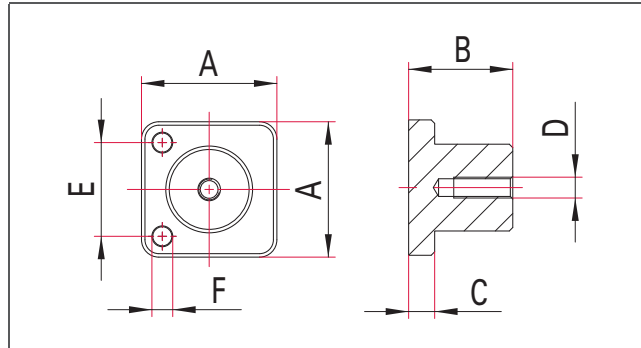
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 320 ISO-K | 370 | 17 | 820KMD320 |
| DN 400 ISO-K | 450 | 17 | 820KMD400 |
| DN 500 ISO-K | 550 | 17 | 820KMD500 |

Chamber feet for Standard Vacuum Chamber, Cubical (KBH)



- For deploying the cubical chamber (KBH) on a level surface
- Assemble to the foot-plates of the cubical chamber (KBH)
- Sturdy mounting which can take great loads
- Number per set: Consisting of 4 feet with screws
- Materials: Aluminum, surface: red anodized

Dimensions



Chamber Feet KBH

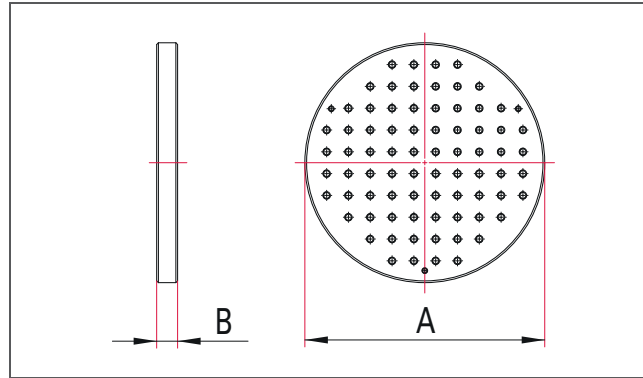
| Nominal diameter | A [mm] | B [mm] | C [mm] | D | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|-----|--------|--------|--------------|
| DN 300 | 68 | 50 | 15 | M10 | 44 | 9 | 820KBH0300-F |
| DN 500 | 78 | 60 | 15 | M12 | 54 | 11 | 820KBH0500-F |
| DN 750 | 118 | 65 | 20 | M16 | 88 | 13.5 | 820KBH0750-F |

Mounting Tables

- Square and round tables available
- Hole pattern: 25 x 25 mm
- Thread: M6
- Surfaces: Precision milled or polished

Aluminum: Round

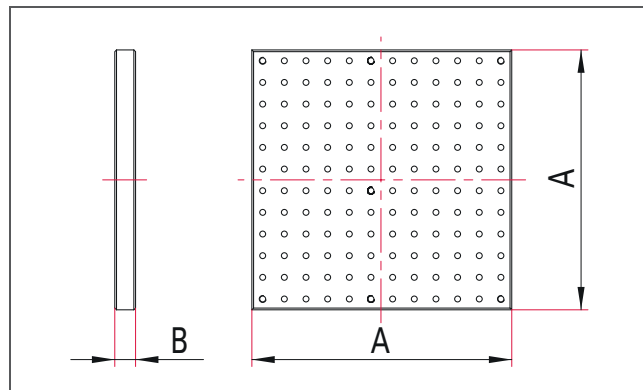
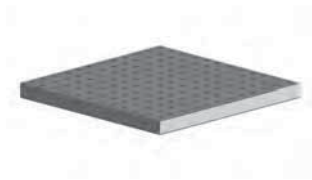
Dimensions



| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 320 | 275 | 15 | 810KTO320-R |
| DN 400 | 350 | 15 | 810KTO400-R |
| DN 500 | 425 | 20 | 810KTO500-R |
| DN 600 | 525 | 25 | 810KTO600-R |

Aluminum: Square

Dimensions



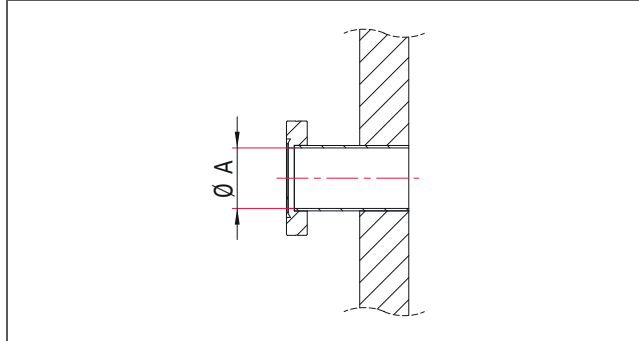
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 300 | 250 | 15 | 810KTO300-E |
| DN 500 | 425 | 20 | 810KTO500-E |
| DN 750 | 650 | 25 | 810KTO750-E |

CF Ports



- Other flange materials available upon request
- Pressure range: $< 1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Note

The minimum inner diameter is determined by the combination of flange, tube and seal.
The open diameter may be locally reduced by welding seams and manufacturing-related deviations of the tubes.

CF, Fixed Port: 304L Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 | 16 | 820KPC016 |
| DN 25 | 24 | 820KPC025 |
| DN 40 | 37 | 820KPC040 |
| DN 50 | 47.5 | 820KPC050 |
| DN 63 | 66 | 820KPC063 |
| DN 75 | 72.1 | 820KPC075 |
| DN 100 | 104 | 820KPC100 |
| DN 130 | 123.7 | 820KPC130 |
| DN 160 | 155 | 820KPC160 |
| DN 200 | 200 | 820KPC200 |
| DN 250 | 250 | 820KPC250 |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, Fixed Port with Thread: 304L Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 | 16 | 820KPC016-G |
| DN 40 | 37 | 820KPC040-G |
| DN 63 | 66 | 820KPC063-G |
| DN 100 | 104 | 820KPC100-G |
| DN 160 | 155 | 820KPC160-G |
| DN 200 | 200 | 820KPC200-G |
| DN 250 | 250 | 820KPC250-G |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, Rotatable: 304L Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 | 16 | 820KPD016 |
| DN 25 | 24 | 820KPD025 |
| DN 40 | 37 | 820KPD040 |
| DN 50 | 47.5 | 820KPD050 |
| DN 63 | 66 | 820KPD063 |
| DN 75 | 72.1 | 820KPD075 |
| DN 100 | 104 | 820KPD100 |
| DN 130 | 123.7 | 820KPD130 |
| DN 160 | 155 | 820KPD160 |
| DN 200 | 200 | 820KPD200 |
| DN 250 | 250 | 820KPD250 |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, Rotatable with Metric Thread: 304L Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 | 16 | 820KPD016-G |
| DN 40 | 37 | 820KPD040-G |
| DN 63 | 66 | 820KPD063-G |
| DN 100 | 104 | 820KPD100-G |
| DN 160 | 155 | 820KPD160-G |
| DN 200 | 200 | 820KPD200-G |
| DN 250 | 250 | 820KPD250-G |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, Blank Flange for Ports: 304L Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 | - | 820KBC016 |
| DN 25 | - | 820KBC025 |
| DN 40 | - | 820KBC040 |
| DN 50 | - | 820KBC050 |
| DN 63 | - | 820KBC063 |
| DN 75 | - | 820KBC075 |
| DN 100 | - | 820KBC100 |
| DN 130 | - | 820KBC130 |
| DN 160 | - | 820KBC160 |
| DN 200 | - | 820KBC200 |
| DN 250 | - | 820KBC250 |

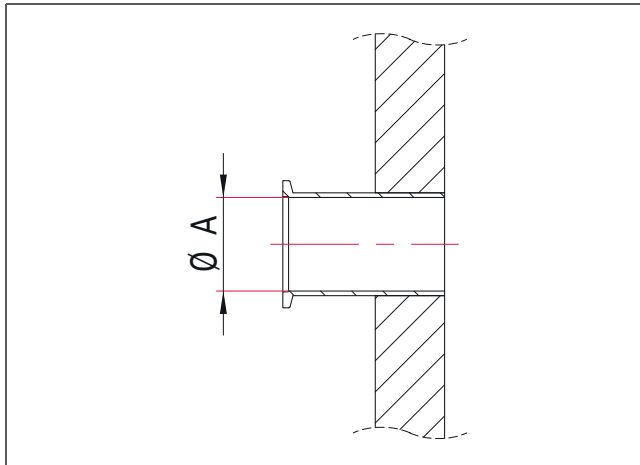
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-KF Ports



- Other flange materials available on request
- Pressure range: $< 1 \cdot 10^{-7}$ hPa to 500 hPa over pressure (elastomer seal);
 $< 1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Note

The minimum inner diameter is determined by the combination of flange, tube and seal. The open diameter may be locally reduced by welding seams and manufacturing-related deviations of the tubes.

ISO-KF Ports: 304/1.4301 Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 | 16 | 820KPI016 |
| DN 25 | 24 | 820KPI025 |
| DN 40 | 40.5 | 820KPI040 |
| DN 50 | 51 | 820KPI050 |

Flanges according to ISO 2861

ISO-KF Blind Flange for Ports: 304/1.4301 Stainless Steel, with FKM Centering Ring and Clamping Ring

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 | - | 820KBI016 |
| DN 25 | - | 820KBI025 |
| DN 40 | - | 820KBI040 |
| DN 50 | - | 820KBI050 |

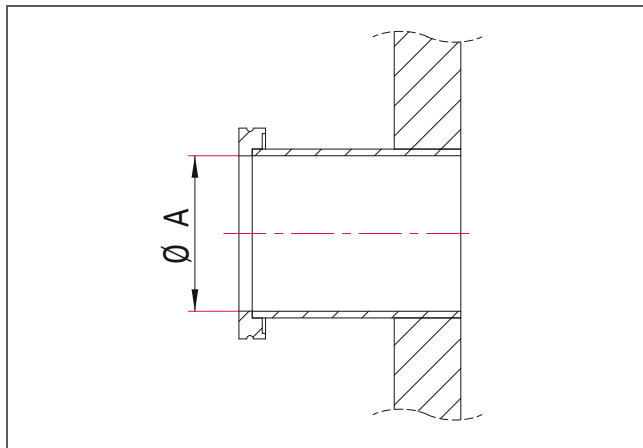
Flanges according to ISO 2861

ISO-K Ports



- Other flange materials available upon request
- Pressure range: $< 1 \cdot 10^{-7}$ hPa to 500 hPa over pressure (elastomer seal); $< 1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Note

The minimum inner diameter is determined by the combination of flange, tube and seal. The open diameter may be locally reduced by welding seams and manufacturing-related deviations of the tubes.

ISO-K Ports: 304/1.4301 Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 63 | 70 | 820KPI063 |
| DN 80 | 83 | 820KPI080 |
| DN 100 | 102 | 820KPI100 |
| DN 160 | 153 | 820KPI160 |
| DN 200 | 213 | 820KPI200 |
| DN 250 | 261 | 820KPI250 |

Flanges according to ISO 1609

ISO-K Blank Flanges for Ports: 304/1.4301 Stainless Steel, with FPM Centering Ring and Double Claw Clamps

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 63 | - | 820KBI063 |
| DN 80 | - | 820KBI080 |
| DN 100 | - | 820KBI100 |
| DN 160 | - | 820KBI160 |
| DN 200 | - | 820KBI200 |
| DN 250 | - | 820KBI250 |

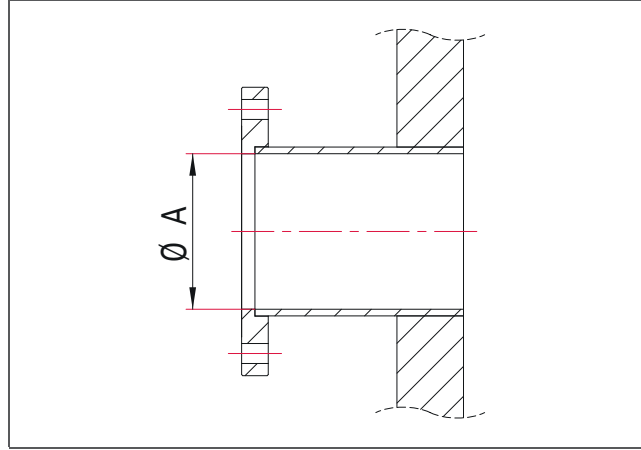
Flanges according to ISO 1609

ISO-F Ports



- Other flange materials available upon request
- Pressure range: $< 1 \cdot 10^{-7}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 300 °C

Dimensions



Note

The minimum inner diameter is determined by the combination of flange, tube and seal. The open diameter may be locally reduced by welding seams and manufacturing-related deviations of the tubes.

ISO-F Ports: 304/1.4301 Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 63 | 70 | 820KPF063 |
| DN 100 | 102 | 820KPF100 |
| DN 160 | 153 | 820KPF160 |
| DN 200 | 213 | 820KPF200 |
| DN 250 | 261 | 820KPF250 |

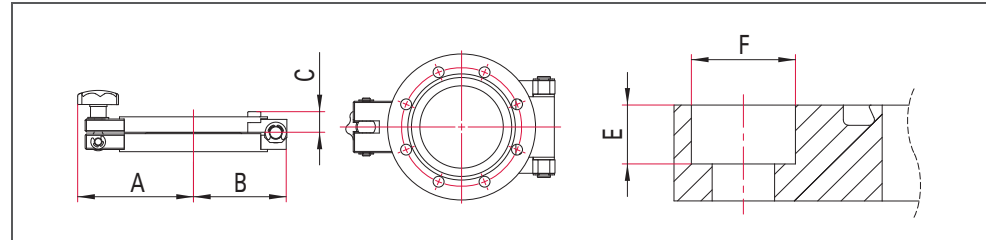
Flanges according to ISO 1609

CF Quick-Access-Door

- Screw holes: Through-holes with counter-bore for cylinder head
- Can be installed using hexagon socket screws
- Bakeout temperature: up to 200 °C
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Temperature range: -15 to 150 °C

Stainless Steel, without Sight Glass

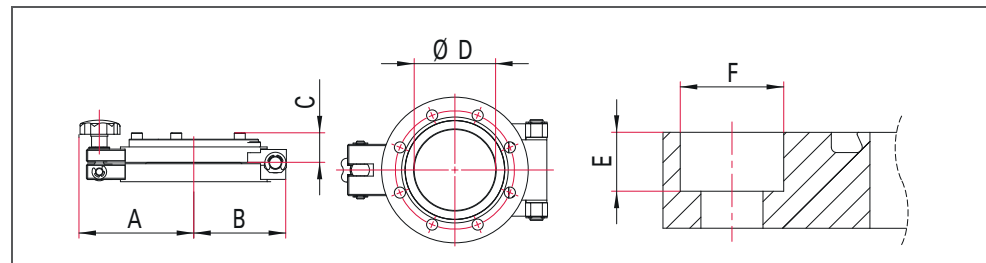
Dimensions



| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 63 CF | 88 | 72 | 16 | - | 10 | 16 | 420KTU063 |
| DN 100 CF | 108 | 93 | 16 | - | 10 | 16 | 420KTU100 |
| DN 160 CF | 134 | 119 | 20 | - | 10 | 16 | 420KTU160 |
| DN 200 CF | 160 | 145 | 20 | - | 10 | 16 | 420KTU200 |
| DN 250 CF | 186 | 171 | 20 | - | 10 | 16 | 420KTU250 |

Stainless Steel, with Sight Glass

Dimensions



- Order no. suffix -G: with sight glass
- Sight glass: Borosilicate glass

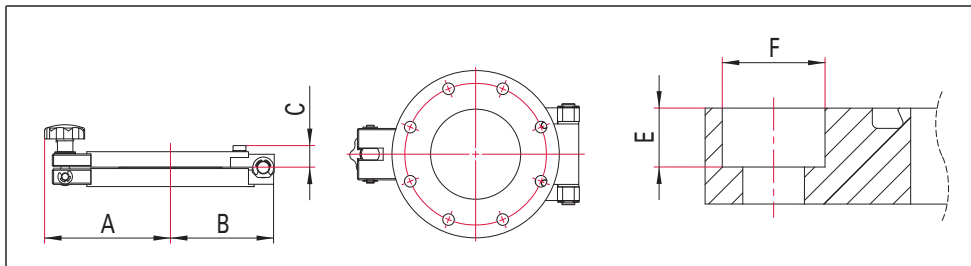
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 63 CF | 88 | 72 | 23 | 63 | 10 | 16 | 420KTU063-G |
| DN 100 CF | 108 | 93 | 27 | 95 | 10 | 16 | 420KTU100-G |
| DN 160 CF | 134 | 119 | 31 | 145 | 10 | 16 | 420KTU160-G |
| DN 200 CF | 160 | 145 | 31 | 145 | 10 | 16 | 420KTU200-G |
| DN 250 CF | 186 | 171 | 31 | 145 | 10 | 16 | 420KTU250-G |

ISO-F Quick-Access-Door

- Screw holes: Through-holes with counter-bore for cylinder head
- Can be installed using hexagon socket screws
- Bakeout temperature: up to 200 °C
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Temperature range: -15 to 150 °C

Stainless Steel 304/1.4301, without Sight Glass

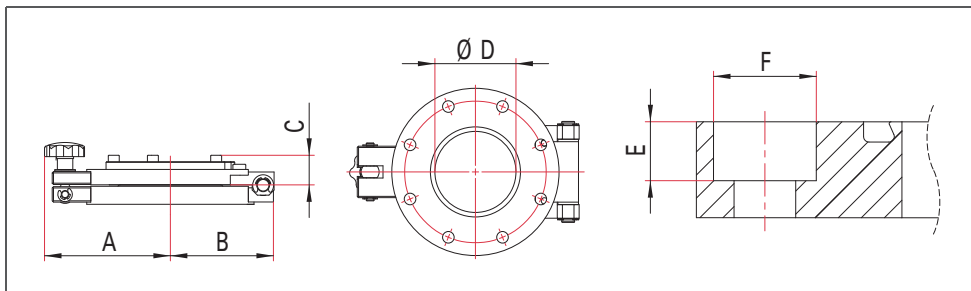
Dimensions



| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-F | 98 | 80 | 16 | - | 10 | 16 | 520KTU063 |
| DN 100 ISO-F | 116 | 99 | 16 | - | 10 | 16 | 520KTU100 |
| DN 160 ISO-F | 147 | 130 | 20 | - | 12.5 | 20 | 520KTU160 |
| DN 200 ISO-F | 177 | 160 | 20 | - | 12.5 | 20 | 520KTU200 |

Stainless Steel 304/1.4301, with Sight Glass

Dimensions



- Order no. suffix -G: with sight glass
- Sight glass: Borosilicate glass

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-F | 98 | 80 | 23 | 63 | 10 | 16 | 520KTU063-G |
| DN 100 ISO-F | 116 | 99 | 27 | 95 | 10 | 16 | 520KTU100-G |
| DN 160 ISO-F | 147 | 130 | 31 | 145 | 12.5 | 20 | 520KTU160-G |
| DN 200 ISO-F | 177 | 160 | 31 | 145 | 12.5 | 20 | 520KTU200-G |



Custom vacuum chambers

Individually designed chambers for your vacuum applications



Custom vacuum chambers

With many years of experience we have the know-how of virtually all requirements and can provide professional guidance for system specifications, design and engineering.

Our physicists, designers, project managers and production specialists have extensive experience of a wide range of uses in all market segments. The tasks are based on your requirements: our starting point on the path to a finished product can range from a rough sketch to a complete set of blueprints.

Our customers include a great number of renowned large research facilities and universities, who we supply with UHV vacuum chambers, cryostats and accelerator components as well as reputable customers from industry, whose development and production areas we equip with vacuum chambers.

Customer benefits

- Individual design
- Proven, robust design
- Optimal process adaption
- Extensive systems guidance

Typical applications

- For all areas of vacuum technology



Space simulation



Leak detection



Air conditioning / refrigeration technology

Technical design

Vacuum chambers are produced using high-quality materials. Special cleaning procedures guarantee contamination-free, vacuum-stable surfaces, to meet the highest of standards and are ready for immediate installation. All production phases are documented and quality tested in each production phase. You will receive a quality report containing the leak test log and other test results.

All vacuum chambers

- can be adapted to meet technical requirements
- can be equipped with the necessary accessories
- are tested for leaks

Standards

We use 1.4301 (304) stainless steel for pipes, chamber walls and ISO flanges and 1.4307 (304 L) for CF flanges. Premium stainless steel 1.4429 ESU (316 LN ESR) is available to provide minimum outgassing rate and high strength even after vacuum annealing above 950°C. Our standard interior and exterior treatment is glass bead blasted. Surfaces can be sanded, sanded and electro-polished, chemically pickled and passivated, as well as vacuum annealed.

Options

Your vacuum chamber can be expanded in numerous ways. We offer an extensive selection of accessories, fittings and attachments. We can also supply the following services upon request:

- Chamber materials: additional stainless steels and aluminum alloys
- Material certification
- Water cooling: as C-channel, pillow plate cooling or double walled.
- Chamber frames
- Chamber heating
- Cleaning and demagnetization annealing under vacuum
- Design and production of a pressure chamber
- FEM (Finite Element Method) calculations
- Assembly under cleanroom conditions

Product testing

In addition to the standard leak test other tests can be carried out:

- Integral helium leak testing
- Baking-out and final vacuum residual gas analysis
- Pressure testing
- 3D check
- Permeability testing
- Electrical insulation testing
- Dye penetrant inspection
- X-ray inspection of welding seams





Components

The connection in your vacuum system



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Components

The connection in your vacuum system

A vacuum system consists of several individual parts, which have to be joined together to form a single unit. Detachable, vacuum-sealed flange connections allow components to be connected directly or with vacuum components such as pipes or hoses.

Pfeiffer Vacuum offers components with various flange systems that meet the connection standards for many applications and flange sizes. The selection of proper materials and the use of high-quality production and cleaning technologies meet the high standards of vacuum technology and lead to a high degree of tightness and low outgassing rates (desorption). The broad range of standard components in stock guarantee rapid availability.

Pfeiffer Vacuum also offers more than standard solutions. Components can be modified to meet your requirements or a customized solution can be produced to perfectly fit your needs. We are a one-stop supplier for all stages of the process: assistance in finding the right solution for your application, design, manufacture, quality assurance, installation and on-site service.



Features at a glance

| | Nominal diameter | | | | | | | | | | | | | | | | Page | | | | | | | |
|------------------------------------|------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|------|--------|--------|--------|--------|--------|--------|-----|
| | DN 10 | DN 16 | DN 25 | DN 40 | DN 50 | DN 63 | DN 75 | DN 80 | DN 100 | DN 130 | DN 160 | DN 200 | DN 250 | DN 300 | DN 320 | DN 350 | | DN 400 | DN 450 | DN 500 | DN 600 | DN 630 | DN 800 | |
| ISO-KF | | | | | | | | | | | | | | | | | | | | | | | | |
| Sealing elements | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | 52 |
| Fastening elements | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | 60 |
| Flanges | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | 66 |
| Pipe components | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | 70 |
| Adapter | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | 83 |
| Hoses and flexible connectors | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | 94 |
| ISO-K / ISO-F | | | | | | | | | | | | | | | | | | | | | | | | |
| Fastening elements | | | | | | ■ | | ■ | ■ | | ■ | ■ | ■ | | ■ | | ■ | | ■ | | ■ | | | 106 |
| Sealing elements | | | | | | ■ | | ■ | ■ | | ■ | ■ | ■ | | ■ | | ■ | | ■ | | ■ | | | 110 |
| Flanges | | | | | | ■ | | ■ | ■ | | ■ | ■ | ■ | | ■ | | ■ | | ■ | | ■ | | | 114 |
| Pipe components | | | | | | ■ | | | ■ | | ■ | ■ | ■ | | | | | | | | | | | 123 |
| Adapters | | | | | | ■ | | | ■ | | ■ | | | | | | | | | | | | | 133 |
| Hoses and flexible connectors | | | | | | ■ | | ■ | ■ | | ■ | ■ | ■ | | ■ | | | | | | | | | 138 |
| CF | | | | | | | | | | | | | | | | | | | | | | | | |
| Sealing elements | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | 144 |
| Fastening elements | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | 149 |
| Flanges | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | 153 |
| Adapter | | ■ | | ■ | | ■ | | | ■ | | ■ | | | | ■ | | | | | | | | | 178 |
| Pipe components | | ■ | | ■ | | ■ | | | ■ | | ■ | ■ | | | | | | | | | | | | 182 |
| Hoses and flexible connectors | | ■ | | ■ | | ■ | | | ■ | | ■ | | | | | | | | | | | | | 192 |
| COF | | | | | | | | | | | | | | | | | | | | | | | | |
| Fastening elements | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | ■ | 194 |
| Sealing elements | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | ■ | 195 |
| Flanges | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | ■ | 196 |
| Viewports | | | | | | | | | | | | | | | | | | | | | | | | |
| ISO-KF, ISO-K, ISO-F, CF viewports | | ■ | ■ | ■ | ■ | ■ | | | ■ | | ■ | ■ | | | | | | | | | | | | 200 |
| CF shutters | | | | ■ | | ■ | | | ■ | | ■ | | | | | | | | | | | | | 206 |
| ISO-KF, ISO-K, CF retainers | | | | ■ | | ■ | | | | | | | | | | | | | | | | | | 208 |
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**Customer benefits**

- High availability
- Compatibility
- Easy assembly
- Suitable for a wide variety of applications



ISO-KF small flange components



ISO-K clamping flange and ISO-F fixed flange components



CF flange components for UHV applications

Series

ISO-KF small flange components are produced in accordance with DIN 28403 and ISO 2861 in the nominal range DN 10 to DN 50 from the stainless steel materials 1.4301 (304) and 1.4404 (316L) and aluminum alloys. ISO-KF connections are suitable for pressures up to 10^{-8} hPa and may also be used with overpressure up to 1,500 hPa. The pressure range may be expanded to $< 10^{-9}$ hPa with metal seals.

ISO-K clamping flange components and ISO-F fixed flange components are produced in accordance with DIN 28404 and ISO 1609 in the nominal range DN 63 to DN 630 from the stainless steel materials 1.4301 (304) and 1.4404 (316L). ISO-K/ ISO-F connections are suitable for pressures up to 10^{-8} hPa and may also be used with overpressure up to 1,500 hPa. The pressure range may be expanded to $< 10^{-9}$ hPa with metal seals.

CF flange components for ultra high vacuum applications are produced for the lowest ultimate pressure in the nominal range DN 16 to DN 350 from the stainless steel materials 1.4307 (304L) and 1.4429 ESU (316LN ESR). The components meet the specification under the ISO 3669 standard and are in the nominal range DN 16 to DN 250 compatible with the ISO/TS 3669-2 standard. CF connections are sealed with flat metal gaskets and are bakeable up to 450 °C. Flanges made from 1.4429 ESU (316LN ESR) are also suitable for cleaning or demagnetization vacuum heat treatment at 1,050 °C due to their extremely high strength.

COF flanges are used in the large nominal range DN 400 to DN 800 for ultra high vacuum applications and are made from stainless steel materials 1.4307 (304L). The pressure range comprises 10^{-12} hPa to ambient pressure. COF connections are sealed with metal wires and are bakeable up to 300 °C. They are not symmetrical and are composed of a male and female flange. COF flange dimensions are not standardized. Should there be any questions about compatibility with existing COF equipment, please contact us.

Viewports are primarily for visual monitoring of processes. They may also be used for the targeted transfer of electromagnetic waves. In doing so the transmission and the optical quality of the glasses need to be taken into account. We will provide you with the appropriate glass type in combination with various vacuum flange types in the nominal range DN 16 to DN 200 for your requirements.

General information

All vacuum components from Pfeiffer Vacuum meet the high quality requirements placed on vacuum components. The vacuum components are helium leak-tested and show leakage rates better than 10^{-10} Pa m³/s for ISO-KF, ISO-K/ISO-F flanges and 10^{-11} Pa m³/s for CF and COF flanges. All flange components are welded from inside for an ideal vacuum. Should the geometry not permit this process, the flange will be welded entirely to avoid virtual leaks such as gaps and blind holes. Welded components are finely glass bead blasted with glass beads or pickled. Alternative surface treatments such as surface grinding, electro-polishing or annealing are available upon request.

Important information relating to the technical data

The minimum attainable ultimate pressure in the overall system depends on a number of factors, in particular the pump system, the desorption rates, the interior surfaces and the pump down time. Minimum pressures listed in the product description are empirical values that can be achieved with a well designed vacuum system. In individual cases they can be both exceeded or not met. When using elastomer seals, their permeation also needs to be taken into account. It is dependent on the material, temperature and gas type.

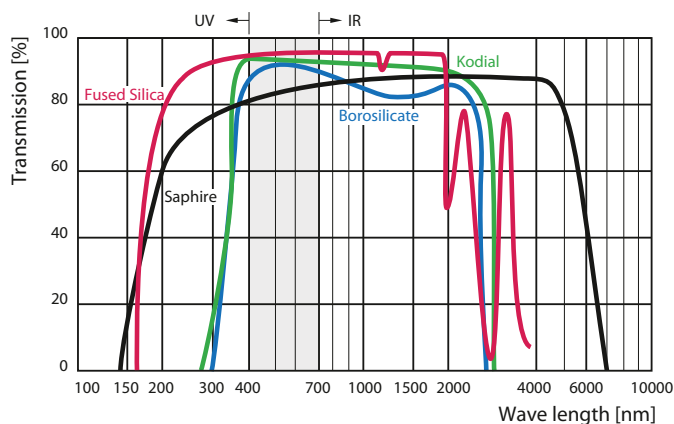
The permitted maximum and minimum temperature for the overall system is based on the lowest maximum temperature and the highest minimum temperature of the components used. The flange connections and components were developed to implement vacuum proof connections. They can only bear limited mechanical loads. Therefore it is necessary to test whether static or dynamic loads need to be absorbed by additional elements (e.g. brackets) when designing a vacuum system.



COF flange components

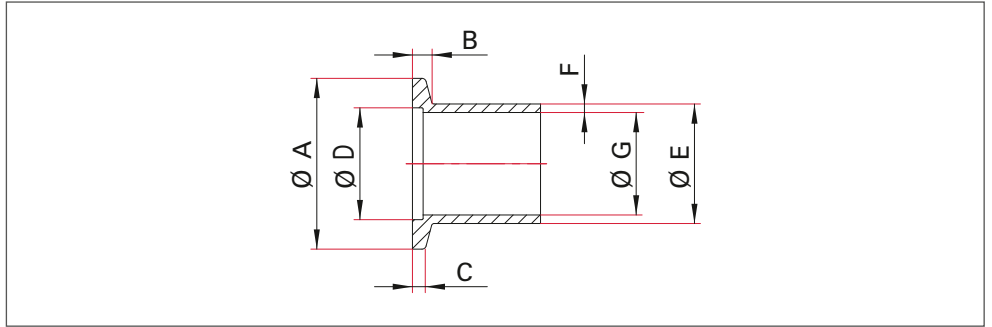


Viewports



Transmission curve for viewports

Dimensions



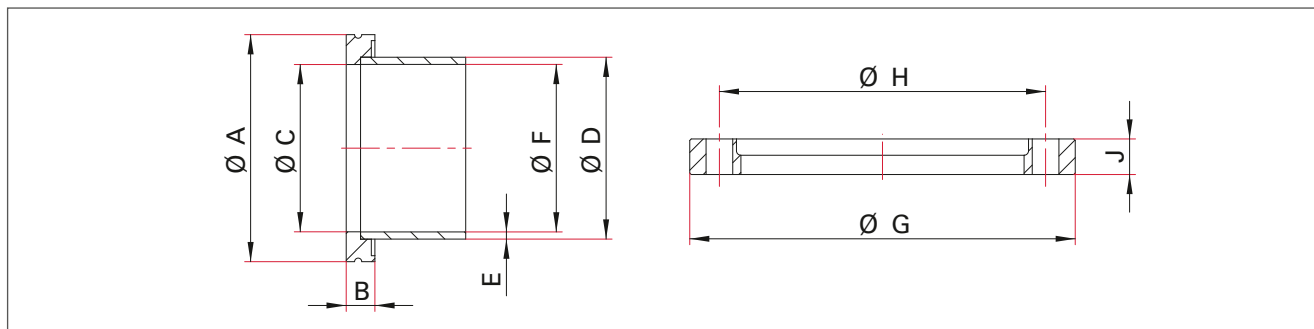
Primary dimensions of ISO-KF flanges

| Nominal diameter | DN 10 KF | DN 16 KF | DN 25 KF | DN 40 KF | DN 50 KF |
|---|----------|----------|----------|----------|----------|
| A – External diameter [mm] | 30 | 30 | 40 | 55 | 75 |
| A – External diameter [inch] | 1.18 | 1.18 | 1.57 | 2.17 | 2.95 |
| B – Flange height [mm] | 5 | 5 | 5 | 5 | 5 |
| C – [mm] | 3 | 3 | 3 | 3 | 3 |
| D – Centering ring set [mm] | 12.2 | 17.2 | 26.2 | 41.2 | 52.4 |
| E · F – Typical pipe dimension ¹⁾ [mm] | 14 · 2 | 20 · 2 | 28 · 2 | 44.5 · 2 | 57 · 3.2 |
| G – Typical internal diameter ²⁾ [mm] | 10 | 16 | 24 | 40.5 | 51 |

¹⁾ Additional pipe dimensions can be found particularly in the products “weld ring flange” and “flange with half nipple”.

²⁾ The minimum inner diameter is determined by the combination of flange, pipe and centering ring. In addition, welding seams and manufacturing tolerances of the pipes can locally reduce the free diameter.

Dimensions



Primary dimensions for ISO-K and ISO-F flanges

| Nominal diameter | DN 63 ISO-K | DN 80 ISO-K | DN 100 ISO-K | DN 160 ISO-K | DN 200 ISO-K | DN 250 ISO-K | DN 320 ISO-K | DN 400 ISO-K | DN 500 ISO-K | DN 630 ISO-K |
|--|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| A - External diameter [mm] | 95 | 110 | 130 | 180 | 240 | 290 | 370 | 450 | 550 | 690 |
| A - External diameter [inch] | 3.74 | 4.33 | 5.12 | 7.09 | 9.45 | 11.42 | 14.57 | 17.72 | 21.65 | 27.17 |
| B - Flange height [mm] | 12 | 12 | 12 | 12 | 12 | 12 | 17 | 17 | 17 | 22 |
| C - Centering ring set [mm] | 70 | 83 | 102 | 153 | 213 | 261 | 318 | 400 | 501 | 651 |
| D · E - Typical pipe dimension ¹⁾ [mm] | 76.1 · 3 | 88.9 · 3 | 108 · 3 | 159 · 3 | 219 · 3 | 273 · 3 | 324 · 3 | 406 · 3 | 508 · 4 | 660 · 5 |
| F - Typical internal diameter ²⁾ [mm] | 70 | 83 | 102 | 153 | 213 | 261 | 318 | 400 | 500 | 650 |
| G - External diameter [mm] ISO-F flange and FLU ³⁾ | 130 | 145 | 165 | 225 | 285 | 335 | 425 | 510 | 610 | 750 |
| H - Bolt holes [mm] ISO-F flange and FLU ³⁾ | 110 | 125 | 145 | 200 | 260 | 310 | 395 | 480 | 580 | 720 |
| J - Height [mm] ISO-F flange and FLU | 12 | 12 | 12 | 16 | 16 | 16 | 20 | 20 | 20 | 24 |
| Number of bore holes · diameter [mm] ISO-F flange and FLU ³⁾ | 4 · 9 | 8 · 9 | 8 · 9 | 8 · 11 | 12 · 11 | 12 · 11 | 12 · 13.5 | 16 · 13.5 | 16 · 13.5 | 20 · 13.5 |
| Recommended number of bracket screws for elastomer seals ⁴⁾ | 4 | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 12 | 12 |
| Minimal number of bracket screws for aluminum edged seal ⁴⁾ | 4 | 6 | 6 | 8 | 10 | 12 | - | - | - | - |
| Number of claws / screws | 4 · M8 | 8 · M8 | 8 · M8 | 8 · M10 | 12 · M10 | 12 · M10 | 12 · M12 | 16 · M12 | 16 · M12 | 20 · M12 |

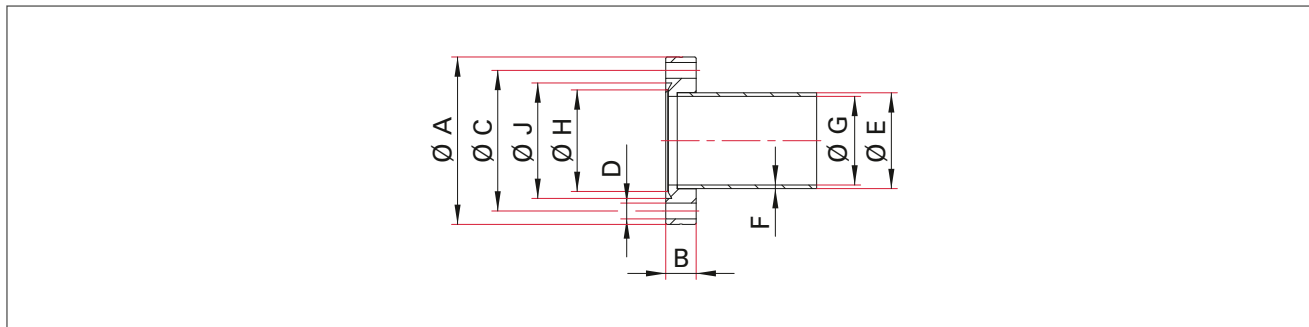
¹⁾ Additional pipe dimensions can be found particularly in the products "weld ring flange" and "flange with half nipple".

²⁾ The minimum inner diameter is determined by the combination of flange, pipe and centering ring. In addition, welding seams and manufacturing tolerances of the pipes can locally reduce the free diameter.

³⁾ FLU = Rotatable bolt ring

⁴⁾ Note the installation instructions for the component!

Dimensions for CF flange



Primary dimensions of CF flanges

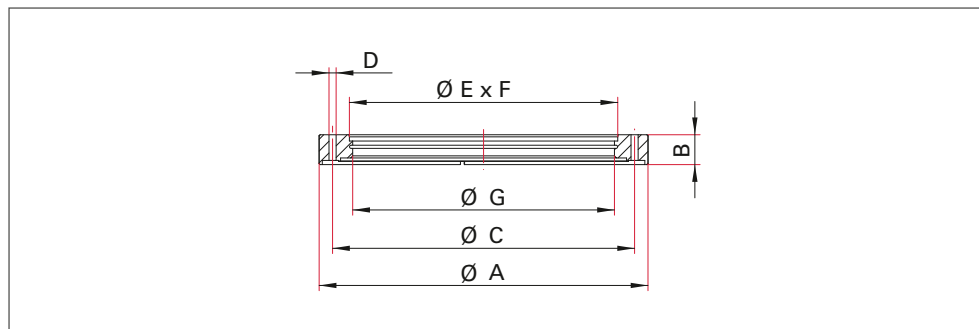
| Nominal diameter | DN 16 CF | DN 25 CF | DN 40 CF | DN 50 CF | DN 63 CF | DN 75 CF | DN 100 CF |
|--|----------|----------|----------|-------------|----------|----------|-----------|
| A – External diameter [mm] | 34.0 | 54.0 | 69.9 | 85.7 | 113.5 | 117.4 | 152.0 |
| A – External diameter [inch] | 1-1/3 | 2-1/8 | 2-3/4 | 3-3/8 | 4-1/2 | 4-5/8 | 6 |
| B – Flange height [mm] | 7.75 | 12.0 | 12.7 | 17.3 | 17.5 | 17.5 | 19.8 |
| C – Bolt hole diameter for screws [mm] | 27.0 | 41.3 | 58.7 | 72.4 | 92.2 | 102.3 | 130.3 |
| D – Number · Diameter Screw bore holes [mm] | 6 · 4.4 | 4 · 6.6 | 6 · 6.6 | 8 · 8.4 | 8 · 8.4 | 10 · 8.4 | 16 · 8.4 |
| E · F – Typical outside pipe diameter ¹⁾ [mm] | 18 · 1 | 28 · 2 | 40 · 1.5 | 50.8 · 1.65 | 70 · 2 | 76.1 · 2 | 108 · 2 |
| G – Typical internal diameter ²⁾ [mm] | 16 | 24 | 37 | 47.5 | 66 | 72.1 | 104 |
| H – Diameter cutting edge [mm] | 18.3 | 27.7 | 41.9 | 55.9 | 77 | 86.2 | 115.3 |
| J – Diameter groove for flange seal [mm] | 21.4 | 33.0 | 48.25 | 61.8 | 82.5 | 91.6 | 120.6 |

| Nominal diameter | DN 130 CF | DN 160 CF | DN 200 CF | DN 250 CF | DN 300 CF | DN 350 CF |
|--|------------|-----------|-----------|-----------|-----------|-----------|
| A – External diameter [mm] | 171.4 | 202.4 | 253.2 | 304.8 | 355.6 | 419.1 |
| A – External diameter [inch] | 6-3/4 | 8 | 10 | 12 | 14 | 16.5 |
| B – Flange height [mm] | 21.4 | 22.2 | 24.5 | 26.0 | 28.5 | 28.5 |
| C – Bolt hole diameter screws [mm] | 151.6 | 181.0 | 231.8 | 284.0 | 325.4 | 388.9 |
| D – Number · Cross section Screw bore holes [mm] | 18 · 8.4 | 20 · 8.4 | 24 · 8.4 | 32 · 8.4 | 30 · 10.5 | 36 · 10.5 |
| E · F – Typical outside pipe diameter ¹⁾ [mm] | 127 · 1.65 | 159 · 2 | 205 · 2.5 | 256 · 3 | 306 · 3 | 356 · 3 |
| G – Typical internal diameter ²⁾ [mm] | 123.7 | 154.5 | 200 | 250 | 300 | 350 |
| H – Diameter cutting edge [mm] | 136.3 | 166.1 | 216.9 | 267 | 308.9 | 370.7 |
| J – Diameter groove for flange seal [mm] | 141.8 | 171.4 | 222.2 | 273.1 | 313.5 | 376.8 |

¹⁾ Additional pipe dimensions can be found particularly in the products “weld ring flange” and “flange with half nipple”..

²⁾ The minimum internal diameter is determined by the combination of flange, pipe and seal. In addition, welding seams and manufacturing tolerances of the pipes can locally reduce the free diameter.

Dimensions for COF flange



Primary dimensions of COF flanges

| Nominal diameter | DN 400 COF | DN 450 COF | DN 500 COF | DN 600 COF | DN 800 COF |
|--|---------------|---------------|---------------|---------------|---------------|
| A – External diameter [mm] | 497 | 562 | 595 | 690 | 890 |
| B – Flange height [mm] | 33 | 38 | 43 | 43 | 43 |
| C – Bolt hole diameter screws [mm] | 454 | 513 | 559 | 661 | 859 |
| D – Number · Diameter Screw bore holes [mm] | 36 · 13 | 36 · 17 | 36 · 17 | 40 · 17 | 52 · 17 |
| E · F – Pipe dimension [mm] | 406 · 3 | 458 · 4 | 508 · 4 | 610 · 5 | 812 · 6 |
| G – Internal diameter ¹⁾ [mm] | 400 | 450 | 500 | 600 | 800 |

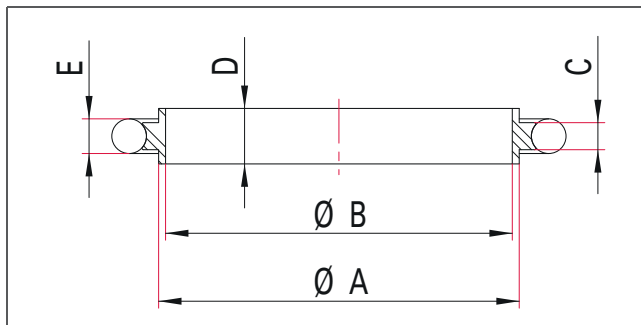
¹⁾ The minimum internal diameter is determined by the combination of flange and pipe. In addition, welding seams and manufacturing tolerances of the pipes can locally reduce the free diameter.

ISO-KF Centering Ring



- Material: O-ring in various materials
- Temperature range: FKM: -15 to 150 °C (shortly up to 200 °C); NBR: -25 to 120 °C; CR: -5 to 120 °C; EPDM: -50 to 130 °C

Dimensions



Aluminum EN AW-6061

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | CR | 12 | 10 | 3.9 | 8 | 5 | 116ZRG010 |
| DN 16 KF | CR | 17 | 16 | 3.9 | 8 | 5 | 116ZRG016 |
| DN 25 KF | CR | 26 | 25 | 3.9 | 8 | 5 | 116ZRG025 |
| DN 40 KF | CR | 41 | 40 | 3.9 | 8 | 5 | 116ZRG040 |
| DN 50 KF | CR | 52 | 50 | 3.9 | 8 | 5.33 | 116ZRG050 |
| DN 10 KF | FKM | 12 | 10 | 3.9 | 8 | 5 | 112ZRG010 |
| DN 16 KF | FKM | 17 | 16 | 3.9 | 8 | 5 | 112ZRG016 |
| DN 25 KF | FKM | 26 | 25 | 3.9 | 8 | 5 | 112ZRG025 |
| DN 40 KF | FKM | 41 | 40 | 3.9 | 8 | 5 | 112ZRG040 |
| DN 50 KF | FKM | 52 | 50 | 3.9 | 8 | 5.33 | 112ZRG050 |
| DN 10 KF | NBR | 12 | 10 | 3.9 | 8 | 5 | 111ZRG010 |
| DN 16 KF | NBR | 17 | 16 | 3.9 | 8 | 5 | 111ZRG016 |
| DN 25 KF | NBR | 26 | 25 | 3.9 | 8 | 5 | 111ZRG025 |
| DN 40 KF | NBR | 41 | 40 | 3.9 | 8 | 5 | 111ZRG040 |
| DN 50 KF | NBR | 52 | 50 | 3.9 | 8 | 5.33 | 111ZRG050 |

According to ISO 2861

Stainless Steel 304/1.4301

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | FKM | 12 | 10 | 3.9 | 8 | 5 | 122ZRG010 |
| DN 16 KF | FKM | 17 | 16 | 3.9 | 8 | 5 | 122ZRG016 |
| DN 25 KF | FKM | 26 | 25 | 3.9 | 8 | 5 | 122ZRG025 |
| DN 40 KF | FKM | 41 | 40 | 3.9 | 8 | 5 | 122ZRG040 |
| DN 50 KF | FKM | 52 | 50 | 3.9 | 8 | 5.33 | 122ZRG050 |
| DN 16 KF | EPDM | 17 | 16 | 3.9 | 8 | 5 | 124ZRG016 |
| DN 25 KF | EPDM | 26 | 25 | 3.9 | 8 | 5 | 124ZRG025 |
| DN 40 KF | EPDM | 41 | 40 | 3.9 | 8 | 5 | 124ZRG040 |
| DN 50 KF | EPDM | 52 | 50 | 3.9 | 8 | 5.33 | 124ZRG050 |

According to ISO 2861

Stainless Steel 316L/1.4404

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | FKM | 12 | 10 | 3.9 | 8 | 5 | 172ZRG010 |
| DN 16 KF | FKM | 17 | 16 | 3.9 | 8 | 5 | 172ZRG016 |
| DN 25 KF | FKM | 26 | 25 | 3.9 | 8 | 5 | 172ZRG025 |
| DN 40 KF | FKM | 41 | 40 | 3.9 | 8 | 5 | 172ZRG040 |
| DN 50 KF | FKM | 52 | 50 | 3.9 | 8 | 5.33 | 172ZRG050 |

According to ISO 2861

ISO-KF Centering Ring, Plastic

- Material: Plastic
- Temperature range: -15 to 150 °C (shortly up to 200 °C)



PTFE

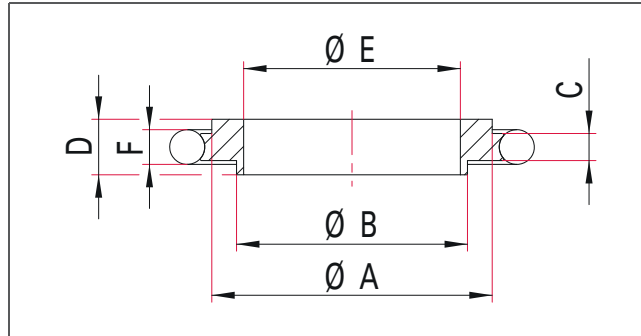
| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | FKM | 12 | 10 | 3.9 | 8 | 5 | 132ZRG010 |
| DN 16 KF | FKM | 17 | 16 | 3.9 | 8 | 5 | 132ZRG016 |
| DN 25 KF | FKM | 26 | 25 | 3.9 | 8 | 5 | 132ZRG025 |
| DN 40 KF | FKM | 41 | 40 | 3.9 | 8 | 5 | 132ZRG040 |
| DN 50 KF | FKM | 52 | 50 | 3.9 | 8 | 5.33 | 132ZRG050 |

ISO-KF Reducer Centering Ring



- Material: O-ring in various materials
- Temperature range: FKM: -15 to 150 °C (shortly up to 200 °C);
NBR: -25 to 120 °C; CR: -5 to 120 °C

Dimensions



Aluminum EN AW-6061

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Nominal diameter reduced | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------|--------------------------|--------------|
| DN 16 KF | FKM | 17 | 12 | 3.9 | 8 | 10 | 5 | DN 10 KF | 112ZRR016 |
| DN 25 KF | FKM | 26 | 22 | 3.9 | 8 | 21 | 5 | DN 20 KF | 112ZRR025 |
| DN 40 KF | FKM | 41 | 34 | 3.9 | 8 | 32 | 5 | DN 32 KF | 112ZRR040 |
| DN 16 KF | NBR | 17 | 12 | 3.9 | 8 | 10 | 5 | DN 10 KF | 111ZRR016 |
| DN 25 KF | NBR | 26 | 22 | 3.9 | 8 | 21 | 5 | DN 20 KF | 111ZRR025 |
| DN 40 KF | NBR | 41 | 34 | 3.9 | 8 | 32 | 5 | DN 32 KF | 111ZRR040 |
| DN 16 KF | CR | 17 | 12 | 3.9 | 8 | 10 | 5 | DN 10 KF | 116ZRR016 |
| DN 25 KF | CR | 26 | 22 | 3.9 | 8 | 21 | 5 | DN 20 KF | 116ZRR025 |
| DN 40 KF | CR | 41 | 34 | 3.9 | 8 | 32 | 5 | DN 32 KF | 116ZRR040 |

According to ISO 2861

Stainless Steel 304/1.4301

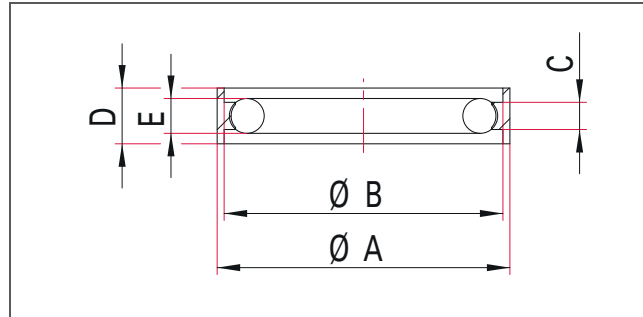
| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Nominal diameter reduced | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------|--------------------------|--------------|
| DN 16 KF | FKM | 17 | 12 | 3.9 | 8 | 10 | 5 | DN 10 KF | 122ZRR016 |
| DN 25 KF | FKM | 26 | 22 | 3.9 | 8 | 21 | 5 | DN 20 KF | 122ZRR025 |
| DN 40 KF | FKM | 41 | 34 | 3.9 | 8 | 32 | 5 | DN 32 KF | 122ZRR040 |

According to ISO 2861

ISO-KF Outer Centering Ring

- Available in aluminum, stainless steel or plastic

Dimensions



Aluminum EN AW-6061

- Temperature range: FKM: -15 to 150 °C (shortly up to 200 °C); EPDM: -50 to 130 °C

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 16 KF | EPDM | 32.5 | 30 | 3.9 | 8 | 5 | 114ZAR016 |
| DN 25 KF | EPDM | 42 | 40 | 3.9 | 8 | 5 | 114ZAR025 |
| DN 40 KF | EPDM | 57.5 | 55 | 3.9 | 8 | 5 | 114ZAR040 |
| DN 50 KF | EPDM | 77.5 | 75 | 3.9 | 8 | 5.33 | 114ZAR050 |
| DN 16 KF | FKM | 32.5 | 30 | 3.9 | 8 | 5 | 112ZAR016 |
| DN 25 KF | FKM | 42 | 40 | 3.9 | 8 | 5 | 112ZAR025 |
| DN 40 KF | FKM | 57.5 | 55 | 3.9 | 8 | 5 | 112ZAR040 |
| DN 50 KF | FKM | 77.5 | 75 | 3.9 | 8 | 5.33 | 112ZAR050 |

Stainless Steel 304/1.4301

- Temperature range: -15 to 150 °C (shortly up to 200 °C)

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 16 KF | FKM | 32.5 | 30 | 3.9 | 8 | 5 | 122ZAR016 |
| DN 25 KF | FKM | 42 | 40 | 3.9 | 8 | 5 | 122ZAR025 |
| DN 40 KF | FKM | 57.5 | 55 | 3.9 | 8 | 5 | 122ZAR040 |
| DN 50 KF | FKM | 77.5 | 75 | 3.9 | 8 | 5.33 | 122ZAR050 |

Plastic PTFE

- Temperature range: -15 to 150 °C (shortly up to 200 °C)

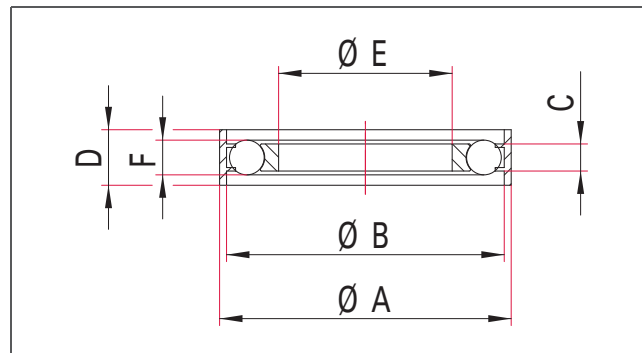
| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 16 KF | FKM | 32.5 | 30 | 3.9 | 8 | 5 | 132ZAR016 |
| DN 25 KF | FKM | 42 | 40 | 3.9 | 8 | 5 | 132ZAR025 |
| DN 40 KF | FKM | 57.5 | 55 | 3.9 | 8 | 5 | 132ZAR040 |
| DN 50 KF | FKM | 77.5 | 75 | 3.9 | 8 | 5.33 | 132ZAR050 |

ISO-KF Outer Centering Ring with Inner Support Ring



- Inner ring material: Stainless steel
- Temperature range: -15 to 150 °C (shortly up to 200 °C)

Dimensions



Aluminum EN AW-6061

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 16 KF | FKM | 32.5 | 30 | 3.9 | 8 | 16 | 5 | 112ZAI016 |
| DN 25 KF | FKM | 42 | 40 | 3.9 | 8 | 25 | 5 | 112ZAI025 |
| DN 40 KF | FKM | 57.5 | 55 | 3.9 | 8 | 40 | 5 | 112ZAI040 |
| DN 50 KF | FKM | 77.5 | 75 | 3.9 | 8 | 50 | 5.33 | 112ZAI050 |

Stainless Steel 304/1.4301

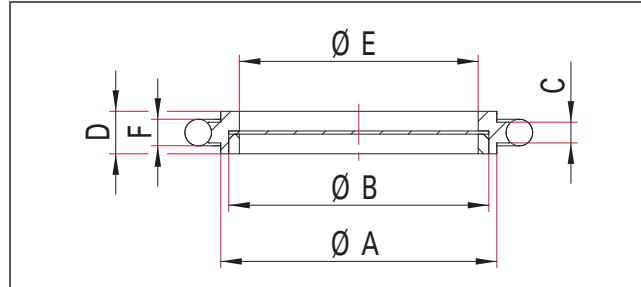
| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 16 KF | FKM | 32.5 | 30 | 3.9 | 8 | 16 | 5 | 122ZAI016 |
| DN 25 KF | FKM | 42 | 40 | 3.9 | 8 | 25 | 5 | 122ZAI025 |
| DN 40 KF | FKM | 57.5 | 55 | 3.9 | 8 | 40 | 5 | 122ZAI040 |
| DN 50 KF | FKM | 75.5 | 75 | 3.9 | 8 | 50 | 5.33 | 122ZAI050 |

ISO-KF Centering Ring with Screen



- Material: Stainless Steel
- Wire thickness: Approximately 0.3 mm
- Mesh: Approximately 1 mm
- Temperature range: -15 to 150 °C (shortly up to 200 °C)

Dimensions



Stainless Steel 304/1.4301

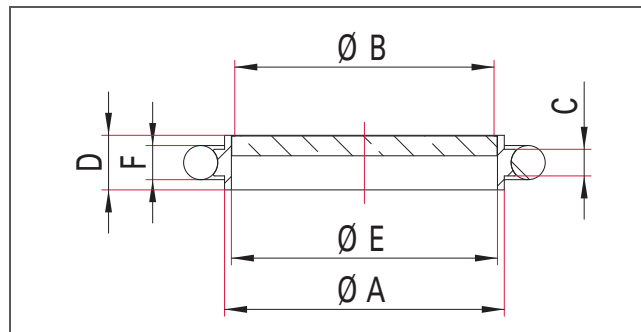
| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | FKM | 12 | 10 | 3.9 | 8 | 7 | 5 | 122ZRD010 |
| DN 16 KF | FKM | 17 | 16 | 3.9 | 8 | 13 | 5 | 122ZRD016 |
| DN 25 KF | FKM | 26 | 25 | 3.9 | 8 | 19 | 5 | 122ZRD025 |
| DN 40 KF | FKM | 41 | 40 | 3.9 | 8 | 34 | 5 | 122ZRD040 |
| DN 50 KF | FKM | 52 | 50 | 3.9 | 8 | 45 | 5.33 | 122ZRD050 |

ISO-KF Centering Ring with Sintered Metal Filter



- Material: Sintered bronze
- Mesh: Average pore diameter: Approximately 0.02 mm
- Temperature range: -15 to 150 °C (shortly up to 200 °C)

Dimensions



Stainless Steel 304/1.4301

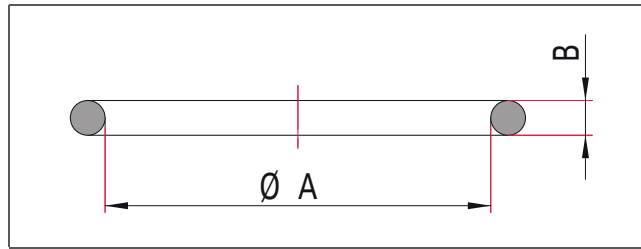
| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | FKM | 12 | 9 | 3.9 | 8 | 10 | 5 | 122ZRS010 |
| DN 16 KF | FKM | 17 | 13 | 3.9 | 8 | 14 | 5 | 122ZRS016 |
| DN 25 KF | FKM | 26 | 23 | 3.9 | 8 | 24 | 5 | 122ZRS025 |
| DN 40 KF | FKM | 41 | 38 | 3.9 | 8 | 39 | 5 | 122ZRS040 |
| DN 50 KF | FKM | 52 | 48 | 3.9 | 8 | 49 | 5.33 | 122ZRS050 |

ISO-KF O-Ring

- Quantities: Item no. suffix -S10 = 10 pieces



Dimensions



FKM

- Temperature range: -15 to 150 °C (shortly up to 200 °C)

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------|
| DN 10 KF | 15 | 5 | 102DOR010-S10 |
| DN 16 KF | 18 | 5 | 102DOR016-S10 |
| DN 25 KF | 28 | 5 | 102DOR025-S10 |
| DN 40 KF | 42 | 5 | 102DOR040-S10 |
| DN 50 KF | 53.34 | 5.33 | 102DOR050-S10 |

According to ISO 2861

NBR

- Temperature range: -25 to 120 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------|
| DN 10 KF | 15 | 5 | 101DOR010-S10 |
| DN 16 KF | 18 | 5 | 101DOR016-S10 |
| DN 25 KF | 28 | 5 | 101DOR025-S10 |
| DN 40 KF | 42 | 5 | 101DOR040-S10 |
| DN 50 KF | 53.34 | 5.33 | 101DOR050-S10 |

According to ISO 2861

Silicone (VMQ)

- Temperature range: -55 to 200 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------|
| DN 10 KF | 15 | 5 | 103DOR010-S10 |
| DN 16 KF | 18 | 5 | 103DOR016-S10 |
| DN 25 KF | 28 | 5 | 103DOR025-S10 |
| DN 40 KF | 42 | 5 | 103DOR040-S10 |
| DN 50 KF | 53.34 | 5.33 | 103DOR050-S10 |

According to ISO 2861

EPDM

- Temperature range: -50 to 130 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------|
| DN 10 KF | 15 | 5 | 104DOR010-S10 |
| DN 16 KF | 18 | 5 | 104DOR016-S10 |
| DN 25 KF | 28 | 5 | 104DOR025-S10 |
| DN 40 KF | 42 | 5 | 104DOR040-S10 |
| DN 50 KF | 53.34 | 5.33 | 104DOR050-S10 |

According to ISO 2861

CR

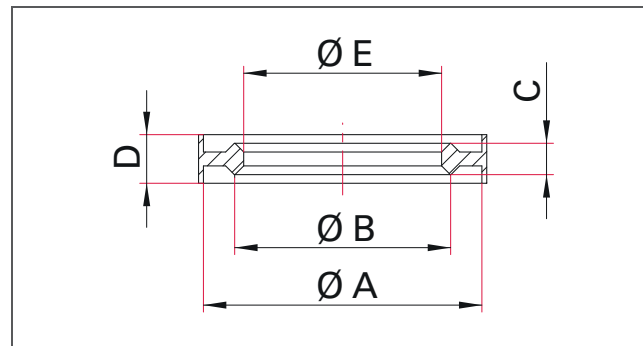
- Temperature range: -5 to 120 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------|
| DN 10 KF | 15 | 5 | 106DOR010-S10 |
| DN 16 KF | 18 | 5 | 106DOR016-S10 |
| DN 25 KF | 28 | 5 | 106DOR025-S10 |
| DN 40 KF | 42 | 5 | 106DOR040-S10 |
| DN 50 KF | 53.34 | 5.33 | 106DOR050-S10 |

According to ISO 2861

ISO-KF Aluminum Edged Seal

- For stainless steel flanges
- No gas permeation
- Fastener: ISO-KF Clamp for Metal Seals
- For single use only
- Temperature range: -196 to 150 °C

Dimensions**Aluminum EN AW-6082/3.2315, Soft-annealed**

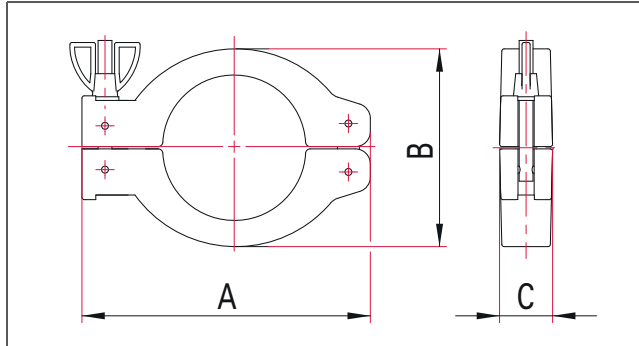
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 10 / 16 KF | 30 | 21 | 4.5 | 7 | 18.5 | 110ZSK016 |
| DN 20 / 25 KF | 40 | 31 | 4.5 | 7 | 28.5 | 110ZSK025 |
| DN 32 / 40 KF | 55 | 46 | 4.5 | 7 | 43.5 | 110ZSK040 |
| DN 50 KF | 75 | 66 | 4.5 | 7 | 63.5 | 110ZSK050 |

ISO-KF Clamp for Elastomer Seal



- Suitable for use with elastomer seals
- Torque: max. 2 Nm on wingnut
- Temperature range: -196 to 200 °C
- Over pressure max.: 1500 hPa

Dimensions



Aluminum ADC 12

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 / 16 KF | 63 | 43 | 16 | 110BSR016 |
| DN 20 / 25 KF | 72 | 54 | 16 | 110BSR025 |
| DN 32 / 40 KF | 90 | 70 | 16 | 110BSR040 |
| DN 50 KF | 113 | 92 | 22 | 110BSR050 |

According to ISO 2861

Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 / 16 KF | 62 | 45 | 17 | 120BSR016 |
| DN 20 / 25 KF | 73 | 53 | 17 | 120BSR025 |
| DN 32 / 40 KF | 90 | 68 | 17 | 120BSR040 |
| DN 50 KF | 115 | 90 | 19 | 120BSR050 |

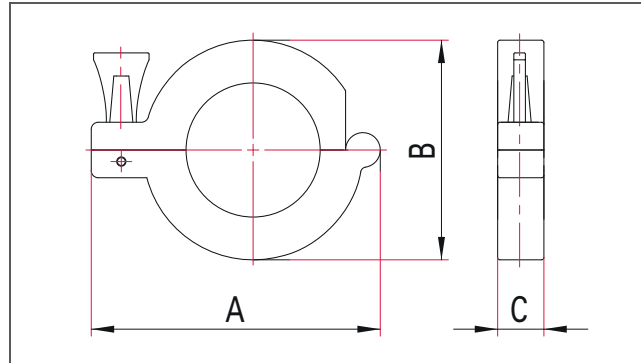
According to ISO 2861

ISO-KF Clamping Ring for Elastomer Seal, Plastic



- Particularly well suited for glass flanges
- Suitable for use with elastomer seals
- Torque: max. 2 Nm on wingnut
- Temperature range: -10 to 80 °C
- Over pressure max.: 500 hPa

Dimensions



Plastic

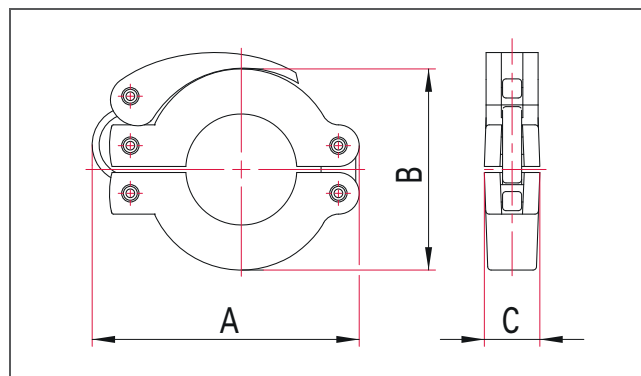
| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 / 16 KF | 65 | 47 | 20 | 130BSR016 |
| DN 20 / 25 KF | 79 | 59 | 20 | 130BSR025 |
| DN 32 / 40 KF | 92 | 74 | 20 | 130BSR040 |
| DN 50 KF | 123 | 95 | 23 | 130BSR050 |

ISO-KF Quick-Release Clamp



- Suitable for use with elastomer seals
- Temperature range: -10 to 80 °C
- Over pressure max.: 500 hPa

Dimensions



Aluminum/Plastic

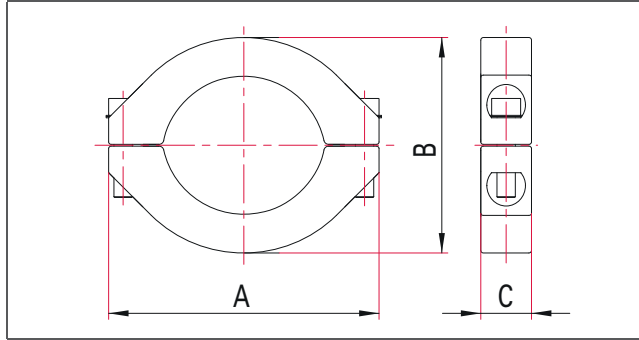
| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 / 16 KF | 68 | 45 | 16 | 110BSS016 |
| DN 20 / 25 KF | 80 | 55 | 16 | 110BSS025 |
| DN 32 / 40 KF | 98 | 70 | 18 | 110BSS040 |

ISO-KF Clamp for Metal Seals



- Suitable for use with elastomer and metal seals
- Bolts: Hexagon socket, A2-70 steel
- We recommend using a screw thread lubricant
- Temperature range: -196 to 300 °C
- Over pressure max.: 500 hPa

Dimensions



Stainless Steel 304/1.4301

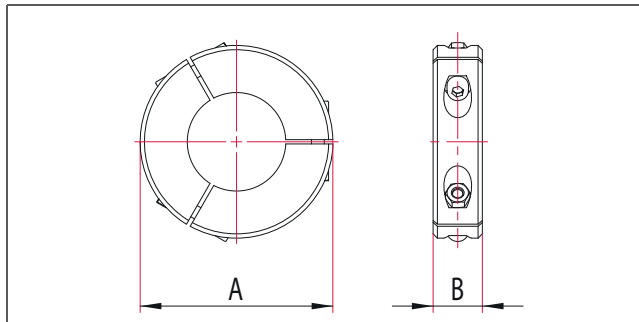
| Nominal diameter | A [mm] | B [mm] | C [mm] | Bolt | Order number |
|------------------|--------|--------|--------|---------|--------------|
| DN 10 / 16 KF | 55 | 47 | 18 | M5 x 25 | 120BSM016 |
| DN 20 / 25 KF | 66.5 | 57 | 18 | M5 x 25 | 120BSM025 |
| DN 32 / 40 KF | 82.5 | 72 | 18 | M5 x 25 | 120BSM040 |
| DN 50 KF | 122 | 96 | 21 | M8 x 35 | 120BSM050 |

ISO-KF Bolt Clamp (3-Part) for Metal Seals



- Suitable for use with metal and elastomer seals
- Bolts: Hexagon socket, A2-70 steel
- Temperature range: -196 to 200 °C
- Over pressure max.: 500 hPa

Dimensions



Aluminum

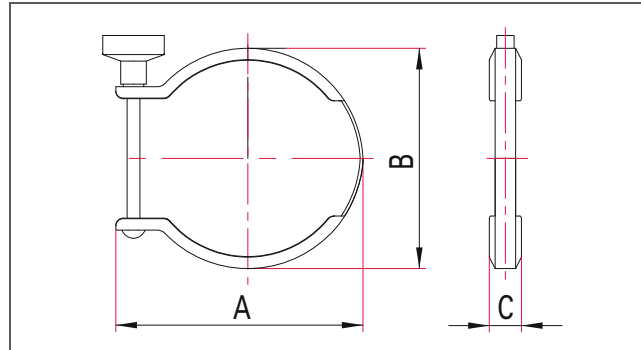
| Nominal diameter | A [mm] | B [mm] | Bolt | Order number |
|------------------|--------|--------|---------|--------------|
| DN 10 / 16 KF | 48 | 18 | M4 x 30 | 110BSD016 |
| DN 20 / 25 KF | 70 | 19 | M6 x 30 | 110BSD025 |
| DN 32 / 40 KF | 85 | 23 | M8 x 35 | 110BSD040 |
| DN 50 KF | 112 | 28 | M8 x 35 | 110BSD050 |

ISO-KF Hingeless Clamp



- Suitable for use with elastomer seals
- Compact design
- Torque: max. 2 Nm on wingnut
- Temperature range: -10 to 125 °C
- Over pressure max.: 500 hPa

Dimensions



Stainless Steel 304/1.4301

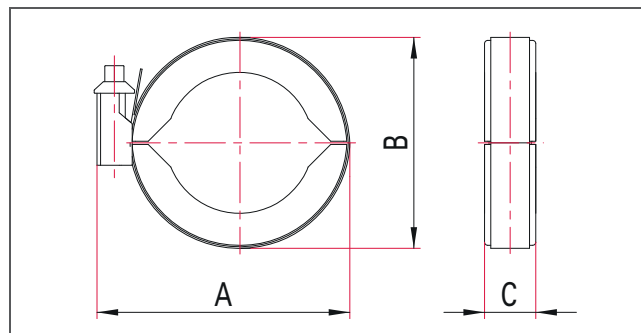
| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 / 16 KF | 47 | 38 | 16 | 120BSG016 |
| DN 20 / 25 KF | 54 | 49 | 16 | 120BSG025 |
| DN 32 / 40 KF | 70 | 62 | 16 | 120BSG040 |
| DN 50 KF | 90 | 84 | 16 | 120BSG050 |

ISO-KF Clamping Ring for Elastomer Seals



- Suitable for use with elastomer seals
- Compact design
- Screw: Hexagon head; wrench width 7 mm
- Temperature range: 0 to 100 °C
- Over pressure max.: 500 hPa

Dimensions



Aluminum ADC 12/Steel

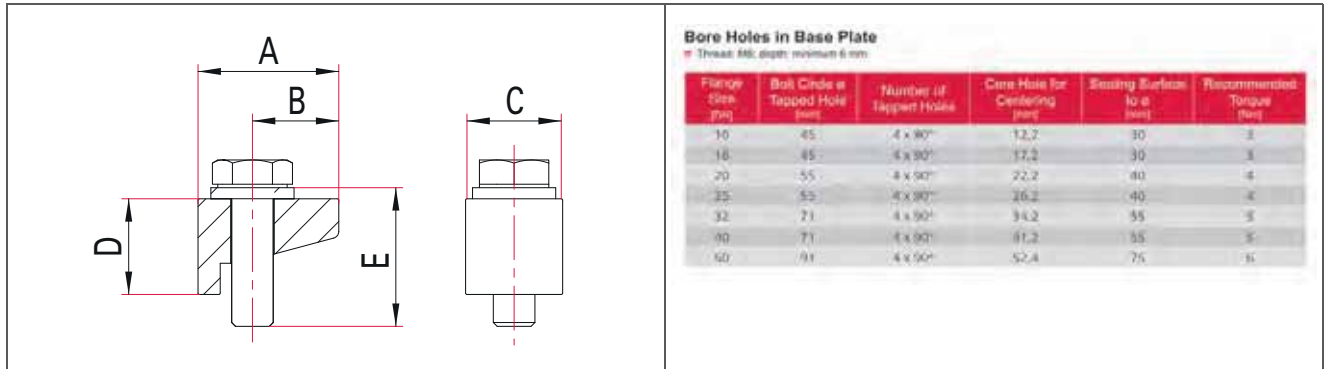
| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 / 16 KF | 54 | 39 | 16 | 110BSB016 |
| DN 20 / 25 KF | 63 | 48 | 16 | 110BSB025 |
| DN 32 / 40 KF | 80 | 64 | 16 | 110BSB040 |

ISO-KF Claw Clamp



- Suitable for use with elastomer seals
- For installing on a base plate with KF centering ring
- Holes: Needed number of tapped holes in base plate: 4x90°
(Thread: M6, depth: min. 6 mm)
- Torque: Max. 8 Nm
- Bolt: Hexagon head, A2-70 steel, M6 x 20 mm
- Temperature range: -196 to 200 °C
- Over pressure max.: 500 hPa

Dimensions



Aluminum EN AW-6061

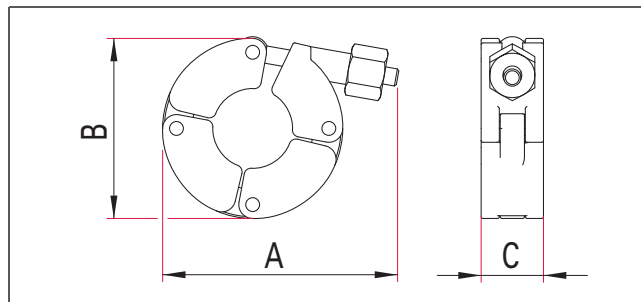
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 10 - 50 KF | 20.5 | 12.5 | 14 | 14 | 20 | 110BPR050-2 |

ISO-KF Chain Clamp, Aluminum



- Suitable for use with elastomer and metallic seals
- Hand grip: Stainless steel
- Temperature range: -196 to 200 °C
- Over pressure max.: 500 hPa

Dimensions



Aluminum/stainless steel

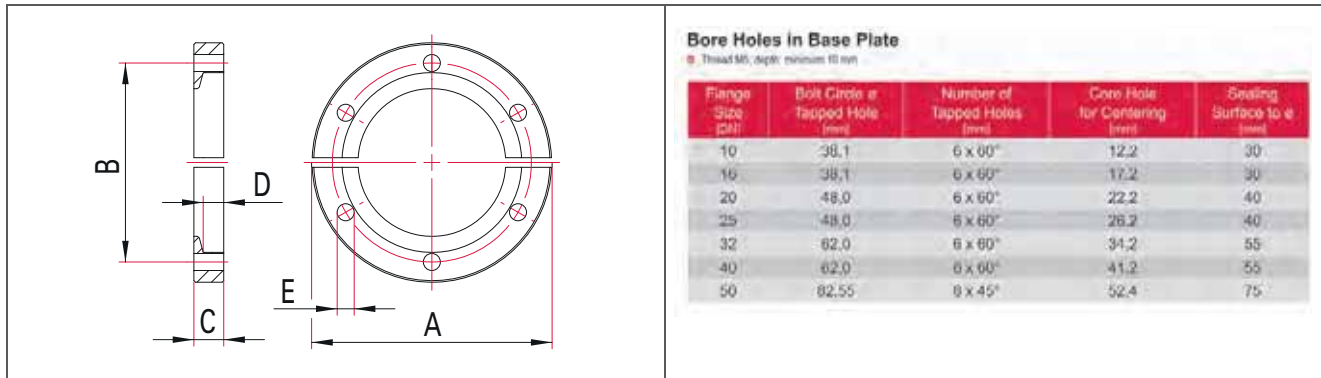
| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10-16 ISO-KF | 71 | 52.5 | 18 | PF 106 016-T |
| DN 20-25 ISO-KF | 82 | 65 | 18 | PF 106 025-T |
| DN 32-40 ISO-KF | 98 | 79 | 18 | PF 106 040-T |
| DN 50 ISO-KF | 117 | 97.5 | 20 | PF 106 050-T |

ISO-KF Bulkhead Clamp



- Suitable for use with elastomer seals
- For mounting on a base plate with KF centering ring
- Holes: Number of tapped holes in base plate: DN 10-40: 6x60°; DN 50: 8x45°
(Thread M5, depth: min. 10 mm)
- Kind of screw: Hexagon head, A2-70 steel, M5x20
- Temperature range: -196 to 200 °C
- Over pressure max.: 500 hPa

Dimensions



Aluminum EN AW-6082/3.2315

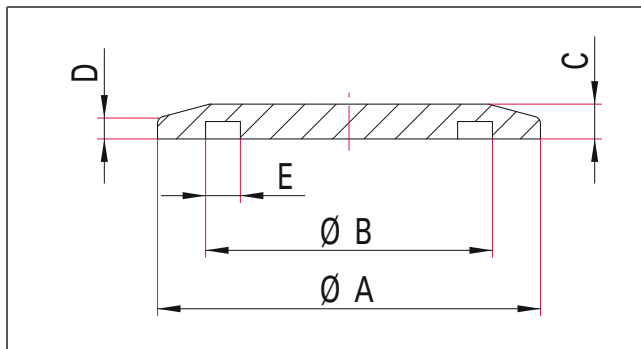
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 10 / 16 KF | 50.8 | 38.1 | 9.2 | 6.5 | 5.3 | 110BUH016 |
| DN 20 / 25 KF | 60.3 | 48 | 9.9 | 6.6 | 5.3 | 110BUH025 |
| DN 32 / 40 KF | 74.6 | 62 | 9.3 | 6.6 | 5.3 | 110BUH040 |
| DN 50 KF | 95.2 | 82.55 | 10.3 | 6.5 | 5.3 | 110BUH050 |

ISO-KF Blank Flange

- Available in stainless steel or aluminum



Dimensions



Aluminum EN AW-6082/3.2315

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure
- Temperature range: -196 to 200 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | 30 | 12.2 | 5 | 3 | - | 110FBL010 |
| DN 16 KF | 30 | 17.2 | 5 | 3 | - | 110FBL016 |
| DN 25 KF | 40 | 26.2 | 5 | 3 | 3.5 | 110FBL025 |
| DN 40 KF | 55 | 41.2 | 5 | 3 | 5 | 110FBL040 |
| DN 50 KF | 75 | 52.4 | 5 | 3 | 5 | 110FBL050 |

Flanges according to ISO 2861

Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | 30 | 12.2 | 5 | 3 | - | 120FBL010 |
| DN 16 KF | 30 | 17.2 | 5 | 3 | - | 120FBL016 |
| DN 25 KF | 40 | 26.2 | 5 | 3 | 3.5 | 120FBL025 |
| DN 40 KF | 55 | 41.2 | 5 | 3 | 5 | 120FBL040 |
| DN 50 KF | 75 | 52.4 | 5 | 3 | 5 | 120FBL050 |

Flanges according to ISO 2861

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | 30 | 12.2 | 5 | 3 | - | 170FBL010 |
| DN 16 KF | 30 | 17.2 | 5 | 3 | - | 170FBL016 |
| DN 25 KF | 40 | 26.2 | 5 | 3 | 3.5 | 170FBL025 |
| DN 40 KF | 55 | 41.2 | 5 | 3 | 5 | 170FBL040 |
| DN 50 KF | 75 | 52.4 | 5 | 3 | 5 | 170FBL050 |

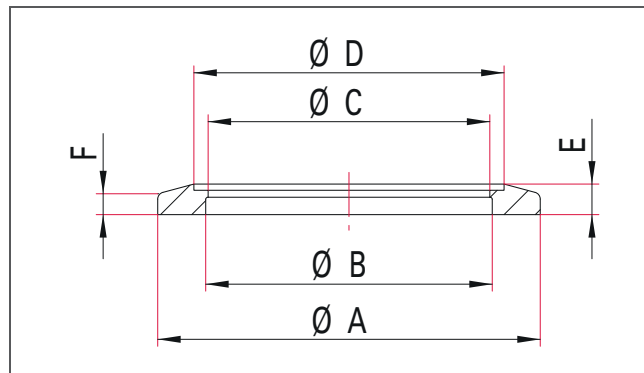
Flanges according to ISO 2861

ISO-KF Weld Ring Flange

- Various stainless steel grades available



Dimensions



Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal); $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | 12.7 x 1.24 | 30 | 12.2 | 10.2 | 12.8 | 5 | 3 | 120FAN010-12 |
| DN 10 KF | 14 x 2 | 30 | 12.2 | 10 | 14.15 | 5 | 3 | 120FAN010-14 |
| DN 16 KF | 19.05 x 1.65 | 30 | 17.2 | 15.75 | 19.2 | 5 | 3 | 120FAN016-19 |
| DN 16 KF | 20 x 2 | 30 | 17.2 | 16 | 20.2 | 5 | 3 | 120FAN016-20 |
| DN 25 KF | 25.4 x 1.65 | 40 | 26.2 | 22.1 | 25.6 | 5 | 3 | 120FAN025-25 |
| DN 25 KF | 28 x 2 | 40 | 26.2 | 24 | 28.2 | 5 | 3 | 120FAN025-28 |
| DN 40 KF | 38 x 1.5 | 55 | 41.2 | 34.8 | 38.4 | 5 | 3 | 120FAN040-38 |
| DN 40 KF | 44.5 x 2 | 55 | 41.2 | 40.5 | 44.7 | 5 | 3 | 120FAN040-44 |
| DN 50 KF | 50.8 x 1.65 | 75 | 52.4 | 47.5 | 51 | 5 | 3 | 120FAN050-51 |
| DN 50 KF | 57 x 3.2 | 75 | 52.4 | 50.6 | 57.2 | 5 | 3 | 120FAN050-57 |

Flanges according to ISO 2861

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal); $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 10 KF | 14 x 2 | 30 | 12.2 | 10 | 14.15 | 5 | 3 | 170FAN010-14 |
| DN 16 KF | 20 x 2 | 30 | 17.2 | 16 | 20.2 | 5 | 3 | 170FAN016-20 |
| DN 25 KF | 28 x 2 | 40 | 26.2 | 24 | 28.2 | 5 | 3 | 170FAN025-28 |
| DN 40 KF | 44.5 x 2 | 55 | 41.2 | 40.5 | 44.7 | 5 | 3 | 170FAN040-44 |
| DN 50 KF | 57 x 3.2 | 75 | 52.4 | 50.6 | 57.2 | 5 | 3 | 170FAN050-57 |

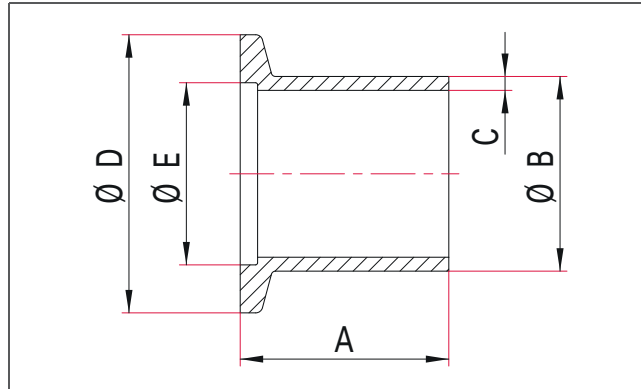
Flanges according to ISO 2861

ISO-KF Half Nipple



- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)

Dimensions



Stainless Steel 304/1.4301

- Temperature range: -196 to 300 °C

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|--------|-----------------|
| DN 10 KF | 14 x 2 | 30 | 14 | 2 | 30 | 12.2 | 120FRA010-14-30 |
| DN 10 KF | 14 x 2 | 52 | 14 | 2 | 30 | 12.2 | 120FRA010-14-52 |
| DN 10 KF | 14 x 2 | 70 | 14 | 2 | 30 | 12.2 | 120FRA010-14-70 |
| DN 16 KF | 19.05 x 1.65 | 40 | 19.05 | 1.65 | 30 | 17.2 | 120FRA016-19-40 |
| DN 16 KF | 20 x 2 | 30 | 20 | 2 | 30 | 17.2 | 120FRA016-20-30 |
| DN 16 KF | 20 x 2 | 52 | 20 | 2 | 30 | 17.2 | 120FRA016-20-52 |
| DN 16 KF | 20 x 2 | 70 | 20 | 2 | 30 | 17.2 | 120FRA016-20-70 |
| DN 25 KF | 25.4 x 1.65 | 40 | 25.4 | 1.65 | 40 | 26.2 | 120FRA025-25-40 |
| DN 25 KF | 28 x 2 | 30 | 28 | 2 | 40 | 26.2 | 120FRA025-28-30 |
| DN 25 KF | 28 x 2 | 55 | 28 | 2 | 40 | 26.2 | 120FRA025-28-55 |
| DN 25 KF | 28 x 2 | 70 | 28 | 2 | 40 | 26.2 | 120FRA025-28-70 |
| DN 40 KF | 38 x 1.5 | 40 | 38 | 1.5 | 55 | 41.2 | 120FRA040-38-40 |
| DN 40 KF | 42.4 x 2 | 26 | 42.4 | 2 | 55 | 41.2 | 120FRA040-42-26 |
| DN 40 KF | 44.5 x 2 | 30 | 44.5 | 2 | 55 | 41.2 | 120FRA040-44-30 |
| DN 40 KF | 44.5 x 2 | 58 | 44.5 | 2 | 55 | 41.2 | 120FRA040-44-58 |
| DN 40 KF | 44.5 x 2 | 70 | 44.5 | 2 | 55 | 41.2 | 120FRA040-44-70 |
| DN 50 KF | 50.8 x 1.65 | 40 | 50.8 | 1.65 | 75 | 52.4 | 120FRA050-50-40 |
| DN 50 KF | 54 x 2 | 26 | 54 | 2 | 75 | 52.4 | 120FRA050-54-26 |
| DN 50 KF | 57 x 3.2 | 30 | 57 | 3.2 | 75 | 52.4 | 120FRA050-57-30 |
| DN 50 KF | 57 x 3.2 | 58 | 57 | 3.2 | 75 | 52.4 | 120FRA050-57-58 |
| DN 50 KF | 57 x 3.2 | 70 | 57 | 3.2 | 75 | 52.4 | 120FRA050-57-70 |

Flanges according to ISO 2861

Stainless Steel 316L/1.4404

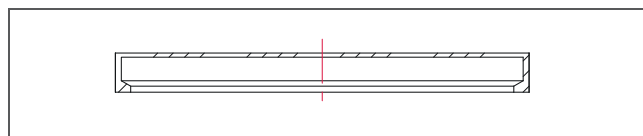
■ Temperature range: -196 to 350 °C

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|--------|-----------------|
| DN 10 KF | 14 x 2 | 30 | 14 | 2 | 30 | 12.2 | 170FRA010-14-30 |
| DN 10 KF | 14 x 2 | 70 | 14 | 2 | 30 | 12.2 | 170FRA010-14-70 |
| DN 16 KF | 19.05 x 1.65 | 40 | 19.05 | 1.65 | 30 | 17.2 | 170FRA016-19-40 |
| DN 16 KF | 20 x 2 | 30 | 20 | 2 | 30 | 17.2 | 170FRA016-20-30 |
| DN 16 KF | 20 x 2 | 70 | 20 | 2 | 30 | 17.2 | 170FRA016-20-70 |
| DN 25 KF | 25.4 x 1.65 | 40 | 25.4 | 1.65 | 40 | 26.2 | 170FRA025-25-40 |
| DN 25 KF | 28 x 2 | 30 | 28 | 2 | 40 | 26.2 | 170FRA025-28-30 |
| DN 25 KF | 28 x 2 | 70 | 28 | 2 | 40 | 26.2 | 170FRA025-28-70 |
| DN 40 KF | 42.4 x 2 | 26 | 42.4 | 2 | 55 | 41.2 | 170FRA040-42-26 |
| DN 40 KF | 44.5 x 2 | 30 | 44.5 | 2 | 55 | 41.2 | 170FRA040-44-30 |
| DN 40 KF | 44.5 x 2 | 70 | 44.5 | 2 | 55 | 41.2 | 170FRA040-44-70 |
| DN 50 KF | 54 x 2 | 26 | 54 | 2 | 75 | 52.4 | 170FRA050-54-26 |
| DN 50 KF | 57 x 3.2 | 30 | 57 | 3.2 | 75 | 52.4 | 170FRA050-57-30 |
| DN 50 KF | 57 x 3.2 | 70 | 57 | 3.2 | 75 | 52.4 | 170FRA050-57-70 |

Flanges according to ISO 2861

ISO-KF Flange Cap

■ Made from plastic

**Dimensions****Polyethylene (PE)**

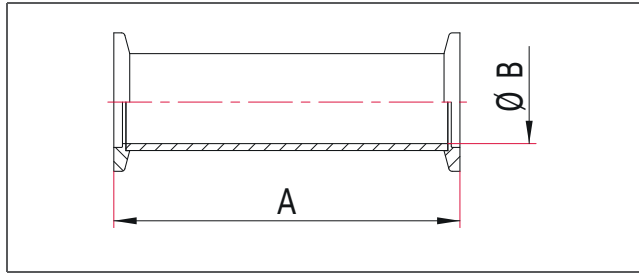
| Nominal diameter | Quantity per package | Order number |
|------------------|----------------------|---------------|
| DN 16 KF | 10 | 130FSK016-S10 |
| DN 25 KF | 10 | 130FSK025-S10 |
| DN 40 KF | 10 | 130FSK040-S10 |
| DN 50 KF | 10 | 130FSK050-S10 |

ISO-KF Full Nipple

- Custom lengths on request



Dimensions



Aluminium EN AW-6082/3.2315

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 KF | 80 | 16 | 110RZS016 |
| DN 25 KF | 100 | 24 | 110RZS025 |
| DN 40 KF | 130 | 40 | 110RZS040 |

Flanges according to ISO 2861

Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 KF | 80 | 16 | 120RZS016 |
| DN 25 KF | 100 | 24 | 120RZS025 |
| DN 40 KF | 130 | 40 | 120RZS040 |
| DN 50 KF | 140 | 50 | 120RZS050 |

Flanges according to ISO 2861

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 KF | 80 | 16 | 170RZS016 |
| DN 25 KF | 100 | 24 | 170RZS025 |
| DN 40 KF | 130 | 40 | 170RZS040 |
| DN 50 KF | 140 | 50 | 170RZS050 |

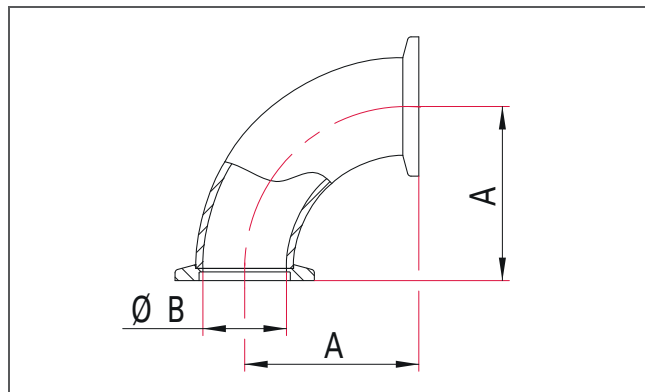
Flanges according to ISO 2861

ISO-KF Elbow, Radius, 90°

- Various stainless steel grades available



Dimensions



Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 10 KF | 30 | 10 | 120RRB010-90 |
| DN 16 KF | 40 | 16 | 120RRB016-90 |
| DN 25 KF | 50 | 24 | 120RRB025-90 |
| DN 40 KF | 65 | 40 | 120RRB040-90 |
| DN 50 KF | 70 | 51 | 120RRB050-90 |

Flanges according to ISO 2861

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 KF | 40 | 16 | 170RRB016-90 |
| DN 25 KF | 50 | 24 | 170RRB025-90 |
| DN 40 KF | 65 | 40 | 170RRB040-90 |
| DN 50 KF | 70 | 51 | 170RRB050-90 |

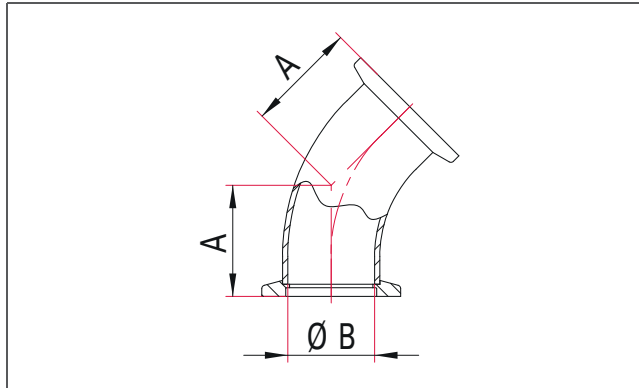
Flanges according to ISO 2861

ISO-KF Elbow, Radius, 45°

- Various stainless steel grades available



Dimensions



Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 10 KF | 30 | 10 | 120RRB010-45 |
| DN 16 KF | 25 | 16 | 120RRB016-45 |
| DN 25 KF | 32 | 24 | 120RRB025-45 |
| DN 40 KF | 40 | 40 | 120RRB040-45 |
| DN 50 KF | 51 | 51 | 120RRB050-45 |

Flanges according to ISO 2861

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 KF | 26 | 16 | 170RRB016-45 |
| DN 25 KF | 32 | 24 | 170RRB025-45 |
| DN 40 KF | 40 | 40 | 170RRB040-45 |
| DN 50 KF | 51 | 51 | 170RRB050-45 |

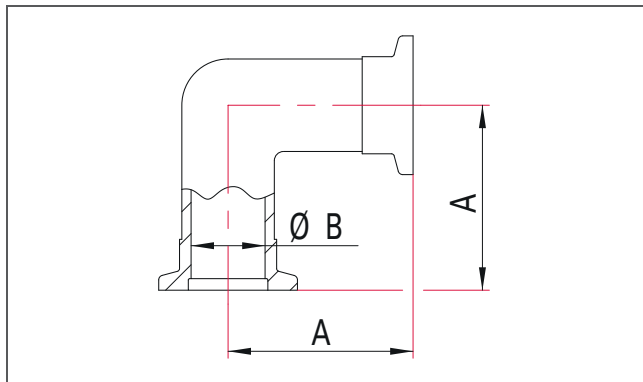
Flanges according to ISO 2861

ISO-KF Elbow, 90°

- Aluminum
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

Aluminum EN AW-6082/3.2315

Dimensions

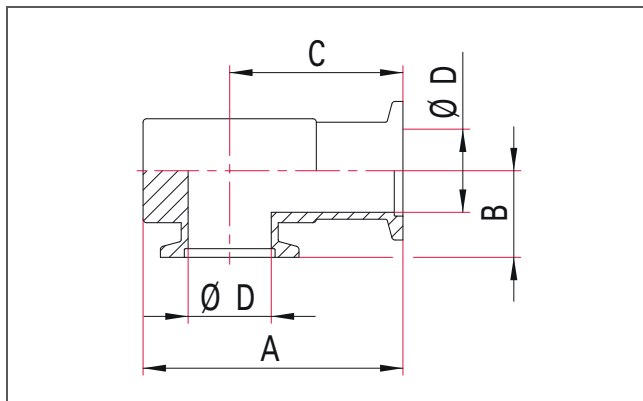


| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 10 KF | 30 | 10 | 110RRB010-90 |
| DN 16 KF | 40 | 16 | 110RRB016-90 |
| DN 25 KF | 50 | 25 | 110RRB025-90 |
| DN 40 KF | 65 | 39 | 110RRB040-90 |

Flanges according to ISO 2861

Aluminum EN AW-2007/3.1645

Dimensions



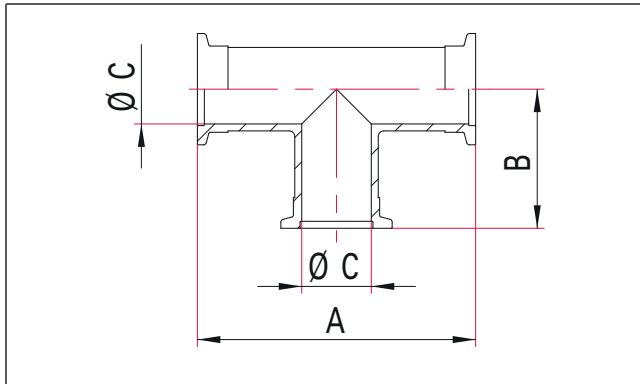
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 16 KF | 58 | 20 | 40 | 16 | 110RWS016-V |
| DN 25 KF | 73 | 25 | 50 | 25 | 110RWS025-V |
| DN 40 KF | 95 | 35 | 65 | 40 | 110RWS040-V |

Flanges according to ISO 2861

ISO-KF Tee

Aluminum EN AW-6082/3.2315

Dimensions



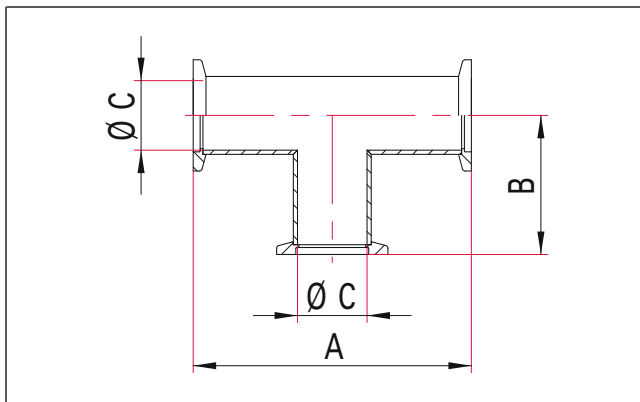
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 KF | 60 | 30 | 10 | 110RTS010 |
| DN 16 KF | 80 | 40 | 16 | 110RTS016 |
| DN 25 KF | 100 | 50 | 25 | 110RTS025 |
| DN 40 KF | 130 | 65 | 40 | 110RTS040 |

Flanges according to ISO 2861

Stainless Steel 304/1.4301

Dimensions



- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 KF | 60 | 30 | 10 | 120RTS010 |
| DN 16 KF | 80 | 40 | 16 | 120RTS016 |
| DN 25 KF | 100 | 50 | 24 | 120RTS025 |
| DN 40 KF | 130 | 65 | 40 | 120RTS040 |
| DN 50 KF | 140 | 70 | 51 | 120RTS050 |

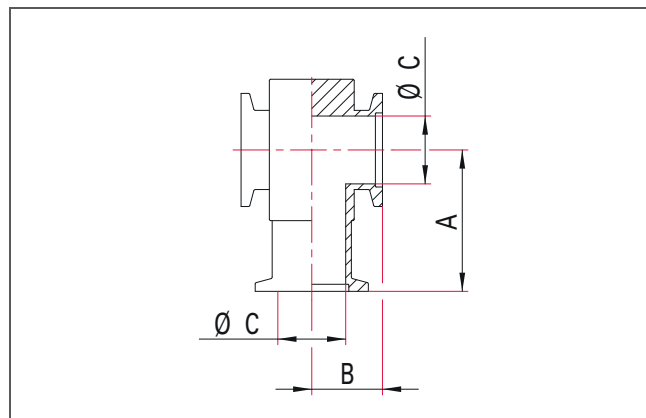
Flanges according to ISO 2861

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 KF | 80 | 40 | 16 | 170RTS016 |
| DN 25 KF | 100 | 50 | 24 | 170RTS025 |
| DN 40 KF | 130 | 65 | 40 | 170RTS040 |
| DN 50 KF | 140 | 70 | 50 | 170RTS050 |

Flanges according to ISO 2861

Aluminum EN AW-2007/3.1645**Dimensions**

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

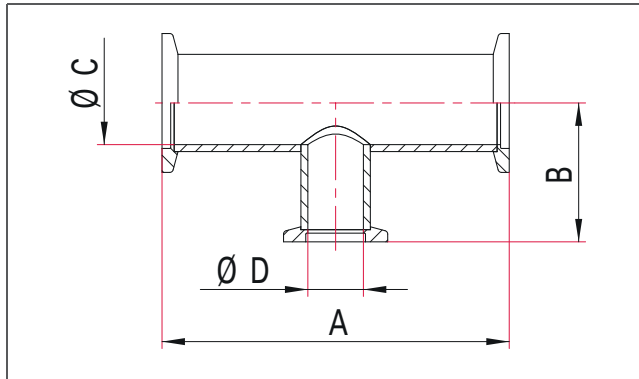
| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 KF | 40 | 20 | 16 | 110RTS016-V |
| DN 25 KF | 50 | 25 | 25 | 110RTS025-V |
| DN 40 KF | 65 | 35 | 40 | 110RTS040-V |

Flanges according to ISO 2861

ISO-KF Reducer Tee

Stainless Steel 304/1.4301

Dimensions



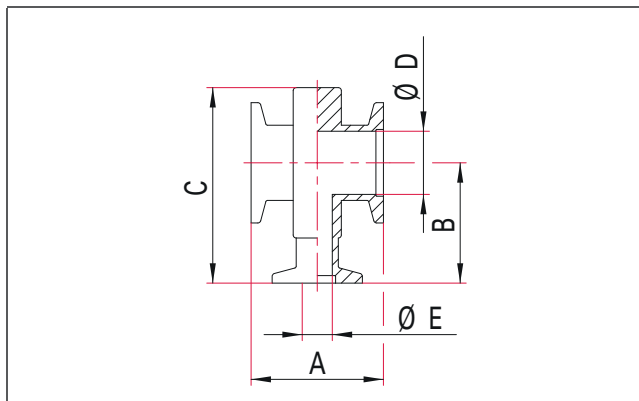
- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------------------------|---------------|
| DN 25 KF | 100 | 40 | 24 | 16 | DN 16 KF | 120RTR025-016 |
| DN 40 KF | 130 | 40 | 40 | 16 | DN 16 KF | 120RTR040-016 |
| DN 40 KF | 130 | 50 | 40 | 24 | DN 25 KF | 120RTR040-025 |
| DN 50 KF | 140 | 50 | 50 | 16 | DN 16 KF | 120RTR050-016 |
| DN 50 KF | 140 | 65 | 50 | 24 | DN 25 KF | 120RTR050-025 |
| DN 50 KF | 140 | 65 | 50 | 40 | DN 40 KF | 120RTR050-040 |

Flanges according to ISO 2861

Aluminum EN AW-2007/3.1645

Dimensions



- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

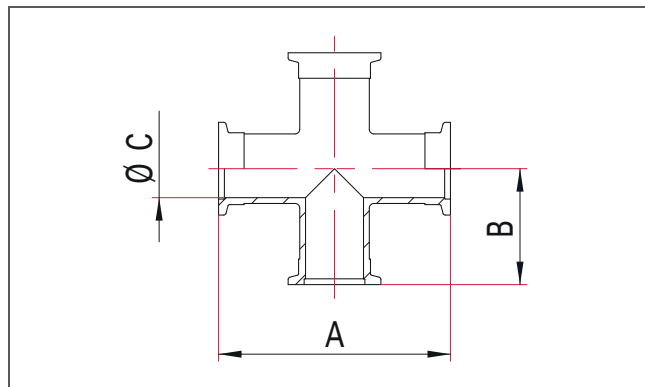
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------------------------|-----------------|
| DN 25 KF | 44 | 40 | 62.5 | 25 | DN 16 KF | 110RTR025-016-V |
| DN 40 KF | 59 | 50 | 80 | 40 | DN 16 KF | 110RTR040-016-V |
| DN 40 KF | 59 | 50 | 80 | 40 | DN 25 KF | 110RTR040-025-V |

Flanges according to ISO 2861

ISO-KF 4-Way Cross

Aluminum EN AW-6082/3.2315

Dimensions



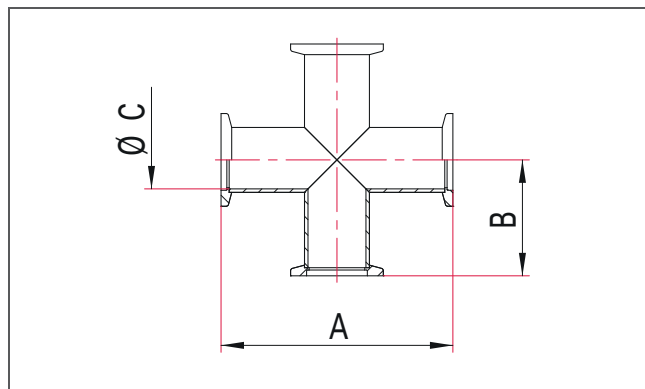
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 KF | 80 | 40 | 16 | 110RKS016 |
| DN 25 KF | 100 | 50 | 24 | 110RKS025 |
| DN 40 KF | 130 | 65 | 40 | 110RKS040 |

Flanges according to ISO 2861

Stainless Steel 304/1.4301

Dimensions



- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 KF | 60 | 30 | 10 | 120RKS010 |
| DN 16 KF | 80 | 40 | 16 | 120RKS016 |
| DN 25 KF | 100 | 50 | 24 | 120RKS025 |
| DN 40 KF | 130 | 65 | 40 | 120RKS040 |
| DN 50 KF | 140 | 70 | 51 | 120RKS050 |

Flanges according to ISO 2861

Stainless Steel 316L/1.4404

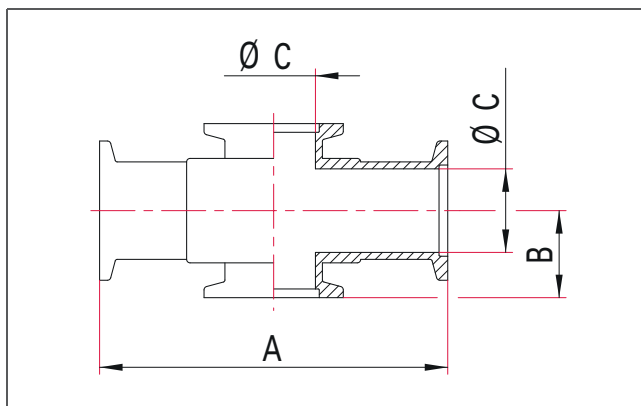
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 10 KF | 60 | 30 | 10 | 170RKS010 |
| DN 16 KF | 80 | 40 | 16 | 170RKS016 |
| DN 25 KF | 100 | 50 | 24 | 170RKS025 |
| DN 40 KF | 130 | 65 | 40 | 170RKS040 |
| DN 50 KF | 140 | 70 | 51 | 170RKS050 |

Flanges according to ISO 2861

Aluminum EN AW-2007/3.1645

Dimensions



- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

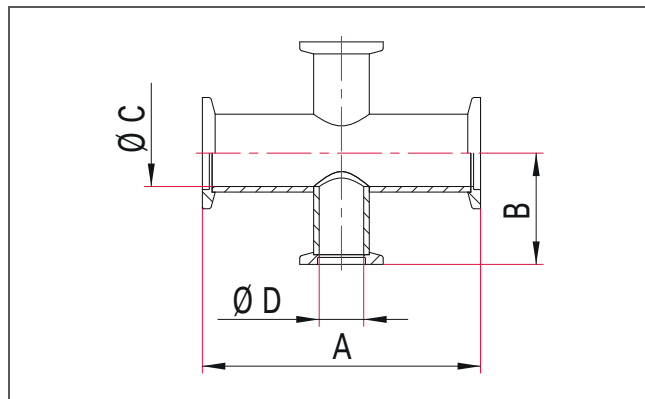
| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 KF | 80 | 20 | 16 | 110RKS016-V |
| DN 25 KF | 100 | 25 | 25 | 110RKS025-V |
| DN 40 KF | 130 | 35 | 40 | 110RKS040-V |

Flanges according to ISO 2861

ISO-KF Reducer Cross

Stainless Steel 304/1.4301

Dimensions



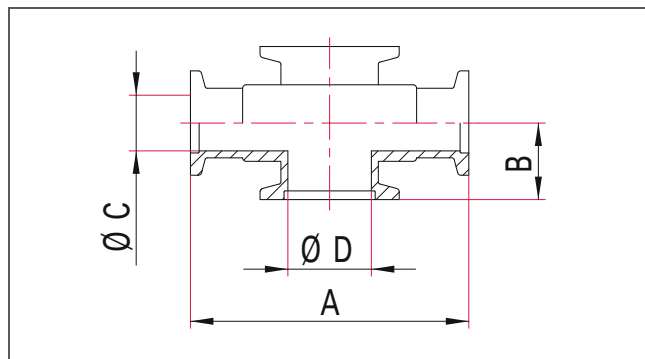
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------------------------|---------------|
| DN 25 KF | 100 | 40 | 24 | 16 | DN 16 KF | 120RKR025-016 |
| DN 40 KF | 130 | 40 | 40 | 16 | DN 16 KF | 120RKR040-016 |
| DN 40 KF | 130 | 50 | 40 | 24 | DN 25 KF | 120RKR040-025 |
| DN 50 KF | 140 | 40 | 50 | 16 | DN 16 KF | 120RKR050-016 |
| DN 50 KF | 140 | 50 | 50 | 24 | DN 25 KF | 120RKR050-025 |
| DN 50 KF | 140 | 65 | 50 | 40 | DN 40 KF | 120RKR050-040 |

Flanges according to ISO 2861

Aluminum EN AW-2007/3.1645

Dimensions



- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------------------------|-----------------|
| DN 25 KF | 80 | 22 | 16 | 25 | DN 16 KF | 110RKR025-016-V |
| DN 40 KF | 100 | 30 | 16 | 40 | DN 16 KF | 110RKR040-016-V |
| DN 40 KF | 100 | 30 | 25 | 40 | DN 25 KF | 110RKR040-025-V |

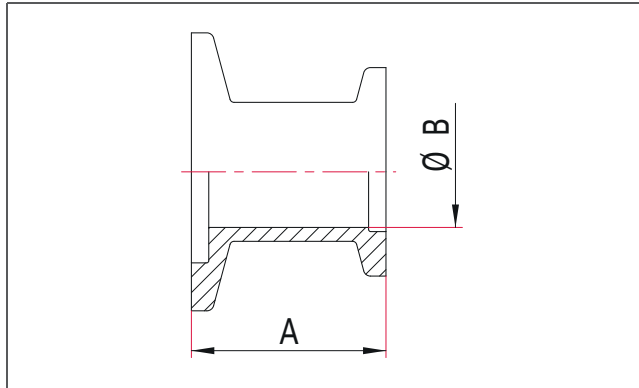
Flanges according to ISO 2861

ISO-KF Straight Reducer

- Available in stainless steel or aluminum



Dimensions



Aluminum EN AW-6082/3.2315

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|------------------|
| DN 25 KF | 40 | 10 | DN 10 KF | 110RRG025-010-40 |
| DN 25 KF | 28 | 16 | DN 16 KF | 110RRG025-016-28 |
| DN 25 KF | 40 | 16 | DN 16 KF | 110RRG025-016-40 |
| DN 40 KF | 28 | 16 | DN 16 KF | 110RRG040-016-28 |
| DN 40 KF | 40 | 16 | DN 16 KF | 110RRG040-016-40 |
| DN 40 KF | 28 | 24 | DN 25 KF | 110RRG040-025-28 |
| DN 40 KF | 40 | 25 | DN 25 KF | 110RRG040-025-40 |
| DN 50 KF | 40 | 24 | DN 25 KF | 110RRG050-025-40 |
| DN 50 KF | 40 | 40 | DN 40 KF | 110RRG050-040-40 |

Flanges according to ISO 2861

Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|------------------|
| DN 25 KF | 28 | 16 | DN 16 IKF | 120RRG025-016-28 |
| DN 25 KF | 40 | 16 | DN 16 KF | 120RRG025-016-40 |
| DN 40 KF | 28 | 16 | DN 16 KF | 120RRG040-016-28 |
| DN 40 KF | 40 | 16 | DN 16 KF | 120RRG040-016-40 |
| DN 40 KF | 28 | 24 | DN 25 KF | 120RRG040-025-28 |
| DN 40 KF | 40 | 24 | DN 25 KF | 120RRG040-025-40 |
| DN 50 KF | 40 | 16 | DN 16 KF | 120RRG050-016-40 |
| DN 50 KF | 28 | 24 | DN 25 KF | 120RRG050-025-28 |
| DN 50 KF | 40 | 24 | DN 25 KF | 120RRG050-025-40 |
| DN 50 KF | 28 | 40 | DN 40 KF | 120RRG050-040-28 |
| DN 50 KF | 40 | 40 | DN 40 KF | 120RRG050-040-40 |

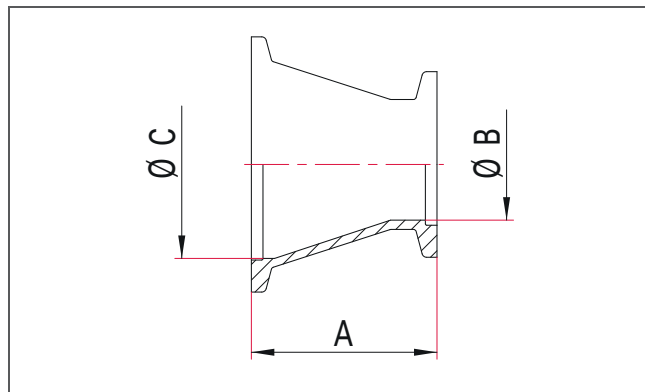
Flanges according to ISO 2861

ISO-KF Conical Reducer

- Available in stainless steel or aluminum



Dimensions



Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------------------------|------------------|
| DN 25 KF | 40 | 16 | 24 | DN 16 KF | 120RRK025-016-40 |
| DN 40 KF | 40 | 16 | 40 | DN 16 KF | 120RRK040-016-40 |
| DN 40 KF | 40 | 24 | 40 | DN 25 KF | 120RRK040-025-40 |
| DN 50 KF | 40 | 16 | 50 | DN 16 KF | 120RRK050-016-40 |
| DN 50 KF | 40 | 24 | 50 | DN 25 KF | 120RRK050-025-40 |
| DN 50 KF | 40 | 40 | 50 | DN 40 KF | 120RRK050-040-40 |

Flanges according to ISO 2861

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------------------------|------------------|
| DN 25 KF | 40 | 16 | 24 | DN 16 KF | 170RRK025-016-40 |
| DN 40 KF | 40 | 16 | 40 | DN 16 KF | 170RRK040-016-40 |
| DN 40 KF | 40 | 24 | 40 | DN 25 KF | 170RRK040-025-40 |
| DN 50 KF | 40 | 24 | 50 | DN 25 KF | 170RRK050-025-40 |
| DN 50 KF | 40 | 40 | 50 | DN 40 KF | 170RRK050-040-40 |

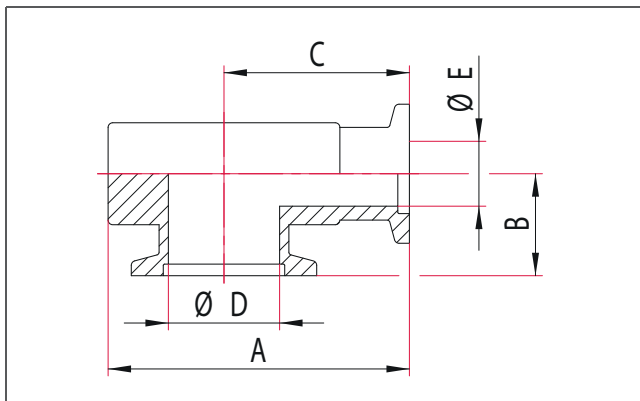
Flanges according to ISO 2861

ISO-KF Reducer Elbow



- Aluminum
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

Dimensions



Aluminum EN AW-2007/3.1645

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------|--------------------------|-----------------|
| DN 25 KF | 62 | 22 | 40 | 25 | 16 | DN 16 KF | 110RWR025-016-V |
| DN 40 KF | 72 | 30 | 50 | 40 | 16 | DN 16 KF | 110RWR040-016-V |
| DN 40 KF | 80 | 30 | 50 | 40 | 25 | DN 25 KF | 110RWR040-025-V |

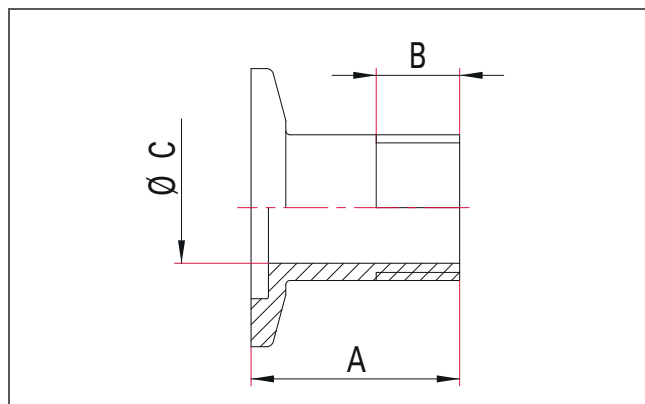
Flanges according to ISO 2861

ISO-KF Flange with Pipe Thread, w/o Seal, Male



- Materials: Stainless steel
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Thread | Order number |
|------------------|--------|--------|--------|--------|----------------|
| DN 10 KF | 30 | 12 | 10 | G3/8" | 120AEI010-0375 |
| DN 16 KF | 30 | 9 | 9 | G1/4" | 120AEI016-0250 |
| DN 16 KF | 30 | 12 | 16 | G1/2" | 120AEI016-0500 |
| DN 25 KF | 30 | 12 | 16 | G1/2" | 120AEI025-0500 |
| DN 25 KF | 30 | 12 | 20 | G3/4" | 120AEI025-0750 |
| DN 25 KF | 30 | 12 | 24 | G1" | 120AEI025-1000 |
| DN 40 KF | 30 | 14 | 35 | G1.25" | 120AEI040-1250 |
| DN 40 KF | 30 | 12 | 41 | G1.5" | 120AEI040-1500 |
| DN 50 KF | 35 | 16 | 51 | G2" | 120AEI050-2000 |

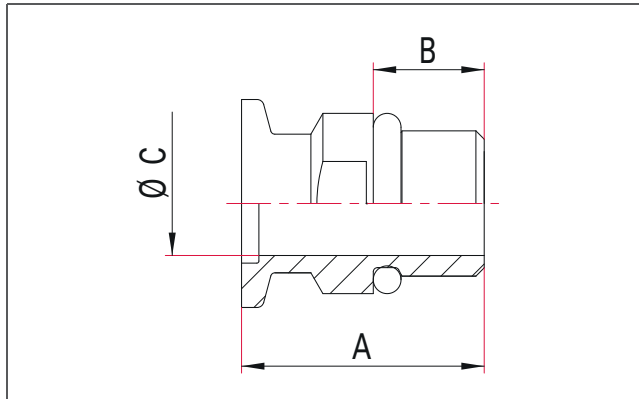
Flanges according to ISO 2861

ISO-KF Flange with Pipe Thread and FKM Seal, Male



- Material: Stainless steel
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -15 to 150 °C (shortly up to 200 °C)

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Wrench size [mm] | Thread | Order number |
|------------------|--------|--------|--------|------------------|--------|----------------|
| DN 10 KF | 35 | 16 | 10 | 19 | G3/8" | 122AED010-0375 |
| DN 16 KF | 35 | 16 | 15 | 23 | G1/2" | 122AED016-0500 |
| DN 25 KF | 45 | 24 | 21 | 32 | G3/4" | 122AED025-0750 |
| DN 25 KF | 45 | 24 | 24 | 34 | G1" | 122AED025-1000 |
| DN 40 KF | 50 | 28 | 40 | 50 | G1.5" | 122AED040-1500 |

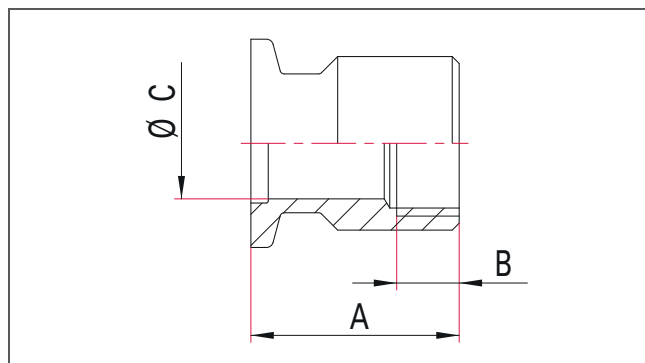
Flanges according to ISO 2861

ISO-KF Flange with Pipe Thread, w/o Seal, Female



- Material: Stainless steel
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Thread | Order number |
|------------------|--------|--------|--------|--------|----------------|
| DN 10 KF | 30 | 15 | 10 | G3/8" | 120AAU010-0375 |
| DN 16 KF | 30 | 9 | 16 | G1/2" | 120AAU016-0500 |
| DN 25 KF | 30 | 12 | 24 | G3/4" | 120AAU025-0750 |
| DN 40 KF | 30 | 16 | 28 | G1" | 120AAU040-1000 |

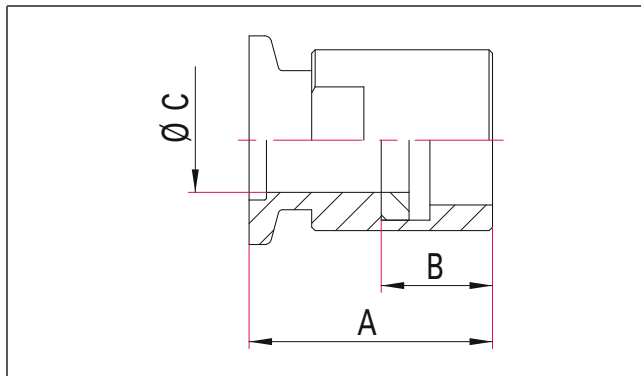
Flanges according to ISO 2861

ISO-KF Flange with Pipe Thread and FKM Seal, Female



- Material: Stainless steel
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -15 to 150 °C (shortly up to 200 °C)

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Wrench size [mm] | Thread | Order number |
|------------------|--------|--------|--------|------------------|--------|----------------|
| DN 10 KF | 35 | 15 | 10 | 17 | G3/8" | 122AAD010-0375 |
| DN 16 KF | 35 | 16 | 15 | 21 | G1/2" | 122AAD016-0500 |
| DN 25 KF | 45 | 25 | 24 | 35 | G1" | 122AAD025-1000 |
| DN 40 KF | 50 | 26 | 40 | 46 | G1.5" | 122AAD040-1500 |

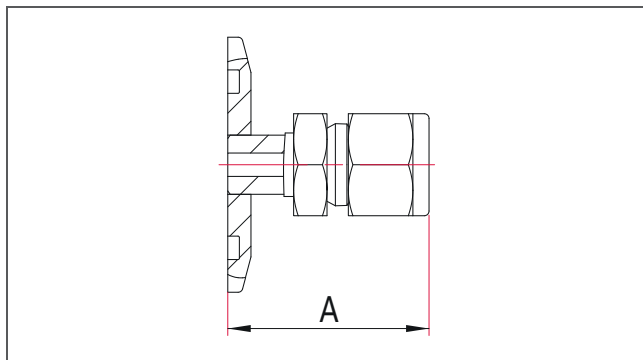
Flanges according to ISO 2861

ISO-KF Swagelok® Adapter



- Original Swagelok® fitting
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Materials: Stainless steel 304/1.4301
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301, Metric Sizes

| Nominal diameter | A [mm] | Tube external diameter | Order number |
|------------------|--------|------------------------|--------------|
| DN 16 KF | 40 | 6 mm | 120ASW016-6 |
| DN 16 KF | 41 | 8 mm | 120ASW016-8 |
| DN 25 KF | 38 | 6 mm | 120ASW025-6 |
| DN 25 KF | 39 | 8 mm | 120ASW025-8 |
| DN 25 KF | 41 | 10 mm | 120ASW025-10 |
| DN 25 KF | 43 | 12 mm | 120ASW025-12 |
| DN 40 KF | 38 | 6 mm | 120ASW040-6 |

Flanges according to ISO 2861

Stainless Steel 304/1.4301, Imperial Sizes

| Nominal diameter | A [mm] | Tube external diameter | Order number |
|------------------|--------|------------------------|----------------|
| DN 16 KF | 40 | 1/4" | 120ASW016-0250 |
| DN 16 KF | 53 | 1/2" | 120ASW016-0500 |
| DN 25 KF | 38 | 1/4" | 120ASW025-0250 |
| DN 25 KF | 53 | 1/2" | 120ASW025-0500 |
| DN 40 KF | 38 | 1/4" | 120ASW040-0250 |

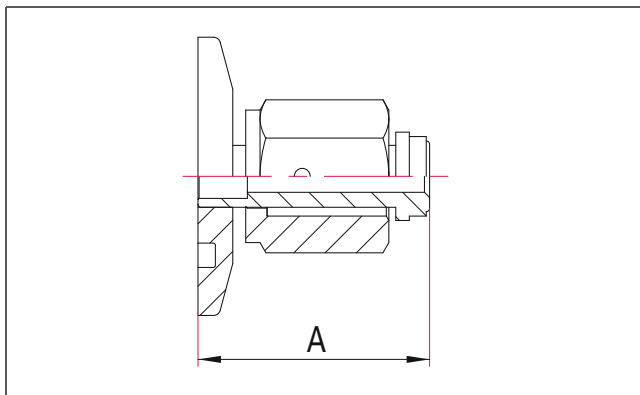
Flanges according to ISO 2861

ISO-KF VCR Adapter, Female



- Original Swagelok® VCR adapter
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Materials: Stainless steel 304/1.4301
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | VCR connection | Order number |
|------------------|--------|----------------|----------------|
| DN 16 KF | 36 | 1/4" | 120AVF016-0250 |
| DN 16 KF | 41 | 1/2" | 120AVF016-0500 |
| DN 25 KF | 33 | 1/4" | 120AVF025-0250 |
| DN 25 KF | 37 | 1/2" | 120AVF025-0500 |

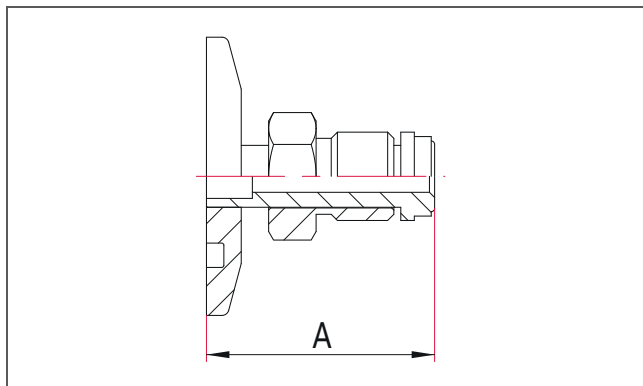
Flanges according to ISO 2861

ISO-KF VCR Adapter, Male



- Original Swagelok® VCR Adapter
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Materials: Stainless steel 304/1.4301
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | VCR connection | Order number |
|------------------|--------|----------------|----------------|
| DN 16 KF | 36 | 1/4" | 120AVM016-0250 |
| DN 16 KF | 41 | 1/2" | 120AVM016-0500 |
| DN 25 KF | 33 | 1/4" | 120AVM025-0250 |
| DN 25 KF | 37 | 1/2" | 120AVM025-0500 |
| DN 40 KF | 33 | 1/4" | 120AVM040-0250 |
| DN 40 KF | 37 | 1/2" | 120AVM040-0500 |

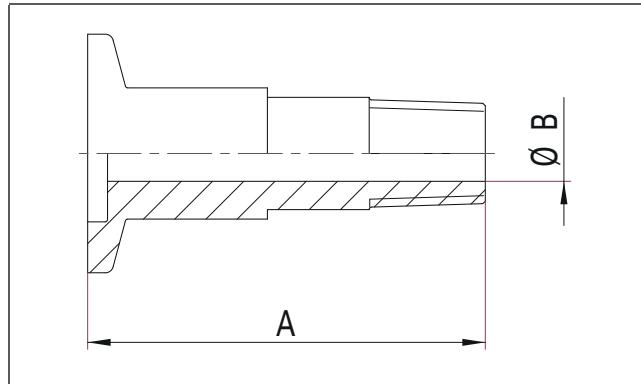
Flanges according to ISO 2861

ISO-KF Flange with NPT Thread, Male



- Material: Stainless steel
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | Thread | Order number |
|------------------|--------|--------|----------|----------------|
| DN 16 KF | 50 | 7.1 | NPT 1/4" | 120ANM016-0250 |
| DN 25 KF | 50 | 7.1 | NPT 1/4" | 120ANM025-0250 |
| DN 25 KF | 75 | 11.9 | NPT 1/2" | 120ANM025-0500 |

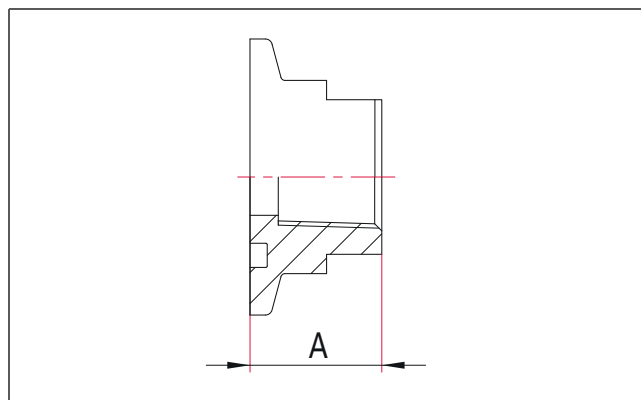
Flanges according to ISO 2861

ISO-KF Flange with NPT Thread, Female



- Material: Stainless steel
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | Thread | Order number |
|------------------|--------|----------|----------------|
| DN 16 KF | 19 | NPT 1/8" | 120ANF016-0125 |
| DN 16 KF | 19 | NPT 1/4" | 120ANF016-0250 |
| DN 25 KF | 19 | NPT 1/8" | 120ANF025-0125 |
| DN 25 KF | 19 | NPT 1/4" | 120ANF025-0250 |

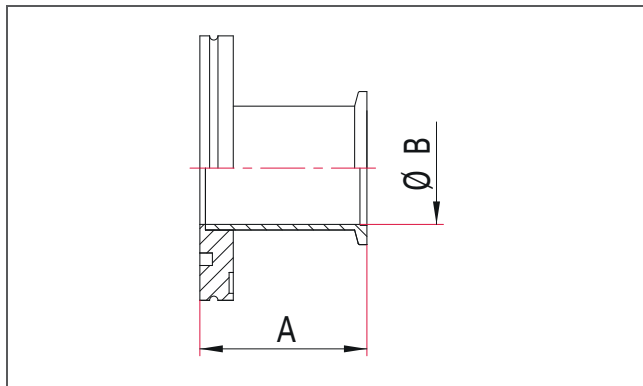
Flanges according to ISO 2861

ISO-K/KF Straight Adapter



- Other combinations and lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|------------------|
| DN 63 ISO-K | 40 | 24 | DN 25 ISO-KF | 320RRG063-025-40 |
| DN 63 ISO-K | 40 | 40.5 | DN 40 ISO-KF | 320RRG063-040-40 |
| DN 63 ISO-K | 40 | 50.6 | DN 50 ISO-KF | 320RRG063-050-40 |
| DN 100 ISO-K | 40 | 24 | DN 25 ISO-KF | 320RRG100-025-40 |
| DN 100 ISO-K | 40 | 40.5 | DN 40 ISO-KF | 320RRG100-040-40 |
| DN 100 ISO-K | 40 | 50.6 | DN 50 ISO-KF | 320RRG100-050-40 |
| DN 160 ISO-K | 40 | 40.5 | DN 40 ISO-KF | 320RRG160-040-40 |

ISO-KF Flanges according to ISO 2861

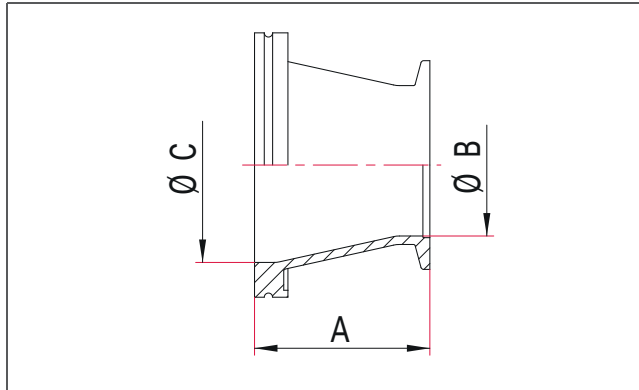
ISO-K Flanges according to ISO 1609

ISO-K/KF Conical Adapter

- Available in stainless steel or aluminum



Dimensions



Aluminum EN AW-6082

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------------------------|------------------|
| DN 63 ISO-K | 40 | 40.5 | 70 | DN 40 ISO-KF | 310RRK063-040-40 |
| DN 63 ISO-K | 45 | 50 | 70 | DN 50 ISO-KF | 310RRK063-050-45 |

Flanges according to ISO 2861

ISO-K Flanges according to ISO 1609

Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------------------------|------------------|
| DN 63 ISO-K | 63 | 24 | 70 | DN 25 ISO-KF | 320RRK063-025-63 |
| DN 63 ISO-K | 63 | 40.5 | 70 | DN 40 ISO-KF | 320RRK063-040-63 |
| DN 63 ISO-K | 63 | 50 | 70 | DN 50 ISO-KF | 320RRK063-050-63 |
| DN 100 ISO-K | 63 | 40.5 | 102 | DN 40 ISO-KF | 320RRK100-040-63 |
| DN 100 ISO-K | 63 | 50 | 102 | DN 50 ISO-KF | 320RRK100-050-63 |

Flanges according to ISO 2861

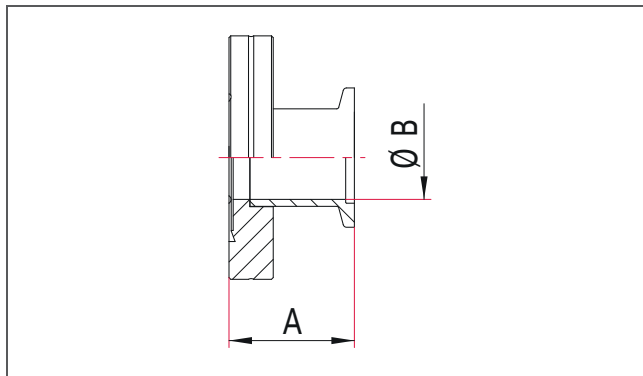
ISO-K Flanges according to ISO 1609

ISO-KF/CF Adapter



- Other nominal diameters and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to ambient pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301; CF Flange 304L

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|------------------|
| DN 16 CF | 36 | 16 | DN 16 ISO-KF | 420RUG016-016-36 |
| DN 16 CF | 36 | 16 | DN 25 ISO-KF | 420RUG016-025-36 |
| DN 16 CF | 36 | 16 | DN 40 ISO-KF | 420RUG016-040-36 |
| DN 40 CF | 36 | 16 | DN 16 ISO-KF | 420RUG040-016-36 |
| DN 40 CF | 36 | 24 | DN 25 ISO-KF | 420RUG040-025-36 |
| DN 40 CF | 50 | 40.5 | DN 40 ISO-KF | 420RUG040-040-50 |
| DN 63 CF | 50 | 40.5 | DN 40 ISO-KF | 420RUG063-040-50 |
| DN 100 CF | 50 | 40.5 | DN 40 ISO-KF | 420RUG100-040-50 |

ISO-KF Flanges according to ISO 2861

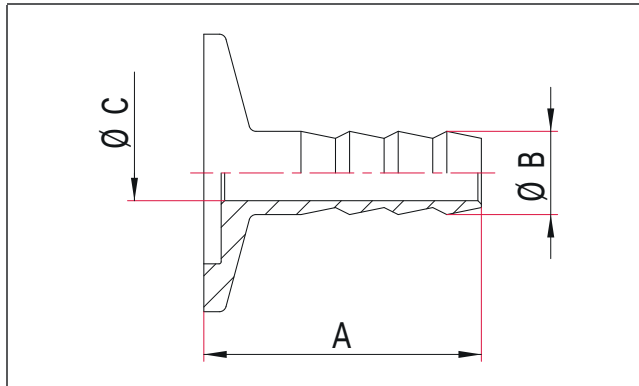
CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-KF Hose Connector

- Fastener: Hose clamp (see accessories)
- Adapter for rubber hose



Dimensions



Aluminum EN AW-6082/3.2315

- Temperature range: -196 bis 150 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 KF | 40 | 8 | 4 | 110ASC016-8 |
| DN 16 KF | 40 | 12 | 7 | 110ASC016-12 |
| DN 25 KF | 40 | 8 | 4 | 110ASC025-8 |
| DN 25 KF | 40 | 12 | 7 | 110ASC025-12 |
| DN 40 KF | 40 | 12 | 7 | 110ASC040-12 |

Flanges according to ISO 2861

Stainless Steel 304/1.4301

- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 KF | 40 | 8 | 4 | 120ASC016-8 |
| DN 16 KF | 40 | 12 | 7 | 120ASC016-12 |
| DN 25 KF | 40 | 12 | 7 | 120ASC025-12 |
| DN 25 KF | 40 | 16 | 12 | 120ASC025-16 |
| DN 25 KF | 40 | 20 | 16 | 120ASC025-20 |
| DN 40 KF | 40 | 12 | 7 | 120ASC040-12 |

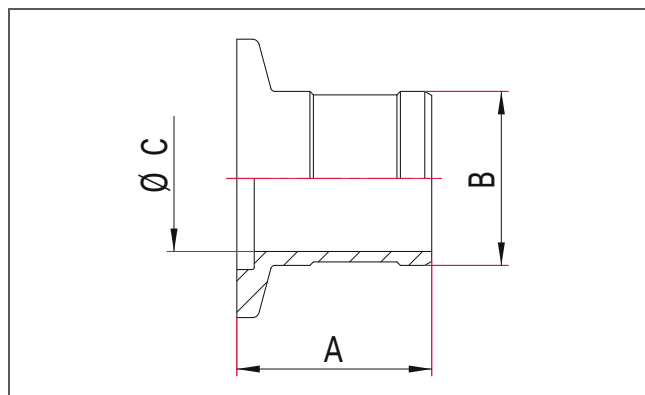
Flanges according to ISO 2861

ISO-KF Adapter for PVC Hose



- For connecting a PVC hose with embedded spring or a CR sleeve
- Fastener: Hose clamp (see accessories)

Dimensions



Aluminum

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 KF | 28 | 16 | 12 | 110ASP016-16 |
| DN 25 KF | 28 | 16 | 12 | 110ASP025-16 |
| DN 25 KF | 40 | 25 | 21 | 110ASP025-25 |
| DN 40 KF | 32 | 45 | 40 | 110ASP040-45 |
| DN 50 KF | 60 | 50 | 45 | 110ASP050-50 |
| DN 10 KF | 40 | 14 | 9 | PF 146 012 |
| DN 16 KF | 40 | 20 | 15 | PF 146 024 |
| DN 25 KF | 40 | 20 | 16 | PF 146 034 |
| DN 40 KF | 40 | 26 | 22 | PF 146 047 |
| DN 40 KF | 40 | 41 | 37 | PF 146 048 |

Please check the hose inner diameter before ordering
Flanges according to ISO 2861

Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 KF | 28 | 16 | 12 | 120ASP016-16 |
| DN 25 KF | 28 | 25 | 21 | 120ASP025-25 |
| DN 40 KF | 32 | 45 | 40 | 120ASP040-45 |
| DN 50 KF | 60 | 50 | 45 | 120ASP050-50 |

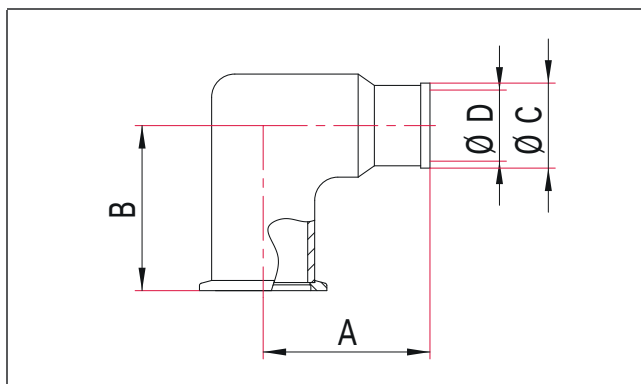
Please check the hose inner diameter before ordering
Flanges according to ISO 2861

ISO-KF 90° Elbow with Hose Adapter



- For connecting a PVC hose or a CR sleeve
- Fastener: Hose clamp (see accessories)

Dimensions



Aluminum EN AW-6061

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 16 KF | 40 | 40 | 17 | 13 | 110ASR016 |
| DN 25 KF | 50 | 50 | 26 | 22 | 110ASR025 |
| DN 40 KF | 65 | 65 | 41 | 37 | 110ASR040 |

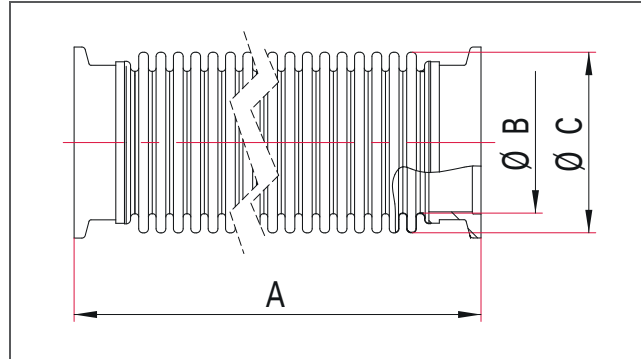
Please check the hose inner diameter before ordering
Flanges according to ISO 2861

ISO-KF Corrugated Hose, Flexible



- Flange connection length: 15 mm
- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange 304/1.4301; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Bend radius, unique movement [mm] | Bend radius, often movement [mm] | Order number |
|------------------|--------|--------|--------|-----------------------------------|----------------------------------|----------------|
| DN 10 KF | 250 | 10 | 15.9 | 17 | 100 | 120SWN010-0250 |
| DN 10 KF | 500 | 10 | 15.9 | 17 | 100 | 120SWN010-0500 |
| DN 10 KF | 750 | 10 | 15.9 | 17 | 100 | 120SWN010-0750 |
| DN 10 KF | 1000 | 10 | 15.9 | 17 | 100 | 120SWN010-1000 |
| DN 10 KF | 1500 | 10 | 15.9 | 17 | 100 | 120SWN010-1500 |
| DN 10 KF | 2000 | 10 | 15.9 | 17 | 100 | 120SWN010-2000 |
| DN 16 KF | 250 | 16 | 23 | 26 | 140 | 120SWN016-0250 |
| DN 16 KF | 500 | 16 | 23 | 26 | 140 | 120SWN016-0500 |
| DN 16 KF | 750 | 16 | 23 | 26 | 140 | 120SWN016-0750 |
| DN 16 KF | 1000 | 16 | 23 | 26 | 140 | 120SWN016-1000 |
| DN 16 KF | 1500 | 16 | 23 | 26 | 140 | 120SWN016-1500 |
| DN 16 KF | 2000 | 16 | 23 | 26 | 140 | 120SWN016-2000 |
| DN 25 KF | 250 | 24 | 33 | 38 | 180 | 120SWN025-0250 |
| DN 25 KF | 500 | 24 | 33 | 38 | 180 | 120SWN025-0500 |
| DN 25 KF | 750 | 24 | 33 | 38 | 180 | 120SWN025-0750 |
| DN 25 KF | 1000 | 24 | 33 | 38 | 180 | 120SWN025-1000 |
| DN 25 KF | 1500 | 24 | 33 | 38 | 180 | 120SWN025-1500 |
| DN 25 KF | 2000 | 24 | 33 | 38 | 180 | 120SWN025-2000 |
| DN 40 KF | 250 | 40 | 52 | 59 | 240 | 120SWN040-0250 |
| DN 40 KF | 500 | 40 | 52 | 59 | 240 | 120SWN040-0500 |
| DN 40 KF | 750 | 40 | 52 | 59 | 240 | 120SWN040-0750 |
| DN 40 KF | 1000 | 40 | 52 | 59 | 240 | 120SWN040-1000 |
| DN 40 KF | 1500 | 40 | 52 | 59 | 240 | 120SWN040-1500 |
| DN 40 KF | 2000 | 40 | 52 | 59 | 240 | 120SWN040-2000 |
| DN 50 KF | 250 | 50 | 63 | 72 | 280 | 120SWN050-0250 |
| DN 50 KF | 500 | 50 | 63 | 72 | 280 | 120SWN050-0500 |
| DN 50 KF | 750 | 50 | 63 | 72 | 280 | 120SWN050-0750 |
| DN 50 KF | 1000 | 50 | 63 | 72 | 280 | 120SWN050-1000 |
| DN 50 KF | 1500 | 50 | 63 | 72 | 280 | 120SWN050-1500 |
| DN 50 KF | 2000 | 50 | 63 | 72 | 280 | 120SWN050-2000 |

Please note that the hose shrinks under vacuum.

The minimum bending radii are applicable for a temperature of 20 °C.

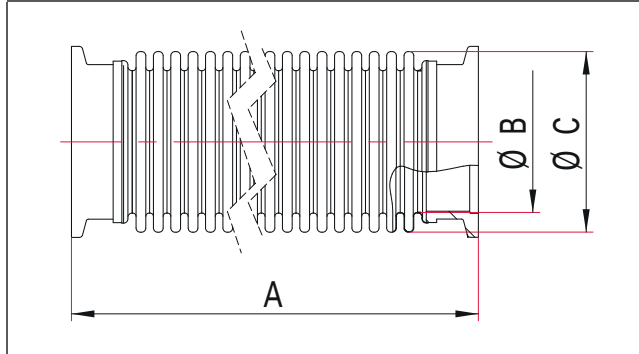
Flanges according to ISO 2861

ISO-KF Corrugated Hose, Flexible, Annealed



- Flange connection length: 15 mm
- Stress relieved; low reset force when bent
- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange 304/1.4301; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Bend radius, unique movement [mm] | Order number |
|------------------|--------|--------|--------|-----------------------------------|----------------|
| DN 10 KF | 250 | 10 | 16 | 17 | 120SWG010-0250 |
| DN 10 KF | 500 | 10 | 16 | 17 | 120SWG010-0500 |
| DN 10 KF | 750 | 10 | 16 | 17 | 120SWG010-0750 |
| DN 10 KF | 1000 | 10 | 16 | 17 | 120SWG010-1000 |
| DN 16 KF | 250 | 16 | 23 | 26 | 120SWG016-0250 |
| DN 16 KF | 500 | 16 | 23 | 26 | 120SWG016-0500 |
| DN 16 KF | 750 | 16 | 23 | 26 | 120SWG016-0750 |
| DN 16 KF | 1000 | 16 | 23 | 26 | 120SWG016-1000 |
| DN 25 KF | 250 | 24 | 33 | 38 | 120SWG025-0250 |
| DN 25 KF | 500 | 24 | 33 | 38 | 120SWG025-0500 |
| DN 25 KF | 750 | 24 | 33 | 38 | 120SWG025-0750 |
| DN 25 KF | 1000 | 24 | 33 | 38 | 120SWG025-1000 |
| DN 40 KF | 250 | 40 | 52 | 59 | 120SWG040-0250 |
| DN 40 KF | 500 | 40 | 52 | 59 | 120SWG040-0500 |
| DN 40 KF | 750 | 40 | 52 | 59 | 120SWG040-0750 |
| DN 40 KF | 1000 | 40 | 52 | 59 | 120SWG040-1000 |
| DN 50 KF | 250 | 49.9 | 63 | 72 | 120SWG050-0250 |
| DN 50 KF | 500 | 49.9 | 63 | 72 | 120SWG050-0500 |
| DN 50 KF | 750 | 49.9 | 63 | 72 | 120SWG050-0750 |
| DN 50 KF | 1000 | 49.9 | 63 | 72 | 120SWG050-1000 |

Please note that the hose shrinks under vacuum.

The minimum bending radius is applicable for a temperature of 20 °C.

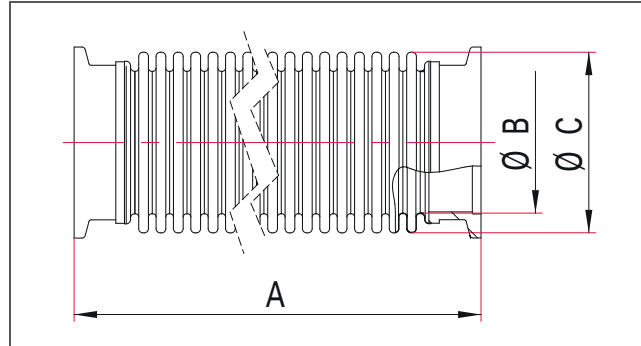
Flanges according to ISO 2861

ISO-KF Corrugated Hose, Highly Flexible, Thin-wall



- Flange connection length: 15 mm
- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange 304/1.4301; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Bend radius, unique movement [mm] | Bend radius, often movement [mm] | Order number |
|------------------|--------|--------|--------|-----------------------------------|----------------------------------|----------------|
| DN 16 KF | 250 | 16 | 26 | 26 | 105 | 120SWD016-0250 |
| DN 16 KF | 500 | 16 | 26 | 26 | 105 | 120SWD016-0500 |
| DN 16 KF | 750 | 16 | 26 | 26 | 105 | 120SWD016-0750 |
| DN 16 KF | 1000 | 16 | 26 | 26 | 105 | 120SWD016-1000 |
| DN 16 KF | 1500 | 16 | 26 | 26 | 105 | 120SWD016-1500 |
| DN 16 KF | 2000 | 16 | 26 | 26 | 105 | 120SWD016-2000 |
| DN 25 KF | 250 | 24 | 37 | 38 | 135 | 120SWD025-0250 |
| DN 25 KF | 500 | 24 | 37 | 38 | 135 | 120SWD025-0500 |
| DN 25 KF | 750 | 24 | 37 | 38 | 135 | 120SWD025-0750 |
| DN 25 KF | 1000 | 24 | 37 | 38 | 135 | 120SWD025-1000 |
| DN 25 KF | 1500 | 24 | 37 | 38 | 135 | 120SWD025-1500 |
| DN 25 KF | 2000 | 24 | 37 | 38 | 135 | 120SWD025-2000 |
| DN 40 KF | 250 | 40 | 56 | 59 | 180 | 120SWD040-0250 |
| DN 40 KF | 500 | 40 | 56 | 59 | 180 | 120SWD040-0500 |
| DN 40 KF | 750 | 40 | 56 | 59 | 180 | 120SWD040-0750 |
| DN 40 KF | 1000 | 40 | 56 | 59 | 180 | 120SWD040-1000 |
| DN 40 KF | 1500 | 40 | 56 | 59 | 180 | 120SWD040-1500 |
| DN 40 KF | 2000 | 40 | 56 | 59 | 180 | 120SWD040-2000 |
| DN 50 KF | 250 | 50 | 67 | 72 | 210 | 120SWD050-0250 |
| DN 50 KF | 500 | 50 | 67 | 72 | 210 | 120SWD050-0500 |
| DN 50 KF | 750 | 50 | 67 | 72 | 210 | 120SWD050-0750 |
| DN 50 KF | 1000 | 50 | 67 | 72 | 210 | 120SWD050-1000 |
| DN 50 KF | 1500 | 50 | 67 | 72 | 210 | 120SWD050-1500 |
| DN 50 KF | 2000 | 50 | 67 | 72 | 210 | 120SWD050-2000 |

Please note that the hose shrinks under vacuum.

The minimum bending radii are applicable for a temperature of 20 °C.

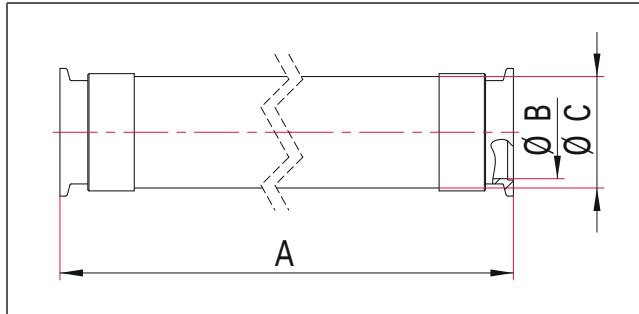
Flanges according to ISO 2861

ISO-KF Corrugated Hose, Sheathed



- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange and Braided Sheath 304/1.4301; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Bend radius, unique movement [mm] | Bend radius, often movement [mm] | Order number |
|------------------|--------|--------|--------|-----------------------------------|----------------------------------|----------------|
| DN 16 KF | 250 | 15.9 | 24.9 | 44 | 140 | 120SWU016-0250 |
| DN 16 KF | 500 | 15.9 | 24.9 | 44 | 140 | 120SWU016-0500 |
| DN 16 KF | 750 | 15.9 | 24.9 | 44 | 140 | 120SWU016-0750 |
| DN 16 KF | 1000 | 15.9 | 24.9 | 44 | 140 | 120SWU016-1000 |
| DN 25 KF | 250 | 24 | 35.1 | 64 | 180 | 120SWU025-0250 |
| DN 25 KF | 500 | 24 | 35.1 | 64 | 180 | 120SWU025-0500 |
| DN 25 KF | 750 | 24 | 35.1 | 64 | 180 | 120SWU025-0750 |
| DN 25 KF | 1000 | 24 | 35.1 | 64 | 180 | 120SWU025-1000 |
| DN 40 KF | 250 | 40 | 54.7 | 98 | 240 | 120SWU040-0250 |
| DN 40 KF | 500 | 40 | 54.7 | 98 | 240 | 120SWU040-0500 |
| DN 40 KF | 750 | 40 | 54.7 | 98 | 240 | 120SWU040-0750 |
| DN 40 KF | 1000 | 40 | 54.7 | 98 | 240 | 120SWU040-1000 |
| DN 50 KF | 250 | 49.9 | 65.7 | 120 | 280 | 120SWU050-0250 |
| DN 50 KF | 500 | 49.9 | 65.7 | 120 | 280 | 120SWU050-0500 |
| DN 50 KF | 750 | 49.9 | 65.7 | 120 | 280 | 120SWU050-0750 |
| DN 50 KF | 1000 | 49.9 | 65.7 | 120 | 280 | 120SWU050-1000 |

Please note that the hose shrinks under vacuum.

The minimum bending radii are applicable for a temperature of 20 °C.

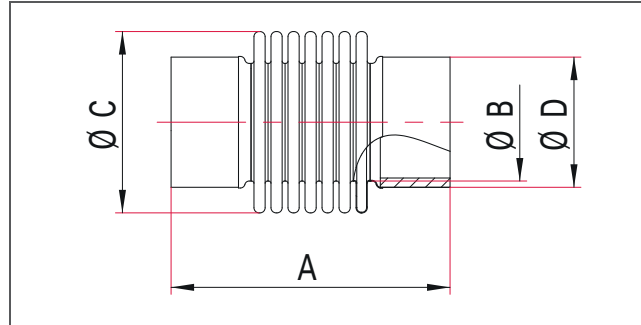
Flanges according to ISO 2861

ISO-KF Spring Bellows with Weld Ends



- Flange connection length: 15 mm
- Weld end wall thickness: 2 mm
- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Materials: Stainless steel 316L
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Axial stroke [mm] | Order number |
|------------------|--------|--------|--------|--------|-------------------|---------------|
| DN 16 KF | 90 | 16 | 26 | 20 | ±7 | 170SFA016-090 |
| DN 25 KF | 120 | 24 | 39 | 28 | ±16 | 170SFA025-120 |
| DN 40 KF | 120 | 40.5 | 58 | 44.5 | ±18 | 170SFA040-120 |
| DN 50 KF | 120 | 50 | 69 | 54 | ±19.5 | 170SFA050-120 |

Please note that the spring bellows shrinks under vacuum.

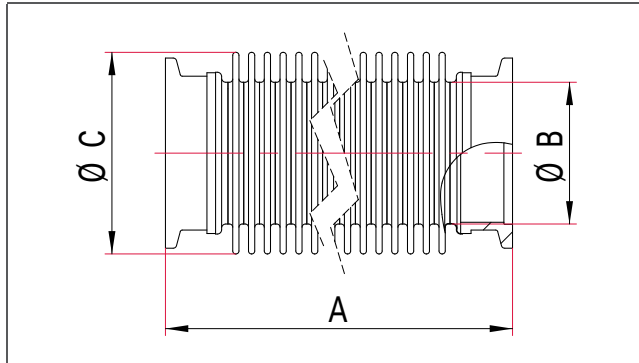
The axial stroke is applicable for a temperature of 20 °C and 10000 load cycles.

ISO-KF Spring Bellows



- Flange connection length: 15 mm
- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Materials: Flange: stainless steel 1.4301/304; bellows: stainless steel 316L
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange 304/1.4301; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Axial stroke [mm] | Order number |
|------------------|--------|--------|--------|-------------------|---------------|
| DN 16 KF | 60 | 16 | 26 | ±3.5 | 170SFK016-060 |
| DN 16 KF | 70 | 16 | 26 | ±5 | 170SFK016-070 |
| DN 16 KF | 100 | 16 | 26 | ±8.5 | 170SFK016-100 |
| DN 16 KF | 120 | 16 | 26 | ±11 | 170SFK016-120 |
| DN 25 KF | 60 | 24 | 39 | ±5 | 170SFK025-060 |
| DN 25 KF | 100 | 24 | 39 | ±12.5 | 170SFK025-100 |
| DN 25 KF | 120 | 24 | 39 | ±16 | 170SFK025-120 |
| DN 40 KF | 60 | 39 | 58 | ±5.5 | 170SFK040-060 |
| DN 40 KF | 100 | 39 | 58 | ±14 | 170SFK040-100 |
| DN 40 KF | 120 | 39 | 58 | ±18 | 170SFK040-120 |
| DN 50 KF | 60 | 50 | 69 | ±6.5 | 170SFK050-060 |
| DN 50 KF | 100 | 50 | 69 | ±15 | 170SFK050-100 |
| DN 50 KF | 120 | 50 | 69 | ±19.5 | 170SFK050-120 |

Please note that the spring bellows shrinks under vacuum.

The axial stroke is applicable for a temperature of 20 °C and 10000 load cycles.

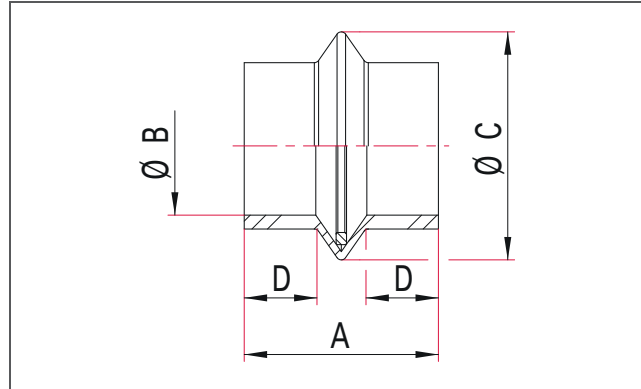
Flanges according to ISO 2861

ISO-KF CR Sleeve



- Sleeve made from chloroprene rubber
- Connection: Adapter for PVC hose (see adapters) and hose clamp (see accessories)
- Pressure range: $1 \cdot 10^{-5}$ hPa to ambient pressure
- Temperature range: -5 to 120 °C

Dimensions



Chloroprene Rubber (CR)

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 16 KF | 44 | 17 | 44 | 12 | 130SMA020 |
| DN 25 KF | 50 | 25 | 50 | 15 | 130SMA028 |
| DN 40 KF | 56 | 41 | 68 | 18 | 130SMA045 |

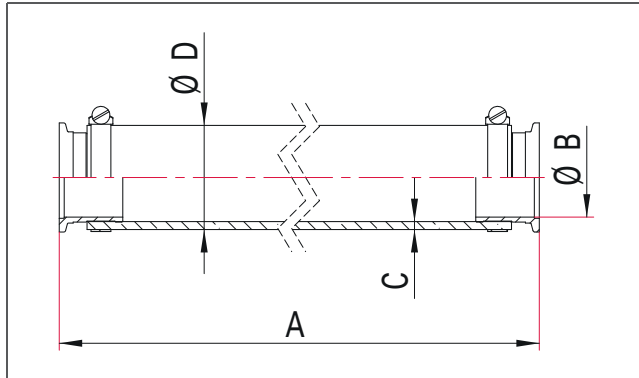
Please note that the sleeve shrinks under vacuum.

ISO-KF PVC Hose with Embedded Spring and Flanges



- Inner tube: PVC, transparent
- Casing: Steel coil
- Hose cover: PVC, transparent
- Smooth inner and outer walls
- Custom lengths on request
- Pressure range: $1 \cdot 10^{-4}$ hPa to ambient pressure
- Temperature range: -10 to 60 °C

Dimensions



PVC with Stainless Steel Flange, 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Bend radius [mm] | Order number |
|------------------|--------|--------|--------|--------|------------------|----------------|
| DN 16 KF | 500 | 12 | 3.1 | 22 | 30 | 100SPA016-0500 |
| DN 16 KF | 1000 | 12 | 3.1 | 22 | 30 | 100SPA016-1000 |
| DN 25 KF | 500 | 21 | 4 | 33 | 50 | 100SPA025-0500 |
| DN 25 KF | 1000 | 21 | 4 | 33 | 50 | 100SPA025-1000 |
| DN 40 KF | 500 | 40 | 4.9 | 55 | 90 | 100SPA040-0500 |
| DN 40 KF | 1000 | 40 | 4.9 | 55 | 90 | 100SPA040-1000 |
| DN 50 KF | 500 | 45 | 5.9 | 62 | 100 | 100SPA050-0500 |
| DN 50 KF | 1000 | 45 | 5.9 | 62 | 100 | 100SPA050-1000 |

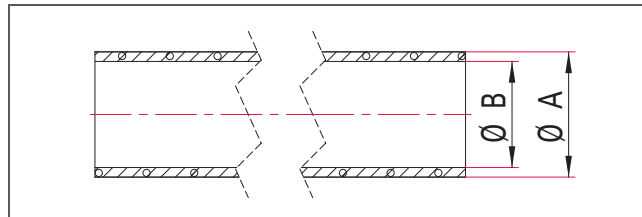
The minimum bending radius is applicable for a temperature of 20 °C.
Flanges according to ISO 2861

ISO-KF PVC Hose with Embedded Spring



- Inner tube material: PVC, transparent
- Casing: steel coil
- Hose cover material: PVC, transparent
- Smooth inner and outer walls
- Length: up to 50 m; min. order: 1 m; orders > 1 m calculated pro rata
- Connection: hose adapter and hose clamp
- Pressure range: $1 \cdot 10^{-4}$ hPa to 500 hPa over pressure
- Temperature range: -10 to 60 °C

Dimensions



PVC

| Inner diameter [mm] | A [mm] | B [mm] | Bend radius [mm] | Order number |
|---------------------|--------|--------|------------------|---------------|
| 16 | 22 | 16 | 30 | 100SPM016 |
| 25 | 33 | 25 | 50 | 100SPM025 |
| 45 | 55 | 45 | 90 | 100SPM040 |
| 50 | 62 | 50 | 100 | 100SPM050 |
| 10 | 16 | 10 | - | P 2358 262 SS |
| 13 | 19 | 13 | - | P 2359 314 NV |
| 19 | 26 | 19 | - | P 2359 455 NV |
| 38 | 49 | 38 | - | P 2359 810 NV |

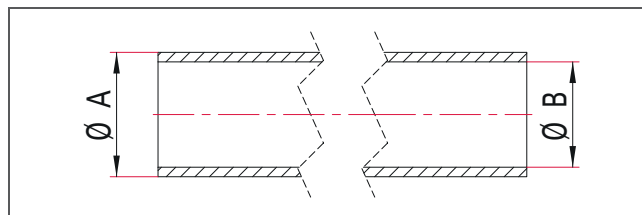
The minimum bending radius is applicable for a temperature of 20 °C.

ISO-KF Rubber Hose



- For vacuum applications
- Custom lengths on request; minimum order: 1 m; orders > 1 m calculated pro rata
- Pressure range: $1 \cdot 10^{-4}$ hPa to ambient pressure
- Temperature range: -30 to 85 °C

Dimensions



Rubber

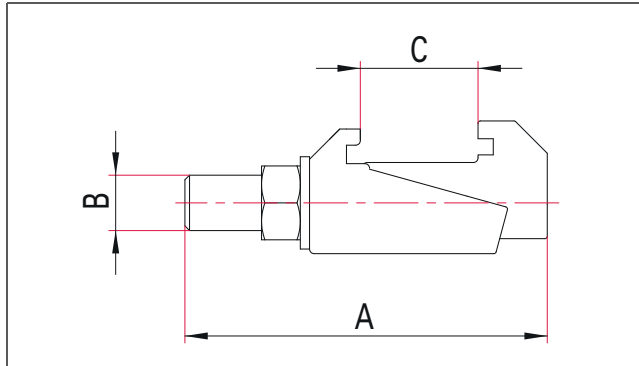
| Inner diameter [mm] | A [mm] | B [mm] | Order number |
|---------------------|--------|--------|--------------|
| 7 | 17 | 7 | 130SPM010 |
| 10 | 25 | 10 | 130SPM016 |
| 16 | 32 | 16 | 130SPM020 |

ISO-K Double Claw Clamp



- Suitable for use with metal and elastomer seals
- For stainless steel clamps we recommend using thread lubricant
- Torque: (for installation) DN 63-250: 12 to 16 Nm; DN 320-630: 20 to 26 Nm

Dimensions



Stainless Steel 316/1.4401

- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B | C [mm] | Order number |
|------------------|--------|-----|---------|------------------|
| DN 63-250 ISO-K | 61.5 | M10 | 15 - 27 | 320BKL250 |
| DN 320-500 ISO-K | 75 | M12 | 27 - 33 | 320BKL500 |
| DN 630 ISO-K | 85 | M12 | 36 - 44 | 320BKL630 |

Not to be used for the assembly of turbo pumps!

Use the fastening elements given in the corresponding operating instructions.

Zinc-plated Steel

- Temperature range: 0 to 200 °C

| Nominal diameter | A [mm] | B | C [mm] | Order number |
|------------------|--------|-----|---------|------------------|
| DN 63-250 ISO-K | 61.5 | M10 | 15 - 27 | 350BKL250 |
| DN 320-500 ISO-K | 77 | M12 | 27 - 33 | 350BKL500 |
| DN 630 ISO-K | 86 | M12 | 36 - 44 | 350BKL630 |

Not to be used for the assembly of turbo pumps!

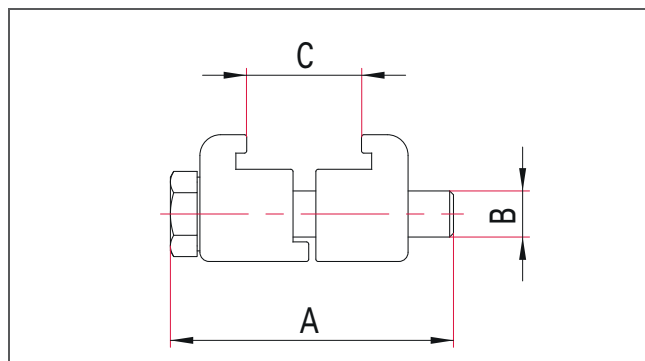
Use the fastening elements given in the corresponding operating instructions.

ISO-K Double Claw Clamp, Aluminum

- Suitable for use with elastomer seals
- Temperature range: -196 to 200 °C



Dimensions



Aluminum EN AW-6061; Screw: Stainless Steel A2-70

| Nominal diameter | A [mm] | B | C [mm] | Order number |
|------------------|--------|-----|---------|--------------|
| DN 63-100 ISO-K | 50 | M8 | 24 - 27 | 310BKL100 |
| DN 160-250 ISO-K | 52 | M10 | 27 - 32 | 310BKL250 |
| DN 320-500 ISO-K | 65 | M12 | 32 - 38 | 310BKL500 |

Not to be used for the assembly of turbo pumps!

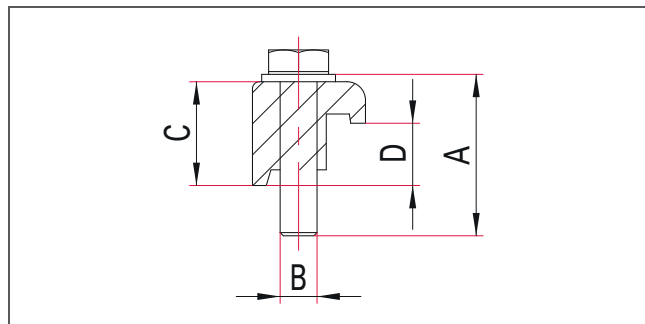
Use the fastening elements given in the corresponding operating instructions.

ISO-K Claw Clamp

- Zinc-plated and stainless steel versions: Suitable for use with metal and elastomer seals
- Aluminum version: Suitable for use with elastomer seals
- For installing an ISO-K flange on a base plate without O-ring groove
- For a base plate with O-ring groove please use single claw clamp for base plate with sealing groove (BPD)

Aluminum EN AW-6061; Screw: Stainless Steel A2-70

Dimensions



- Temperature range: -196 to 200 °C

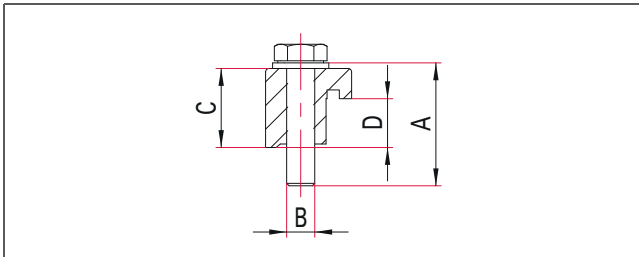
| Nominal diameter | A [mm] | B | C [mm] | D [mm] | Order number |
|------------------|--------|-----|--------|--------|--------------|
| DN 63-100 ISO-K | 35 | M8 | 23 | 14 | 310BPR100 |
| DN 160-250 ISO-K | 35 | M10 | 23 | 14 | 310BPR250 |
| DN 320-500 ISO-K | 50 | M12 | 30 | 21 | 310BPR500 |

Not to be used for the assembly of turbo pumps!

Use the fastening elements given in the corresponding operating instructions.

Stainless Steel 304/1.4301

Dimensions



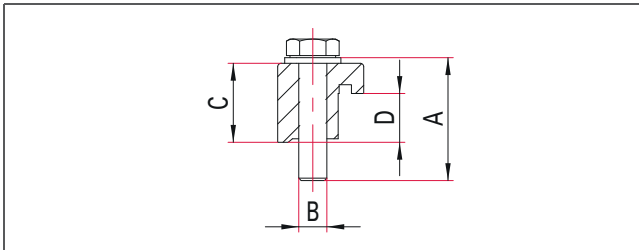
■ Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B | C [mm] | D [mm] | Order number |
|------------------|--------|-----|--------|--------|--------------|
| DN 63-100 ISO-K | 35 | M8 | 23 | 14 | 320BPR100 |
| DN 160-250 ISO-K | 35 | M10 | 23 | 14 | 320BPR250 |
| DN 320-500 ISO-K | 50 | M12 | 30 | 21 | 320BPR500 |

Not to be used for the assembly of turbo pumps!
Use the fastening elements given in the corresponding operating instructions.

Zinc-plated Steel

Dimensions



■ Temperature range: 0 to 200 °C

| Nominal diameter | A [mm] | B | C [mm] | D [mm] | Order number |
|------------------|--------|-----|--------|--------|--------------|
| DN 63-100 ISO-K | 35 | M8 | 23 | 14 | 350BPR100 |
| DN 160-250 ISO-K | 35 | M10 | 23 | 14 | 350BPR250 |
| DN 320-500 ISO-K | 50 | M12 | 30 | 20 | 350BPR500 |
| DN 630 ISO-K | 60 | M12 | 41,5 | 26 | 350BPR630 |

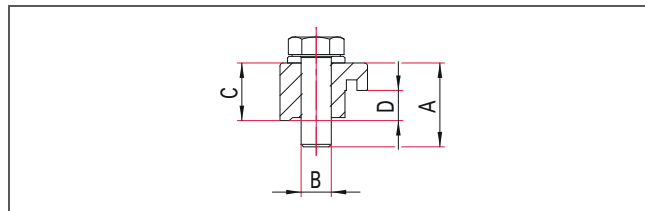
Not to be used for the assembly of turbo pumps!
Use the fastening elements given in the corresponding operating instructions.

ISO-K Single Claw Clamp for Base Plate with Sealing Groove



- Suitable for use with metal and elastomer seals
- For installing an ISO-K flange on a base plate with O-ring groove
- If there is no O-ring groove, please use the longer single claw clamps (BPR)
- Temperature range: 0 to 200 °C

Dimensions



Zinc-plated Steel

| Nominal diameter | A [mm] | B | C [mm] | D [mm] | Order number |
|------------------|--------|-----|--------|--------|--------------|
| DN 63-100 ISO-K | 30 | M8 | 19 | 10.1 | 350BPD100 |
| DN 160-250 ISO-K | 35 | M10 | 19 | 10.1 | 350BPD250 |
| DN 320-500 ISO-K | 45 | M12 | 31 | 15.4 | 350BPD500 |
| DN 630 ISO-K | 55 | M12 | 36 | 20.4 | 350BPD630 |

Not to be used for the assembly of turbo pumps!

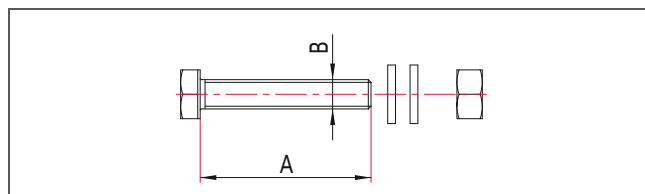
Use the fastening elements given in the corresponding operating instructions.

ISO-F Screw Set



- For connecting two ISO-F flanges
- For connecting an ISO-F flange and an ISO-K/ISO-F bolt ring
- For connecting two ISO-K/ISO-F bolt rings
- Suitable for use with metal and elastomer seals
- Hexagon head screws, each with two washers and one nut

Dimensions



Zinc-plated Steel, property class 8.8

| Nominal diameter | A [mm] | B | Package [Qty.] | Order number |
|------------------------|--------|-----|----------------|--------------|
| DN 63-100 ISO-K/ISO-F | 40 | M8 | 8 | 550BSC100 |
| DN 160-250 ISO-K/ISO-F | 50 | M10 | 12 | 550BSC250 |
| DN 320-500 ISO-K/ISO-F | 65 | M12 | 16 | 550BSC500 |
| DN 630 ISO-K/ISO-F | 70 | M12 | 20 | 550BSC630 |

Stainless Steel A2-70

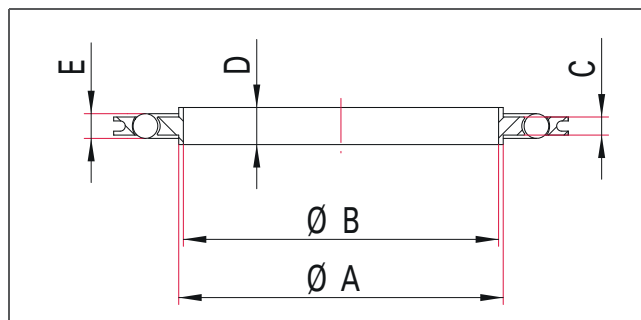
| Nominal diameter | A [mm] | B | Package [Qty.] | Order number |
|------------------------|--------|-----|----------------|--------------|
| DN 63-100 ISO-K/ISO-F | 40 | M8 | 8 | 520BSC100 |
| DN 160-250 ISO-K/ISO-F | 50 | M10 | 12 | 520BSC250 |
| DN 320-500 ISO-K/ISO-F | 65 | M12 | 16 | 520BSC500 |
| DN 630 ISO-K/ISO-F | 70 | M12 | 20 | 520BSC630 |

ISO-K Centering Ring with Outer Ring



- Aluminum outer ring
- Temperature range: FKM: -15 to 150 °C (shortly up to 200 °C);
NBR: -25 to 120 °C; CR: -5 to 120 °C

Dimensions



Aluminum

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | NBR | 70 | 68 | 3.9 | 8 | 5.33 | 311ZRA063 |
| DN 80 ISO-K | NBR | 83 | 81 | 3.9 | 8 | 5.33 | 311ZRA080 |
| DN 100 ISO-K | NBR | 102 | 100 | 3.9 | 8 | 5.33 | 311ZRA100 |
| DN 160 ISO-K | NBR | 153 | 151 | 3.9 | 8 | 5.33 | 311ZRA160 |
| DN 200 ISO-K | NBR | 213 | 211 | 3.9 | 8 | 5.33 | 311ZRA200 |
| DN 250 ISO-K | NBR | 261 | 259 | 3.9 | 8 | 5.33 | 311ZRA250 |
| DN 320 ISO-K | NBR | 318 | 313 | 5.6 | 14 | 7 | 311ZRA320 |
| DN 400 ISO-K | NBR | 400 | 395 | 5.6 | 14 | 7 | 311ZRA400 |
| DN 500 ISO-K | NBR | 501 | 496 | 5.6 | 14 | 7 | 311ZRA500 |
| DN 630 ISO-K | NBR | 651 | 646 | 5.6 | 14 | 7 | 311ZRA630 |
| DN 63 ISO-K | CR | 70 | 68 | 3.9 | 8 | 5.33 | 316ZRA063 |
| DN 80 ISO-K | CR | 83 | 81 | 3.9 | 8 | 5.33 | 316ZRA080 |
| DN 100 ISO-K | CR | 102 | 100 | 3.9 | 8 | 5.33 | 316ZRA100 |
| DN 160 ISO-K | CR | 153 | 151 | 3.9 | 8 | 5.33 | 316ZRA160 |
| DN 200 ISO-K | CR | 213 | 211 | 3.9 | 8 | 5.33 | 316ZRA200 |
| DN 250 ISO-K | CR | 261 | 259 | 3.9 | 8 | 5.33 | 316ZRA250 |
| DN 320 ISO-K | CR | 318 | 313 | 5.6 | 14 | 7 | 316ZRA320 |
| DN 400 ISO-K | CR | 400 | 395 | 5.6 | 14 | 7 | 316ZRA400 |
| DN 500 ISO-K | CR | 501 | 496 | 5.6 | 14 | 7 | 316ZRA500 |
| DN 630 ISO-K | CR | 651 | 646 | 5.6 | 14 | 7 | 316ZRA630 |
| DN 63 ISO-K | FKM | 70 | 68 | 3.9 | 8 | 5.33 | 312ZRA063 |
| DN 80 ISO-K | FKM | 83 | 81 | 3.9 | 8 | 5.33 | 312ZRA080 |
| DN 100 ISO-K | FKM | 102 | 100 | 3.9 | 8 | 5.33 | 312ZRA100 |
| DN 160 ISO-K | FKM | 153 | 151 | 3.9 | 8 | 5.33 | 312ZRA160 |
| DN 200 ISO-K | FKM | 213 | 211 | 3.9 | 8 | 5.33 | 312ZRA200 |
| DN 250 ISO-K | FKM | 261 | 259 | 3.9 | 8 | 5.33 | 312ZRA250 |
| DN 320 ISO-K | FKM | 318 | 313 | 5.6 | 14 | 7 | 312ZRA320 |
| DN 400 ISO-K | FKM | 400 | 395 | 5.6 | 14 | 7 | 312ZRA400 |
| DN 500 ISO-K | FKM | 501 | 496 | 5.6 | 14 | 7 | 312ZRA500 |
| DN 630 ISO-K | FKM | 651 | 646 | 5.6 | 14 | 7 | 312ZRA630 |

Stainless Steel 316Ti/1.4571 (DN 320: 304/1.4301) Outer Ring: Aluminum

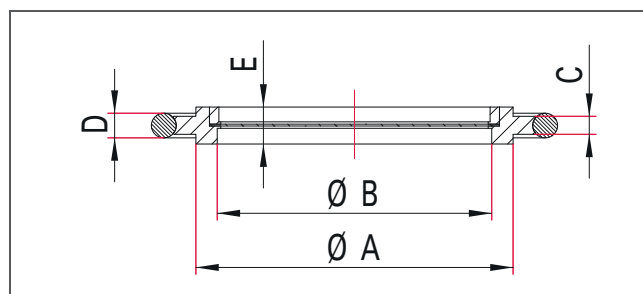
| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | FKM | 70 | 68 | 3.9 | 8 | 5.33 | 322ZRA063 |
| DN 80 ISO-K | FKM | 83 | 81 | 3.9 | 8 | 5.33 | 322ZRA080 |
| DN 100 ISO-K | FKM | 102 | 100 | 3.9 | 8 | 5.33 | 322ZRA100 |
| DN 160 ISO-K | FKM | 153 | 151 | 3.9 | 8 | 5.33 | 322ZRA160 |
| DN 200 ISO-K | FKM | 213 | 211 | 3.9 | 8 | 5.33 | 322ZRA200 |
| DN 250 ISO-K | FKM | 261 | 259 | 3.9 | 8 | 5.33 | 322ZRA250 |
| DN 320 ISO-K | FKM | 318 | 313 | 5.6 | 14 | 7 | 322ZRA320 |

ISO-K Centering Ring with Screen



- Material: Stainless Steel
- Temperature range: -15 to 150 °C (shortly up to 200 °C)

Dimensions



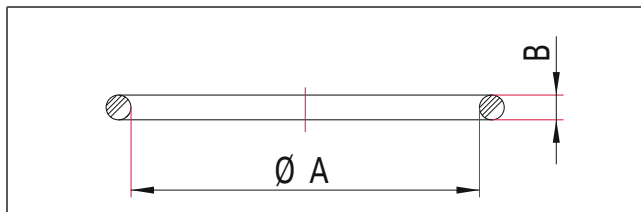
Stainless Steel 304/1.4301

| Nominal diameter | O-ring material | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Mesh [mm] | Wire thickness [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|--------|-----------|---------------------|--------------|
| DN 63 ISO-K | FKM | 70 | 60 | 3.9 | 5.33 | 8 | 0.5 | 0.2 | 322ZRD063 |
| DN 80 ISO-K | FKM | 83 | 73 | 3.9 | 5.33 | 8 | 0.6 | 0.2 | 322ZRD080 |
| DN 100 ISO-K | FKM | 102 | 92 | 3.9 | 5.33 | 8 | 0.8 | 0.2 | 322ZRD100 |
| DN 160 ISO-K | FKM | 153 | 143 | 3.9 | 5.33 | 8 | 1.2 | 0.2 | 322ZRD160 |

ISO-K O-Rings

- Quantities: Item no. suffix -S1 = 1 piece; -S5 = 5 pieces

Dimensions



FKM

- Temperature range: -15 to 150 °C (shortly up to 200 °C)

| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|--------------|
| DN 63 ISO-K | 76 | 5.33 | 5 | 302DOR063-S5 |
| DN 80 ISO-K | 88.27 | 5.33 | 5 | 302DOR080-S5 |
| DN 100 ISO-K | 107 | 5.33 | 5 | 302DOR100-S5 |
| DN 160 ISO-K | 158 | 5.33 | 5 | 302DOR160-S5 |
| DN 200 ISO-K | 209 | 5.33 | 5 | 302DOR200-S5 |
| DN 250 ISO-K | 253 | 5.33 | 5 | 302DOR250-S5 |
| DN 320 ISO-K | 317 | 7 | 1 | 302DOR320-S1 |
| DN 400 ISO-K | 405 | 7 | 1 | 302DOR400-S1 |
| DN 500 ISO-K | 507 | 7 | 1 | 302DOR500-S1 |
| DN 630 ISO-K | 659 | 7 | 1 | 302DOR630-S1 |

NBR

- Temperature range: -25 to 120 °C

| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|--------------|
| DN 63 ISO-K | 76 | 5.33 | 5 | 301DOR063-S5 |
| DN 80 ISO-K | 88.27 | 5.33 | 5 | 301DOR080-S5 |
| DN 100 ISO-K | 107 | 5.33 | 5 | 301DOR100-S5 |
| DN 160 ISO-K | 158 | 5.33 | 5 | 301DOR160-S5 |
| DN 200 ISO-K | 209 | 5.33 | 5 | 301DOR200-S5 |
| DN 250 ISO-K | 253 | 5.33 | 5 | 301DOR250-S5 |
| DN 320 ISO-K | 317 | 7 | 1 | 301DOR320-S1 |
| DN 400 ISO-K | 405 | 7 | 1 | 301DOR400-S1 |
| DN 500 ISO-K | 507 | 7 | 1 | 301DOR500-S1 |
| DN 630 ISO-K | 659 | 7 | 1 | 301DOR630-S1 |

CR

- Temperature range: -5 to 120 °C

| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|--------------|
| DN 63 ISO-K | 76 | 5.33 | 5 | 306DOR063-S5 |
| DN 80 ISO-K | 88.27 | 5.33 | 5 | 306DOR080-S5 |
| DN 100 ISO-K | 107 | 5.33 | 5 | 306DOR100-S5 |
| DN 160 ISO-K | 158 | 5.33 | 5 | 306DOR160-S5 |
| DN 200 ISO-K | 209 | 5.33 | 5 | 306DOR200-S5 |
| DN 250 ISO-K | 253 | 5.33 | 5 | 306DOR250-S5 |
| DN 320 ISO-K | 317 | 7 | 1 | 306DOR320-S1 |
| DN 400 ISO-K | 405 | 7 | 1 | 306DOR400-S1 |
| DN 500 ISO-K | 507 | 7 | 1 | 306DOR500-S1 |
| DN 630 ISO-K | 659 | 7 | 1 | 306DOR630-S1 |

EPDM

- Temperature range: -50 to 130 °C

| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|--------------|
| DN 63 ISO-K | 76 | 5.33 | 5 | 304DOR063-S5 |
| DN 80 ISO-K | 88.27 | 5.33 | 5 | 304DOR080-S5 |
| DN 100 ISO-K | 107 | 5.33 | 5 | 304DOR100-S5 |
| DN 160 ISO-K | 158 | 5.33 | 5 | 304DOR160-S5 |
| DN 200 ISO-K | 209 | 5.33 | 5 | 304DOR200-S5 |
| DN 250 ISO-K | 253 | 5.33 | 5 | 304DOR250-S5 |

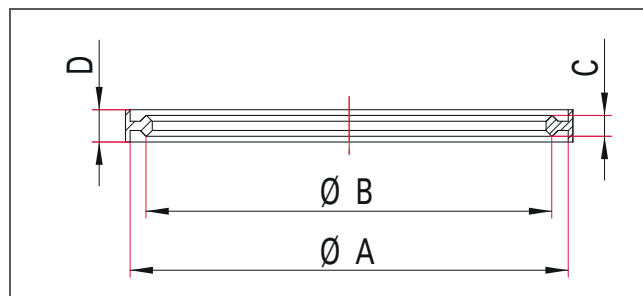
Silicone

- Temperature range: -55 to 200 °C

| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|--------------|
| DN 63 ISO-K | 76 | 5.33 | 5 | 303DOR063-S5 |
| DN 80 ISO-K | 88.27 | 5.33 | 5 | 303DOR080-S5 |
| DN 100 ISO-K | 107 | 5.33 | 5 | 303DOR100-S5 |
| DN 160 ISO-K | 158 | 5.33 | 5 | 303DOR160-S5 |
| DN 200 ISO-K | 209 | 5.33 | 5 | 303DOR200-S5 |
| DN 250 ISO-K | 253 | 5.33 | 5 | 303DOR250-S5 |

ISO-K Metal Seal, Aligned at Outer Diameter

- For stainless steel flanges
- No gas permeation
- For single use only
- Temperature range: -196 to 150 °C

Dimensions**Aluminum EN AW-6082**

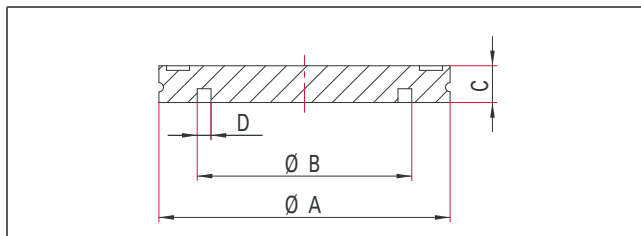
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | 95 | 88 | 4.5 | 7 | 310ZSK063 |
| DN 80 ISO-K | 110 | 103 | 4.5 | 7 | 310ZSK080 |
| DN 100 ISO-K | 130 | 123 | 4.5 | 7 | 310ZSK100 |
| DN 160 ISO-K | 180 | 173 | 4.5 | 7 | 310ZSK160 |
| DN 200 ISO-K | 240 | 233 | 4.5 | 7 | 310ZSK200 |
| DN 250 ISO-K | 290 | 283 | 4.5 | 7 | 310ZSK250 |

ISO-K Blank Flange

- Available in stainless steel or aluminum



Dimensions



Aluminum EN AW-6082

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure
- Temperature range: -196 bis 200 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | 95 | 70 | 12 | 4.5 | 310FBL063 |
| DN 80 ISO-K | 110 | 83 | 12 | 4.5 | 310FBL080 |
| DN 100 ISO-K | 130 | 102 | 12 | 4.5 | 310FBL100 |
| DN 160 ISO-K | 180 | 153 | 12 | 4.5 | 310FBL160 |
| DN 200 ISO-K | 240 | 213 | 12 | 4.5 | 310FBL200 |
| DN 250 ISO-K | 290 | 261 | 12 | 4.5 | 310FBL250 |

Flanges according to ISO 1609

Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | 95 | 70 | 12 | 4.5 | 320FBL063 |
| DN 80 ISO-K | 110 | 83 | 12 | 4.5 | 320FBL080 |
| DN 100 ISO-K | 130 | 102 | 12 | 4.5 | 320FBL100 |
| DN 160 ISO-K | 180 | 153 | 12 | 4.5 | 320FBL160 |
| DN 200 ISO-K | 240 | 213 | 12 | 4.5 | 320FBL200 |
| DN 250 ISO-K | 290 | 261 | 12 | 4.5 | 320FBL250 |
| DN 320 ISO-K | 370 | 318 | 17 | 4.5 | 320FBL320 |
| DN 400 ISO-K | 450 | 400 | 17 | 4.5 | 320FBL400 |
| DN 500 ISO-K | 550 | 501 | 17 | 4.5 | 320FBL500 |
| DN 630 ISO-K | 690 | 651 | 22 | 4.5 | 320FBL630 |

Flanges according to ISO 1609

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | 95 | 70 | 12 | 4.5 | 370FBL063 |
| DN 80 ISO-K | 110 | 83 | 12 | 4.5 | 370FBL080 |
| DN 100 ISO-K | 130 | 102 | 12 | 4.5 | 370FBL100 |
| DN 160 ISO-K | 180 | 153 | 12 | 4.5 | 370FBL160 |
| DN 200 ISO-K | 240 | 213 | 12 | 4.5 | 370FBL200 |
| DN 250 ISO-K | 290 | 261 | 12 | 4.5 | 370FBL250 |
| DN 320 ISO-K | 370 | 318 | 17 | 4.5 | 370FBL320 |

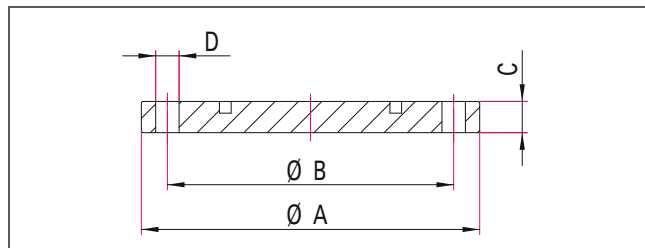
Flanges according to ISO 1609

ISO-F Blank Flange



- Other flange materials on request
- Other flange sizes on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 63 ISO-F | 130 | 110 | 12 | 9 | 520FBL063 |
| DN 100 ISO-F | 165 | 145 | 12 | 9 | 520FBL100 |
| DN 160 ISO-F | 225 | 200 | 16 | 11 | 520FBL160 |
| DN 200 ISO-F | 285 | 260 | 16 | 11 | 520FBL200 |
| DN 250 ISO-F | 335 | 310 | 16 | 11 | 520FBL250 |

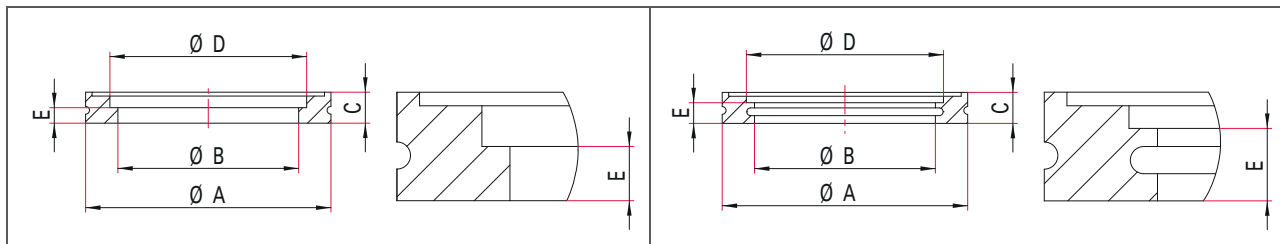
Flanges according to ISO 1609

ISO-K Weld Ring Flange

- Other flange materials on request



Dimensions



Note

Annex S version with weld lip as welding guide

Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|--------|-----------------|
| DN 63 ISO-K | 63.5 x 1.65 | 95 | 70 | 12 | 63.8 | 6 | 320FAN063-63 |
| DN 63 ISO-K | 70 x 2 | 95 | 70 | 12 | 70.3 | 6 | 320FAN063-70 |
| DN 63 ISO-K | 76.1 x 3 | 95 | 70 | 12 | 76.4 | 6 | 320FAN063-76 |
| DN 63 ISO-K | 76.1 x 3 | 95 | 70 | 12 | 76.4 | 8 | 320FAN063-76-S |
| DN 80 ISO-K | 76.1 x 3 | 110 | 83 | 12 | 76.4 | 6 | 320FAN080-76 |
| DN 80 ISO-K | 88.9 x 3 | 110 | 83 | 12 | 89.2 | 6 | 320FAN080-88 |
| DN 100 ISO-K | 101.6 x 2.1 | 130 | 102 | 12 | 101.9 | 6 | 320FAN100-101 |
| DN 100 ISO-K | 104 x 2 | 130 | 102 | 12 | 104.3 | 6 | 320FAN100-104 |
| DN 100 ISO-K | 108 x 3 | 130 | 102 | 12 | 108.3 | 6 | 320FAN100-108 |
| DN 100 ISO-K | 108 x 3 | 130 | 102 | 12 | 108.3 | 8 | 320FAN100-108-S |
| DN 100 ISO-K | 114.3 x 2 | 130 | 102 | 12 | 114.6 | 6 | 320FAN100-114 |
| DN 160 ISO-K | 152.4 x 2.4 | 180 | 153 | 12 | 152.7 | 6 | 320FAN160-152 |
| DN 160 ISO-K | 159 x 3 | 180 | 153 | 12 | 159.3 | 6 | 320FAN160-159 |
| DN 160 ISO-K | 159 x 3 | 180 | 153 | 12 | 159.3 | 8 | 320FAN160-159-S |
| DN 200 ISO-K | 203.2 x 2.4 | 240 | 213 | 12 | 203.6 | 6 | 320FAN200-203 |
| DN 200 ISO-K | 219 x 3 | 240 | 213 | 12 | 219.4 | 6 | 320FAN200-219 |
| DN 200 ISO-K | 219 x 3 | 240 | 213 | 12 | 219.4 | 8 | 320FAN200-219-S |
| DN 250 ISO-K | 254 x 2 | 290 | 261 | 12 | 254.4 | 6 | 320FAN250-254 |
| DN 250 ISO-K | 273 x 3 | 290 | 261 | 12 | 273.4 | 6 | 320FAN250-273 |
| DN 250 ISO-K | 273 x 3 | 290 | 261 | 12 | 273.4 | 8 | 320FAN250-273-S |
| DN 320 ISO-K | 324 x 3 | 370 | 318 | 17 | 324.4 | 8 | 320FAN320-324 |
| DN 320 ISO-K | 324 x 3 | 370 | 318 | 17 | 324.4 | 10 | 320FAN320-324-S |
| DN 400 ISO-K | 406 x 3 | 450 | 400 | 17 | 406.5 | 8 | 320FAN400-406 |
| DN 500 ISO-K | 508 x 4 | 550 | 501 | 17 | 508.5 | 8 | 320FAN500-508 |
| DN 630 ISO-K | 660 x 5 | 690 | 651 | 22 | 660.5 | 12 | 320FAN630-660 |

Flanges according to ISO 1609

Stainless Steel 316L/1.4404

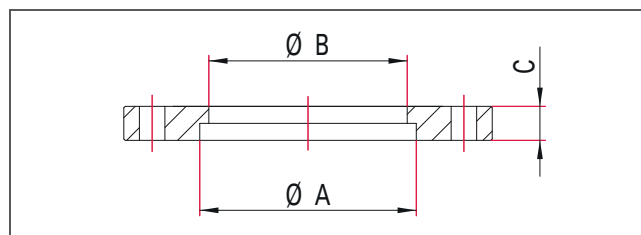
- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|--------|-----------------|
| DN 63 ISO-K | 63.5 x 1.65 | 95 | 70 | 12 | 63.8 | 6 | 370FAN063-63 |
| DN 63 ISO-K | 70 x 2 | 95 | 70 | 12 | 70.3 | 6 | 370FAN063-70 |
| DN 63 ISO-K | 76.1 x 3 | 95 | 70 | 12 | 76.4 | 6 | 370FAN063-76 |
| DN 63 ISO-K | 76.1 x 3 | 95 | 70 | 12 | 76.4 | 8 | 370FAN063-76-S |
| DN 80 ISO-K | 76.1 x 3 | 110 | 83 | 12 | 76.4 | 6 | 370FAN080-76 |
| DN 80 ISO-K | 88.9 x 3 | 110 | 83 | 12 | 89.2 | 6 | 370FAN080-88 |
| DN 100 ISO-K | 101.6 x 2.1 | 130 | 102 | 12 | 101.9 | 6 | 370FAN100-101 |
| DN 100 ISO-K | 104 x 2 | 130 | 102 | 12 | 104.3 | 6 | 370FAN100-104 |
| DN 100 ISO-K | 108 x 3 | 130 | 102 | 12 | 108.3 | 6 | 370FAN100-108 |
| DN 100 ISO-K | 108 x 3 | 130 | 102 | 12 | 108.3 | 8 | 370FAN100-108-S |
| DN 100 ISO-K | 114.3 x 2 | 130 | 102 | 12 | 114.6 | 6 | 370FAN100-114 |
| DN 160 ISO-K | 159 x 3 | 180 | 153 | 12 | 159.3 | 6 | 370FAN160-159 |
| DN 160 ISO-K | 159 x 3 | 180 | 153 | 12 | 159.3 | 8 | 370FAN160-159-S |
| DN 200 ISO-K | 203.2 x 2.4 | 240 | 213 | 12 | 203.6 | 6 | 370FAN200-203 |
| DN 200 ISO-K | 219 x 3 | 240 | 213 | 12 | 219.4 | 6 | 370FAN200-219 |
| DN 250 ISO-K | 254 x 2 | 290 | 261 | 12 | 254.4 | 6 | 370FAN250-254 |
| DN 250 ISO-K | 273 x 3 | 290 | 216 | 12 | 273.4 | 6 | 370FAN250-273 |
| DN 320 ISO-K | 324 x 3 | 370 | 318 | 17 | 324.4 | 8 | 370FAN320-324 |
| DN 400 ISO-K | 406 x 3 | 450 | 400 | 17 | 406.5 | 8 | 370FAN400-406 |
| DN 500 ISO-K | 508 x 4 | 550 | 501 | 17 | 508.5 | 8 | 370FAN500-508 |

Flanges according to ISO 1609

ISO-F Weld Flange

- Other flange sizes or materials available upon request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions**Stainless Steel 304/1.4301**

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | Order number |
|------------------|---------------------|--------|--------|--------|---------------|
| DN 63 ISO-F | 76.1 x 3 | 76.4 | 70 | 12 | 520FAN063-76 |
| DN 100 ISO-F | 108 x 3 | 108.3 | 102 | 12 | 520FAN100-108 |
| DN 160 ISO-F | 159 x 3 | 159.3 | 153 | 16 | 520FAN160-159 |
| DN 200 ISO-F | 219 x 3 | 219.4 | 213 | 16 | 520FAN200-219 |
| DN 250 ISO-F | 273 x 3 | 273.4 | 261 | 16 | 520FAN250-273 |

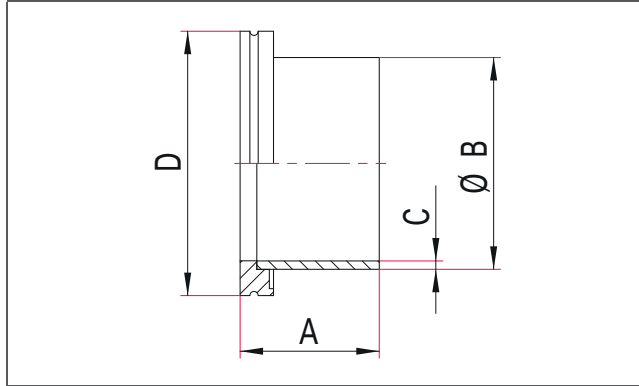
Flanges according to ISO 1609

ISO-K Half Nipple



- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 1500 hPa over pressure (metal seal)
- Materials: Flange: stainless steel 304/1.4301; tube: stainless steel 304/1.4301 or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | Order number |
|------------------|---------------------|--------|--------|--------|-------------------|
| DN 63 ISO-K | 63.5 x 1.65 | 100 | 63.5 | 1.65 | 320FRA063-63-100 |
| DN 63 ISO-K | 76.1 x 3 | 100 | 76.1 | 3 | 320FRA063-76-100 |
| DN 80 ISO-K | 76.1 x 3 | 100 | 76.1 | 3 | 320FRA080-76-100 |
| DN 80 ISO-K | 88.9 x 3 | 100 | 88.9 | 3 | 320FRA080-88-100 |
| DN 100 ISO-K | 101.6 x 2.1 | 100 | 101.6 | 2.1 | 320FRA100-101-100 |
| DN 100 ISO-K | 108 x 3 | 100 | 108 | 3 | 320FRA100-108-100 |
| DN 160 ISO-K | 152.4 x 2.4 | 100 | 152.4 | 2.4 | 320FRA160-153-100 |
| DN 160 ISO-K | 159 x 3 | 100 | 159 | 3 | 320FRA160-159-100 |
| DN 200 ISO-K | 203.2 x 2.4 | 100 | 203.2 | 2.4 | 320FRA200-203-100 |
| DN 200 ISO-K | 219 x 3 | 100 | 219 | 3 | 320FRA200-219-100 |
| DN 250 ISO-K | 254 x 2 | 100 | 254 | 2 | 320FRA250-254-100 |
| DN 250 ISO-K | 273 x 3 | 100 | 273 | 3 | 320FRA250-273-100 |
| DN 320 ISO-K | 324 x 3 | 100 | 324 | 3 | 320FRA320-324-100 |
| DN 400 ISO-K | 406 x 3 | 100 | 406,4 | 3 | 320FRA400-406-100 |
| DN 500 ISO-K | 508 x 4 | 100 | 508 | 4 | 320FRA500-508-100 |
| DN 630 ISO-K | 660 x 5 | 100 | 660 | 5 | 320FRA630-660-100 |

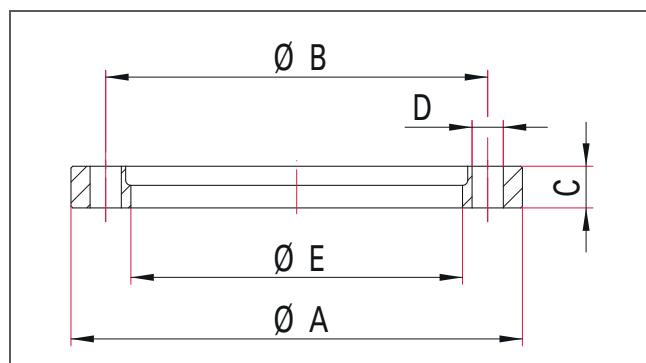
Flanges according to ISO 1609

ISO-K Rotatable Bolt Ring



- Circlip included
- Fixation: Set of screws

Dimensions



Note

The rotatable bolt ring lets you convert an ISO-K flange into a rotatable ISO-F flange.

Stainless Steel 304/1.4301

- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | 130 | 110 | 12 | 9 | 95.5 | 320FLU063 |
| DN 80 ISO-K | 145 | 125 | 12 | 9 | 110.5 | 320FLU080 |
| DN 100 ISO-K | 165 | 145 | 12 | 9 | 130.5 | 320FLU100 |
| DN 160 ISO-K | 225 | 200 | 16 | 11 | 180.7 | 320FLU160 |
| DN 200 ISO-K | 285 | 260 | 16 | 11 | 240.7 | 320FLU200 |
| DN 250 ISO-K | 335 | 310 | 16 | 11 | 290.7 | 320FLU250 |

Flanges according to ISO 1609

Nickel-plated Steel S235JR/1.0038

- Temperature range: 0 to 200 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | 130 | 110 | 12 | 9 | 95.5 | 350FLU063 |
| DN 100 ISO-K | 165 | 145 | 12 | 9 | 130.5 | 350FLU100 |
| DN 160 ISO-K | 225 | 200 | 16 | 11 | 180.7 | 350FLU160 |
| DN 200 ISO-K | 285 | 260 | 16 | 11 | 240.7 | 350FLU200 |
| DN 250 ISO-K | 335 | 310 | 16 | 11 | 290.7 | 350FLU250 |
| DN 320 ISO-K | 425 | 395 | 20 | 13,5 | 370.8 | 350FLU320 |

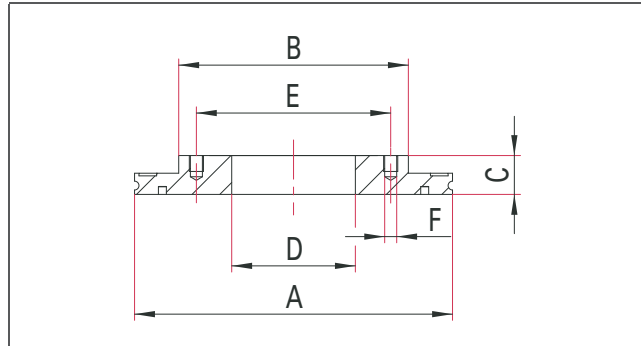
Flanges according to ISO 1609

ISO-K/ISO-F Adapter Flange



- Other flange sizes on request
- Reduced nominal width implemented with ISO-F blind hole threads
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------|-----|--------------------------|---------------|
| DN 160 ISO-K | 180 | 130 | 22 | 70 | 110 | M8 | DN 63 ISO-F | 320FLR160-063 |
| DN 160 ISO-K | 180 | 165 | 22 | 102 | 145 | M8 | DN 100 ISO-F | 320FLR160-100 |
| DN 200 ISO-K | 240 | 165 | 20 | 102 | 145 | M8 | DN 100 ISO-F | 320FLR200-100 |
| DN 200 ISO-K | 240 | 225 | 26 | 153 | 200 | M10 | DN 160 ISO-F | 320FLR200-160 |
| DN 250 ISO-K | 290 | 225 | 22 | 153 | 200 | M10 | DN 160 ISO-F | 320FLR250-160 |

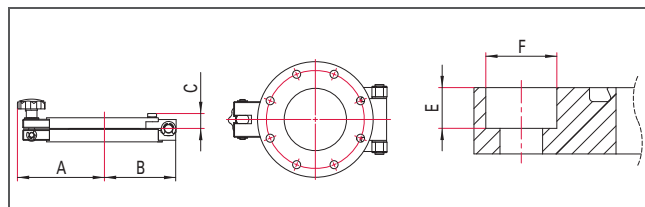
Flanges according to ISO 1609

ISO-F Quick-Access-Door

- Screw holes: Through-holes with counter-bore for cylinder head
- Can be installed using hexagon socket screws
- Bakeout temperature: up to 200 °C
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Temperature range: -15 to 150 °C

Stainless Steel 304/1.4301, without Sight Glass

Dimensions



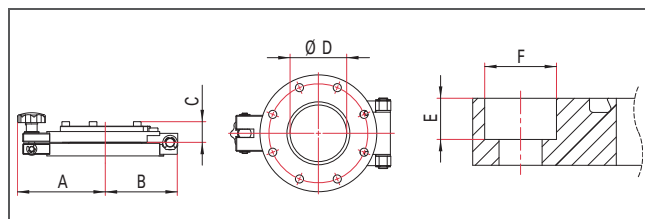
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-F | 98 | 80 | 16 | - | 10 | 16 | 520KTU063 |
| DN 100 ISO-F | 116 | 99 | 16 | - | 10 | 16 | 520KTU100 |
| DN 160 ISO-F | 147 | 130 | 20 | - | 12.5 | 20 | 520KTU160 |
| DN 200 ISO-F | 177 | 160 | 20 | - | 12.5 | 20 | 520KTU200 |

Stainless Steel 304/1.4301, with Sight Glass

- Order no. suffix -G: with sight glass
- Sight glass: Borosilicate glass



Dimensions



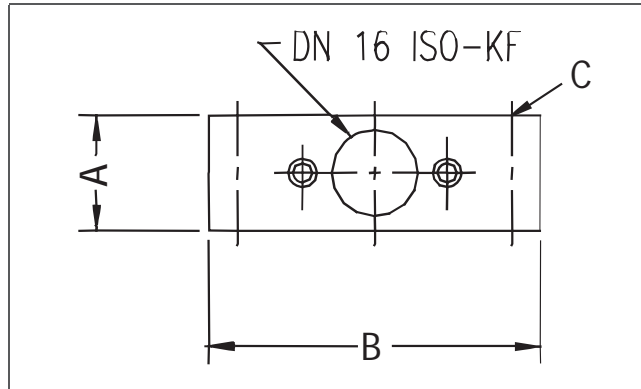
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-F | 98 | 80 | 23 | 63 | 10 | 16 | 520KTU063-G |
| DN 100 ISO-F | 116 | 99 | 27 | 95 | 10 | 16 | 520KTU100-G |
| DN 160 ISO-F | 147 | 130 | 31 | 145 | 12.5 | 20 | 520KTU160-G |
| DN 200 ISO-F | 177 | 160 | 31 | 145 | 12.5 | 20 | 520KTU200-G |

ISO-F Measurement Flange



- Suitable for application with elastomer seal
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 200 °C

Dimensions



Aluminum

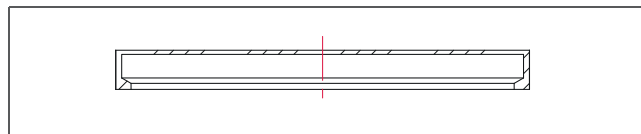
| Nominal diameter | A [mm] | B [mm] | C | Order number |
|------------------|--------|--------|--------|--------------|
| DN 63 ISO-F | 35 | 130 | 4 x M8 | PF 308 006-T |
| DN 100 ISO-F | 35 | 165 | 8 x M8 | PF 308 010-T |

ISO-K Flange Cap



- Made from plastic

Dimensions



Polyethelene (PE)

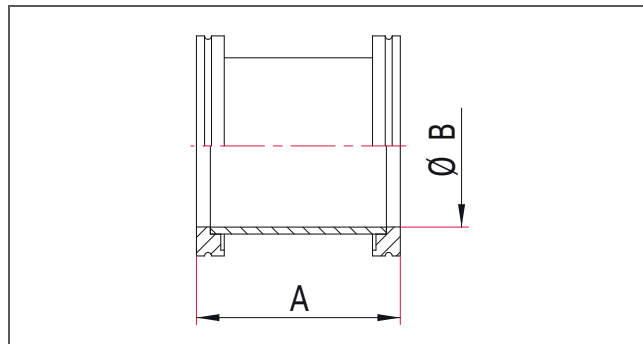
| Nominal diameter | Package [Qty.] | Order number |
|------------------|----------------|--------------|
| DN 63 ISO-K | 5 | 330FSK063-S5 |
| DN 80 ISO-K | 5 | 330FSK080-S5 |
| DN 100 ISO-K | 5 | 330FSK100-S5 |
| DN 160 ISO-K | 5 | 330FSK160-S5 |
| DN 200 ISO-K | 5 | 330FSK200-S5 |
| DN 250 ISO-K | 5 | 330FSK250-S5 |

ISO-K Full Nipple



- Other lengths and materials on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------|
| DN 63 ISO-K | 88 | 70 | 320RZS063 |
| DN 63 ISO-K | 176 | 70 | 320RZS063-176 |
| DN 100 ISO-K | 108 | 102 | 320RZS100 |
| DN 100 ISO-K | 216 | 102 | 320RZS100-216 |
| DN 160 ISO-K | 138 | 153 | 320RZS160 |
| DN 160 ISO-K | 276 | 153 | 320RZS160-276 |
| DN 200 ISO-K | 178 | 213 | 320RZS200 |
| DN 250 ISO-K | 208 | 261 | 320RZS250 |

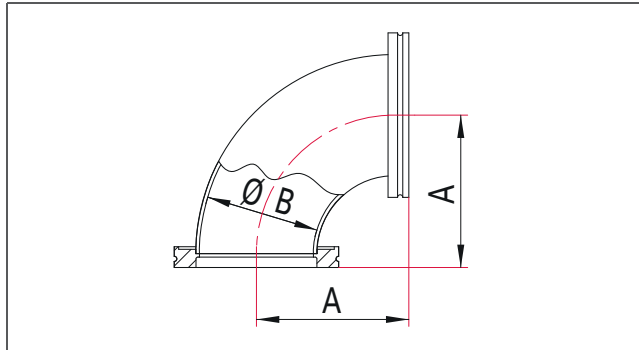
Flanges according to ISO 1609

ISO-K 90° Elbow, Radius

- Larger flange sizes on request



Dimensions



Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 63 ISO-K | 88 | 66 | 320RRB063-90 |
| DN 100 ISO-K | 108 | 100 | 320RRB100-90 |
| DN 160 ISO-K | 232 | 150 | 320RRB160-90 |

Flanges according to ISO 1609

Stainless Steel 316L/1.4404

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 350 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 63 ISO-K | 88 | 66 | 370RRB063-90 |
| DN 100 ISO-K | 108 | 100 | 370RRB100-90 |

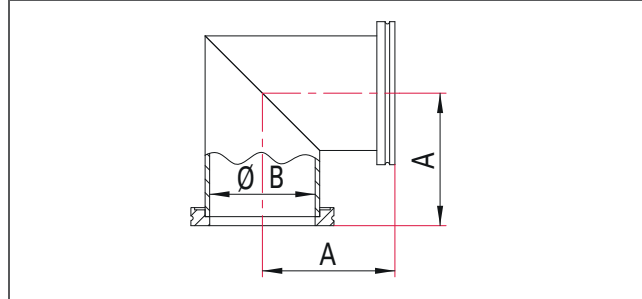
Flanges according to ISO 1609

ISO-K 90° Elbow, Mitered



- Larger flange sizes on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 160 ISO-K | 138 | 153 | 320RWS160-90 |
| DN 200 ISO-K | 178 | 213 | 320RWS200-90 |
| DN 250 ISO-K | 208 | 261 | 320RWS250-90 |

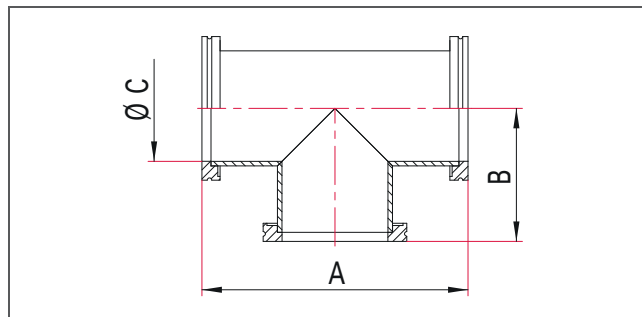
Flanges according to ISO 1609

ISO-K Tee



- Larger flange sizes on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 63 ISO-K | 176 | 88 | 70 | 320RTS063 |
| DN 100 ISO-K | 216 | 108 | 102 | 320RTS100 |
| DN 160 ISO-K | 276 | 138 | 153 | 320RTS160 |
| DN 200 ISO-K | 356 | 178 | 213 | 320RTS200 |
| DN 250 ISO-K | 416 | 208 | 261 | 320RTS250 |

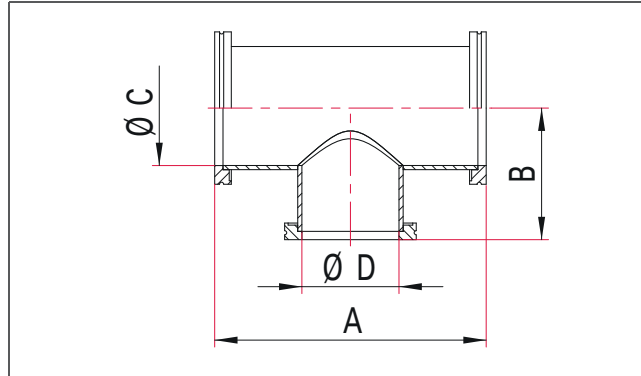
Flanges according to ISO 1609

ISO-K Reducer Tee



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------------------------|---------------|
| DN 100 ISO-K | 216 | 107 | 102 | 70 | DN 63 ISO-K | 320RTR100-063 |
| DN 160 ISO-K | 276 | 130 | 153 | 70 | DN 63 ISO-K | 320RTR160-063 |
| DN 160 ISO-K | 276 | 131 | 153 | 102 | DN 100 ISO-K | 320RTR160-100 |

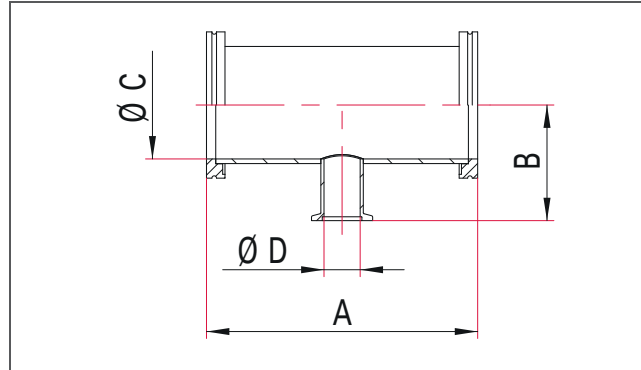
Flanges according to ISO 1609

ISO-K to ISO-KF Reducer Tee



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------------------------|---------------|
| DN 63 ISO-K | 176 | 75 | 70 | 24 | DN 25 ISO-KF | 320RTR063-025 |
| DN 63 ISO-K | 176 | 75 | 70 | 40.5 | DN 40 ISO-KF | 320RTR063-040 |
| DN 100 ISO-K | 216 | 100 | 102 | 24 | DN 25 ISO-KF | 320RTR100-025 |
| DN 100 ISO-K | 216 | 100 | 102 | 40.5 | DN 40 ISO-KF | 320RTR100-040 |
| DN 160 ISO-K | 276 | 125 | 153 | 24 | DN 25 ISO-KF | 320RTR160-025 |
| DN 160 ISO-K | 276 | 125 | 153 | 40.5 | DN 40 ISO-KF | 320RTR160-040 |

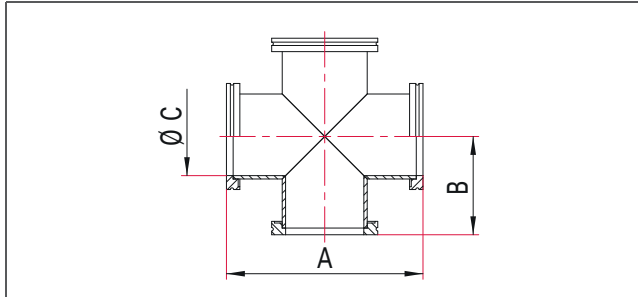
Flanges according to ISO 1609

ISO-K Cross



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 63 ISO-K | 176 | 88 | 66 | 320RKS063 |
| DN 100 ISO-K | 216 | 108 | 100 | 320RKS100 |
| DN 160 ISO-K | 276 | 138 | 153 | 320RKS160 |
| DN 200 ISO-K | 356 | 178 | 213 | 320RKS200 |
| DN 250 ISO-K | 416 | 208 | 261 | 320RKS250 |

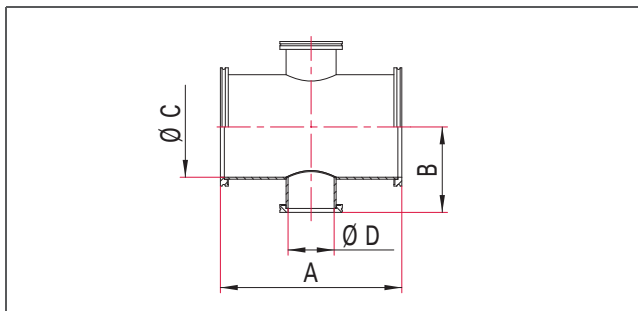
Flanges according to ISO 1609

ISO-K Reducer Cross



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------------------------|---------------|
| DN 100 ISO-K | 216 | 107 | 102 | 70 | DN 63 ISO-K | 320RKR100-063 |
| DN 160 ISO-K | 276 | 130 | 153 | 70 | DN 63 ISO-K | 320RKR160-063 |
| DN 160 ISO-K | 276 | 131 | 153 | 102 | DN 100 ISO-K | 320RKR160-100 |

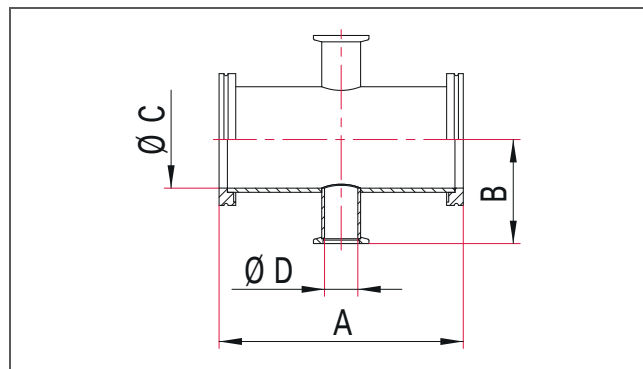
Flanges according to ISO 1609

ISO-K to ISO-KF Adapter Cross



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------|--------------------------|---------------|
| DN 63 ISO-K | 176 | 75 | 70 | 24 | DN 25 ISO-KF | 320RKR063-025 |
| DN 63 ISO-K | 176 | 75 | 70 | 40.5 | DN 40 ISO-KF | 320RKR063-040 |
| DN 100 ISO-K | 216 | 100 | 102 | 24 | DN 25 ISO-KF | 320RKR100-025 |
| DN 100 ISO-K | 216 | 100 | 102 | 40.5 | DN 40 ISO-KF | 320RKR100-040 |
| DN 160 ISO-K | 276 | 125 | 153 | 24 | DN 25 ISO-KF | 320RKR160-025 |
| DN 160 ISO-K | 276 | 125 | 153 | 40.5 | DN 40 ISO-KF | 320RKR160-040 |

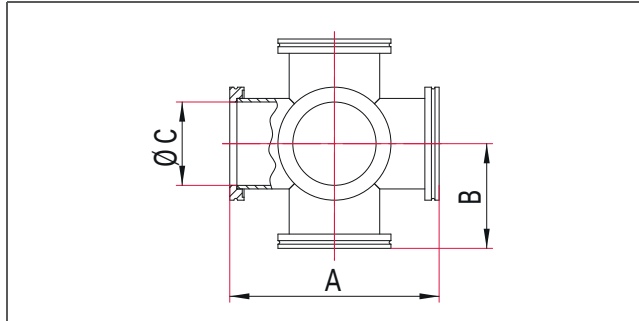
Flanges according to ISO 1609

ISO-K 6-Way Cross



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 63 ISO-K | 176 | 88 | 70 | 320RKD063 |
| DN 100 ISO-K | 216 | 108 | 102 | 320RKD100 |
| DN 160 ISO-K | 276 | 138 | 153 | 320RKD160 |
| DN 200 ISO-K | 356 | 178 | 213 | 320RKD200 |
| DN 250 ISO-K | 416 | 208 | 261 | 320RKD250 |

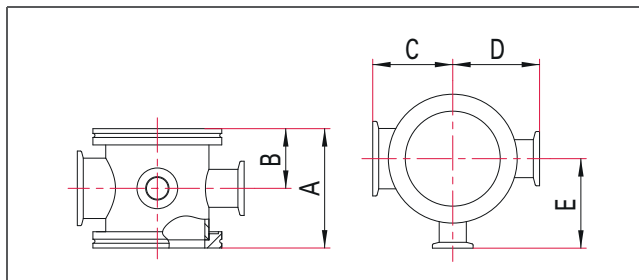
Flanges according to ISO 1609

ISO-K Instrument Cross



- Three ports: DN 16 KF, DN 25 KF and DN 40 KF
- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | 88 | 44 | 59 | 64 | 66 | 320RKM063 |
| DN 100 ISO-K | 100 | 50 | 77 | 80 | 82 | 320RKM100 |
| DN 160 ISO-K | 100 | 50 | 107 | 105 | 107 | 320RKM160 |

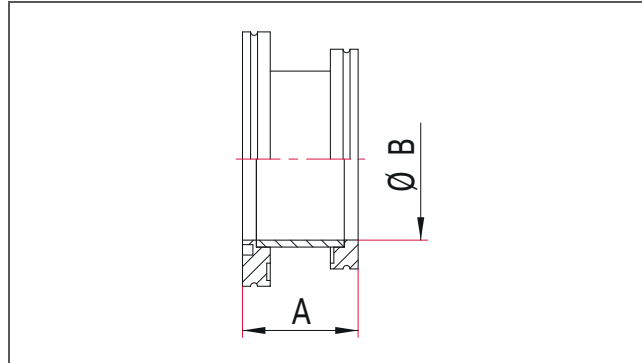
Flanges according to ISO 1609

ISO-K Reducer, Straight



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|-------------------------|
| DN 100 ISO-K | 50 | 70 | DN 63 ISO-K | 320RRG100-063-50 |
| DN 160 ISO-K | 50 | 70 | DN 63 ISO-K | 320RRG160-063-50 |
| DN 160 ISO-K | 50 | 102 | DN 100 ISO-K | 320RRG160-100-50 |
| DN 200 ISO-K | 50 | 102 | DN 100 ISO-K | 320RRG200-100-50 |
| DN 200 ISO-K | 50 | 153 | DN 160 ISO-K | 320RRG200-160-50 |
| DN 250 ISO-K | 50 | 153 | DN 160 ISO-K | 320RRG250-160-50 |
| DN 250 ISO-K | 50 | 213 | DN 200 ISO-K | 320RRG250-200-50 |

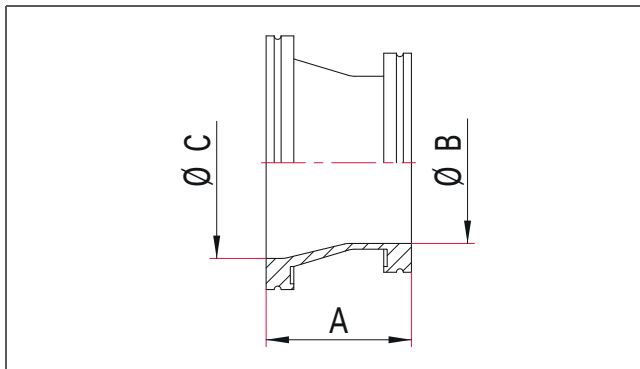
Flanges according to ISO 1609

ISO-K Conical Reducer



- Material: Stainless steel
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------------------------|-------------------|
| DN 100 ISO-K | 63 | 70 | 102 | DN 63 ISO-K | 320RRK100-063-63 |
| DN 160 ISO-K | 63 | 70 | 153 | DN 63 ISO-K | 320RRK160-063-63 |
| DN 160 ISO-K | 104 | 102 | 153 | DN 100 ISO-K | 320RRK160-100-104 |

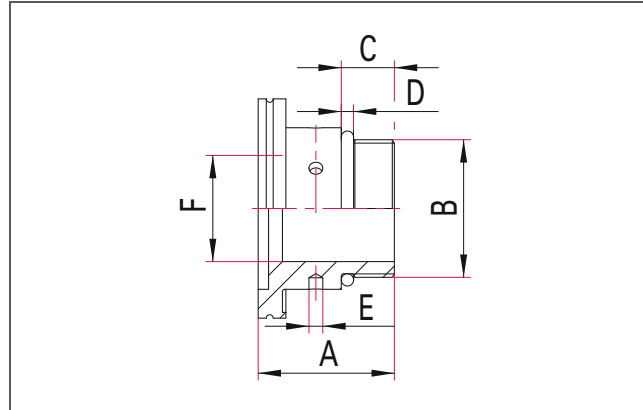
Flanges according to ISO 1609

ISO-K Flange with Pipe Thread and FPM Seal, Male



- FKM O-ring included
- Holes: (blind holes) for C-spanner wrench: 6 x Ø 6 mm
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -15 to 200 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|-----|--------|--------|--------|--------|----------------|
| DN 63 ISO-K | 59 | G2" | 23 | 5 | 6 | 48 | 320AED063-2000 |
| DN 63 ISO-K | 60 | G3" | 23 | 5 | 6 | 50 | 320AED063-3000 |
| DN 100 ISO-K | 60 | G3" | 23 | 5 | 6 | 70 | 320AED100-3000 |

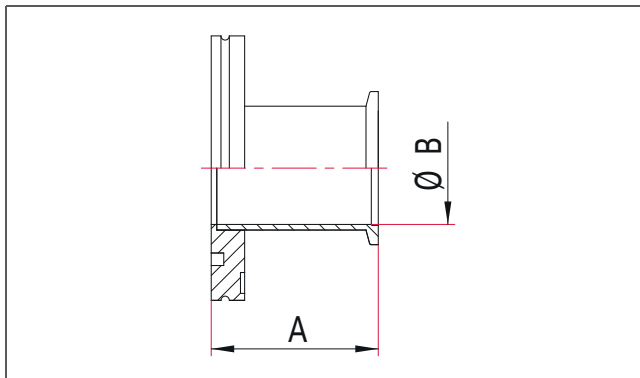
Flanges according to ISO 1609

ISO-K/KF Straight Adapter



- Other combinations and lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|-------------------------|
| DN 63 ISO-K | 40 | 24 | DN 25 ISO-KF | 320RRG063-025-40 |
| DN 63 ISO-K | 40 | 40.5 | DN 40 ISO-KF | 320RRG063-040-40 |
| DN 63 ISO-K | 40 | 50.6 | DN 50 ISO-KF | 320RRG063-050-40 |
| DN 100 ISO-K | 40 | 24 | DN 25 ISO-KF | 320RRG100-025-40 |
| DN 100 ISO-K | 40 | 40.5 | DN 40 ISO-KF | 320RRG100-040-40 |
| DN 100 ISO-K | 40 | 50.6 | DN 50 ISO-KF | 320RRG100-050-40 |
| DN 160 ISO-K | 40 | 40.5 | DN 40 ISO-KF | 320RRG160-040-40 |

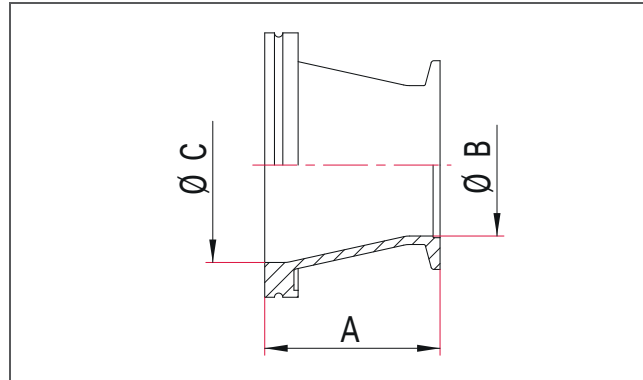
ISO-KF Flanges according to ISO 2861

ISO-K Flanges according to ISO 1609

ISO-K/KF Conical Adapter

- Available in stainless steel or aluminum

Dimensions



Aluminum EN AW-6082

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 150 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------------------------|-------------------------|
| DN 63 ISO-K | 40 | 40.5 | 70 | DN 40 ISO-KF | 31ORRK063-040-40 |
| DN 63 ISO-K | 45 | 50 | 70 | DN 50 ISO-KF | 31ORRK063-050-45 |

Flanges according to ISO 2861

ISO-K Flanges according to ISO 1609

Stainless Steel 304/1.4301

- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

| Nominal diameter | A [mm] | B [mm] | C [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------|--------------------------|-------------------------|
| DN 63 ISO-K | 63 | 24 | 70 | DN 25 ISO-KF | 32ORRK063-025-63 |
| DN 63 ISO-K | 63 | 40.5 | 70 | DN 40 ISO-KF | 32ORRK063-040-63 |
| DN 63 ISO-K | 63 | 50 | 70 | DN 50 ISO-KF | 32ORRK063-050-63 |
| DN 100 ISO-K | 63 | 40.5 | 102 | DN 40 ISO-KF | 32ORRK100-040-63 |
| DN 100 ISO-K | 63 | 50 | 102 | DN 50 ISO-KF | 32ORRK100-050-63 |

Flanges according to ISO 2861

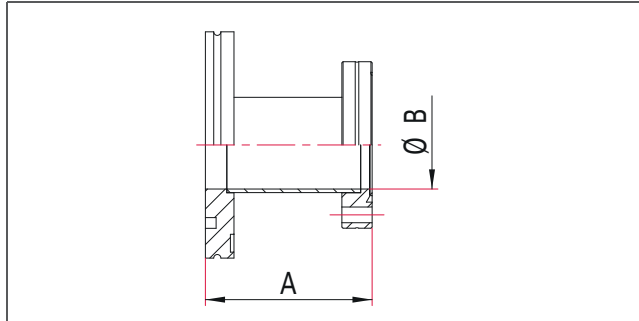
ISO-K Flanges according to ISO 1609

ISO-K/CF Adapter



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301; CF Flange 304L

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|-------------------|
| DN 16 CF | 60 | 16 | DN 63 ISO-K | 420RUG016-063-60 |
| DN 40 CF | 70 | 37 | DN 63 ISO-K | 420RUG040-063-70 |
| DN 63 CF | 90 | 66 | DN 63 ISO-K | 420RUG063-063-90 |
| DN 100 CF | 90 | 102 | DN 100 ISO-K | 420RUG100-100-90 |
| DN 160 CF | 100 | 153 | DN 160 ISO-K | 420RUG160-160-100 |

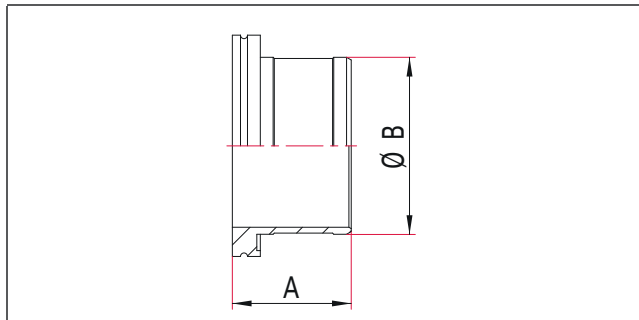
CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2
ISO-K Flanges according to ISO 1609

ISO-K Sleeve Coupling



- For connecting a CR sleeve (330SMA)
- Fastener: hose clamp (see accessories)

Dimensions



Aluminum EN AW-6082

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 63 ISO-K | 51 | 76 | 310FMA063 |
| DN 100 ISO-K | 56 | 108 | 310FMA100 |
| DN 160 ISO-K | 56 | 159 | 310FMA160 |

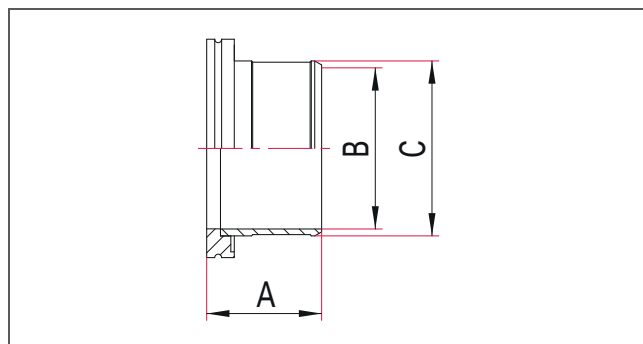
Flanges according to ISO 1609

ISO-K Hose Adapter



- For connecting a PVC hose with embedded spring (330SPM)
- Fastener: hose clamp (see accessories)

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 63 ISO-K | 50 | 70 | 76.1 | 320ASP063 |
| DN 100 ISO-K | 50 | 95 | 101.6 | 320ASP100 |

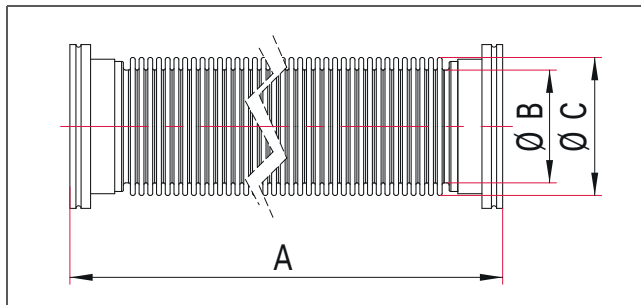
Flanges according to ISO 1609

ISO-K Corrugated Hose, Flexible



- Flange connection length: 30 mm
- Custom lengths on request
- Pressure min.: $1 \cdot 10^{-8}$ hPa
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange 304/1.4301; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Bend radius, unique movement [mm] | Bend radius, often movement [mm] | Over pressure max. [hPa] | Order number |
|------------------|--------|--------|--------|-----------------------------------|----------------------------------|--------------------------|----------------|
| DN 63 ISO-K | 250 | 65 | 80 | 90 | 330 | 500 | 320SWN063-0250 |
| DN 63 ISO-K | 500 | 65 | 80 | 90 | 330 | 500 | 320SWN063-0500 |
| DN 63 ISO-K | 750 | 65 | 80 | 90 | 330 | 500 | 320SWN063-0750 |
| DN 63 ISO-K | 1000 | 65 | 80 | 90 | 330 | 500 | 320SWN063-1000 |
| DN 63 ISO-K | 1500 | 65 | 80 | 90 | 330 | 500 | 320SWN063-1500 |
| DN 100 ISO-K | 250 | 100 | 119 | 131 | 530 | 300 | 320SWN100-0250 |
| DN 100 ISO-K | 500 | 100 | 119 | 131 | 530 | 300 | 320SWN100-0500 |
| DN 100 ISO-K | 750 | 100 | 119 | 131 | 530 | 300 | 320SWN100-0750 |
| DN 100 ISO-K | 1000 | 100 | 119 | 131 | 530 | 300 | 320SWN100-1000 |
| DN 160 ISO-K | 250 | 150 | 173 | 216 | 1050 | 100 | 320SWN160-0250 |
| DN 160 ISO-K | 500 | 150 | 173 | 216 | 1050 | 100 | 320SWN160-0500 |
| DN 160 ISO-K | 750 | 150 | 173 | 216 | 1050 | 100 | 320SWN160-0750 |
| DN 160 ISO-K | 1000 | 150 | 173 | 216 | 1050 | 100 | 320SWN160-1000 |

Please note that the hose shrinks under vacuum.

The minimum bending radii are applicable for a temperature of 20 °C.

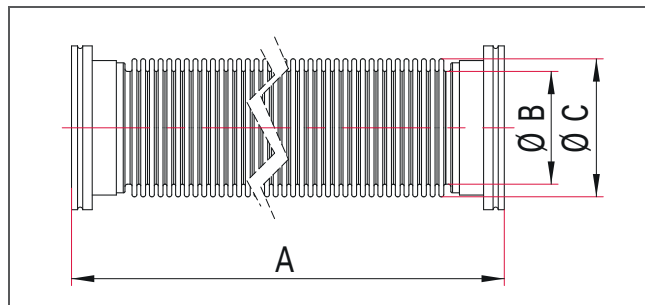
Flanges according to ISO 1609

ISO-K Corrugated Hose, Flexible, Annealed



- Flange connection length: 30 mm
- Stress relieved; low reset force when bent
- Custom lengths on request
- Pressure min.: $1 \cdot 10^{-8}$ hPa
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange 304/1.4301; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Bend radius, unique movement [mm] | Over pressure max. [hPa] | Order number |
|------------------|--------|--------|--------|-----------------------------------|--------------------------|----------------|
| DN 63 ISO-K | 250 | 65 | 80 | 90 | 500 | 320SWG063-0250 |
| DN 63 ISO-K | 500 | 65 | 80 | 90 | 500 | 320SWG063-0500 |
| DN 63 ISO-K | 750 | 65 | 80 | 90 | 500 | 320SWG063-0750 |
| DN 63 ISO-K | 1000 | 65 | 80 | 90 | 500 | 320SWG063-1000 |
| DN 100 ISO-K | 250 | 100 | 119 | 131 | 300 | 320SWG100-0250 |
| DN 100 ISO-K | 500 | 100 | 119 | 131 | 300 | 320SWG100-0500 |
| DN 100 ISO-K | 750 | 100 | 119 | 131 | 300 | 320SWG100-0750 |
| DN 100 ISO-K | 1000 | 100 | 119 | 131 | 300 | 320SWG100-1000 |
| DN 160 ISO-K | 250 | 150 | 173 | 216 | 100 | 320SWG160-0250 |
| DN 160 ISO-K | 500 | 150 | 173 | 216 | 100 | 320SWG160-0500 |
| DN 160 ISO-K | 750 | 150 | 173 | 216 | 100 | 320SWG160-0750 |
| DN 160 ISO-K | 1000 | 150 | 173 | 216 | 100 | 320SWG160-1000 |

Please note that the hose shrinks under vacuum.

The minimum bending radius is applicable for a temperature of 20 °C.

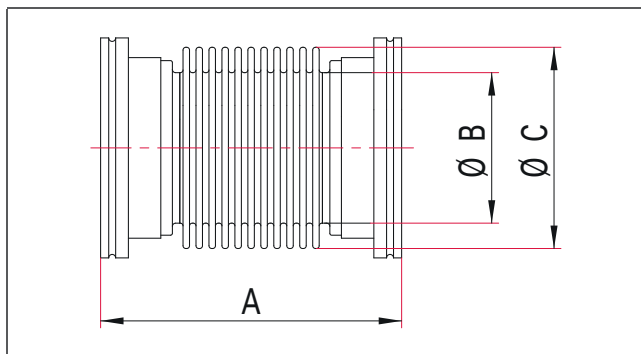
Flanges according to ISO 1609

ISO-K Spring Bellows



- Flange connection length: 30 mm
- Custom lengths on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Materials: Stainless steel (flange: 304; bellows: DN 63 to DN 100 and DN 320: 316L;
DN 160 to DN 250: 316Ti)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | C [mm] | Axial stroke [mm] | Order number |
|------------------|--------|--------|--------|-------------------|---------------|
| DN 63 ISO-K | 130 | 65 | 87 | ±16 | 320SFK063-130 |
| DN 63 ISO-K | 150 | 65 | 87 | ±20 | 320SFK063-150 |
| DN 80 ISO-K | 130 | 80 | 104 | ±11 | 320SFK080-130 |
| DN 80 ISO-K | 150 | 80 | 104 | ±15 | 320SFK080-150 |
| DN 100 ISO-K | 130 | 100 | 127 | ±17 | 320SFK100-130 |
| DN 100 ISO-K | 150 | 100 | 127 | ±21 | 320SFK100-150 |
| DN 160 ISO-K | 150 | 150 | 184 | ±14 | 320SFK160-150 |
| DN 160 ISO-K | 220 | 150 | 184 | ±25 | 320SFK160-220 |
| DN 200 ISO-K | 220 | 200 | 235 | ±25 | 320SFK200-220 |
| DN 250 ISO-K | 220 | 250 | 285 | ±25 | 320SFK250-220 |
| DN 320 ISO-K | 220 | 318 | 368 | ±25 | 320SFK320-220 |

Please note that the spring bellows shrinks under vacuum.

The axial stroke is applicable for a temperature of 20 °C and 10000 load cycles.

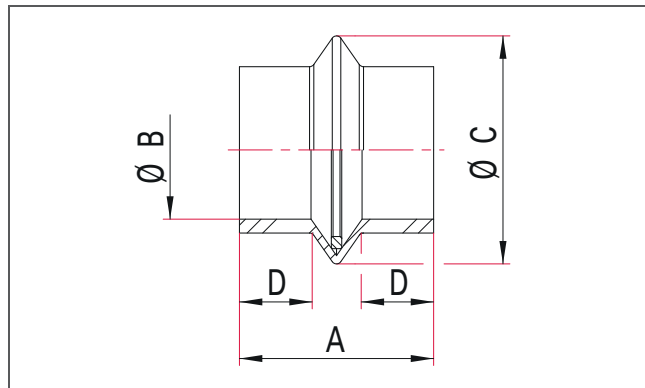
Flanges according to ISO 1609

ISO-K CR Sleeve



- Sleeve made from chloroprene rubber
- Connection: sleeve coupling (see adapters) and hose clamp (see accessories)
- Pressure range: $1 \cdot 10^{-5}$ hPa to ambient pressure
- Temperature range: -5 to 120 °C

Dimensions



Chloroprene Rubber (CR)

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 63 ISO-K | 65 | 75 | 115 | 20 | 330SMA063 |
| DN 100 ISO-K | 75 | 105 | 160 | 16 | 330SMA100 |
| DN 160 ISO-K | 75 | 156 | 218 | 16 | 330SMA160 |

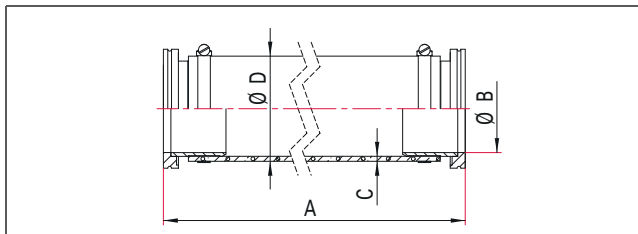
Please note that the sleeve shrinks under vacuum.

ISO-K PVC Hose with Embedded Spring and Flanges



- Inner tube material: PVC, transparent
- Casing: Steel coil
- Hose cover material: PVC, transparent
- Smooth inner and outer walls
- Custom lengths on request
- Pressure range: $1 \cdot 10^{-4}$ hPa to ambient pressure
- Temperature range: -10 to 60 °C

Dimensions



PVC with Stainless Steel Flange 304/1.4301

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Bend radius [mm] | Order number |
|------------------|--------|--------|--------|--------|------------------|----------------|
| DN 63 ISO-K | 500 | 70 | 7.5 | 90 | 150 | 300SPA063-0500 |
| DN 63 ISO-K | 1000 | 70 | 7.5 | 90 | 150 | 300SPA063-1000 |
| DN 100 ISO-K | 500 | 95 | 8.5 | 117 | 200 | 300SPA100-0500 |
| DN 100 ISO-K | 1000 | 95 | 8.5 | 117 | 200 | 300SPA100-1000 |

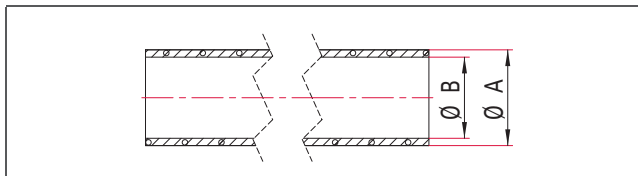
The minimum bending radius is applicable for a temperature of 20 °C.
Flanges according to ISO 1609

ISO-K PVC Hose with Embedded Spring



- Inner tube material: PVC, transparent
- Casing: Steel coil
- Hose cover material: PVC, transparent
- Smooth inner and outer walls
- Length: Up to 50 m; min. order: 1 m; orders > 1 m calculated pro rata
- Connection: Hose Adapter and Hose Clamp
- Pressure range: $1 \cdot 10^{-4}$ hPa to 500 hPa over pressure
- Temperature range: -10 to 60 °C

Dimensions



PVC

| Inner diameter [mm] | A [mm] | B [mm] | Bend radius [mm] | Order number |
|---------------------|--------|--------|------------------|--------------|
| 75 | 90 | 75 | 150 | 330SPM063 |
| 100 | 117 | 100 | 200 | 330SPM100 |

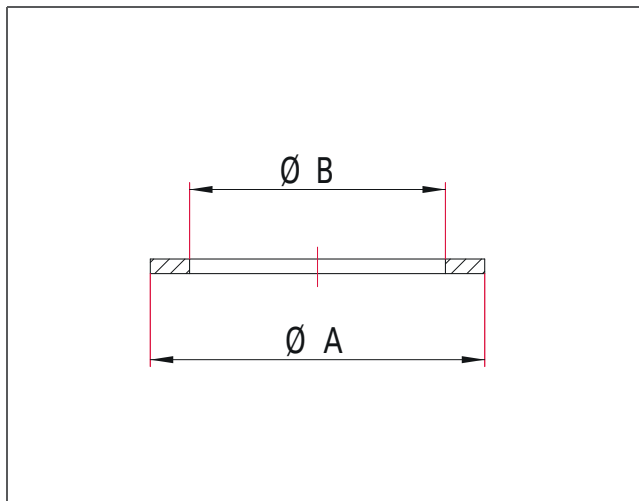
The minimum bending radius is applicable for a temperature of 20 °C.

CF Copper Gasket



- For single use only
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Temperature range: -196 to 200 °C

Dimensions



OFHC Copper (Oxygen Free)

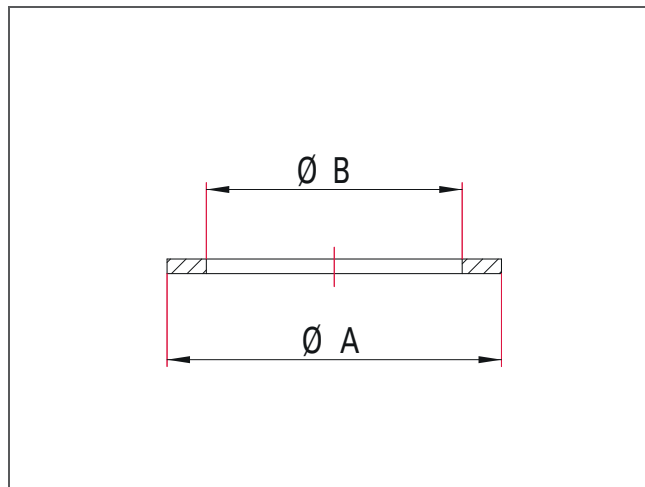
| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|---------------|
| DN 16 CF | 21.3 | 16 | 10 | 490DFL016-S10 |
| DN 25 CF | 32.8 | 25.5 | 10 | 490DFL025-S10 |
| DN 40 CF | 48.2 | 36.6 | 10 | 490DFL040-S10 |
| DN 50 CF | 61.6 | 50.8 | 10 | 490DFL050-S10 |
| DN 63 CF | 82.4 | 63.4 | 10 | 490DFL063-S10 |
| DN 75 CF | 91.4 | 76.3 | 10 | 490DFL075-S10 |
| DN 100 CF | 120.5 | 101.6 | 10 | 490DFL100-S10 |
| DN 130 CF | 141.4 | 127.1 | 5 | 490DFL130-S5 |
| DN 160 CF | 171.3 | 152.4 | 5 | 490DFL160-S5 |
| DN 200 CF | 222.1 | 203.3 | 5 | 490DFL200-S5 |
| DN 250 CF | 272.9 | 254 | 5 | 490DFL250-S5 |
| DN 300 CF | 313.2 | 300 | 5 | 490DFL300-S5 |
| DN 350 CF | 376.6 | 356.5 | 5 | 490DFL350-S5 |

CF Silver-plated Copper Gasket



- For single use only
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Temperature range: -196 to 450 °C

Dimensions



OFHC Copper (Oxygen Free), Silver-plated

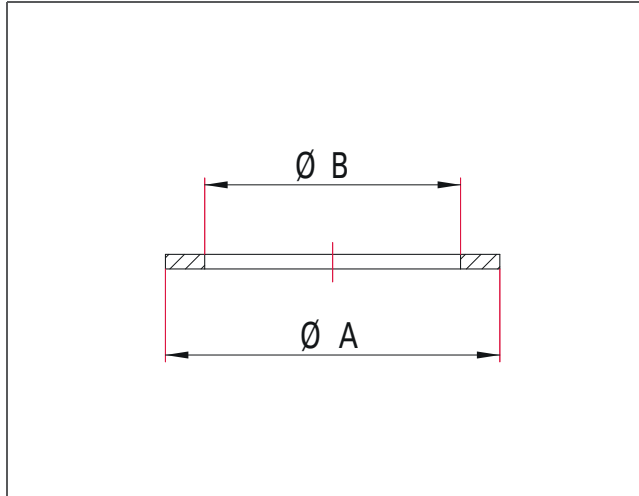
| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|----------------|
| DN 16 CF | 21.3 | 16 | 5 | 490DFL016-S-S5 |
| DN 25 CF | 32.8 | 25.5 | 5 | 490DFL025-S-S5 |
| DN 40 CF | 48.2 | 36.6 | 5 | 490DFL040-S-S5 |
| DN 63 CF | 82.4 | 63.4 | 5 | 490DFL063-S-S5 |
| DN 100 CF | 120.5 | 101.6 | 5 | 490DFL100-S-S5 |
| DN 160 CF | 171.3 | 152.4 | 5 | 490DFL160-S-S5 |
| DN 200 CF | 222.1 | 203.3 | 5 | 490DFL200-S-S5 |
| DN 250 CF | 272.9 | 254 | 5 | 490DFL250-S-S5 |

CF Vacuum-annealed Copper Gasket



- Particularly well suited for viewports
- For single use only
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Temperature range: -196 to 200 °C

Dimensions



OFHC Copper (Oxygen Free), Vacuum-annealed

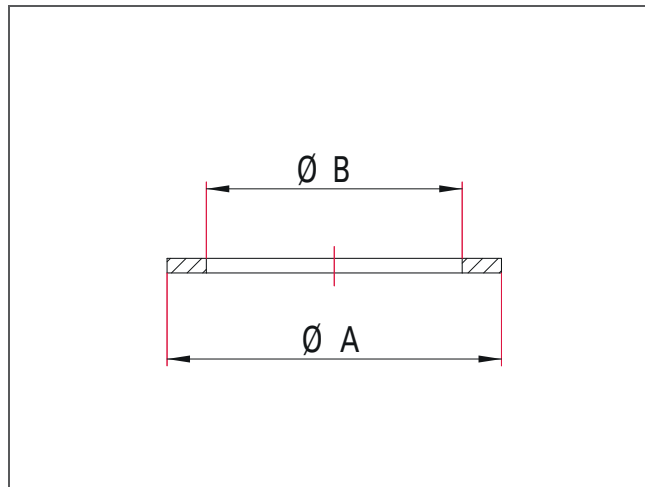
| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|----------------|
| DN 16 CF | 21.3 | 16 | 5 | 490DFL016-G-S5 |
| DN 40 CF | 48.2 | 36.6 | 5 | 490DFL040-G-S5 |
| DN 63 CF | 82.4 | 63.4 | 5 | 490DFL063-G-S5 |
| DN 100 CF | 120.5 | 101.6 | 5 | 490DFL100-G-S5 |
| DN 160 CF | 171.3 | 152.4 | 5 | 490DFL160-G-S5 |
| DN 200 CF | 222.1 | 203.3 | 5 | 490DFL200-G-S5 |
| DN 250 CF | 272.9 | 254 | 5 | 490DFL250-G-S5 |

CF Silver-plated, Vacuum-annealed Copper Gasket



- Particularly well suited for viewports
- For single use only
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Temperature range: -196 to 450 °C

Dimensions



OFHC Copper (Oxygen Free), Silver-plated, Vacuum-annealed

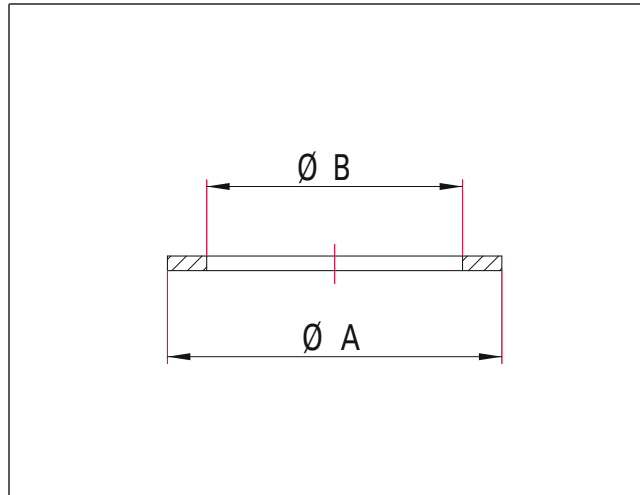
| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|------------------|
| DN 16 CF | 21.3 | 16 | 5 | 490DFL016-S-G-S5 |
| DN 40 CF | 48.2 | 36.6 | 5 | 490DFL040-S-G-S5 |
| DN 63 CF | 82.4 | 63.4 | 5 | 490DFL063-S-G-S5 |
| DN 100 CF | 120.5 | 101.6 | 5 | 490DFL100-S-G-S5 |
| DN 160 CF | 171.3 | 152.4 | 5 | 490DFL160-S-G-S5 |
| DN 200 CF | 222.1 | 203.3 | 5 | 490DFL200-S-G-S5 |
| DN 250 CF | 272.9 | 254 | 5 | 490DFL250-S-G-S5 |

CF Elastomer Gasket FKM

- Reusable
- Version with centering lip: better fixation in flange for easier assembly; higher purity of materials for lower desorption
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Temperature range: -15 to 150 °C (shortly up to 200 °C)

FKM Cut from Sheet Material

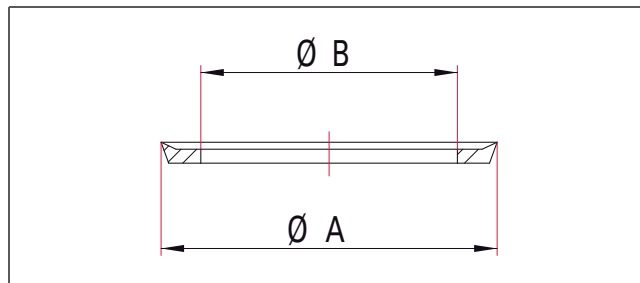
Dimensions



| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|--------------|
| DN 16 CF | 21.4 | 16 | 2 | 402DFL016-S2 |
| DN 40 CF | 48.2 | 37 | 2 | 402DFL040-S2 |
| DN 63 CF | 82.4 | 63 | 2 | 402DFL063-S2 |
| DN 100 CF | 120.5 | 109 | 2 | 402DFL100-S2 |
| DN 160 CF | 171.3 | 152 | 2 | 402DFL160-S2 |
| DN 200 CF | 222.1 | 203 | 2 | 402DFL200-S2 |
| DN 250 CF | 272.9 | 254 | 2 | 402DFL250-S2 |

FKM with Centering Lip; Heat-molded

Dimensions



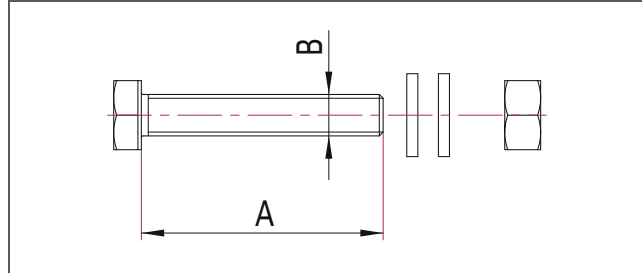
| Nominal diameter | A [mm] | B [mm] | Package [Qty.] | Order number |
|------------------|--------|--------|----------------|--------------|
| DN 16 CF | 21.4 | 16 | 1 | 402DFL016-Z |
| DN 40 CF | 48.2 | 36 | 1 | 402DFL040-Z |
| DN 63 CF | 82.4 | 71 | 1 | 402DFL063-Z |
| DN 100 CF | 120.5 | 109 | 1 | 402DFL100-Z |
| DN 160 CF | 171.3 | 158 | 1 | 402DFL160-Z |
| DN 200 CF | 222.1 | 200 | 1 | 402DFL200-Z |
| DN 250 CF | 272.9 | 254 | 1 | 402DFL250-Z |

CF Hexagon Head Screw Set for Flanges with Through-holes



- For installing two flanges with through-holes
- Set includes the screws required for the specified flange size
- Includes two washers and one nut for each screw

Dimensions



Stainless Steel A2

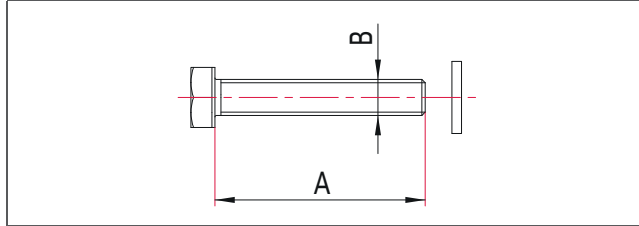
| Nominal diameter | A [mm] | B | Number per set | Order number |
|------------------|--------|-----|----------------|--------------|
| DN 16 CF | 20 | M4 | 6 | 420BSC016-20 |
| DN 25 CF | 35 | M6 | 4 | 420BSC025-35 |
| DN 40 CF | 35 | M6 | 6 | 420BSC040-35 |
| DN 50 CF | 45 | M8 | 8 | 420BSC050-45 |
| DN 63 CF | 45 | M8 | 8 | 420BSC063-45 |
| DN 75 CF | 45 | M8 | 10 | 420BSC075-45 |
| DN 100 CF | 50 | M8 | 16 | 420BSC100-50 |
| DN 130 CF | 55 | M8 | 18 | 420BSC130-55 |
| DN 160 CF | 55 | M8 | 20 | 420BSC160-55 |
| DN 200 CF | 60 | M8 | 24 | 420BSC200-60 |
| DN 250 CF | 65 | M8 | 32 | 420BSC250-65 |
| DN 300 CF | 70 | M10 | 30 | 420BSC300-70 |
| DN 350 CF | 70 | M10 | 36 | 420BSC350-70 |

CF Hexagon Head Screw Set for Flanges with Tapped Holes



- For installing a flange with through-holes on a flange with tapped-holes
- Ideal for installing gate valves
- Set includes the screws required for the specified flange size
- One screw and one washer

Dimensions



Stainless Steel A2-70

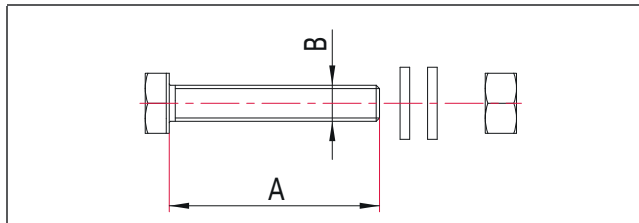
| Nominal diameter | A [mm] | B | Number per set | Order number |
|------------------|--------|----|----------------|--------------|
| DN 16 CF | 14 | M4 | 6 | 420BSC016-14 |
| DN 40 CF | 20 | M6 | 6 | 420BSC040-20 |
| DN 63 CF | 30 | M8 | 8 | 420BSC063-30 |
| DN 100 CF | 30 | M8 | 16 | 420BSC100-30 |
| DN 160 CF | 35 | M8 | 20 | 420BSC160-35 |
| DN 200 CF | 35 | M8 | 24 | 420BSC200-35 |
| DN 250 CF | 35 | M8 | 32 | 420BSC250-35 |

CF Hexagon Head Screw Set for Spacer Flanges



- For installing a spacer between two standard flanges with through-holes
- Set includes the screws required for the specified flange size
- Includes two washers and one nut for each screw

Dimensions



Stainless Steel A2-70

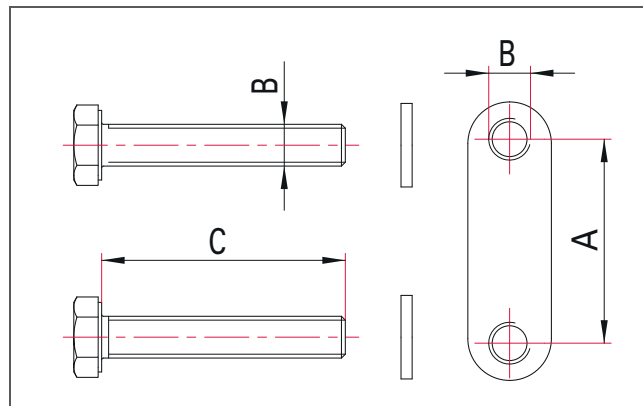
| Nominal diameter | A [mm] | B | Number per set | Order number |
|------------------|--------|----|----------------|--------------|
| DN 16 CF | 30 | M4 | 6 | 420BSC016-30 |
| DN 40 CF | 50 | M6 | 6 | 420BSC040-50 |
| DN 63 CF | 65 | M8 | 8 | 420BSC063-65 |
| DN 100 CF | 70 | M8 | 16 | 420BSC100-70 |
| DN 160 CF | 80 | M8 | 20 | 420BSC160-80 |
| DN 200 CF | 90 | M8 | 24 | 420BSC200-90 |
| DN 250 CF | 90 | M8 | 32 | 420BSC250-90 |

CF Plate Nut Sets



- Set includes screws and washers for the specified flange size
- Easy assembly with only one wrench (no counter-tightening necessary)

Dimensions



Stainless Steel 304; Screws A2-70

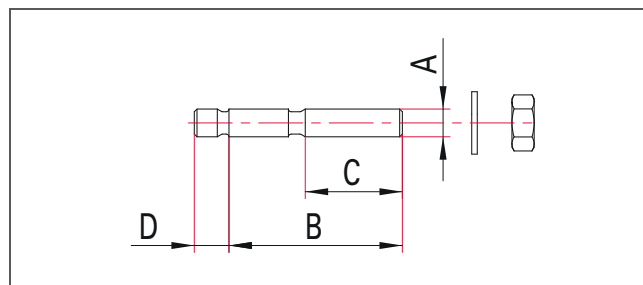
| Nominal diameter | A [mm] | B | C [mm] | Number per set | Order number |
|------------------|--------|----|--------|----------------|--------------|
| DN 16 CF | 13.5 | M4 | 20 | 3 | 420BMD016 |
| DN 40 CF | 29.3 | M6 | 35 | 3 | 420BMD040 |
| DN 63 CF | 35.2 | M8 | 45 | 4 | 420BMD063 |
| DN 100 CF | 25.4 | M8 | 50 | 8 | 420BMD100 |
| DN 160 CF | 28.3 | M8 | 55 | 10 | 420BMD160 |

CF Stud Screw Set with Hexagon Nut



- 10 sets per package
- Includes washer and one nut for each screw

Dimensions



Stainless Steel A2

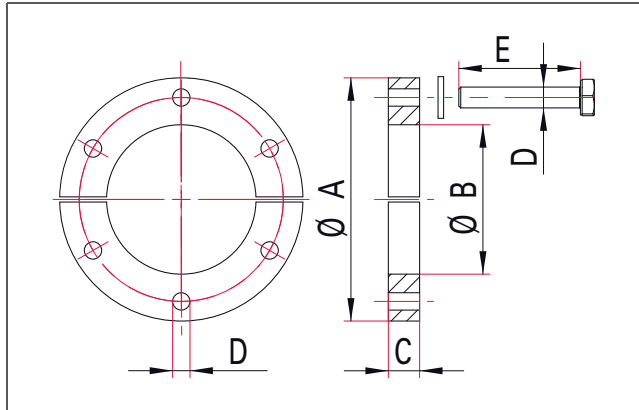
| Nominal diameter | A | B [mm] | C [mm] | D [mm] | Order number |
|------------------|----|--------|--------|--------|--------------|
| DN 25-40 CF | M6 | 25 | 18 | 6 | 420BST-M6x25 |
| DN 25-40 CF | M6 | 30 | 18 | 6 | 420BST-M6x30 |
| DN 25-40 CF | M6 | 35 | 18 | 6 | 420BST-M6x35 |
| DN 63-250 CF | M8 | 40 | 22 | 8 | 420BST-M8x40 |
| DN 63-250 CF | M8 | 45 | 22 | 8 | 420BST-M8x45 |
| DN 63-250 CF | M8 | 50 | 22 | 8 | 420BST-M8x50 |
| DN 63-250 CF | M8 | 55 | 22 | 8 | 420BST-M8x55 |
| DN 63-250 CF | M8 | 60 | 22 | 8 | 420BST-M8x60 |

CF Hexagon Head Screw Set with Horseshoe Nuts



- For installing two flanges with through-holes
- Easy assembly with only one wrench (no counter-tightening necessary)
- Set contains two horseshoe nut plates with screws and washers

Dimensions



Stainless Steel 304/1.4301; Screws A2-70

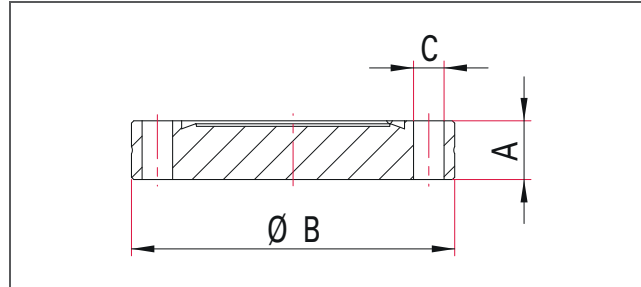
| Nominal diameter | A [mm] | B [mm] | C [mm] | D | E [mm] | Order number |
|------------------|--------|--------|--------|----|--------|--------------|
| DN 16 CF | 34 | 20 | 6 | M4 | 20 | 420BMH016 |
| DN 40 CF | 69.6 | 45 | 9 | M6 | 35 | 420BMH040 |
| DN 63 CF | 113.5 | 80 | 12 | M8 | 45 | 420BMH063 |
| DN 100 CF | 151.6 | 115 | 12 | M8 | 50 | 420BMH100 |
| DN 160 CF | 202.4 | 165 | 12 | M8 | 55 | 420BMH160 |

CF Blank Flange



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 CF | 7.75 | 34 | 4.4 | 420FBL016 |
| DN 25 CF | 12 | 54 | 6.6 | 420FBL025 |
| DN 40 CF | 12.7 | 69.9 | 6.6 | 420FBL040 |
| DN 50 CF | 17.3 | 85.7 | 8.4 | 420FBL050 |
| DN 63 CF | 17.5 | 113.5 | 8.4 | 420FBL063 |
| DN 75 CF | 17.5 | 117.4 | 8.4 | 420FBL075 |
| DN 100 CF | 19.8 | 152 | 8.4 | 420FBL100 |
| DN 130 CF | 21.4 | 171.4 | 8.4 | 420FBL130 |
| DN 160 CF | 22.2 | 202.4 | 8.4 | 420FBL160 |
| DN 200 CF | 24.5 | 253.2 | 8.4 | 420FBL200 |
| DN 250 CF | 26 | 304.8 | 8.4 | 420FBL250 |
| DN 300 CF | 28.5 | 355.6 | 10.5 | 420FBL300 |
| DN 350 CF | 28.5 | 419.1 | 10.5 | 420FBL350 |

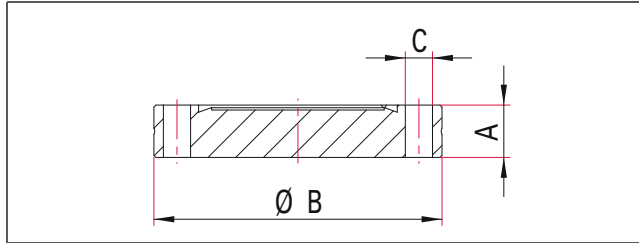
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Blank Flange, with Thread



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L, with Metric Thread

| Nominal diameter | A [mm] | B [mm] | C | Order number |
|------------------|--------|--------|----|--------------|
| DN 16 CF | 7.75 | 34 | M4 | 420FBL016-G |
| DN 40 CF | 12.7 | 69.9 | M6 | 420FBL040-G |
| DN 63 CF | 17.5 | 113.5 | M8 | 420FBL063-G |
| DN 100 CF | 19.8 | 152 | M8 | 420FBL100-G |
| DN 160 CF | 22.2 | 202.4 | M8 | 420FBL160-G |
| DN 200 CF | 24.5 | 253.2 | M8 | 420FBL200-G |
| DN 250 CF | 26 | 304.8 | M8 | 420FBL250-G |

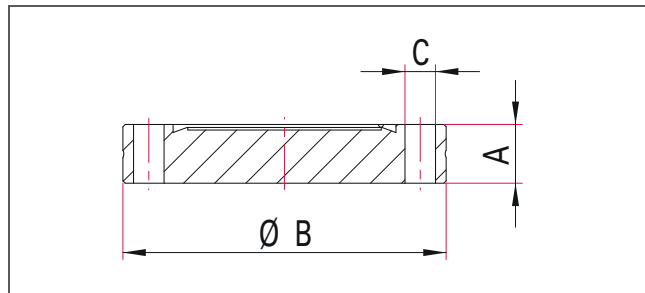
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Blank Flange, 316LN ESR



- Bakeable under vacuum up to 1050 °C
- Low desorption
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Magnetic permeability: ≤ 1.01
- Temperature range: -196 to 350 °C

Dimensions



Stainless Steel 316LN ESR/1.4429 ESU

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 CF | 7.75 | 34 | 4.4 | 480FBL016 |
| DN 25 CF | 12 | 54 | 6.6 | 480FBL025 |
| DN 40 CF | 12.7 | 69.9 | 6.6 | 480FBL040 |
| DN 50 CF | 17.3 | 85.7 | 8.4 | 480FBL050 |
| DN 63 CF | 17.5 | 113.5 | 8.4 | 480FBL063 |
| DN 75 CF | 17.5 | 117.4 | 8.4 | 480FBL075 |
| DN 100 CF | 19.8 | 152 | 8.4 | 480FBL100 |
| DN 130 CF | 21.4 | 171.4 | 8.4 | 480FBL130 |
| DN 160 CF | 22.2 | 202.4 | 8.4 | 480FBL160 |
| DN 200 CF | 24.5 | 253.2 | 8.4 | 480FBL200 |
| DN 250 CF | 26 | 304.8 | 8.4 | 480FBL250 |

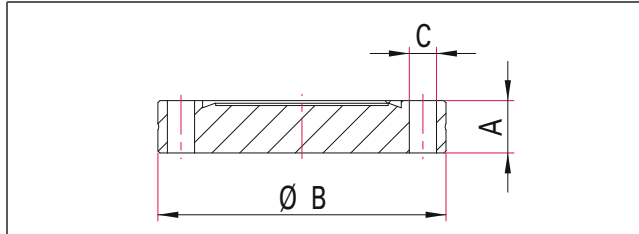
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Blank Flange, with Thread, 316LN ESR



- Bakeable under vacuum up to 1050 °C
- Low desorption
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Magnetic permeability: ≤ 1.01
- Temperature range: -196 to 350 °C

Dimensions



Stainless Steel 316LN ESR/1.4429 ESU, with Thread

| Nominal diameter | A [mm] | B [mm] | C | Order number |
|------------------|--------|--------|----|--------------|
| DN 16 CF | 7.75 | 34 | M4 | 480FBL016-G |
| DN 40 CF | 12.7 | 69.9 | M6 | 480FBL040-G |
| DN 63 CF | 17.5 | 113.5 | M8 | 480FBL063-G |
| DN 100 CF | 19.8 | 152 | M8 | 480FBL100-G |
| DN 160 CF | 22.2 | 202.4 | M8 | 480FBL160-G |

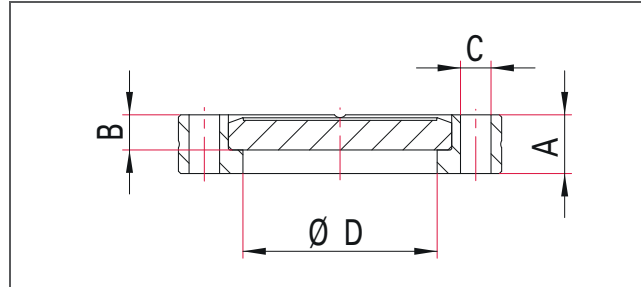
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Blank Flange, Rotatable



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 16 CF | 7.75 | 5.8 | 4.4 | 19.2 | 420FBD016 |
| DN 40 CF | 12.7 | 7.6 | 6.6 | 42 | 420FBD040 |
| DN 63 CF | 17.5 | 12.6 | 8.4 | 72 | 420FBD063 |
| DN 100 CF | 19.8 | 14.4 | 8.4 | 109 | 420FBD100 |
| DN 160 CF | 22.2 | 15.8 | 8.4 | 161 | 420FBD160 |
| DN 200 CF | 24.5 | 15.8 | 8.4 | 207 | 420FBD200 |
| DN 250 CF | 26 | 16.6 | 8.4 | 260 | 420FBD250 |

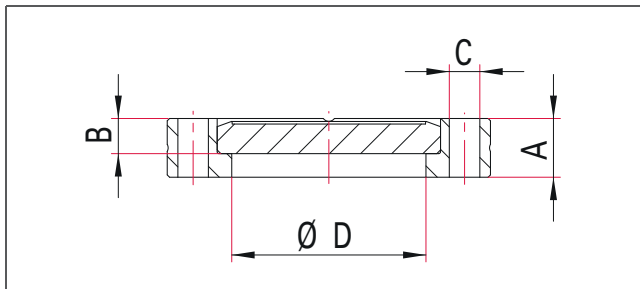
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Blank Flange, Rotatable, 316LN ESR



- Bakeable under vacuum up to 1050 °C
- Low desorption
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Magnetic permeability: ≤ 1.01
- Temperature range: -196 to 350 °C

Dimensions



Stainless Steel 316LN ESR/1.4429 ESU

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 16 CF | 7.75 | 5.8 | 4.4 | 19.2 | 480FBD016 |
| DN 40 CF | 12.7 | 7.6 | 6.6 | 42 | 480FBD040 |
| DN 63 CF | 17.5 | 12.6 | 8.4 | 72 | 480FBD063 |
| DN 100 CF | 19.8 | 14.4 | 8.4 | 109 | 480FBD100 |
| DN 160 CF | 22.2 | 15.8 | 8.4 | 161 | 480FBD160 |

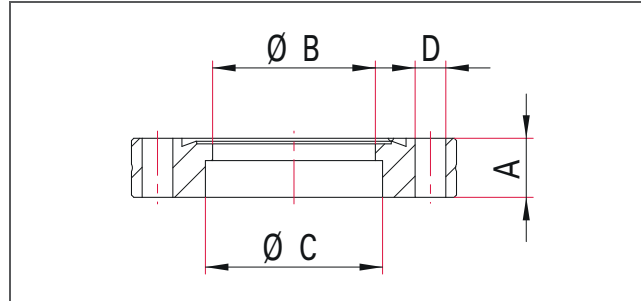
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Weld Flange



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|---------------|
| DN 16 CF | 18 x 1 | 7.75 | 16 | 18.15 | 4.4 | 420FAN016-18 |
| DN 16 CF | 19.05 x 1.65 | 7.75 | 15.75 | 19.2 | 4.4 | 420FAN016-19 |
| DN 25 CF | 25.4 x 1.65 | 12 | 22.1 | 25.6 | 6.6 | 420FAN025-25 |
| DN 25 CF | 28 x 2 | 12 | 24 | 28.2 | 6.6 | 420FAN025-28 |
| DN 40 CF | 38 x 1.5 | 12.7 | 35 | 38.2 | 6.6 | 420FAN040-38 |
| DN 40 CF | 40 x 1.5 | 12.7 | 37 | 40.2 | 6.6 | 420FAN040-40 |
| DN 40 CF | 42.4 x 2 | 12.7 | 38.4 | 42.6 | 6.6 | 420FAN040-42 |
| DN 40 CF | 44.5 x 2 | 12.7 | 40.5 | 44.7 | 6.6 | 420FAN040-44 |
| DN 50 CF | 50.8 x 1.65 | 17.3 | 47.5 | 51.1 | 8.4 | 420FAN050-50 |
| DN 63 CF | 63.5 x 1.65 | 17.5 | 60.2 | 63.8 | 8.4 | 420FAN063-63 |
| DN 63 CF | 70 x 2 | 17.5 | 66 | 70.3 | 8.4 | 420FAN063-70 |
| DN 75 CF | 76.1 x 2 | 17.5 | 72.1 | 76.4 | 8.4 | 420FAN075-76 |
| DN 100 CF | 101.6 x 2.1 | 19.8 | 97.4 | 101.9 | 8.4 | 420FAN100-101 |
| DN 100 CF | 104 x 2 | 19.8 | 100 | 104.3 | 8.4 | 420FAN100-104 |
| DN 100 CF | 108 x 2 | 19.8 | 104 | 108.3 | 8.4 | 420FAN100-108 |
| DN 130 CF | 127 x 1.65 | 21.4 | 123.7 | 127.3 | 8.4 | 420FAN130-127 |
| DN 160 CF | 152.4 x 2.4 | 22.2 | 147.6 | 152.7 | 8.4 | 420FAN160-152 |
| DN 160 CF | 154 x 2 | 22.2 | 150 | 154.3 | 8.4 | 420FAN160-154 |
| DN 160 CF | 159 x 2 | 22.2 | 155 | 159.3 | 8.4 | 420FAN160-159 |
| DN 200 CF | 203.2 x 2.4 | 24.5 | 198.4 | 203.5 | 8.4 | 420FAN200-203 |
| DN 200 CF | 204 x 2 | 24.5 | 200 | 204.3 | 8.4 | 420FAN200-204 |
| DN 200 CF | 205 x 2.5 | 24.5 | 200 | 205.3 | 8.4 | 420FAN200-205 |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | 8.4 | 420FAN250-254 |
| DN 250 CF | 256 x 3 | 26 | 250 | 256.3 | 8.4 | 420FAN250-256 |
| DN 300 CF | 306 x 3 | 28.5 | 300 | 306.3 | 10.5 | 420FAN300-306 |
| DN 350 CF | 356 x 3 | 28.5 | 350 | 356.3 | 10.5 | 420FAN350-356 |

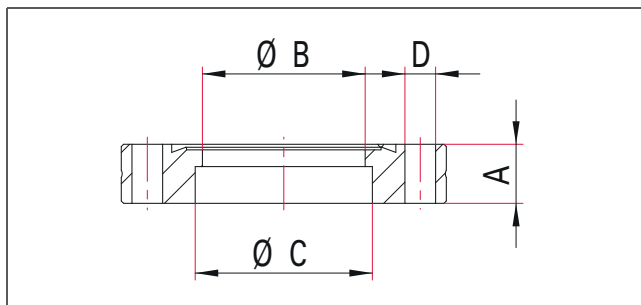
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Weld Flange, with Thread



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L, with Metric Thread

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|---------------------|--------|--------|--------|-----|-----------------|
| DN 16 CF | 18 x 1 | 7.75 | 16 | 18.15 | M4 | 420FAN016-18-G |
| DN 25 CF | 28 x 2 | 12 | 24 | 28.2 | M6 | 420FAN025-28-G |
| DN 40 CF | 38 x 1.5 | 12.7 | 35 | 38.2 | M6 | 420FAN040-38-G |
| DN 40 CF | 40 x 1.5 | 12.7 | 37 | 40.2 | M6 | 420FAN040-40-G |
| DN 40 CF | 42.4 x 2 | 12.7 | 38.4 | 42.6 | M6 | 420FAN040-42-G |
| DN 40 CF | 44.5 x 2 | 12.7 | 40.5 | 44.7 | M6 | 420FAN040-44-G |
| DN 63 CF | 70 x 2 | 17.5 | 66 | 70.3 | M8 | 420FAN063-70-G |
| DN 100 CF | 104 x 2 | 19.8 | 100 | 104.3 | M8 | 420FAN100-104-G |
| DN 100 CF | 108 x 2 | 19.8 | 104 | 108.3 | M8 | 420FAN100-108-G |
| DN 160 CF | 154 x 2 | 22.2 | 150 | 154.3 | M8 | 420FAN160-154-G |
| DN 160 CF | 159 x 2 | 22.2 | 155 | 159.3 | M8 | 420FAN160-159-G |
| DN 200 CF | 204 x 2 | 24.5 | 200 | 204.3 | M8 | 420FAN200-204-G |
| DN 200 CF | 205 x 2.5 | 24.5 | 200 | 205.3 | M8 | 420FAN200-205-G |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | M8 | 420FAN250-254-G |
| DN 250 CF | 256 x 3 | 26 | 250 | 256.3 | M8 | 420FAN250-256-G |
| DN 300 CF | 306 x 3 | 28.5 | 300 | 306.3 | M10 | 420FAN300-306-G |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Stainless Steel 304L, with Imperial (UN) Thread

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|---------------------|--------|--------|--------|---------|-----------------|
| DN 16 CF | 19.05 x 1.65 | 7.75 | 15.75 | 19.2 | 8-32 | 420FAN016-19-T |
| DN 25 CF | 25.4 x 1.65 | 12 | 22.1 | 25.6 | 1/4-28 | 420FAN025-25-T |
| DN 40 CF | 38 x 1.5 | 12.7 | 35 | 38.2 | 1/4-28 | 420FAN040-38-T |
| DN 40 CF | 44.5 x 2 | 12.7 | 40.5 | 44.7 | 1/4-28 | 420FAN040-44-T |
| DN 50 CF | 50.8 x 1.65 | 17.3 | 47.5 | 51.1 | 5/16-24 | 420FAN050-50-T |
| DN 63 CF | 63.5 x 1.65 | 17.5 | 60.2 | 63.8 | 5/16-24 | 420FAN063-63-T |
| DN 75 CF | 76.1 x 2 | 17.5 | 72.1 | 76.4 | 5/16-24 | 420FAN075-76-T |
| DN 100 CF | 101.6 x 2.1 | 19.8 | 97.4 | 101.9 | 5/16-24 | 420FAN100-101-T |
| DN 130 CF | 127 x 1.65 | 21.4 | 123.7 | 127.3 | 5/16-24 | 420FAN130-127-T |
| DN 160 CF | 152.4 x 2.4 | 22.2 | 147.6 | 152.7 | 5/16-24 | 420FAN160-152-T |
| DN 200 CF | 203.2 x 2.4 | 24.5 | 198.4 | 203.5 | 5/16-24 | 420FAN200-203-T |
| DN 250 CF | 254 x 2 | 26 | 250 | 254,3 | 5/16-24 | 420FAN250-254-T |

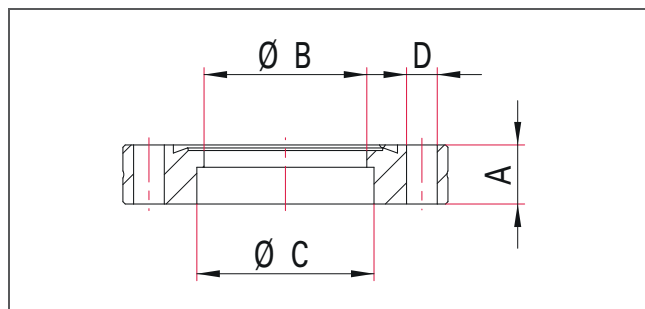
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Weld Flange, 316LN ESR



- Bakeable under vacuum up to 1050 °C
- Low desorption
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Magnetic permeability: ≤ 1.01
- Temperature range: -196 to 350 °C

Dimensions



Stainless Steel 316LN ESR/1.4429 ESU

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|---------------|
| DN 16 CF | 18 x 1 | 7.75 | 16 | 18.15 | 4.4 | 480FAN016-18 |
| DN 16 CF | 19.05 x 1.65 | 7.75 | 15.75 | 19.2 | 4.4 | 480FAN016-19 |
| DN 40 CF | 38 x 1.5 | 12.7 | 35 | 38.2 | 6.6 | 480FAN040-38 |
| DN 40 CF | 40 x 1.5 | 12.7 | 37 | 40.2 | 6.6 | 480FAN040-40 |
| DN 63 CF | 63.5 x 1.65 | 17.5 | 60.2 | 63.8 | 8.4 | 480FAN063-63 |
| DN 63 CF | 70 x 2 | 17.5 | 66 | 70.3 | 8.4 | 480FAN063-70 |
| DN 100 CF | 101.6 x 2.1 | 19.8 | 97.4 | 101.9 | 8.4 | 480FAN100-101 |
| DN 100 CF | 104 x 2 | 19.8 | 100 | 104.3 | 8.4 | 480FAN100-104 |
| DN 100 CF | 108 x 2 | 19.8 | 104 | 108.3 | 8.4 | 480FAN100-108 |
| DN 160 CF | 152.4 x 2.4 | 22.2 | 147.6 | 152.7 | 8.4 | 480FAN160-152 |
| DN 160 CF | 154 x 2 | 22.2 | 150 | 154.3 | 8.4 | 480FAN160-154 |
| DN 160 CF | 159 x 2 | 22.2 | 155 | 159.3 | 8.4 | 480FAN160-159 |
| DN 200 CF | 204 x 2 | 24.5 | 200 | 204.3 | 8.4 | 480FAN200-204 |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | 8.4 | 480FAN250-254 |

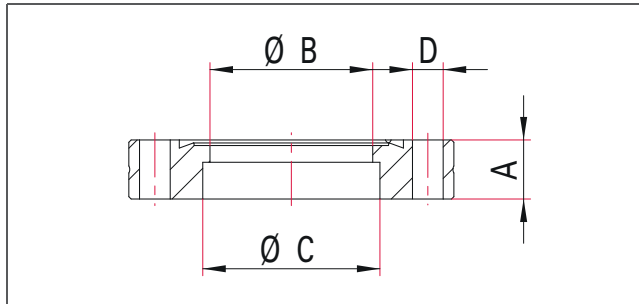
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Weld Flange, with Thread, 316LN ESR



- Bakeable under vacuum up to 1050 °C
- Low desorption
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Magnetic permeability: ≤ 1.01
- Temperature range: -196 to 350 °C

Dimensions



Stainless Steel 316LN ESR/1.4429 ESU, with Thread

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|---------------------|--------|--------|--------|----|-----------------|
| DN 16 CF | 18 x 1 | 7.75 | 16 | 18.15 | M4 | 480FAN016-18-G |
| DN 40 CF | 40 x 1.5 | 12.7 | 37 | 40.2 | M6 | 480FAN040-40-G |
| DN 63 CF | 70 x 2 | 17.5 | 66 | 70.3 | M8 | 480FAN063-70-G |
| DN 100 CF | 104 x 2 | 19.8 | 100 | 104.3 | M8 | 480FAN100-104-G |
| DN 160 CF | 154 x 2 | 22.2 | 150 | 154.3 | M8 | 480FAN160-154-G |
| DN 200 CF | 204 x 2 | 24.5 | 200 | 204.3 | M8 | 480FAN200-204-G |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | M8 | 480FAN250-254-G |

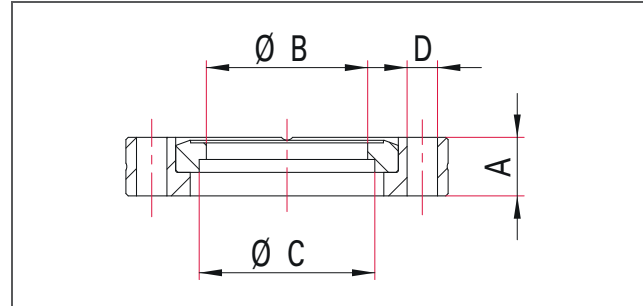
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Weld Flange, Rotatable



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|---------------|
| DN 16 CF | 18 x 1 | 7.75 | 16 | 18.15 | 4.4 | 420FAD016-18 |
| DN 16 CF | 19,05 x 1,65 | 7.75 | 15,75 | 19.2 | 4.4 | 420FAD016-19 |
| DN 25 CF | 25.4 x 1.65 | 12 | 22.1 | 25.6 | 6.6 | 420FAD025-25 |
| DN 25 CF | 28 x 2 | 12 | 24 | 28.2 | 6.6 | 420FAD025-28 |
| DN 40 CF | 38 x 1.5 | 12.7 | 35 | 38.2 | 6.6 | 420FAD040-38 |
| DN 40 CF | 40 x 1.5 | 12.7 | 37 | 40.2 | 6.6 | 420FAD040-40 |
| DN 40 CF | 42.4 x 2 | 12.7 | 38.4 | 42.6 | 6.6 | 420FAD040-42 |
| DN 40 CF | 44.5 x 2 | 12.7 | 40.5 | 44.7 | 6.6 | 420FAD040-44 |
| DN 50 CF | 50.8 x 1.65 | 17.3 | 47.5 | 51.1 | 8.4 | 420FAD050-50 |
| DN 63 CF | 63.5 x 1.65 | 17.5 | 60.2 | 63.8 | 8.4 | 420FAD063-63 |
| DN 63 CF | 70 x 2 | 17.5 | 66 | 70.3 | 8.4 | 420FAD063-70 |
| DN 75 CF | 76.1 x 2 | 17.5 | 72.1 | 76.4 | 8.4 | 420FAD075-76 |
| DN 100 CF | 101.6 x 2.1 | 19.8 | 97.4 | 101.9 | 8.4 | 420FAD100-101 |
| DN 100 CF | 104 x 2 | 19.8 | 100 | 104.3 | 8.4 | 420FAD100-104 |
| DN 100 CF | 108 x 2 | 19.8 | 104 | 108.3 | 8.4 | 420FAD100-108 |
| DN 130 CF | 127 x 1.65 | 21.4 | 123.7 | 127.3 | 8.4 | 420FAD130-127 |
| DN 160 CF | 152.4 x 2.4 | 22.2 | 147.6 | 152.7 | 8.4 | 420FAD160-152 |
| DN 160 CF | 154 x 2 | 22.2 | 150 | 154.3 | 8.4 | 420FAD160-154 |
| DN 160 CF | 159 x 2 | 22.2 | 155 | 159.3 | 8.4 | 420FAD160-159 |
| DN 200 CF | 203.2 x 2.4 | 24.5 | 198.4 | 203.5 | 8.4 | 420FAD200-203 |
| DN 200 CF | 204 x 2 | 24,5 | 200 | 204.3 | 8.4 | 420FAD200-204 |
| DN 200 CF | 205 x 2.5 | 24.5 | 200 | 205.3 | 8.4 | 420FAD200-205 |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | 8.4 | 420FAD250-254 |
| DN 250 CF | 256 x 3 | 26 | 250 | 256.3 | 8.4 | 420FAD250-256 |
| DN 300 CF | 306 x 3 | 28,5 | 300 | 306.3 | 10.5 | 420FAD300-306 |
| DN 350 CF | 356 x 3 | 28,5 | 350 | 356.3 | 10.5 | 420FAD350-356 |

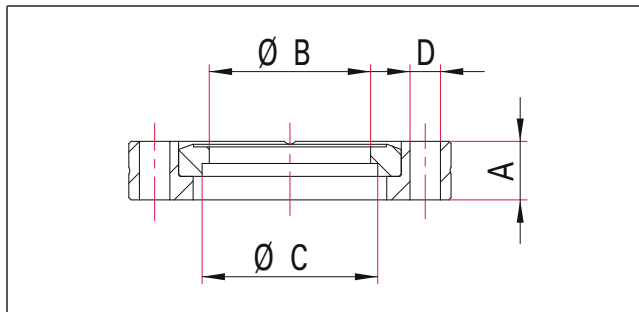
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2.

CF Weld Flange, Rotatable, with Thread



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L, with Metric Thread

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|---------------------|--------|--------|--------|-----|-----------------|
| DN 16 CF | 18 x 1 | 7.75 | 16 | 18.15 | M4 | 420FAD016-18-G |
| DN 25 CF | 28 x 2 | 12 | 24 | 28.2 | M6 | 420FAD025-28-G |
| DN 40 CF | 38 x 1.5 | 12.7 | 35 | 38.2 | M6 | 420FAD040-38-G |
| DN 40 CF | 40 x 1.5 | 12.7 | 37 | 40.2 | M6 | 420FAD040-40-G |
| DN 40 CF | 42.4 x 2 | 12.7 | 38.4 | 42.6 | M6 | 420FAD040-42-G |
| DN 40 CF | 44.5 x 2 | 12.7 | 40.5 | 44.7 | M6 | 420FAD040-44-G |
| DN 50 CF | 50.8 x 1.65 | 17.3 | 47.5 | 51.1 | M8 | 420FAD050-50-G |
| DN 63 CF | 70 x 2 | 17.5 | 66 | 70.3 | M8 | 420FAD063-70-G |
| DN 75 CF | 76.1 x 2 | 17.5 | 72.1 | 76.4 | M8 | 420FAD075-76-G |
| DN 100 CF | 104 x 2 | 19.8 | 100 | 104.3 | M8 | 420FAD100-104-G |
| DN 100 CF | 108 x 2 | 19.8 | 104 | 108.3 | M8 | 420FAD100-108-G |
| DN 160 CF | 154 x 2 | 22.2 | 150 | 154.3 | M8 | 420FAD160-154-G |
| DN 160 CF | 159 x 2 | 22.2 | 155 | 159.3 | M8 | 420FAD160-159-G |
| DN 200 CF | 204 x 2 | 24.5 | 200 | 204.3 | M8 | 420FAD200-204-G |
| DN 200 CF | 205 x 2.5 | 24.5 | 200 | 205.3 | M8 | 420FAD200-205-G |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | M8 | 420FAD250-254-G |
| DN 250 CF | 256 x 3 | 26 | 250 | 256.3 | M8 | 420FAD250-256-G |
| DN 300 CF | 306 x 3 | 28.5 | 300 | 306.3 | M10 | 420FAD300-306-G |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Stainless Steel 304L, with Imperial (UN) Thread

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|---------------------|--------|--------|--------|---------|-----------------|
| DN 16 CF | 19.05 x 1.65 | 7.75 | 15.75 | 19.2 | 8-32 | 420FAD016-19-T |
| DN 25 CF | 25.4 x 1.65 | 12 | 22.1 | 25.6 | 1/4-28 | 420FAD025-25-T |
| DN 40 CF | 38 x 1.5 | 12.7 | 35 | 38.2 | 1/4-28 | 420FAD040-38-T |
| DN 40 CF | 44.5 x 2 | 12.7 | 40.5 | 44.7 | 1/4-28 | 420FAD040-44-T |
| DN 50 CF | 50.8 x 1.65 | 17.3 | 47.5 | 51.1 | 5/16-24 | 420FAD050-50-T |
| DN 63 CF | 63.5 x 1.65 | 17.5 | 60.2 | 63.8 | 5/16-24 | 420FAD063-63-T |
| DN 75 CF | 76.1 x 2 | 17.5 | 72.1 | 76.4 | 5/16-24 | 420FAD075-76-T |
| DN 100 CF | 101.6 x 2.1 | 19.8 | 97.4 | 101.9 | 5/16-24 | 420FAD100-101-T |
| DN 130 CF | 127 x 1.65 | 21.4 | 123.7 | 127.3 | 5/16-24 | 420FAD130-127-T |
| DN 160 CF | 152.4 x 2.4 | 22.2 | 147.6 | 152.7 | 5/16-24 | 420FAD160-152-T |
| DN 200 CF | 203.2 x 2.4 | 24.5 | 198.4 | 203.5 | 5/16-24 | 420FAD200-203-T |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | 5/16-24 | 420FAD250-254-T |

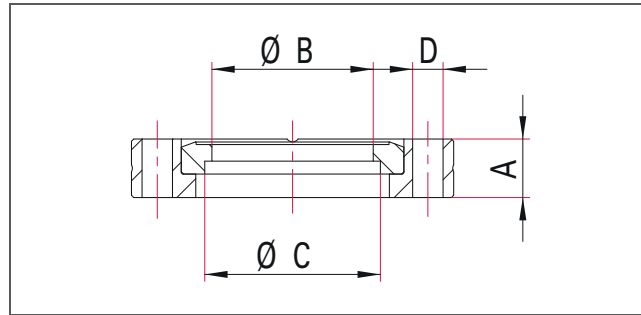
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Weld Flange, Rotatable, 316LN ESR



- Bakeable under vacuum up to 1050 °C
- Low desorption
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Magnetic permeability: ≤ 1.01
- Temperature range: -196 to 350 °C

Dimensions



Stainless Steel 316LN ESR/1.4429 ESU

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|---------------|
| DN 16 CF | 18 x 1 | 7.75 | 16 | 18.15 | 4.4 | 480FAD016-18 |
| DN 16 CF | 19.05 x 1.65 | 7.75 | 15.75 | 19.2 | 4.4 | 480FAD016-19 |
| DN 40 CF | 38 x 1.5 | 13 | 35 | 38.2 | 6.6 | 480FAD040-38 |
| DN 40 CF | 40 x 1.5 | 12.7 | 37 | 40.2 | 6.6 | 480FAD040-40 |
| DN 63 CF | 63.5 x 1.65 | 17.5 | 60.2 | 63.8 | 8.4 | 480FAD063-63 |
| DN 63 CF | 70 x 2 | 17.5 | 66 | 70.3 | 8.4 | 480FAD063-70 |
| DN 100 CF | 101.6 x 2.1 | 19.8 | 97.4 | 101.9 | 8.4 | 480FAD100-101 |
| DN 100 CF | 104 x 2 | 19.8 | 100 | 104.3 | 8.4 | 480FAD100-104 |
| DN 100 CF | 108 x 2 | 19.8 | 104 | 108.3 | 8.4 | 480FAD100-108 |
| DN 160 CF | 152.4 x 2.4 | 22.2 | 147.6 | 157.7 | 8.4 | 480FAD160-152 |
| DN 160 CF | 154 x 2 | 22.2 | 150 | 154.3 | 8.4 | 480FAD160-154 |
| DN 160 CF | 159 x 2 | 22.2 | 155 | 159.3 | 8.4 | 480FAD160-159 |
| DN 200 CF | 204 x 2 | 24.5 | 200 | 204.3 | 8.4 | 480FAD200-204 |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | 8.4 | 480FAD250-254 |

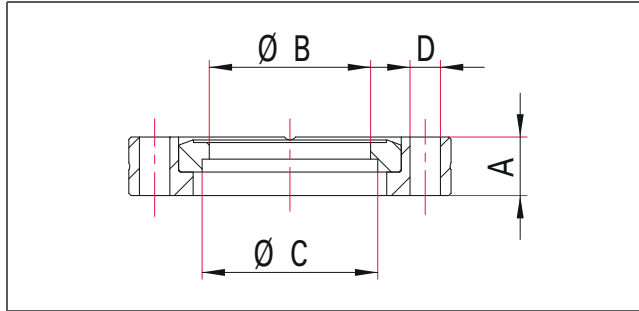
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Weld Flange, Rotatable, with Thread, 316LN ESR



- Bakeable under vacuum up to 1050 °C
- Low desorption
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Magnetic permeability: ≤ 1.01
- Temperature range: -196 to 350 °C

Dimensions



Stainless Steel 316LN ESR/1.4429 ESU, with Thread

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|---------------------|--------|--------|--------|----|-----------------|
| DN 16 CF | 18 x 1 | 7.75 | 16 | 18.15 | M4 | 480FAD016-18-G |
| DN 40 CF | 40 x 1.5 | 12.7 | 37 | 40.2 | M6 | 480FAD040-40-G |
| DN 63 CF | 70 x 2 | 17.5 | 66 | 70.3 | M8 | 480FAD063-70-G |
| DN 100 CF | 104 x 2 | 19.8 | 100 | 104.3 | M8 | 480FAD100-104-G |
| DN 160 CF | 154 x 2 | 22.2 | 150 | 154.3 | M8 | 480FAD160-154-G |
| DN 200 CF | 204 x 2 | 24.5 | 200 | 204.3 | M8 | 480FAD200-204-G |
| DN 250 CF | 254 x 2 | 26 | 250 | 254.3 | M8 | 480FAD250-254-G |

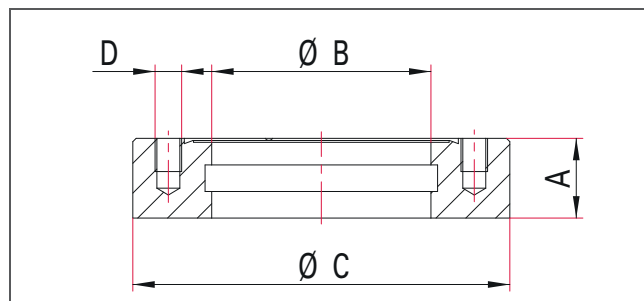
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Weld-On Flange



- Flange for welding to a flat panel or a round chamber/tube
- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|--------|--------|--------|----|--------------|
| DN 16 CF | 16 | 16 | 34 | M4 | 420FES016 |
| DN 40 CF | 24 | 37 | 69.9 | M6 | 420FES040 |
| DN 63 CF | 24 | 66 | 113.5 | M8 | 420FES063 |
| DN 100 CF | 24 | 102 | 152 | M8 | 420FES100 |

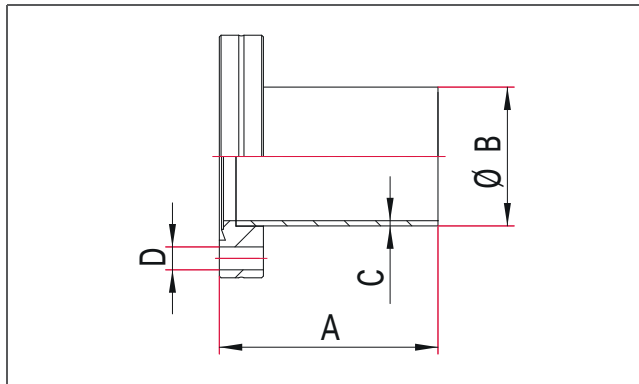
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Half Nipple



- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Other tube dimensions on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|-------------------|
| DN 16 CF | 18 x 1 | 38 | 18 | 1 | 4.4 | 420FRA016-18-38 |
| DN 16 CF | 19.05 x 1.65 | 38 | 19.05 | 1.65 | 4.4 | 420FRA016-19-38 |
| DN 25 CF | 25.4 x 1.65 | 52 | 25.4 | 1.65 | 6.6 | 420FRA025-25-52 |
| DN 40 CF | 38 x 1.5 | 63 | 38 | 1.5 | 6.6 | 420FRA040-38-63 |
| DN 40 CF | 40 x 1.5 | 63 | 40 | 1.5 | 6.6 | 420FRA040-40-63 |
| DN 50 CF | 50.8 x 1.65 | 82 | 50.8 | 1.65 | 8.4 | 420FRA050-50-82 |
| DN 63 CF | 63.5 x 1.65 | 105 | 63.5 | 1.65 | 8.4 | 420FRA063-63-105 |
| DN 63 CF | 70 x 2 | 105 | 70 | 2 | 8.4 | 420FRA063-70-105 |
| DN 75 CF | 76.1 x 2 | 90 | 76.1 | 2 | 8.4 | 420FRA075-76-90 |
| DN 100 CF | 101.6 x 2.1 | 135 | 101.6 | 2.1 | 8.4 | 420FRA100-101-135 |
| DN 100 CF | 108 x 2 | 135 | 108 | 2 | 8.4 | 420FRA100-108-135 |
| DN 160 CF | 154 x 2 | 167 | 154 | 2 | 8.4 | 420FRA160-154-167 |
| DN 160 CF | 159 x 2 | 167 | 159 | 2 | 8.4 | 420FRA160-159-167 |

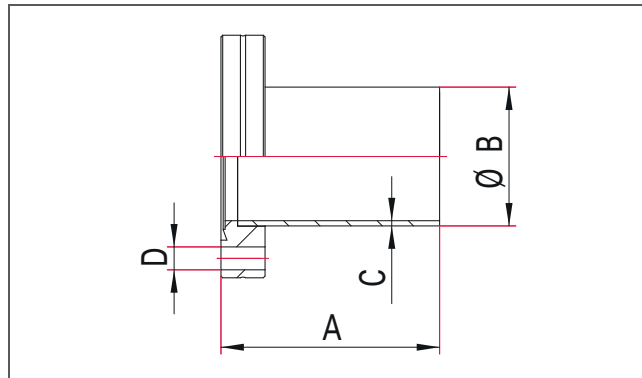
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Half Nipple, with Thread



- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Other tube dimensions on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel, with Metric Thread

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|---------------------|--------|--------|--------|----|---------------------|
| DN 16 CF | 18 x 1 | 38 | 18 | 1 | M4 | 420FRA016-18-38-G |
| DN 40 CF | 40 x 1.5 | 63 | 40 | 1.5 | M6 | 420FRA040-40-63-G |
| DN 63 CF | 70 x 2 | 105 | 70 | 2 | M8 | 420FRA063-70-105-G |
| DN 100 CF | 108 x 2 | 135 | 108 | 2 | M8 | 420FRA100-108-135-G |
| DN 160 CF | 159 x 2 | 167 | 159 | 2 | M8 | 420FRA160-159-167-G |

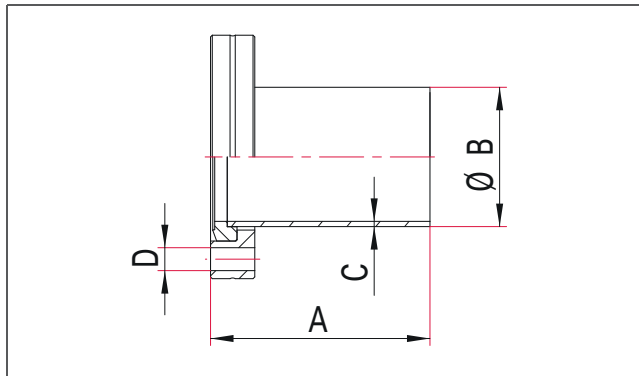
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Half Nipple, Rotatable



- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Other tube diameters on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|-------------------|
| DN 16 CF | 18 x 1 | 38 | 18 | 1 | 4.4 | 420FRD016-18-38 |
| DN 16 CF | 19.05 x 1.65 | 38 | 19.05 | 1.65 | 4.4 | 420FRD016-19-38 |
| DN 25 CF | 25.4 x 1.65 | 52 | 25.4 | 1.65 | 6.6 | 420FRD025-25-52 |
| DN 40 CF | 38 x 1.5 | 63 | 38 | 1.5 | 6.6 | 420FRD040-38-63 |
| DN 40 CF | 40 x 1.5 | 63 | 40 | 1.5 | 6.6 | 420FRD040-40-63 |
| DN 50 CF | 50.8 x 1.65 | 82 | 50.8 | 1.65 | 8.4 | 420FRD050-50-82 |
| DN 63 CF | 63.5 x 1.65 | 105 | 63.5 | 1.65 | 8.4 | 420FRD063-63-105 |
| DN 63 CF | 70 x 2 | 105 | 70 | 2 | 8.4 | 420FRD063-70-105 |
| DN 75 CF | 76.1 x 2 | 90 | 76.1 | 2 | 8.4 | 420FRD075-76-90 |
| DN 100 CF | 101.6 x 2.1 | 135 | 101.6 | 2.1 | 8.4 | 420FRD100-101-135 |
| DN 100 CF | 108 x 2 | 135 | 108 | 2 | 8.4 | 420FRD100-108-135 |
| DN 160 CF | 154 x 2 | 167 | 154 | 2 | 8.4 | 420FRD160-154-167 |
| DN 160 CF | 159 x 2 | 167 | 159 | 2 | 8.4 | 420FRD160-159-167 |

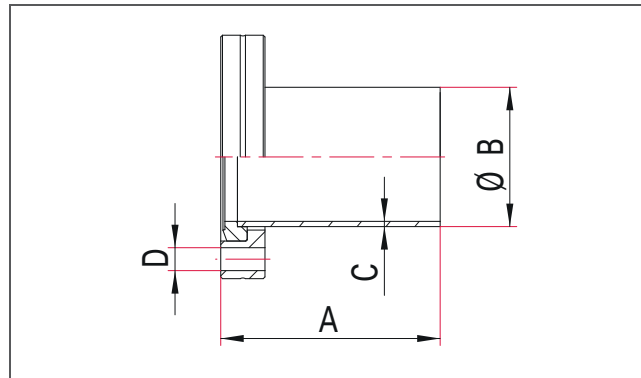
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Half Nipple, Rotatable, with Thread



- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Other tube diameters on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel, with Metric Thread

| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D | Order number |
|------------------|---------------------|--------|--------|--------|----|---------------------|
| DN 16 CF | 18 x 1 | 38 | 18 | 1 | M4 | 420FRD016-18-38-G |
| DN 40 CF | 38 x 1.5 | 63 | 38 | 1.5 | M6 | 420FRD040-38-63-G |
| DN 40 CF | 40 x 1.5 | 38 | 40 | 1.5 | M6 | 420FRD040-40-38-G |
| DN 40 CF | 40 x 1.5 | 63 | 40 | 1.5 | M6 | 420FRD040-40-63-G |
| DN 63 CF | 70 x 2 | 105 | 70 | 2 | M8 | 420FRD063-70-105-G |
| DN 100 CF | 108 x 2 | 135 | 108 | 2 | M8 | 420FRD100-108-135-G |
| DN 160 CF | 159 x 2 | 167 | 159 | 2 | M8 | 420FRD160-159-167-G |

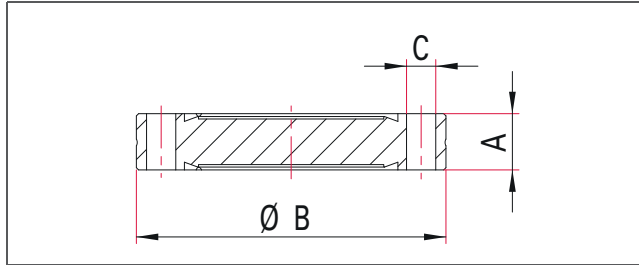
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Spacer Flange



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 16 CF | 7.75 | 34 | 4.4 | 420FDB016 |
| DN 40 CF | 12.7 | 69.9 | 6.6 | 420FDB040 |
| DN 63 CF | 17.5 | 113.5 | 8.4 | 420FDB063 |
| DN 100 CF | 19.8 | 152 | 8.4 | 420FDB100 |
| DN 160 CF | 22.2 | 202.4 | 8.4 | 420FDB160 |

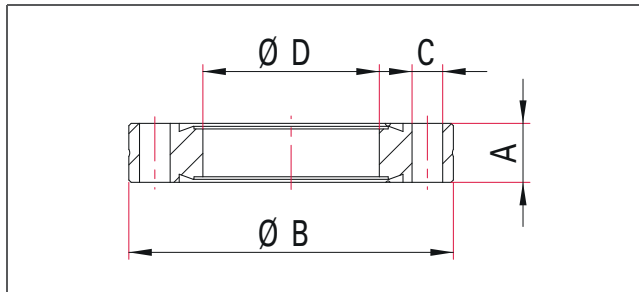
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Spacer Flange with Bore Holes



- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 16 CF | 7.75 | 34 | 4.4 | 16 | 420FDI016 |
| DN 40 CF | 12.7 | 69.9 | 6.6 | 37 | 420FDI040 |
| DN 63 CF | 17.5 | 113.5 | 8.4 | 66 | 420FDI063 |
| DN 100 CF | 19.8 | 152 | 8.4 | 102 | 420FDI100 |
| DN 160 CF | 22.2 | 202.4 | 8.4 | 155 | 420FDI160 |

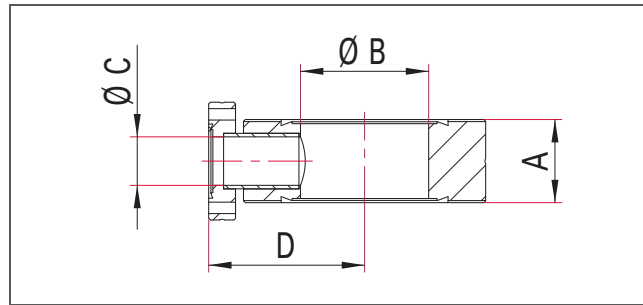
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Spacer Flange with Bore Holes and Port(s)



- Available with up to three DN 16 CF ports with M4 metric thread
- Tube surface: Glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | Number of ports | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|-----------------|--------|--------|--------|--------|----------------|
| DN 40 CF | 1 | 24 | 37 | 14 | 45 | 420FDP040-1-16 |
| DN 40 CF | 2 | 24 | 37 | 14 | 45 | 420FDP040-2-16 |
| DN 40 CF | 3 | 24 | 37 | 14 | 45 | 420FDP040-3-16 |
| DN 63 CF | 1 | 24 | 66 | 14 | 67 | 420FDP063-1-16 |
| DN 63 CF | 2 | 24 | 66 | 14 | 67 | 420FDP063-2-16 |
| DN 63 CF | 3 | 24 | 66 | 14 | 67 | 420FDP063-3-16 |
| DN 100 CF | 1 | 24 | 100 | 14 | 90 | 420FDP100-1-16 |
| DN 100 CF | 2 | 24 | 100 | 14 | 90 | 420FDP100-2-16 |
| DN 100 CF | 3 | 24 | 100 | 14 | 90 | 420FDP100-3-16 |
| DN 160 CF | 1 | 24 | 150 | 14 | 115 | 420FDP160-1-16 |
| DN 160 CF | 2 | 24 | 150 | 14 | 115 | 420FDP160-2-16 |
| DN 160 CF | 3 | 24 | 150 | 14 | 115 | 420FDP160-3-16 |

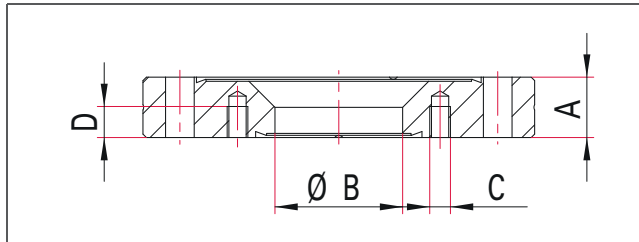
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Reducer Flange



- The reduced-size flange has blind tapped holes. Make sure the screws used for installation are in the correct length.
- Other flange materials on request
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304L

| Nominal diameter | A [mm] | B [mm] | C | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|----|--------|--------------------------|---------------|
| DN 40 CF | 12.7 | 16 | M4 | 6 | DN 16 CF | 420FLR040-016 |
| DN 63 CF | 17.5 | 16 | M4 | 6 | DN 16 CF | 420FLR063-016 |
| DN 63 CF | 17.5 | 37 | M6 | 9 | DN 40 CF | 420FLR063-040 |
| DN 100 CF | 19.8 | 37 | M6 | 9 | DN 40 CF | 420FLR100-040 |
| DN 100 CF | 19.8 | 66 | M8 | 13 | DN 63 CF | 420FLR100-063 |
| DN 160 CF | 22.2 | 37 | M6 | 9 | DN 40 CF | 420FLR160-040 |
| DN 160 CF | 22.2 | 66 | M8 | 13 | DN 63 CF | 420FLR160-063 |
| DN 160 CF | 22.2 | 100 | M8 | 13 | DN 100 CF | 420FLR160-100 |
| DN 200 CF | 24.5 | 37 | M6 | 9 | DN 40 CF | 420FLR200-040 |
| DN 200 CF | 24.5 | 66 | M8 | 13 | DN 63 CF | 420FLR200-063 |
| DN 200 CF | 24.5 | 100 | M8 | 13 | DN 100 CF | 420FLR200-100 |
| DN 200 CF | 24.5 | 155 | M8 | 13 | DN 160 CF | 420FLR200-160 |
| DN 250 CF | 26 | 37 | M6 | 9 | DN 40 CF | 420FLR250-040 |
| DN 250 CF | 26 | 66 | M8 | 13 | DN 63 CF | 420FLR250-063 |
| DN 250 CF | 26 | 100 | M8 | 13 | DN 100 CF | 420FLR250-100 |
| DN 250 CF | 26 | 155 | M8 | 13 | DN 160 CF | 420FLR250-160 |
| DN 250 CF | 26 | 200 | M8 | 13 | DN 200 CF | 420FLR250-200 |

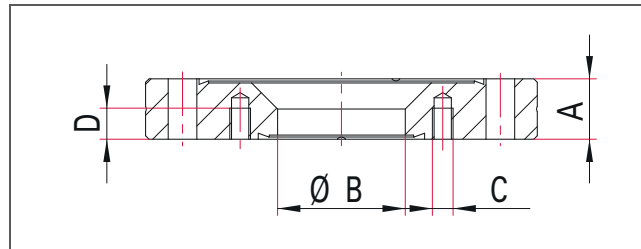
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Reducer Flange, 316LN ESR



- The reduced-size flange has blind tapped holes. Make sure the screws used for installation are the correct length.
- Bakeable under vacuum up to 1050 °C
- Low desorption
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-13}$ hPa to ambient pressure
- Magnetic permeability: ≤ 1.01
- Temperature range: -196 to 350 °C

Dimensions



Stainless Steel 316LN ESR/1.4429 ESU

| Nominal diameter | A [mm] | B [mm] | C | D [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|----|--------|--------------------------|---------------|
| DN 40 CF | 12.7 | 16 | M4 | 6 | DN 16 CF | 480FLR040-016 |
| DN 63 CF | 17.5 | 16 | M4 | 6 | DN 16 CF | 480FLR063-016 |
| DN 63 CF | 17.5 | 37 | M6 | 9 | DN 40 CF | 480FLR063-040 |
| DN 100 CF | 19.8 | 37 | M6 | 9 | DN 40 CF | 480FLR100-040 |
| DN 100 CF | 19.8 | 66 | M8 | 13 | DN 63 CF | 480FLR100-063 |
| DN 160 CF | 22.2 | 37 | M6 | 9 | DN 40 CF | 480FLR160-040 |
| DN 160 CF | 22.2 | 66 | M8 | 13 | DN 63 CF | 480FLR160-063 |
| DN 160 CF | 22.2 | 100 | M8 | 13 | DN 100 CF | 480FLR160-100 |
| DN 200 CF | 24.5 | 37 | M6 | 9 | DN 40 CF | 480FLR200-040 |
| DN 200 CF | 24.5 | 66 | M8 | 13 | DN 63 CF | 480FLR200-063 |
| DN 200 CF | 24.5 | 100 | M8 | 13 | DN 100 CF | 480FLR200-100 |
| DN 200 CF | 24.5 | 155 | M8 | 13 | DN 160 CF | 480FLR200-160 |
| DN 250 CF | 26 | 37 | M6 | 9 | DN 40 CF | 480FLR250-040 |
| DN 250 CF | 26 | 66 | M8 | 13 | DN 63 CF | 480FLR250-063 |
| DN 250 CF | 26 | 100 | M8 | 13 | DN 100 CF | 480FLR250-100 |
| DN 250 CF | 26 | 155 | M8 | 13 | DN 160 CF | 480FLR250-160 |
| DN 250 CF | 26 | 200 | M8 | 13 | DN 200 CF | 480FLR250-200 |

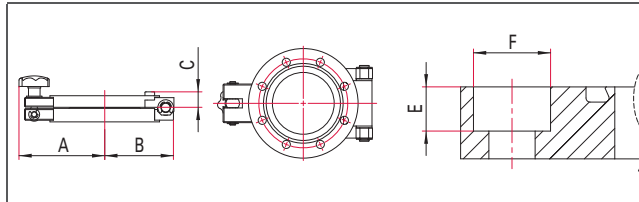
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Quick-Access-Door

- Screw holes: Through-holes with counter-bore for cylinder head
- Can be installed using hexagon socket screws
- Bakeout temperature: up to 200 °C
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Temperature range: -15 to 150 °C

Stainless Steel, without Sight Glass

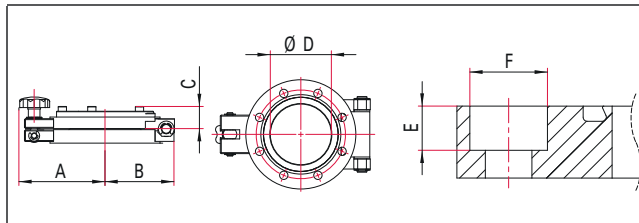
Dimensions



| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 63 CF | 88 | 72 | 16 | - | 10 | 16 | 420KTU063 |
| DN 100 CF | 108 | 93 | 16 | - | 10 | 16 | 420KTU100 |
| DN 160 CF | 134 | 119 | 20 | - | 10 | 16 | 420KTU160 |
| DN 200 CF | 160 | 145 | 20 | - | 10 | 16 | 420KTU200 |
| DN 250 CF | 186 | 171 | 20 | - | 10 | 16 | 420KTU250 |

Stainless Steel, with Sight Glass

Dimensions



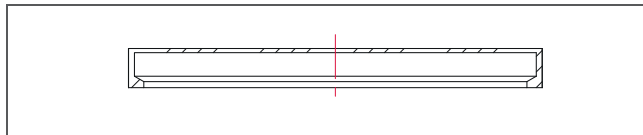
- Order no. suffix -G: with sight glass
- Sight glass: Borosilicate glass

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|--------|--------------|
| DN 63 CF | 88 | 72 | 23 | 63 | 10 | 16 | 420KTU063-G |
| DN 100 CF | 108 | 93 | 27 | 95 | 10 | 16 | 420KTU100-G |
| DN 160 CF | 134 | 119 | 31 | 145 | 10 | 16 | 420KTU160-G |
| DN 200 CF | 160 | 145 | 31 | 145 | 10 | 16 | 420KTU200-G |
| DN 250 CF | 186 | 171 | 31 | 145 | 10 | 16 | 420KTU250-G |

CF Flange Cap

- Made from plastic

Dimensions



Polyethylene (PE)

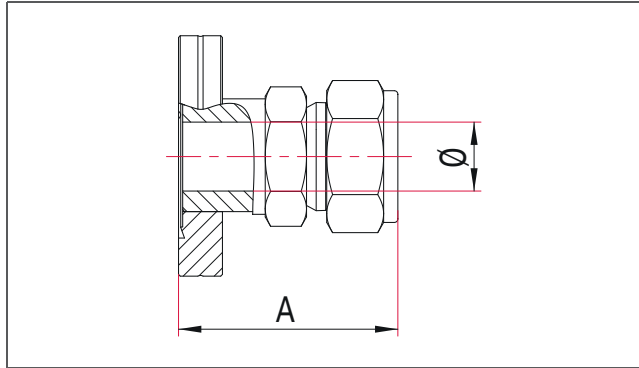
| Nominal diameter | Package [Qty.] | Order number |
|------------------|----------------|---------------|
| DN 16 CF | 10 | 430FSK016-S10 |
| DN 40 CF | 10 | 430FSK040-S10 |
| DN 63 CF | 10 | 430FSK063-S10 |
| DN 100 CF | 10 | 430FSK100-S10 |
| DN 160 CF | 5 | 430FSK160-S5 |
| DN 200 CF | 5 | 430FSK200-S5 |
| DN 250 CF | 5 | 430FSK250-S5 |

CF-Swagelok® Adapter



- For metric and imperial (inch) tube diameters
- Original Swagelok® adapter
- Other flanges sizes and pipe diameters on request
- Pressure range: $1 \cdot 10^{-9}$ hPa to ambient pressure
- Materials: Stainless steel 304L (Flange)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel for Metric Tube Sizes

| Nominal diameter | Tube external diameter | A [mm] | Order number |
|------------------|------------------------|--------|--------------|
| DN 16 CF | 6 mm | 39 | 420ASW016-6 |
| DN 16 CF | 8 mm | 40 | 420ASW016-8 |
| DN 40 CF | 6 mm | 39 | 420ASW040-6 |
| DN 40 CF | 8 mm | 40 | 420ASW040-8 |
| DN 40 CF | 10 mm | 42 | 420ASW040-10 |
| DN 40 CF | 12 mm | 45 | 420ASW040-12 |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Stainless Steel for Imperial (Inch) Tube Sizes

| Nominal diameter | Tube external diameter | A [mm] | Order number |
|------------------|------------------------|--------|----------------|
| DN 16 CF | 1/8" | 32 | 420ASW016-0125 |
| DN 16 CF | 1/4" | 39 | 420ASW016-0250 |
| DN 40 CF | 1/4" | 41 | 420ASW040-0250 |
| DN 40 CF | 1/2" | 50 | 420ASW040-0500 |

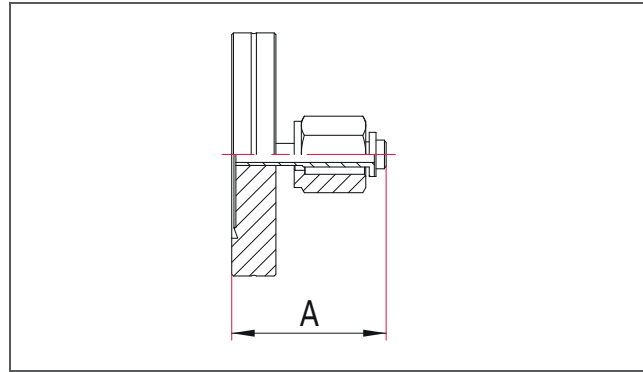
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF-VCR Adapter, Male and Female

- Original Swagelok® VCR-Adapter
- Other flange sizes and VCR adapters on request
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure
- Materials: Flange: Stainless steel 304L; VCR adapter: 316L/1.4404
- Temperature range: -196 to 300 °C

Female

Dimensions

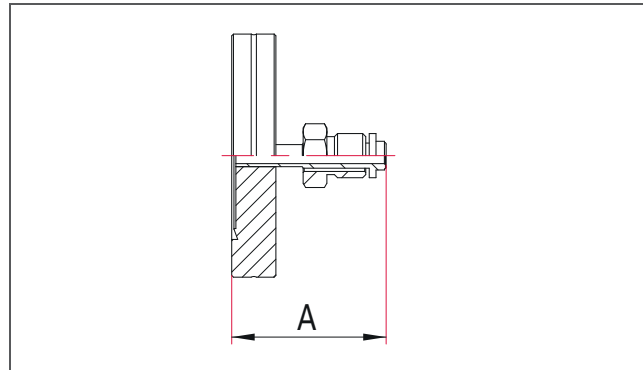


| Nominal diameter | VCR connection | A [mm] | Order number |
|------------------|----------------|--------|----------------|
| DN 16 CF | 1/4" | 44 | 420AVF016-0250 |
| DN 16 CF | 1/2" | 47 | 420AVF016-0500 |
| DN 40 CF | 1/4" | 44 | 420AVF040-0250 |
| DN 40 CF | 1/2" | 47 | 420AVF040-0500 |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Male

Dimensions



| Nominal diameter | VCR connection | A [mm] | Order number |
|------------------|----------------|--------|----------------|
| DN 16 CF | 1/4" | 44 | 420AVM016-0250 |
| DN 16 CF | 1/2" | 47 | 420AVM016-0500 |
| DN 40 CF | 1/4" | 44 | 420AVM040-0250 |
| DN 40 CF | 1/2" | 47 | 420AVM040-0500 |

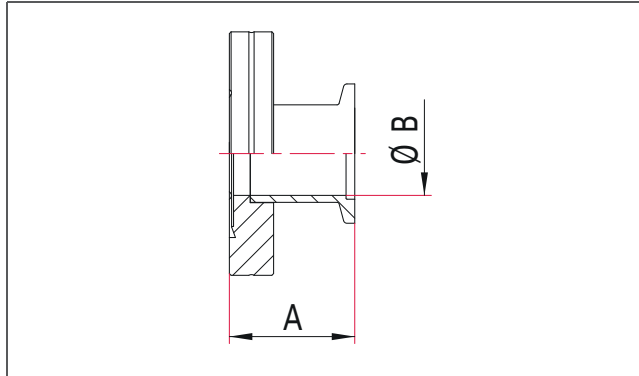
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-KF/CF Adapter



- Other nominal diameters and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to ambient pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301; CF Flange 304L

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|------------------|
| DN 16 CF | 36 | 16 | DN 16 ISO-KF | 420RUG016-016-36 |
| DN 16 CF | 36 | 16 | DN 25 ISO-KF | 420RUG016-025-36 |
| DN 16 CF | 36 | 16 | DN 40 ISO-KF | 420RUG016-040-36 |
| DN 40 CF | 36 | 16 | DN 16 ISO-KF | 420RUG040-016-36 |
| DN 40 CF | 36 | 24 | DN 25 ISO-KF | 420RUG040-025-36 |
| DN 40 CF | 50 | 40.5 | DN 40 ISO-KF | 420RUG040-040-50 |
| DN 63 CF | 50 | 40.5 | DN 40 ISO-KF | 420RUG063-040-50 |
| DN 100 CF | 50 | 40.5 | DN 40 ISO-KF | 420RUG100-040-50 |

ISO-KF Flanges according to ISO 2861

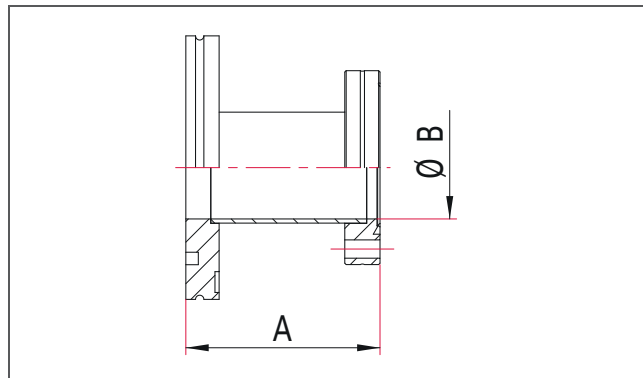
CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-K/CF Adapter



- Other flange sizes and dimensions on request
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (elastomer seal);
 $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure (metal seal)
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel 304/1.4301; CF Flange 304L

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|-------------------|
| DN 16 CF | 60 | 16 | DN 63 ISO-K | 420RUG016-063-60 |
| DN 40 CF | 70 | 37 | DN 63 ISO-K | 420RUG040-063-70 |
| DN 63 CF | 90 | 66 | DN 63 ISO-K | 420RUG063-063-90 |
| DN 100 CF | 90 | 102 | DN 100 ISO-K | 420RUG100-100-90 |
| DN 160 CF | 100 | 153 | DN 160 ISO-K | 420RUG160-160-100 |

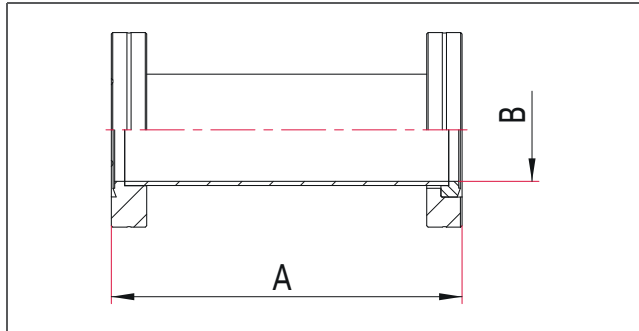
CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2
ISO-K Flanges according to ISO 1609

CF Full Nipple



- One end fixed; one end rotatable
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube material on request
- Other lengths and tube dimensions on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 CF | 76 | 16 | 420RZS016 |
| DN 40 CF | 126 | 37 | 420RZS040 |
| DN 63 CF | 210 | 66 | 420RZS063 |
| DN 100 CF | 270 | 104 | 420RZS100 |
| DN 160 CF | 334 | 155 | 420RZS160 |

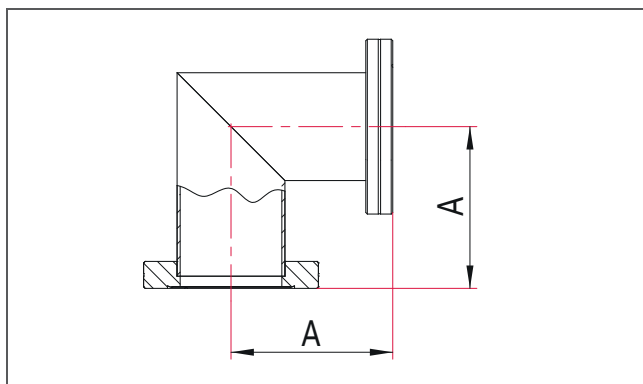
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF 90° Elbow



- One end fixed, one end rotatable
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 CF | 38 | 420RWS016-90 |
| DN 40 CF | 63 | 420RWS040-90 |
| DN 63 CF | 105 | 420RWS063-90 |
| DN 100 CF | 135 | 420RWS100-90 |
| DN 160 CF | 167 | 420RWS160-90 |

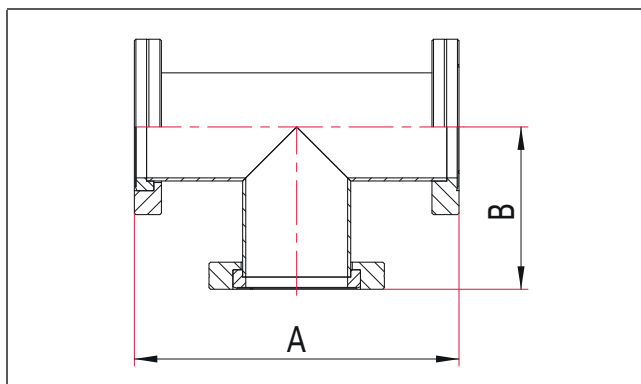
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Tee



- One rotatable flange per axis
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 CF | 76 | 38 | 420RTS016 |
| DN 40 CF | 126 | 63 | 420RTS040 |
| DN 63 CF | 210 | 105 | 420RTS063 |
| DN 100 CF | 270 | 135 | 420RTS100 |
| DN 160 CF | 334 | 167 | 420RTS160 |

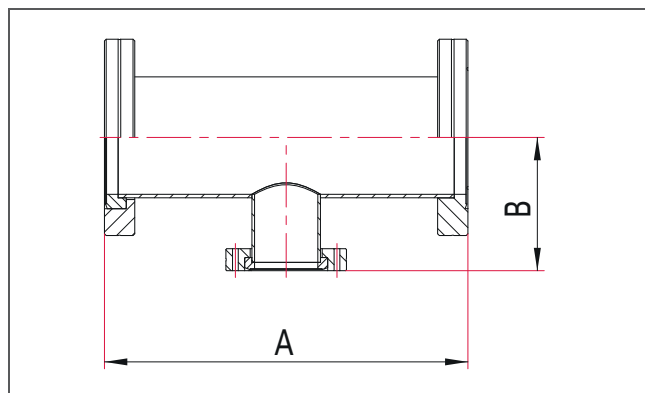
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Reducer Tee



- One rotatable flange per axis
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|---------------|
| DN 40 CF | 126 | 60 | DN 16 CF | 420RTR040-016 |
| DN 63 CF | 210 | 77 | DN 40 CF | 420RTR063-040 |
| DN 100 CF | 270 | 95 | DN 40 CF | 420RTR100-040 |
| DN 100 CF | 270 | 95 | DN 63 CF | 420RTR100-063 |
| DN 160 CF | 334 | 120 | DN 40 CF | 420RTR160-040 |
| DN 160 CF | 334 | 120 | DN 63 CF | 420RTR160-063 |
| DN 160 CF | 334 | 120 | DN 100 CF | 420RTR160-100 |

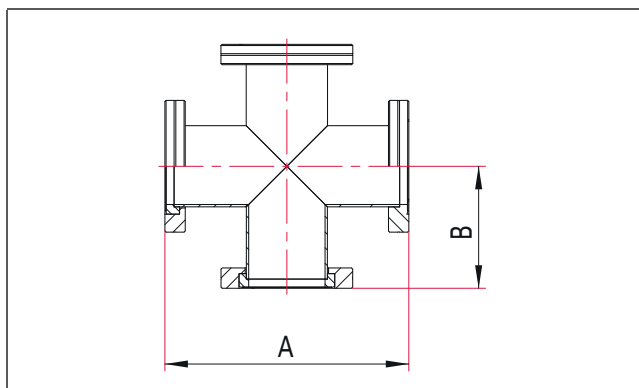
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF 4-Way Cross



- One rotatable flange per axis
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 CF | 76 | 38 | 420RKS016 |
| DN 40 CF | 126 | 63 | 420RKS040 |
| DN 63 CF | 210 | 105 | 420RKS063 |
| DN 100 CF | 270 | 135 | 420RKS100 |
| DN 160 CF | 334 | 167 | 420RKS160 |

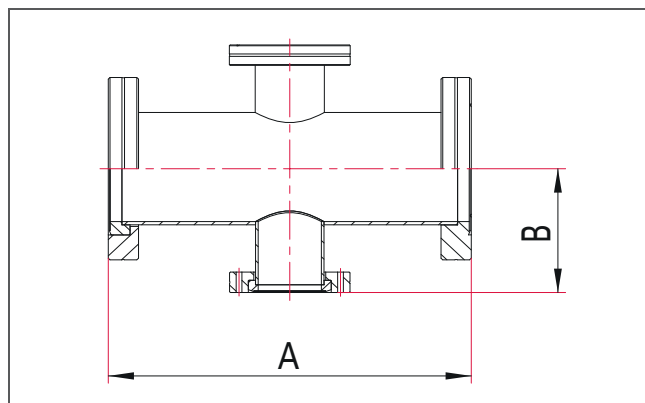
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF 4-Way Reducer Cross



- One rotatable flange per axis
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|---------------|
| DN 40 CF | 126 | 60 | DN 16 CF | 420RKR040-016 |
| DN 63 CF | 210 | 77 | DN 40 CF | 420RKR063-040 |
| DN 100 CF | 270 | 95 | DN 40 CF | 420RKR100-040 |
| DN 100 CF | 270 | 95 | DN 63 CF | 420RKR100-063 |
| DN 160 CF | 334 | 120 | DN 40 CF | 420RKR160-040 |
| DN 160 CF | 334 | 120 | DN 63 CF | 420RKR160-063 |
| DN 160 CF | 334 | 120 | DN 100 CF | 420RKR160-100 |

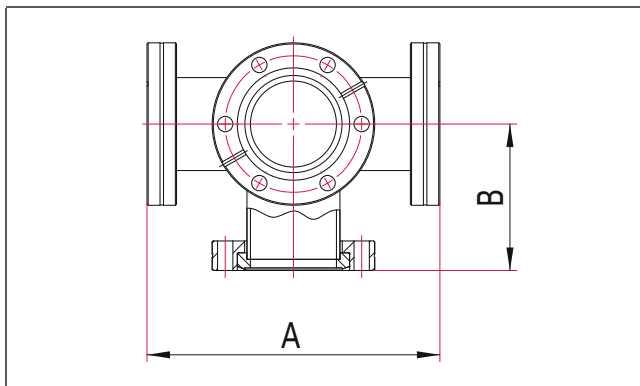
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF 5-Way Cross



- One rotatable flange per axis
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube material on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 CF | 76 | 38 | 420RKF016 |
| DN 40 CF | 126 | 63 | 420RKF040 |
| DN 63 CF | 210 | 105 | 420RKF063 |
| DN 100 CF | 270 | 135 | 420RKF100 |

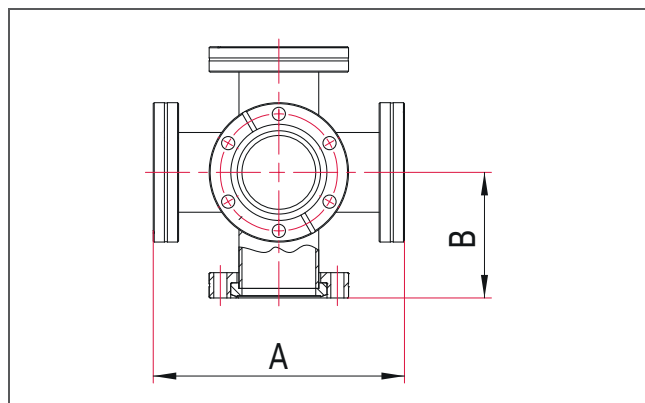
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF 6-Way Cross



- One rotatable flange per axis
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 CF | 76 | 38 | 420RKD016 |
| DN 40 CF | 126 | 63 | 420RKD040 |
| DN 63 CF | 210 | 105 | 420RKD063 |
| DN 100 CF | 270 | 135 | 420RKD100 |
| DN 160 CF | 334 | 167 | 420RKD160 |
| DN 200 CF | 406 | 203 | 420RKD200 |

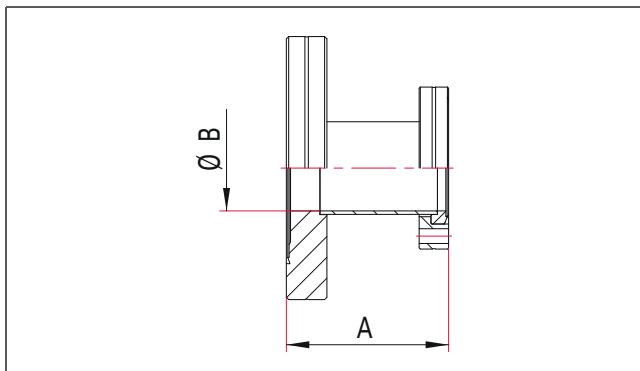
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Reducer Nipple, Straight



- Reduced flange size rotatable
- Tube surface: glass bead blasted (polished version on request)
- Other flange and tube materials on request
- Other lengths and tube dimensions on request
- Bakeout temperature: up to 450 °C
- Tightness: $\leq 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Flange: stainless steel 304L; tube: stainless steel 304L or better
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | Nominal diameter reduced | Order number |
|------------------|--------|--------|--------------------------|---------------|
| DN 40 CF | 70 | 16 | DN 16 CF | 420RRG040-016 |
| DN 63 CF | 70 | 16 | DN 16 CF | 420RRG063-016 |
| DN 63 CF | 70 | 37 | DN 40 CF | 420RRG063-040 |
| DN 100 CF | 70 | 37 | DN 40 CF | 420RRG100-040 |
| DN 100 CF | 70 | 66 | DN 63 CF | 420RRG100-063 |
| DN 160 CF | 70 | 37 | DN 40 CF | 420RRG160-040 |
| DN 160 CF | 127 | 66 | DN 63 CF | 420RRG160-063 |
| DN 160 CF | 127 | 104 | DN 100 CF | 420RRG160-100 |

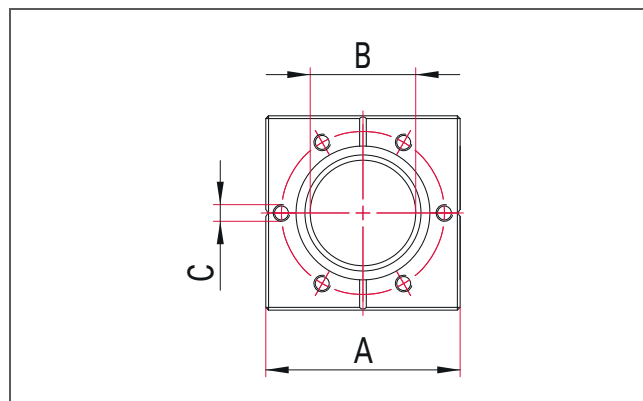
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Cube



- Up to DN 100: manufactured from forged material
- DN 160: manufactured from welded plates
- Bakeout temperature: up to 450 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: Stainless steel 316L/1.4404
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel, with Thread

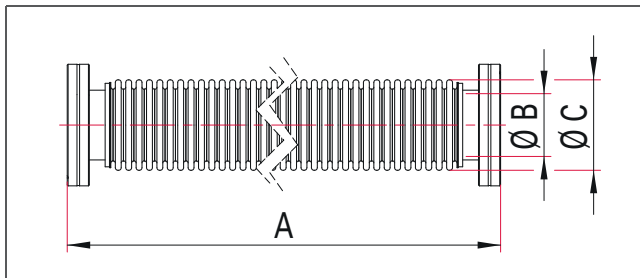
| Nominal diameter | A [mm] | B [mm] | C | Thread depth [mm] | Order number |
|------------------|--------|--------|----|-------------------|--------------|
| DN 16 CF | 35 | 16 | M4 | 5 | 470RKK016 |
| DN 40 CF | 70,5 | 38 | M6 | 8 | 470RKK040 |
| DN 63 CF | 114 | 66 | M8 | 8 | 470RKK063 |
| DN 100 CF | 155 | 104 | M8 | 8 | 470RKK100 |
| DN 160 CF | 208 | 155 | M8 | 8 | 470RKK160 |

ISO-CF Corrugated Hose, Flexible



- One flange rotatable
- Other lengths on request
- Pressure range: $1 \cdot 10^{-9}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange 304L; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Bend radius, unique movement [mm] | Bend radius, often movement [mm] | Order number |
|------------------|--------|--------|--------|-----------------------------------|----------------------------------|----------------|
| DN 16 CF | 250 | 12 | 17 | 50 | 200 | 420SWN016-0250 |
| DN 16 CF | 500 | 12 | 17 | 50 | 200 | 420SWN016-0500 |
| DN 16 CF | 750 | 12 | 17 | 50 | 200 | 420SWN016-0750 |
| DN 16 CF | 1000 | 12 | 17 | 50 | 200 | 420SWN016-1000 |
| DN 40 CF | 250 | 37 | 52 | 130 | 250 | 420SWN040-0250 |
| DN 40 CF | 500 | 37 | 52 | 130 | 250 | 420SWN040-0500 |
| DN 40 CF | 750 | 37 | 52 | 130 | 250 | 420SWN040-0750 |
| DN 40 CF | 1000 | 37 | 52 | 130 | 250 | 420SWN040-1000 |
| DN 63 CF | 250 | 65 | 81 | 200 | 410 | 420SWN063-0250 |
| DN 63 CF | 500 | 65 | 81 | 200 | 410 | 420SWN063-0500 |
| DN 63 CF | 750 | 65 | 81 | 200 | 410 | 420SWN063-0750 |
| DN 63 CF | 1000 | 65 | 81 | 200 | 410 | 420SWN063-1000 |
| DN 100 CF | 250 | 100 | 119 | 230 | 560 | 420SWN100-0250 |
| DN 100 CF | 500 | 100 | 119 | 230 | 560 | 420SWN100-0500 |
| DN 100 CF | 750 | 100 | 119 | 230 | 560 | 420SWN100-0750 |
| DN 100 CF | 1000 | 100 | 119 | 230 | 560 | 420SWN100-1000 |

Please note that the hose shrinks under vacuum.

The minimum bending radii are applicable for a temperature of 20 °C.

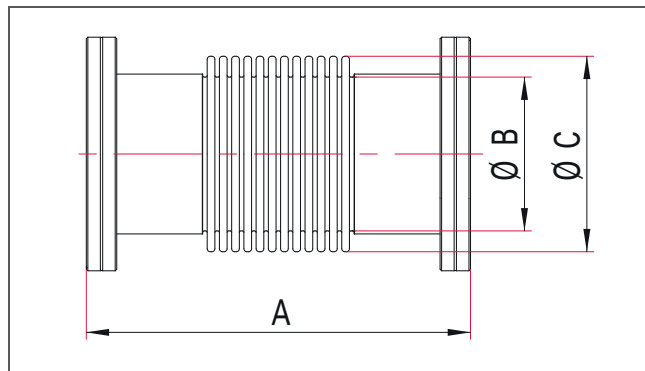
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-CF Spring Bellows



- One flange rotatable
- Other lengths on request
- Pressure range: $1 \cdot 10^{-9}$ hPa to ambient pressure
- Materials: flange: stainless steel: 304L; bellows: stainless steel 316L
- Temperature range: -196 to 300 °C

Dimensions



Stainless Steel: Flange 304L; Bellows 316L

| Nominal diameter | A [mm] | B [mm] | C [mm] | Axial stroke [mm] | Order number |
|------------------|--------|--------|--------|-------------------|---------------|
| DN 16 CF | 110 | 15 | 26 | ±5 | 420SFK016-110 |
| DN 40 CF | 160 | 37 | 59 | ±10 | 420SFK040-160 |
| DN 63 CF | 250 | 66 | 87 | ±18 | 420SFK063-250 |
| DN 100 CF | 250 | 100 | 128 | ±22 | 420SFK100-250 |
| DN 160 CF | 270 | 155 | 184 | ±15 | 420SFK160-270 |

Please note that the spring bellows shrinks under vacuum.

The axial stroke is applicable for a temperature of 20 °C and 10000 load cycles.

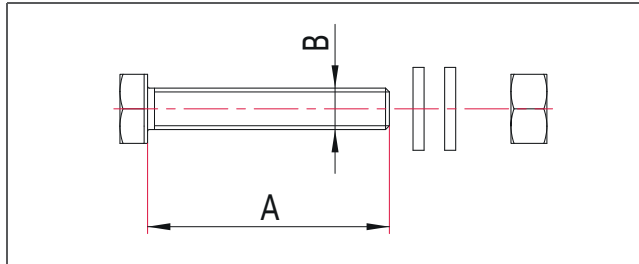
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

COF Screw Set



- For the assembly of two flanges with through holes
- Set includes the screws required for the specified flange size
- Set includes two washers and one nut for each screw

Dimensions



Stainless Steel A2-70

| Nominal diameter | A [mm] | B | Package [Qty.] | Order number |
|------------------|--------|-----|----------------|--------------|
| DN 400 COF | 75 | M12 | 36 | 620BSC400 |
| DN 450 COF | 90 | M16 | 36 | 620BSC450 |
| DN 500 COF | 100 | M16 | 36 | 620BSC500 |
| DN 600 COF | 100 | M16 | 40 | 620BSC600 |
| DN 800 COF | 100 | M16 | 52 | 620BSC800 |

Stainless Steel A4-80

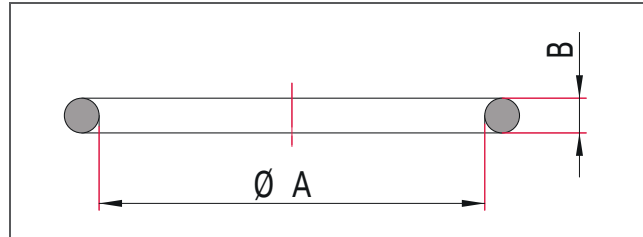
| Nominal diameter | A [mm] | B | Package [Qty.] | Order number |
|------------------|--------|-----|----------------|--------------|
| DN 400 COF | 75 | M12 | 36 | 670BSC400 |
| DN 450 COF | 90 | M16 | 36 | 670BSC450 |
| DN 500 COF | 100 | M16 | 36 | 670BSC500 |
| DN 600 COF | 100 | M16 | 40 | 670BSC600 |
| DN 800 COF | 100 | M16 | 52 | 670BSC800 |

COF Elastomer Seal



- For single use only
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Temperature range: -15 to 150 °C

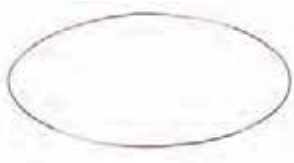
Dimensions



FKM

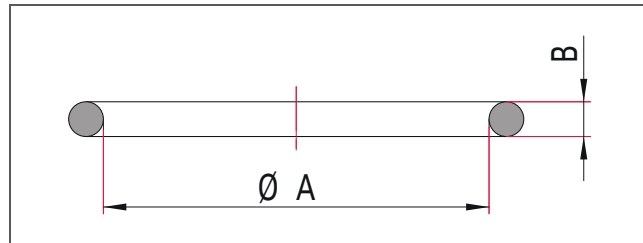
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 400 COF | 436 | 2.5 | 602DOR400-S1 |
| DN 400 COF | 491 | 2.5 | 602DOR450-S1 |
| DN 500 COF | 535 | 2.5 | 602DOR500-S1 |
| DN 600 COF | 635 | 2.5 | 602DOR600-S1 |
| DN 800 COF | 835 | 2.5 | 602DOR800-S1 |

COF Copper Wire Seal



- For single use only
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 200 °C

Dimensions



OFHC Copper (Annealed)

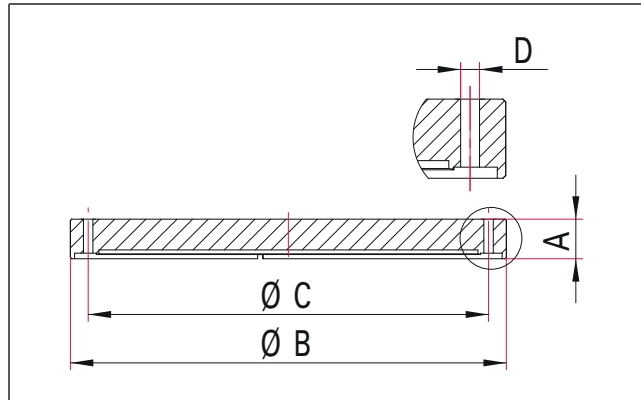
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 400 COF | 435.8 | 2 | 690DDR400 |
| DN 450 COF | 491.4 | 2 | 690DDR450 |
| DN 500 COF | 535.4 | 2 | 690DDR500 |
| DN 600 COF | 635.4 | 2 | 690DDR600 |
| DN 800 COF | 835.4 | 2 | 690DDR800 |

COF Blank Flange

- Flange material: 304L/1.4307 stainless steel, forged
- Other flange materials available upon request
- Bakeout temperature: up to 300 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 200 °C

Stainless Steel, Female

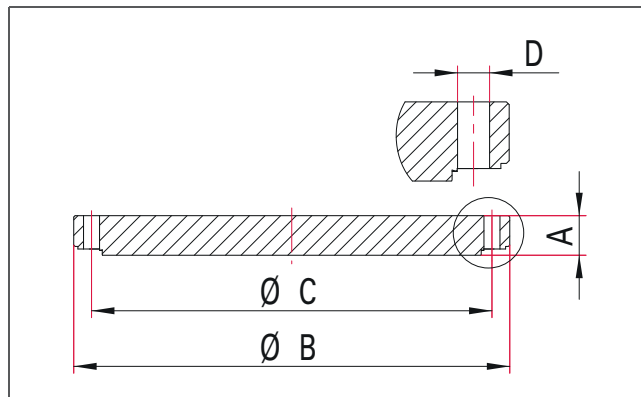
Dimensions



| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 400 COF | 33 | 497 | 454 | 13 | 620FBF400 |
| DN 450 COF | 38 | 562 | 513.1 | 17 | 620FBF450 |
| DN 500 COF | 43 | 595 | 559 | 17 | 620FBF500 |
| DN 600 COF | 43 | 690 | 661 | 17 | 620FBF600 |
| DN 800 COF | 43 | 890 | 859 | 17 | 620FBF800 |

Stainless Steel, Male

Dimensions



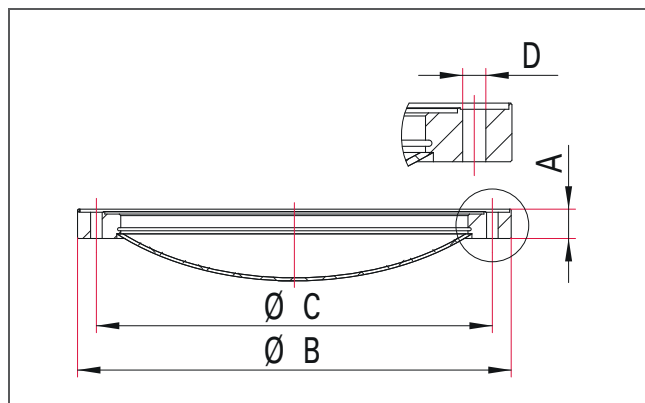
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 400 COF | 33 | 497 | 454 | 13 | 620FBM400 |
| DN 450 COF | 38 | 562 | 513.1 | 17 | 620FBM450 |
| DN 500 COF | 43 | 595 | 559 | 17 | 620FBM500 |
| DN 600 COF | 43 | 690 | 661 | 17 | 620FBM600 |
| DN 800 COF | 43 | 890 | 859 | 17 | 620FBM800 |

COF Blank Flange, with Domed Stainless Steel Disk or Dished Head

- Other flange materials available upon request
- Bakeout temperature: up to 300 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Materials: (flange) 304L/1.4307 stainless steel, forged
- Temperature range: -196 to 200 °C

Stainless Steel, Female

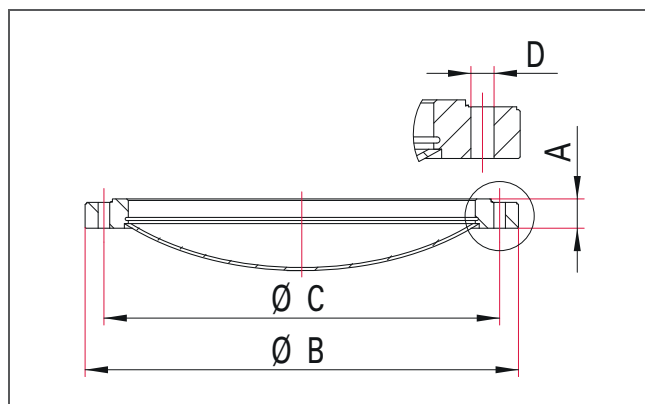
Dimensions



| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 400 COF | 33 | 497 | 454 | 13 | 620FBF400-S |
| DN 450 COF | 38 | 562 | 513.1 | 17 | 620FBF450-S |
| DN 500 COF | 43 | 595 | 559 | 17 | 620FBF500-S |
| DN 600 COF | 43 | 690 | 661 | 17 | 620FBF600-S |
| DN 800 COF | 43 | 890 | 859 | 17 | 620FBF800-S |

Stainless Steel, Male

Dimensions



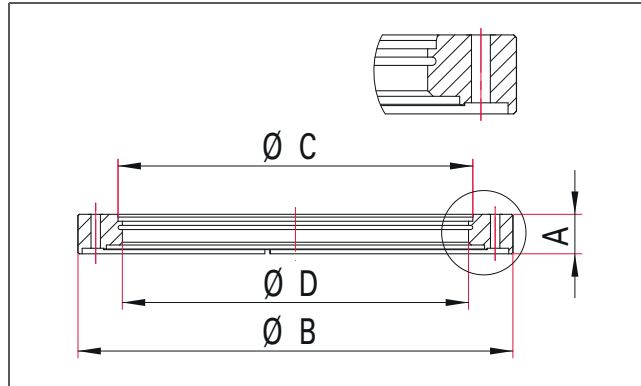
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 400 COF | 33 | 497 | 454 | 13 | 620FBM400-S |
| DN 450 COF | 38 | 562 | 513.1 | 17 | 620FBM450-S |
| DN 500 COF | 43 | 595 | 559 | 17 | 620FBM500-S |
| DN 600 COF | 43 | 690 | 661 | 17 | 620FBM600-S |
| DN 800 COF | 43 | 890 | 859 | 17 | 620FBM800-S |

COF Weld Flange

- Flange material: 304L/1.4307 stainless steel, forged
- With weld lip
- Other flange materials available upon request
- Bakeout temperature: up to 300 °C
- Pressure range: $1 \cdot 10^{-12}$ hPa to ambient pressure
- Temperature range: -196 to 200 °C

Stainless Steel, Female

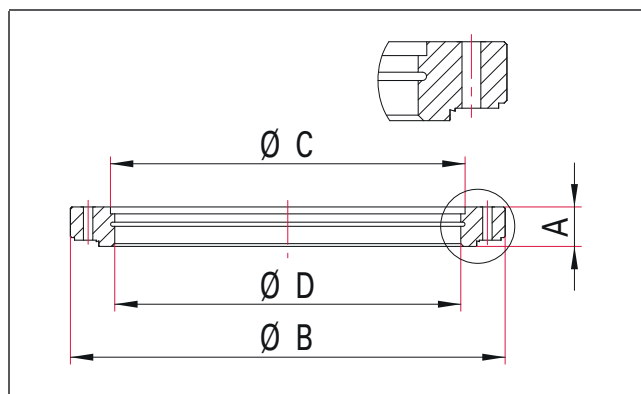
Dimensions



| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|--------------|
| DN 400 COF | 406 x 3 | 33 | 497 | 406.3 | 400 | 620FAF400 |
| DN 450 COF | 458 x 4 | 38 | 562 | 458.5 | 450 | 620FAF450 |
| DN 500 COF | 508 x 4 | 43 | 595 | 508.5 | 500 | 620FAF500 |
| DN 600 COF | 610 x 5 | 43 | 690 | 610.5 | 600 | 620FAF600 |
| DN 800 COF | 812 x 6 | 43 | 890 | 812.5 | 800 | 620FAF800 |

Stainless Steel, Male

Dimensions



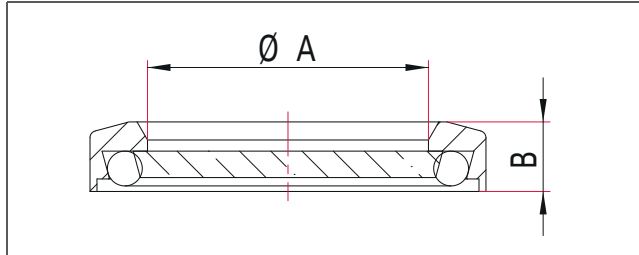
| Nominal diameter | Tube dimension [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|---------------------|--------|--------|--------|--------|--------------|
| DN 400 COF | 406 x 3 | 33 | 497 | 406.3 | 400 | 620FAM400 |
| DN 450 COF | 458 x 4 | 38 | 562 | 458.5 | 450 | 620FAM450 |
| DN 500 COF | 508 x 4 | 43 | 595 | 508.5 | 500 | 620FAM500 |
| DN 600 COF | 610 x 5 | 43 | 690 | 610.5 | 600 | 620FAM600 |
| DN 800 COF | 812 x 6 | 43 | 890 | 812.5 | 800 | 620FAM800 |

ISO-KF Viewport, Borosilicate



- Aluminum frame with integrated FKM O-ring, installation without additional seal
- Circumferential rim for outer centering on the ISO-KF connector flange
- Not suitable for installation on base plate
- Heat up and cool down speed: max. 5 K/min
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -15 to 150 °C

Dimensions



Aluminum/Borosilicate

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 25 KF | 26 | 10 | 110GSG025 |
| DN 40 KF | 41 | 10 | 110GSG040 |
| DN 50 KF | 52 | 10 | 110GSG050 |

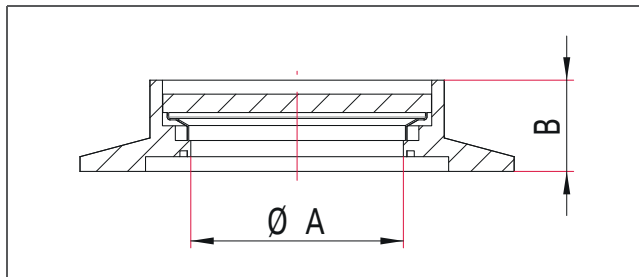
Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage.

ISO-KF Viewport, Fused Silica (Synthetic Amorphous Quartz)



- Stainless Steel frame; glass soldered
- Transmission in UV spectrum to 200 nm
- Heat up and cool down speed: max. 5 K/min
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -100 to 200 °C

Dimensions



Stainless Steel/Fused Silica (Synthetic Amorphous Quartz), UV

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|---------------------|
| DN 25 KF | 16 | 9.9 | 120GSG025-silica-uv |
| DN 40 KF | 36 | 13.7 | 120GSG040-silica-uv |

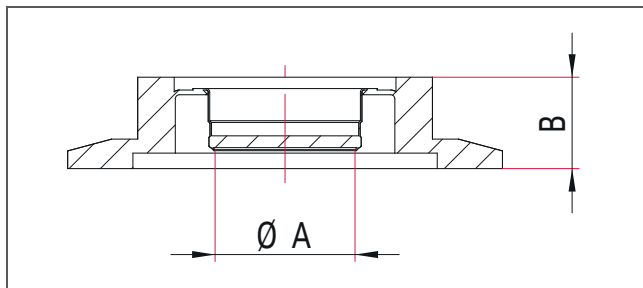
Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage.
Flanges according to ISO 2861

ISO-KF Viewport, Sapphire



- Stainless steel frame; glass soldered
- Transmission in IR spectrum to 4500 nm
- Heat up and cool down speed: max. 5 K/min
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -100 to 350 °C

Dimensions



Stainless Steel/Sapphire

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|------------------|
| DN 16 KF | 15 | 12.7 | 120GSG016-saphir |
| DN 40 KF | 24 | 13 | 120GSG040-saphir |

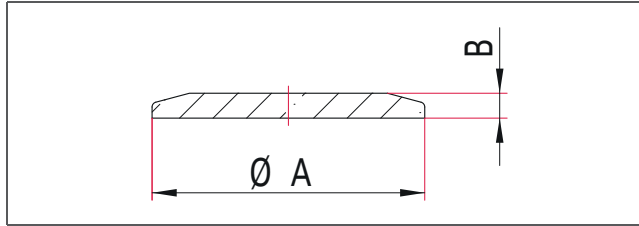
Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage.
Flanges according to ISO 2861

ISO-KF Glass Blank Flange



- Installation with outer centering ring and elastomer seal
- Fastening elements: Clamping ring made from plastic (no usage of metal connection elements)
- Heat up and cool down speed: max. 5 K/min
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure

Dimensions



Note

These flanges are manufactured without seal grooves for centering rings.

Borosilicate

- Temperature range: -15 to 150 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 KF | 30 | 5 | 160FBL016 |
| DN 25 KF | 40 | 5 | 160FBL025 |
| DN 40 KF | 55 | 5 | 160FBL040 |
| DN 50 KF | 75 | 5 | 160FBL050 |

Caution! Risk of injury by glass splinters. Do not use Glass Blank Flange which show apparent damage.

Quartz

- Temperature range: -15 to 200 °C

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 16 KF | 30 | 5 | 180FBL016 |
| DN 25 KF | 40 | 5 | 180FBL025 |
| DN 40 KF | 55 | 5 | 180FBL040 |
| DN 50 KF | 75 | 5 | 180FBL050 |

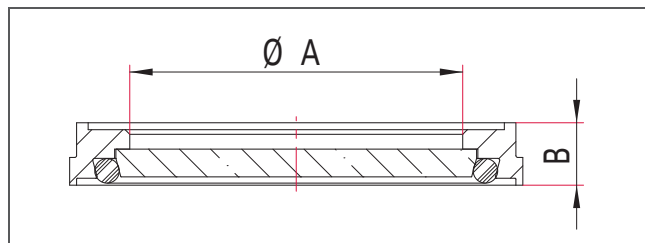
Caution! Risk of injury by glass splinters. Do not use Glass Blank Flange which show apparent damage.

ISO-K Viewport



- Frame with integrated FKM O-ring, installation without additional seal
- Circumferential rim for outer centering on the ISO-K counterflange
- Not suitable for mounting on base plate or with ISO-F flange
- Heat up and cool down speed: max. 5 K/min
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (at temperatures > 60 °C only to ambient pressure); DN 200 to ambient pressure
- Temperature range: -15 to 150 °C; DN 200 to 60 °C

Dimensions



Stainless Steel/Borosilicate

| Nominal diameter | A [mm] | B [mm] | Pressure range | Order number |
|------------------|--------|--------|--|--------------|
| DN 63 ISO-K | 72 | 13.5 | $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure | 322GSG063 |
| DN 100 ISO-K | 104 | 15 | $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure | 322GSG100 |
| DN 160 ISO-K | 153 | 17.5 | $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure | 322GSG160 |
| DN 200 ISO-K | 210 | 17.5 | $1 \cdot 10^{-8}$ hPa to ambient pressure | 322GSG200 |

Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage.

Aluminum/Borosilicate

| Nominal diameter | A [mm] | B [mm] | Pressure range | Order number |
|------------------|--------|--------|--|--------------|
| DN 63 ISO-K | 72 | 13.5 | $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure | PF 410 011-T |
| DN 100 ISO-K | 104 | 15.5 | $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure | PF 411 011-T |
| DN 160 ISO-K | 153 | 17.2 | $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure | PF 412 011-T |

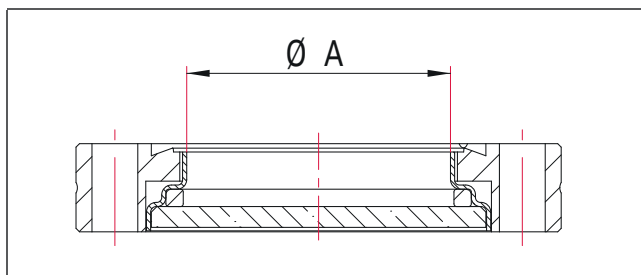
Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage.

CF Viewport



- Always use washers for installation
- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



Note

Item no. suffix -PB: Lead glass for x-ray protection; glass thickness: 5 mm; provides the same protection as 1.5 mm of lead at 100 kV or 1 mm at 200 kV.

Stainless Steel/Kodial

- Heat up and cool down speed: max. 3 K/min
- Temperature range: -20 to 200 °C, bakeable up to 350 °C

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 CF | 16 | 420GSG016 |
| DN 40 CF | 38 | 420GSG040 |
| DN 63 CF | 63 | 420GSG063 |
| DN 100 CF | 89 | 420GSG100 |
| DN 160 CF | 135 | 420GSG160 |
| DN 200 CF | 135 | 420GSG200 |

Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage. Please use annealed copper gaskets or elastomer seals to minimize stress inside the glass. Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Stainless Steel/Kodial with Lead Glass Shielding

- Heat up and cool down speed: max. 3 K/min
- Temperature range: -20 to 200 °C, bakeable to 350 °C

| Nominal diameter | A [mm] | Order number |
|------------------|--------|--------------|
| DN 16 CF | 16 | 420GSG016-PB |
| DN 40 CF | 33 | 420GSG040-PB |
| DN 63 CF | 63 | 420GSG063-PB |
| DN 100 CF | 89 | 420GSG100-PB |
| DN 160 CF | 135 | 420GSG160-PB |

Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage. Please use annealed copper gaskets or elastomer seals to minimize stress inside the glass. Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Stainless Steel/Saphire

- Heat up and cool down speed: max. 5 K/min
- Temperature range: -100 to 300 °C, bakeable up to 450 °C

| Nominal diameter | A [mm] | Order number |
|------------------|--------|------------------|
| DN 16 CF | 12 | 420GSG016-saphir |
| DN 40 CF | 24 | 420GSG040-saphir |
| DN 63 CF | 49 | 420GSG063-saphir |

Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage. Please use annealed copper gaskets or elastomer seals to minimize stress inside the glass. Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Stainless Steel/Fused Silica, UV

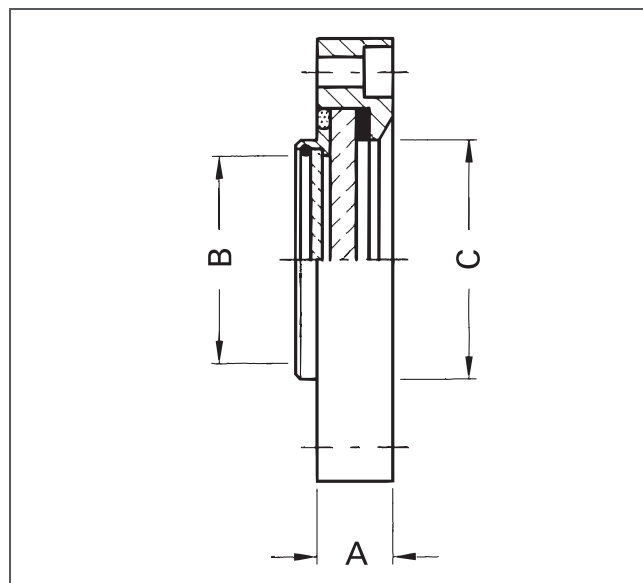
- Heat up and cool down speed: max. 5 K/min
- Temperature range: -100 to 200 °C

| Nominal diameter | A [mm] | Order number |
|------------------|--------|---------------------|
| DN 16 CF | 16 | 420GSG016-silica-uv |
| DN 40 CF | 36 | 420GSG040-silica-uv |
| DN 63 CF | 68 | 420GSG063-silica-uv |
| DN 100 CF | 99 | 420GSG100-silica-uv |

Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage. Please use annealed copper gaskets or elastomer seals to minimize stress inside the glass. Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-F Viewport

- Sight glasses with replaceable safety glass, especially suitable for coating systems
- With integrated FKM O-ring; installation without additional seal
- Including claw clamps, bolts, washers and nuts for installation
- Heat up and cool down speed: max. 5 K/min
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure (at temperatures > 60 °C only to ambient pressure)
- Temperature range: -15 to 150 °C

**Dimensions****Black Anodized Aluminum/Borosilicate**

| Nominal diameter | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------|--------|--------|--------------|
| DN 63 ISO-F | 20 | 60 | 70 | PF 410 013-T |
| DN 100 ISO-F | 22 | 92 | 100 | PF 411 013-T |
| DN 160 ISO-F | 30 | 142 | 154 | PF 412 013-T |

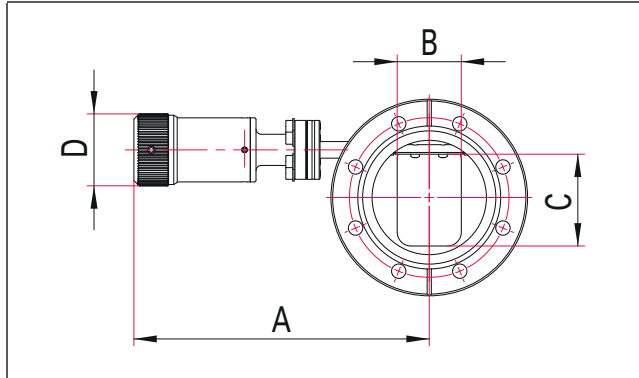
Caution! Risk of injury by glass splinters. Do not use viewports which show apparent damage

CF Shutter, Manual



- Hermetically sealed, suitable for UHV
- Bellows-sealed feedthrough
- Handwheel with snap-in stages
- Bakeout temperature: up to 250 °C
- Operating temperature: up to 80 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Angle of rotation: 0 to 90 ° with snap-in stages in 10 ° increments
- Pressure range: $1 \cdot 10^{-9}$ hPa to ambient pressure
- Service life: 500000 cycles
- Mounting orientation: any

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 40 CF | 152 | 22 | 30 | 42 | 420MBL040 |
| DN 63 CF | 171 | 37 | 51 | 42 | 420MBL063 |
| DN 100 CF | 186 | 65 | 90 | 42 | 420MBL100 |
| DN 160 CF | 212 | 111 | 123 | 42 | 420MBL160 |

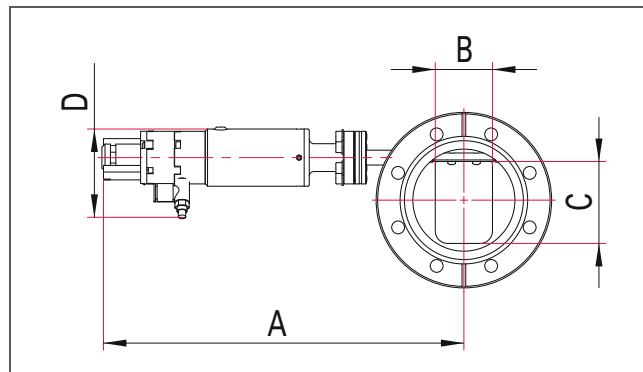
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Shutter, Pneumatic



- Hermetically sealed, suitable for UHV
- Bellows-sealed feedthrough
- Pneumatically operated; double-acting
- Opening and closing speed adjustable
- Connection: (compressed air) 6 mm hose connection
- Bakeout temperature: up to 250 °C, pneumatic drive (removable) up to 60 °C
- Operating temperature: up to 60 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Angle of rotation: 0 to 90 ° (final position adjustable)
- Pressure range: $1 \cdot 10^{-9}$ hPa to ambient pressure
- Compressed air (overpressure) max.: 0.7 MPa
- Compressed air (overpressure) min.: 0.15 MPa
- Service life: 500000 cycles
- Mounting orientation: any

Dimensions



Stainless Steel

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------|--------|--------|--------|--------------|
| DN 40 CF | 214 | 22 | 30 | 59 | 420MBL040-p |
| DN 63 CF | 234 | 37 | 51 | 59 | 420MBL063-p |
| DN 100 CF | 249 | 65 | 90 | 59 | 420MBL100-p |
| DN 160 CF | 276 | 111 | 123 | 59 | 420MBL160-p |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

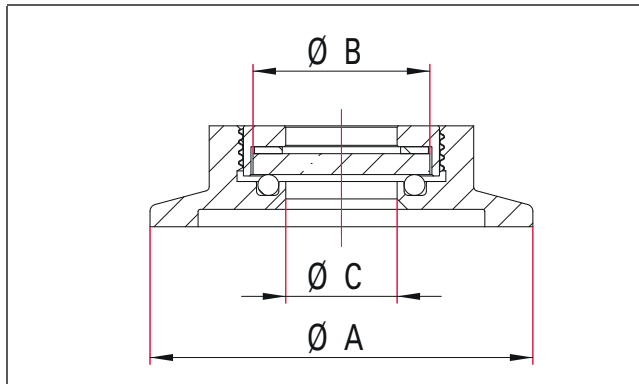
ISO-KF, ISO-K, CF Glass Retainers

These retainers can be used for vacuum-tight installation of 1" (24.8 to 25.8 mm) or 2" (49.8 to 51 mm) optical glasses. These are the standard sizes offered by many manufacturers in optical quality. We offer a wide range of the most commonly used optical glasses as accessories.

- Simple replacement of glasses
- Accessories: Face wrench, optical glasses
- Glass not included
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -15 to 150 °C

KF Flange with Viewport Retainer/Stainless Steel

Dimensions

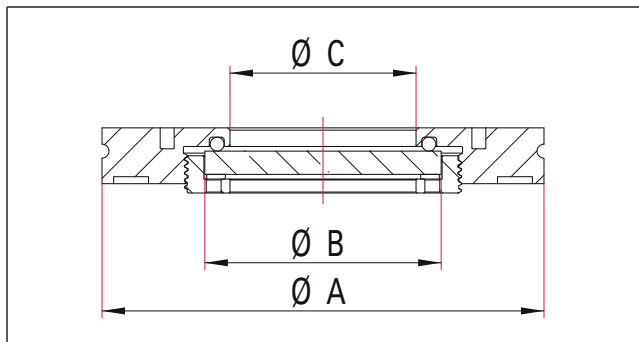


| Nominal diameter | A [mm] | B [mm] | C [mm] | Glass thickness [mm] | Order number |
|------------------|--------|-----------|--------|----------------------|--------------|
| DN 40 KF | 55 | 24.8-25.8 | 16 | 3-7 | 120GAG040-25 |

Flanges according to ISO 2861

ISO-K Flange with Viewport Retainer/Stainless Steel

Dimensions

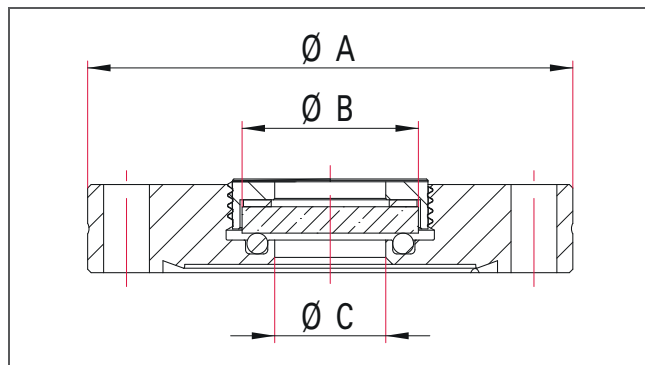


| Nominal diameter | A [mm] | B [mm] | C [mm] | Glass thickness [mm] | Order number |
|------------------|--------|---------|--------|----------------------|--------------|
| DN 63 ISO-K | 95 | 49.8-51 | 40 | 3.8-8 | 320GAG063-50 |

Flanges according to ISO 1609

CF Flange with Viewport Retainer/Stainless Steel

Dimensions



| Nominal diameter | A [mm] | B [mm] | C [mm] | Glass thickness [mm] | Order number |
|------------------|--------|-----------|--------|----------------------|--------------|
| DN 40 CF | 69.9 | 24.8-25.8 | 16 | 3-7 | 420GAG040-25 |
| DN 63 CF | 113.5 | 49.8-51 | 40 | 3.8-8 | 420GAG063-50 |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Accessories for Glass Retainers



- Adjustable face wrench
- Tool to tighten and loosen the threaded insert of the glass retainer

Face Wrench

| Materials | Order number |
|----------------|--------------|
| Steel, bronzed | GAG-SLS |

Borosilicate Float Glass

- Transmission range: 0.35 to 2 μm
- Extremely temperature-resistant; low thermal expansion coefficient
- Chemical-resistant
- Temperature range: up to 350 °C

Borosilicate

| Glass diameter [mm] | Glass thickness [mm] | Order number |
|---------------------|----------------------|----------------|
| 25.4 | 3.8 | GSG025-Boroflo |
| 50.8 | 5.5 | GSG050-Boroflo |

Caution! Risk of injury by glass splinters. Do not use glasses which show apparent damage.

Calcium Fluoride

- Transmission range: 0.2 to 6 μm
- Parallelism: 3 arc minutes
- Planarity: 2 wavelengths at 633 nm
- Surface quality: 40/20 scratch/dig
- Temperature range: up to 200 °C

Calcium Fluoride

| Glass diameter [mm] | Glass thickness [mm] | Order number |
|---------------------|----------------------|--------------|
| 25.4 | 3 | GSG025-CaF2 |
| 50.8 | 5 | GSG050-CaF2 |

Caution! Risk of injury by glass splinters. Do not use glasses which show apparent damage.

Fused Silica (Synthetic Amorphous Quartz)

- Transmission range: 0.2 to 2 μm
- Parallelism: 3 arc minutes
- Planarity: 1 wavelength at 633 nm
- Surface quality: 40/20 scratch/dig
- Temperature range: up to 350 °C

Optical Glass, Fused Silica (Synthetic Amorphous Quartz)

| Glass diameter [mm] | Glass thickness [mm] | Order number |
|---------------------|----------------------|------------------|
| 25.4 | 3 | GSG025-Silica-UV |
| 50.8 | 5 | GSG050-Silica-UV |

Caution! Risk of injury by glass splinters. Do not use glasses which show apparent damage.

Zinc Selenide

- Transmission range: 0.7 to 15 μm
- Parallelism: 3 arc minutes
- Planarity: 1/20 wavelength at 10.6 μm
- Surface quality: 60/40 scratch/dig
- Temperature range: up to 200 °C

Zinc Selenide

| Glass diameter [mm] | Glass thickness [mm] | Order number |
|---------------------|----------------------|--------------|
| 25.4 | 3 | GSG025-ZnSe |
| 50.8 | 5 | GSG050-ZnSe |

Caution! Risk of injury by glass splinters. Do not use glasses which show apparent damage.



Thread Lubricant

- Friction coefficient comparable to that of oiled screws
- Contains solid lubricant, mineral oil, thickener and powdered metal
- Recommended for uncoated stainless steel screws in heated flanges

Customer benefit

- Permits easy disassembly even after prolonged high temperature use.
- Prevents seizing of threads at high temperatures or high torque.

Thread Lubricant

| Tube size [g] | Temperature range [°C] | Order number |
|---------------|------------------------|--------------|
| 100 | -30 to 650 | YFG-100 |

Not for use in vacuum!

Vacuum Greases and Oils

Note

- Lubricants in general should be used only sparingly, because some degree of degassing is inevitable.
- One criterion for choosing a vacuum grease is the vapor pressure at working temperature (see data sheets for details). The vapor pressure should be lower than the targeted final pressure.

Silicone Grease

- Good greasing and sealing ability
- Low surface energy, tendency to creep
- Indissoluble in water, methanol, ethanol and acetone



| Tube size [g] | Temperature range [°C] | Vapor pressure at 20°C [hPa] | Application | Order number |
|---------------|------------------------|------------------------------|--|--------------|
| 50 | -40 to 150 | $5 \cdot 10^{-7}$ | Versatile ultra-high-vacuum grease based on silicone | YFS-50 |

Mineral Grease

- The UHV and HV greases from Apiezon® are based on mineral greases and are silicone-free
- Lower vapor pressure than silicone grease
- No creeping
- The Apiezon®-greases we offer are optimized for various areas of application



| Tube size [g] | Temperature range [°C] | Vapor pressure at 20°C [hPa] | Application | Order number |
|---------------|------------------------|------------------------------|--|---------------|
| 25 | -10 to 240 | $2.3 \cdot 10^{-9}$ | Type H: for use at temperatures above 30 °C | YFS-H |
| 50 | 10 to 30 | $9.3 \cdot 10^{-11}$ | Type L: Ultra-high vacuum, particularly low vapor pressure | YFS-L |
| 100 | 10 to 30 | $2.3 \cdot 10^{-9}$ | Type M: high vacuum use | YFS-M |
| 25 | 10 to 30 | $2.3 \cdot 10^{-9}$ | Type M: general vacuum use at room temperature | B 8010 070 28 |
| 25 | -269 to 30 | $8 \cdot 10^{-10}$ | Type N: cryogenic applications | YFS-N |

Greases and Oils Based on Perfluoropolyether

- Good lubricity and low vapor pressure
- Resistance to chemicals: Very good
- Resistance to oxidation: Very good
- Resistance to thermal decomposition: Good

| Tube size | Temperature range [°C] | Vapor pressure at 20°C [hPa] | Application | Order number |
|-----------|------------------------|------------------------------|---|----------------------|
| 10 ml | -60 to 300 | $1 \cdot 10^{-12}$ | Oil for sliding elastomer seals under vacuum | B N845 804-T |
| 10 g | -20 to 200 | $1 \cdot 10^{-12}$ | Grease for sliding elastomer seals under vacuum | B 2751 055 UB |
| 30 g | -60 to 300 | $1 \cdot 10^{-12}$ | Grease for sliding elastomer seals under vacuum | B N845 805-T |

Sealants

- For sealing small leaks
- Available as spray or paste

Sealants

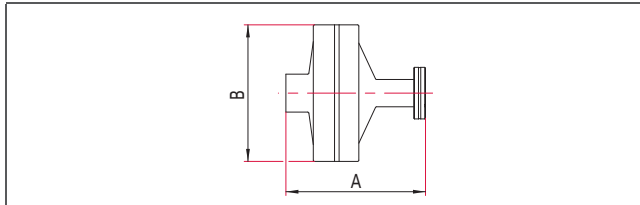
| Application | Quantity [g] | Temperature range [°C] | Order number |
|-------------|--------------|------------------------|---------------------|
| Spray | 170 | up to 350 | B 2751 049-E |
| Paste | 100 | -40 to 200 | B 2753 420-K |

Burst Disk



- EN ISO 4126-2 and AD2000 Merkblatt (leaflet) A1 compliant
- No moving parts
- Burst pressure is lower than 500 hPa overpressure, therefore not within the scope of the Pressure Directive 97/23/EC
- Unit must be replaced after bursting
- Tightness: $< 1 \cdot 10^{-11} \text{ Pa m}^3/\text{s}$
- Materials: Stainless steel 316L (housing and membrane)
- Temperature range: 20 to 280 °C

Dimensions



Customer benefit

- Functional verification: Delivery with Inspection Certificate 3.1 according to EN 10204 including results of the destructive tests of two samples within the manufactured batch.

Stainless Steel

| Flange (in) | A [mm] | B [mm] | Burst pressure min. [hPa] | Burst pressure max. [hPa] | Order number |
|-------------|--------|--------|---------------------------|---------------------------|------------------|
| DN 16 CF | 92 | 90 | 405 | 495 | 420VBS016-0_5bar |

Burst pressure = overpressure

Burst pressure data refer to temperature of 22 °C. Burst pressure drops with rising temperatures.

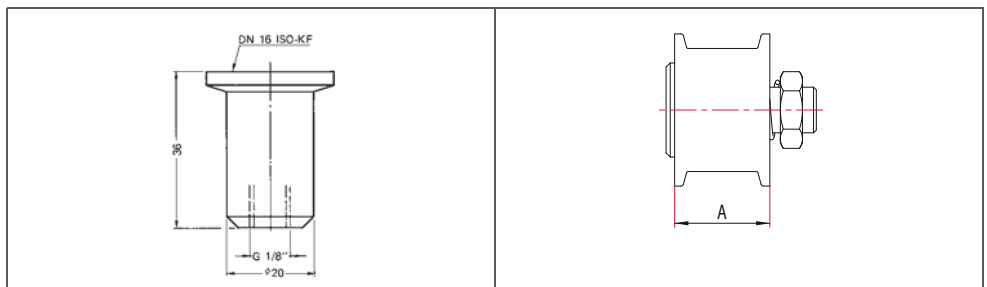
To be used for vacuum chambers. No safety component in terms of the machinery directive 2006/42/EC.

Pressure Relief Valves



- Protects vacuum systems from over pressures

Dimensions



PF I30 032

120VUS016

120VUS040

Pressure Relief Valves

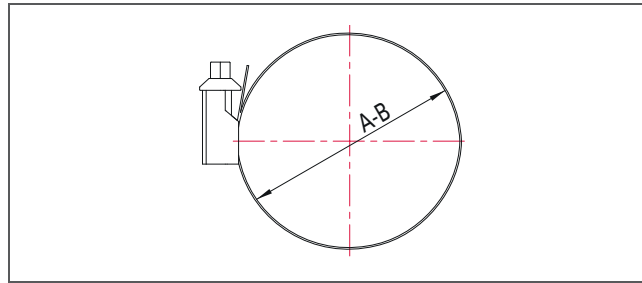
| Nominal diameter | Tightness [Pa m³/s] | Can be opened to a pressure difference of [hPa] | Differential pressure | Order number |
|------------------|---------------------|---|--------------------------------|--------------|
| DN 16 KF | $1 \cdot 10^{-9}$ | 200 to 500 | not modifiable | PF I30 032 |
| DN 40 KF | $1 \cdot 10^{-9}$ | app. 400 | modifiable to app. +/- 100 hPa | 120VUS016 |
| DN 40 KF | $1 \cdot 10^{-9}$ | app. 200 | modifiable to app. +/- 100 hPa | 120VUS040 |

ISO-KF Hose Clamp

- 2 pieces per pkg.
- Temperature range: 0 to 100 °C



Dimensions



Steel, Zinc-plated

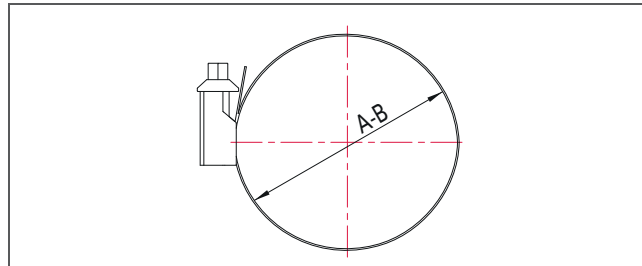
| Nominal diameter | A [Max. Ø mm] | B [Min. Ø mm] | Order number |
|------------------|---------------|---------------|--------------|
| DN 16 KF | 22 | 12 | 150SSS016 |
| DN 25 KF | 32 | 20 | 150SSS025 |
| DN 40 KF | 50 | 35 | 150SSS040 |
| DN 50 KF | 60 | 40 | 150SSS050 |

ISO-K Hose Clamp

- 2 pieces per pkg.
- Temperature range: 0 to 100 °C



Dimensions



Steel, Zinc-plated

| Nominal diameter | A [Max. Ø mm] | B [Min. Ø mm] | Order number |
|------------------|---------------|---------------|--------------|
| DN 63 ISO-K | 90 | 70 | 350SSS063 |
| DN 100 ISO-K | 130 | 110 | 350SSS100 |
| DN 160 ISO-K | 175 | 160 | 350SSS160 |

Custom components



Custom components

Pfeiffer Vacuum can produce every feasible component, from stainless steel, aluminum alloys, titanium or any other possible material. Starting with full nipples in special lengths, custom flanges, an additional port on standard components, adapters, hoses or spring bellows, precision mechanical parts to individual solutions. With our years of experience and vacuum expertise, we can provide extensive knowledge in system specifications, design and engineering. Our physicists, designers and production specialists develop and produce each feasible part for your specific requirements. The specifications are based on your requirements: from a rough sketch to a complete set of blue prints, from a starting point towards to a finished product. From prototype construction to serial production. In addition, Pfeiffer Vacuum supplies mechanical or electrical components to meet customer's specifications or provides you with a kit of components from the catalog and/or customized components.

Technical execution

Customized components are made from high quality materials. Special cleaning procedures guarantee contamination-free surfaces suitable for vacuum, which meet the highest requirements and are ready for immediate operation. All production phases are documented and quality tested. You will receive a quality report containing the leak testing protocol and other test results.

Options

We can also supply the following services upon request:

- Material certification
- Cleaning and final magnetization heat treatment under vacuum
- Design and production as pressure component
- FEM (Finite Elements Method) calculations
- Assembly under cleanroom conditions

Product testing

In addition to the standard leak test for vacuum components other tests can be carried out:

- Integral helium leak test
- Baking and residual gas analysis at ultimate vacuum
- Pressure test
- 3D control
- Permeability test
- Electrical isolation test
- Dye penetrant test
- X-ray testing of welded seams

Vacuum-safe blocking, dosage and control



Contents

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Vacuum-safe blocking, dosing and control

The vacuum-safe blocking or regulating and dosing of gas flows requires valves which meet both the process-specific as well as the vacuum-specific requirements. In addition to the basic function of the valve, valve parameters such as structure and size, drive type, operating pressure, tightness of the valve seat and housing, conductivity or gas flow, operating temperature, opening and closing times, service life or materials determine the selection.

Pfeiffer Vacuum stocks a wide range of valves which fulfill both vacuum requirements as well as those of the specific tasks and thus offer a reliable solution for almost all processes. In addition to manually operated valves, we also offer pneumatic, electropneumatic, electromagnetic and motor operated valves for automation processes. We place great importance on user friendliness such as ergonomic grips, and low amount of force. Integrated position sensors and a service life of up to 10 million cycles will make your daily work easier.



Features at a glance

| | Nominal diameter | | | | | | | | | | Operation | | | Housing | | | Seal | | | Page | | |
|------------------------|------------------|-------|-------|-------|-------|-------|-------|--------|--------|--------|-----------|--------|-----------------|-----------|------------------|----------|-----------------|-------|-----|------|------|-------|
| | DN 5 | DN 10 | DN 16 | DN 25 | DN 40 | DN 50 | DN 63 | DN 100 | DN 160 | DN 200 | DN 250 | Manual | Electromagnetic | Pneumatic | Electropneumatic | Aluminum | Stainless steel | Brass | FKM | | PTFE | Metal |
| Valves | | | | | | | | | | | | | | | | | | | | | | |
| Angle valves | | | ■ | ■ | ■ | | ■ | ■ | | | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | ■ | 228 |
| Inline valves | | | ■ | ■ | ■ | | ■ | ■ | | | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | | 251 |
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| Ball valves | | | ■ | ■ | ■ | | | | | | | ■ | | | | | ■ | ■ | ■ | ■ | | 294 |

**Customer benefits**

- Specific applications possible
- Ideal for automation processes
- Quick reaction to control commands
- High reliability
- Easy to operate
- Compact design



Angle valves



Inline valves



HV gate valves



UHV gate valves

Series

Angle valves have high levels of tightness, are robust, suitable for use in industrial applications and are insensitive to contamination. Valves with flange sizes DN 16 KF to DN 150 ISO-K are available with aluminium and stainless steel housings. In addition to manual versions we also offer valves with pneumatic, electropneumatic and electromagnetic operation. The angle valves are bellows-sealed and generally have integrated position indicators. For the UHV range, welded housings in the nominal sizes DN 16 CF to DN 63 CF are available, whose valve plate is either sealed with FKM or with copper (in all-metal versions). The FKM O-rings and all-metal valve plates may also be replaced.

Inline valves are generally constructed like angle valves. However, their inlet flanges lie in one axis and their flow resistance is slightly larger than angle valves. We can offer you inline valves with flange sizes DN 16 KF to DN 40 KF with stainless steel housings, both manually actuated as well as with pneumatic and electropneumatically actuated operation, each with a position indicator.

HV gate valves are characterized by free passage, which results in high conductivity and the associated minimum power losses for high vacuum pumps. We offer high vacuum gate valves with aluminum housings in flange sizes DN 16 KF to DN 250 ISO-F, whose manual or electropneumatic drive is sealed with the help of a gate feedthrough. In addition we also have the high vacuum gate valves with stainless steel housing in flange sizes DN 16 KF to DN 250 ISO-F, whose electropneumatic drive is sealed with a rotary feedthrough. The electropneumatic gate valves come with a position indicator.

UHV gate valves have lubricant-free mechanics, are bellows-sealed and have a metallicly-sealed stainless steel housings. Thus, they are suitable for ultra high vacuum and for pressures of up to $1 \cdot 10^{-10}$ hPa. We can also offer ultra high vacuum gate valves in nominal sizes DN 40 CF to DN 250 CF, with manual operation or electropneumatic operation with position indicators.

Diaphragm valves are robust and suitable for venting, rough-metering and locking. They are available in flange sizes DN 16 KF to DN 40 KF with aluminum housing and manual drive.

Mini angle and mini inline valves in the nominal size DN 5 are characterized by their small size and are often used for gas inlets or targeted ventilation. Their inlets and outlet ports (thread M14x1) may have adapters (accessories) mounted so that they can be used as connections for DN 10 KF flanges or clamping screws for pipes with external diameters of 6 mm or 6.35 mm. We offer valves with electromagnetic, in bellows-sealed version with manual or electromagnetic operation.

Venting valves are simple, manually operated valves in the nominal size DN 10 KF for ventilation with ambient air.

Pressure relief valves may be used to limit the over-pressure in vacuum systems if you take their maximum flow rate into account. We offer pressure relief valves in flange sizes DN 16 KF and DN 40 KF with stainless steel housing.

Gas dosing valves allow defined gas volumes to enter the vacuum system. Our dosing valves span a broad regulating range: from large gas flow rates up to $1,700 \text{ hPa} \cdot \text{l/s}$, e.g. for manual venting, to excellently reproducible gas flows in the high vacuum range, to the lowest gas flows of $1 \cdot 10^{-10} \text{ hPa} \cdot \text{l/s}$. Such small gas rates are realized with our bakeable all-metal gas dosing valves. They are used for the inlet for high-purity gas under UHV conditions for mass spectrometer applications.



Diaphragm valves



Mini angle and mini inline valves



Pressure relief valves



Gas dosing valves



Gas regulating valves

Gas regulating valves are automated controllable gas dosing valves. We offer electromagnetic or motor operated regulating valves for the high vacuum range and thermo-mechanical controllable and bakeable all-metal gas regulating valves for the UHV range. In addition, you can find suitable control units for the regulating valves.



Ball valves

Ball valves are very robust valves with free passages and suitable for vacuum of roughly $1 \cdot 10^{-5}$ hPa. We offer manually actuated 2-way and 3-way ball valves in flange sizes DN 10 KF to DN 40 KF. The 3-way versions have bore holes of the "L" and "T" types. Due to the size of the bore holes the switching of the three connections are not free of overlapping.



Butterfly valves

Butterfly valves are gate valves whose valve plates are pivoted in the valve opening. They have an almost free passage, are suitable for high vacuum and also have a lower flow resistance compared to angle or inline valves. We offer manually actuated butterfly valves in nominal sizes DN 16 KF to DN 63 ISO-F.

General information

All Pfeiffer Vacuum valves meet the high quality requirements for vacuum components. They are helium leak tested and have better leakage rates than 10^{-10} Pa m³/s for high vacuum valves, 10^{-11} Pa m³/s for UHV valves, and 10^{-7} Pa m³/s for ball valves.

Important information relating to the technical data

The minimum attainable ultimate pressure in the overall system depends on a number of factors, in particular the pump system, the desorption rates, the interior surfaces and the pump-down time. Minimum pressures listed in the product description are empirical values that can be achieved with a well designed vacuum system. In individual cases they may be exceeded or not met. When using elastomer seals their permeation also needs to be taken into account. It is dependent of the material, temperature and gas type.

The permitted maximum and minimum temperature for the overall system is based on the lowest maximum temperature and the highest minimum temperature of the components used.

The flange connections and components were developed to implement vacuum proof connections. They can only bear limited mechanical loads. Therefore it is necessary to test whether static or dynamic loads need to be absorbed by additional elements (e.g. brackets) when designing a vacuum system.

Angle valves, manual, DN 16 to 40 ISO-KF

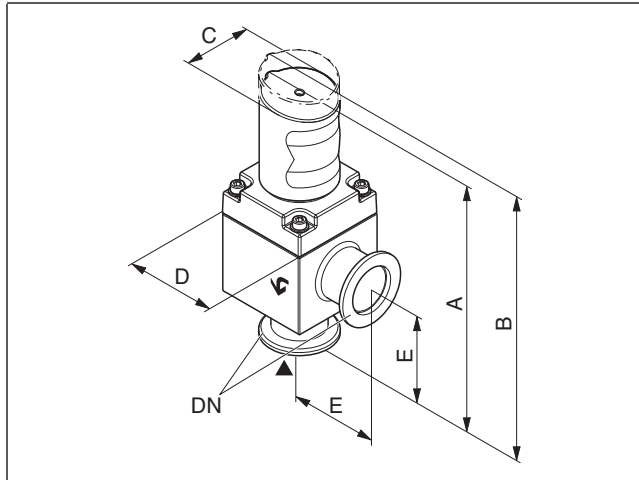


- Quick opening by partly turning the rotary knob
- Bellows-sealed
- With visual indication of open and closed positions
- Service life: 10000 operating cycles

SA = Manually actuated, aluminum housing

SX = Manually actuated, stainless steel housing

Dimensions



| | AVC 016 SA | AVC 025 SA | AVC 040 SA |
|---|------------|------------|------------|
| A | 141.3 mm | 145.3 mm | 186.2 mm |
| B | 149.5 mm | 155.7 mm | 201.4 mm |
| C | 39.6 mm | 39.6 mm | 50 mm |
| D | 45 mm | 54 mm | 69 mm |
| E | 40 mm | 50 mm | 65 mm |

| | AVC 016 SX | AVC 025 SX | AVC 040 SX |
|---|------------|------------|------------|
| A | 143.9 mm | 148.9 mm | 189.2 mm |
| B | 152.1 mm | 159.1 mm | 204.4 mm |
| C | 39.6 mm | 39.6 mm | 50 mm |
| D | 45 mm | 54 mm | 69 mm |
| E | 40 mm | 50 mm | 65 mm |

| Technical data | AVC 016 SA AVC 016 SX | AVC 025 SA AVC 025 SX | AVC 040 SA AVC 040 SX |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Actuator | Rotary knob | Rotary knob | Rotary knob |
| Bakeout temperature: actuator | 50 °C | 50 °C | 50 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 1500 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 1500 hPa |
| Differential pressure in closing direction | 4000 hPa | 4000 hPa | 2000 hPa |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Conductance for molecular flow | 5 l/s | 14 l/s | 45 l/s |
| Service life | 10000 cycles | 10000 cycles | 10000 cycles |

| | AVC 016 SA | AVC 025 SA | AVC 040 SA |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 80 °C | 80 °C | 80 °C |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 0.31 kg | 0.42 kg | 0.85 kg |
| Order number | PF A31 003 | PF A41 003 | PF A51 003 |

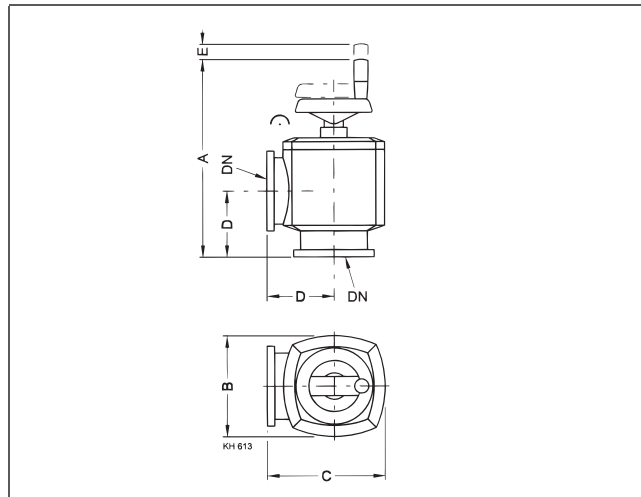
| | AVC 016 SX | AVC 025 SX | AVC 040 SX |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.34 kg | 0.49 kg | 0.96 kg |
| Order number | PF A31 033 | PF A41 033 | PF A51 033 |

Angle valves, manual, DN 63 to 100 ISO-K



- Spindle drive with ergonomic handwheel for continuous opening
 - Bellows-sealed
 - With visual indication of open and closed positions
 - Service life: 10000 operating cycles
- SA = Manually actuated, aluminum housing
 SX = Manually actuated, stainless steel housing

Dimensions



| | EVB 063 SA | EVB 100 SA |
|---|------------|------------|
| A | 266 mm | 320 mm |
| B | 124 mm | 164 mm |
| C | 150 mm | 190 mm |
| D | 88 mm | 108 mm |
| E | 20 mm | 25 mm |

| | EVB 063 SX | EVB 100 SX |
|---|------------|------------|
| A | 266 mm | 320 mm |
| B | 124 mm | 164 mm |
| C | 150 mm | 190 mm |
| D | 88 mm | 108 mm |
| E | 20 mm | 25 mm |

| Technical data | EVB 063 SA EVB 063 SX | EVB 100 SA EVB 100 SX |
|--|---|---|
| Flange (out) | DN 63 ISO-K | DN 100 ISO-K |
| Flange (in) | DN 63 ISO-K | DN 100 ISO-K |
| Actuator | Spindle | Spindle |
| Bakeout temperature: actuator | 60 °C | 60 °C |
| Bakeout temperature: housing | 150 °C | 150 °C |
| Operating pressure max. | 1500 hPa (abs.) | 1500 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM |
| Differential pressure in opening direction | 1500 hPa | 1500 hPa |
| Differential pressure in closing direction | 1500 hPa | 1500 hPa |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel |
| Conductance for molecular flow | 140 l/s | 330 l/s |
| Can be opened to a pressure difference of | 1500 hPa | 1500 hPa |
| Service life | 10000 cycles | 10000 cycles |

| | EVB 063 SA | EVB 100 SA |
|---------------------|-------------------|-------------------|
| Housing | Aluminum | Aluminum |
| Weight | 3.6 kg | 6.1 kg |
| Order number | PF B12 001 | PF B22 001 |

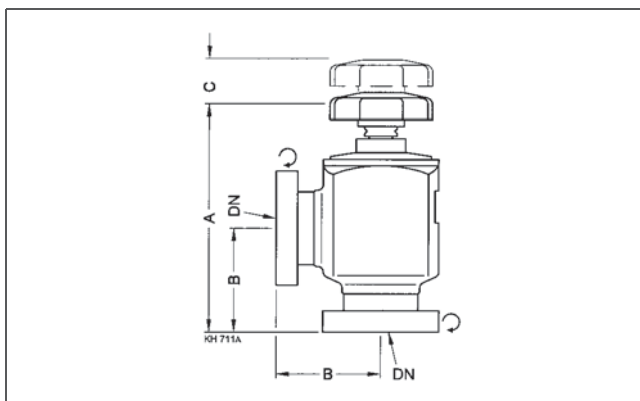
| | EVB 063 SX | EVB 100 SX |
|---------------------|-------------------|-------------------|
| Housing | Stainless steel | Stainless steel |
| Weight | 6.5 kg | 11.1 kg |
| Order number | PF B12 031 | PF B22 031 |

Angle valves, manual, DN 16 to 63 CF



- Suitable for UHV applications
- Hermetically sealed, welded stainless steel body
- Bellows-sealed
- Valve plate replaceable
- For high purity and toxic gases
- For gas analysis

Dimensions



| | UVH 016 - VI | UVH 040 - VI | UVH 063 - VI |
|---|--------------|--------------|--------------|
| A | 104.2 mm | 150.9 mm | 231.2 mm |
| B | 38 mm | 63 mm | 105 mm |
| C | 15 mm | 27 mm | 36 mm |

| Technical data | UVH 016 - VI | UVH 040 - VI | UVH 063 - VI |
|--|---|---|---|
| Flange (out) | DN 16 CF-R | DN 40 CF-R | DN 63 CF-R |
| Flange (in) | DN 16 CF-R | DN 40 CF-R | DN 63 CF-R |
| Actuator | Hand wheel | Hand wheel | Hand wheel |
| Heat up and cool down speed | 4 K/min | 4 K/min | 4 K/min |
| Bakeout temperature: with adjustment knob | 80 °C | 80 °C | 80 °C |
| Bakeout temperature: without adjustment knob | 180 °C | 180 °C | 180 °C |
| Operating pressure max. | 4000 hPa (abs.) | 4000 hPa (abs.) | 4000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Valve plate | FKM | FKM | FKM |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.35 kg | 1.8 kg | 4.8 kg |
| Conductance for molecular flow | 3 l/s | 38 l/s | 100 l/s |
| Service life | 50000 cycles | 50000 cycles | 50000 cycles |

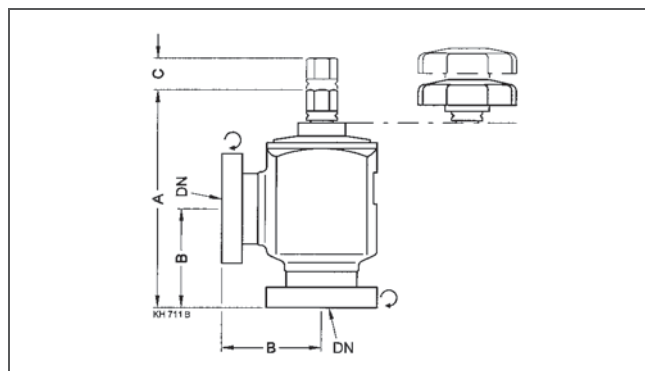
| Order number | | | |
|--------------|------------|------------|------------|
| Angle valves | PF C32 032 | PF C52 032 | PF C62 032 |

All-metal angle valves, manual, DN 16 to 63 CF



- Suitable for UHV applications
- Hermetically sealed, welded stainless steel body
- Bellows-sealed
- Valve plate replaceable
- For high purity and toxic gases
- For gas analysis

Dimensions



| | UVH 016 - CU | UVH 040 - CU | UVH 063 - CU |
|---|--------------|--------------|--------------|
| A | 88 mm | 140 mm | 210 mm |
| B | 38 mm | 63 mm | 105 mm |
| C | 15 mm | 27 mm | 36 mm |

| Technical data | UVH 016 - CU | UVH 040 - CU | UVH 063 - CU |
|--|---|---|---|
| Flange (out) | DN 16 CF-R | DN 40 CF-R | DN 63 CF-R |
| Flange (in) | DN 16 CF-R | DN 40 CF-R | DN 63 CF-R |
| Actuator | Hand wheel / Outer hexagon | Hand wheel / Outer hexagon | Hand wheel / Outer hexagon |
| Heat up and cool down speed | 4 K/min | 4 K/min | 2 K/min |
| Bakeout temperature: with adjustment knob | 80 °C | 80 °C | 80 °C |
| Bakeout temperature: without adjustment knob | 300 °C | 300 °C | 300 °C |
| Operating pressure max. | 4000 hPa (abs.) | 4000 hPa (abs.) | 4000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-11}$ hPa | $1 \cdot 10^{-11}$ hPa | $1 \cdot 10^{-11}$ hPa |
| Tightness | $5 \cdot 10^{-13}$ Pa m ³ /s | $5 \cdot 10^{-13}$ Pa m ³ /s | $5 \cdot 10^{-13}$ Pa m ³ /s |
| Seal plate | Copper | Copper | Copper |
| Seal: Valve plate | Copper | Copper | Copper |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.4 kg | 2 kg | 5 kg |
| Conductance for molecular flow | 3 l/s | 38 l/s | 100 l/s |
| Service life | 1000 cycles | 1000 cycles | 1000 cycles |

| Order number | | | |
|--------------|------------|------------|------------|
| Angle valves | PF K32 032 | PF K52 032 | PF K62 032 |

Angle valves, electropneumatic, with PI, with PV, DN 16 to 40 ISO-KF



- Bellows-sealed
- With visual position indicator
- Normally closed (n.c.)
- Service life: 10 million operating cycles

AVC = Angle valve with bellows feedthrough

PA = Electropneumatically actuated, aluminum housing

PX = Electropneumatically actuated, stainless steel housing

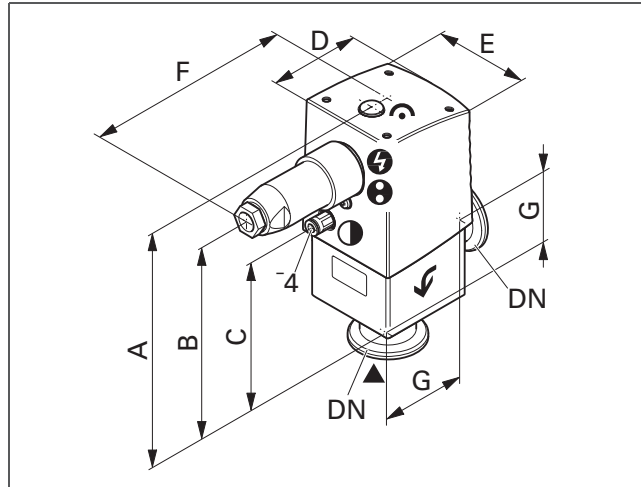
AC = Alternating current

DC = Direct current

PI = Position indicator

PV = Pilot valve

Dimensions



| | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|---|------------|------------|------------|
| A | 142 mm | 146.9 mm | 188.8 mm |
| B | 112.9 mm | 117.8 mm | 159.7 mm |
| C | 75.1 mm | 79 mm | 114.9 mm |
| D | 55 mm | 64.3 mm | 81.3 mm |
| E | 51.4 mm | 60.1 mm | 75.7 mm |
| F | 93.2 mm | 97.8 mm | 105.3 mm |
| G | 40 mm | 50 mm | 65 mm |

| Technical data | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Bakeout temperature: actuator, pilot valve | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 80 °C | 80 °C | 80 °C |
| Operating pressure max. | 2000 hPa | 2000 hPa | 2000 hPa |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 5000 hPa | 5000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 4 cm ³ | 11 cm ³ | 35 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 0.49 kg | 0.68 kg | 1.21 kg |
| Power pilot valve | 2.5 W | 2.5 W | 2.5 W |
| Conductance for molecular flow | 5 l/s | 14 l/s | 45 l/s |
| Opening time | 100 ms | 120 ms | 260 ms |
| Closing time | 100 ms | 160 ms | 540 ms |
| Service life | 10000000 cycles | 10000000 cycles | 10000000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A |
| Control valve | Included | Included | Included |

| | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|---------------------|-------------------|-------------------|-------------------|
| Supply | 24 V AC | 24 V AC | 24 V AC |
| Order number | PF A38 103 | PF A48 103 | PF A58 103 |
| Supply | 24 V DC | 24 V DC | 24 V DC |
| Order number | PF A38 204 | PF A48 204 | PF A58 204 |
| Supply | 100-115 V AC | 100-115 V AC | 100-115 V AC |
| Order number | PF A38 403 | PF A48 403 | PF A58 403 |
| Supply | 200-230 V AC | 200-230 V AC | 200-230 V AC |
| Order number | PF A38 403 | PF A48 503 | PF A58 503 |

Angle valves, electropneumatic, with PI, with PV, DN 16 to 40 ISO-KF



- Bellows-sealed
- With visual position indicator
- Normally closed (n.c.)
- Service life: 10 million operating cycles

AVC = Angle valve with bellows feedthrough

PA = Electropneumatically actuated, aluminum housing

PX = Electropneumatically actuated, stainless steel housing

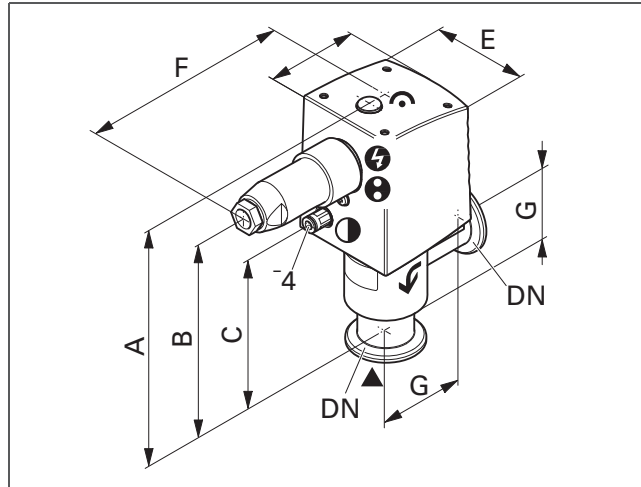
AC = Alternating current

DC = Direct current

PI = Position indicator

PV = Pilot valve

Dimensions



| | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|---|------------|------------|------------|
| A | 144.5 mm | 150.3 mm | 191.8 mm |
| B | 115.4 mm | 121.2 mm | 162.7 mm |
| C | 77.6 mm | 82.5 mm | 117.9 mm |
| D | 55 mm | 64.3 mm | 81.3 mm |
| E | 51.4 mm | 60.1 mm | 75.7 mm |
| F | 93.2 mm | 97.8 mm | 105.3 mm |
| G | 40 mm | 50 mm | 65 mm |

| Technical data | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Bakeout temperature: actuator, pilot valve | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 2000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 5000 hPa | 5000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 4 cm ³ | 11 cm ³ | 35 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.52 kg | 0.75 kg | 1.33 kg |
| Power pilot valve | 4.8 / 3.6 VA | 4.8/3.6 VA | 4.8 / 3.6 VA |
| Conductance for molecular flow | 5 l/s | 14 l/s | 45 l/s |
| Opening time | 100 ms | 120 ms | 260 ms |
| Closing time | 100 ms | 160 ms | 540 ms |
| Service life | 10000000 cycles | 10000000 cycles | 10000000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A |
| Control valve | Included | Included | Included |

| | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|---------------------|-------------------|-------------------|-------------------|
| Supply | 24 V AC | 24 V DC | 24 V AC |
| Order number | PF A38 133 | PF A48 133 | PF A58 133 |
| Supply | 24 V DC | 24 V DC | 24 V DC |
| Order number | PF A38 234 | PF A48 234 | PF A58 234 |
| Supply | 100-115 V AC | 100-115 V AC | 100-115 V AC |
| Order number | PF A38 433 | PF A48 433 | PF A58 533 |
| Supply | 200-230 V AC | 200-230 V AC | 200-230 V AC |
| Order number | PF A38 533 | PF A48 533 | PF A58 533 |

Angle valves, electropneumatic, with PI, with PV, DN 63 to 160 ISO-K



- Bellows-sealed
- With visual position indicator
- Normally closed (n.c.)
- Service life: 1.5 million operating cycles

EVB = Angle valve with bellows feedthrough

PA = Electropneumatically actuated, aluminum housing

PX = Electropneumatically actuated, stainless steel housing

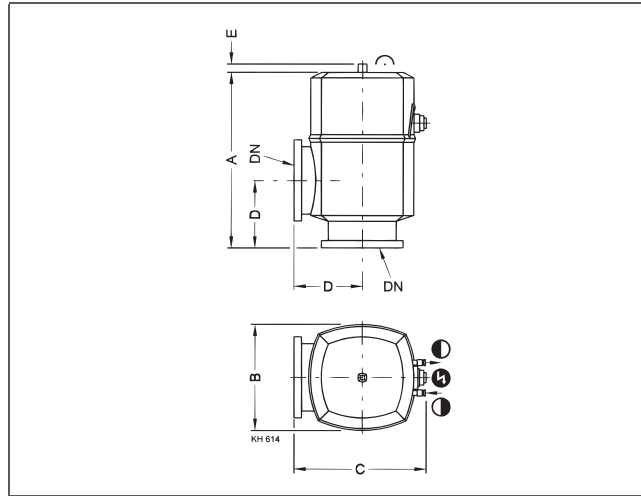
AC = Alternating current

DC = Direct current

PI = Position indicator

PV = Pilot valve

Dimensions



| | EVB 063 PA | EVB 100 PA | EVB 160 PA |
|---|------------|------------|------------|
| A | 250 mm | 282 mm | 366 mm |
| B | 124 mm | 164 mm | 215 mm |
| C | 168 mm | 208 mm | 264 mm |
| D | 88 mm | 108 mm | 138 mm |
| E | 14 mm | 14 mm | 14 mm |

| | EVB 063 PX | EVB 100 PX |
|---|------------|------------|
| A | 250 mm | 282 mm |
| B | 124 mm | 164 mm |
| C | 168 mm | 208 mm |
| D | 88 mm | 108 mm |
| E | 14 mm | 14 mm |

| Technical data | EVB 063 PA EVB 063 PX | EVB 100 PA EVB 100 PX | EVB 160 PA |
|--|--|--|--|
| Flange (out) | DN 63 ISO-K | DN 100 ISO-K | DN 160 ISO-K |
| Flange (in) | DN 63 ISO-K | DN 100 ISO-K | DN 160 ISO-K |
| Bakeout temperature: actuator, pilot valve | 60 °C | 60 °C | 60 °C |
| Operating pressure max. | 1500 hPa (abs.) | 1500 hPa (abs.) | 1500 hPa (abs.) |
| Operating pressure min. | 1 · 10 ⁻⁸ hPa | 1 · 10 ⁻⁸ hPa | 1 · 10 ⁻⁸ hPa |
| Tightness | 1 · 10 ⁻¹⁰ Pa m ³ /s | 1 · 10 ⁻¹⁰ Pa m ³ /s | 1 · 10 ⁻¹⁰ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 1500 hPa | 1500 hPa | 1500 hPa |
| Differential pressure in closing direction | 1500 hPa | 1500 hPa | 1500 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 75 cm ³ | 195 cm ³ | 570 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Aluminum | Aluminum | Aluminum |
| Power pilot valve | 3.1/2.2 W | 3.1/2.2 W | 3.1/2.2 W |
| Conductance for molecular flow | 140 l/s | 330 l/s | 800 l/s |
| Opening time | 300 ms | 400 ms | 600 ms |
| Closing time | 300 ms | 400 ms | 650 ms |
| Service life | 1500000 cycles | 1500000 cycles | 1500000 cycles |
| Electrical position indicator | Included | Included | Included |
| Control valve | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0,125 A ; 50 V DC / 0,25 A | 250 V AC / 0,125 A ; 50 V DC / 0,25 A | 250 V AC / 0,125 A ; 50 V DC / 0,25 A |

| Technical data | EVB 063 PA | EVB 100 PA | EVB 160 PA |
|------------------------------|------------|------------|------------|
| Bakeout temperature: housing | 80 °C | 80 °C | 80 °C |
| Weight | 4 kg | 6.7 kg | 11.4 kg |

| | EVB 063 PA | EVB 100 PA | EVB 160 PA |
|---------------------|-------------------|-------------------|-------------------|
| Supply | 24 V AC | 24 V AC | 24 V AC |
| Order number | PF B18 101 | PF B28 101 | PF B38 101 |
| Supply | 24 V DC | 24 V DC | 24 V DC |
| Order number | PF B18 201 | PF B28 201 | PF B38 201 |
| Supply | 100-115 V AC | 100-115 V AC | 100-115 V AC |
| Order number | PF B18 401 | PF B28 401 | PF B38 401 |
| Supply | 200-240 V AC | 200-240 V AC | 200-240 V AC |
| Order number | PF B18 501 | PF B28 501 | PF B38 501 |

| Technical data | EVB 063 PX | EVB 100 PX |
|------------------------------|------------|------------|
| Bakeout temperature: housing | 150 °C | 150 °C |
| Weight | 6.8 kg | 11.7 kg |

| | EVB 063 PX | EVB 100 PX |
|---------------------|-------------------|-------------------|
| Supply | 24 V AC | 24 V AC |
| Order number | PF B18 131 | PF B28 131 |
| Supply | 24 V DC | 24 V DC |
| Order number | PF B18 231 | PF B28 231 |
| Supply | 100-115 V AC | 100-115 V AC |
| Order number | PF B18 431 | PF B28 431 |
| Supply | 200-240 V AC | 200-240 V AC |
| Order number | PF B18 531 | PF B28 531 |

Angle valves, pneumatic, with PI, without PV, DN 16 to 40 ISO-KF



- Bellows-sealed
- With visual position indicator
- Normally closed (n.c.)
- Service life: 10 million operating cycles

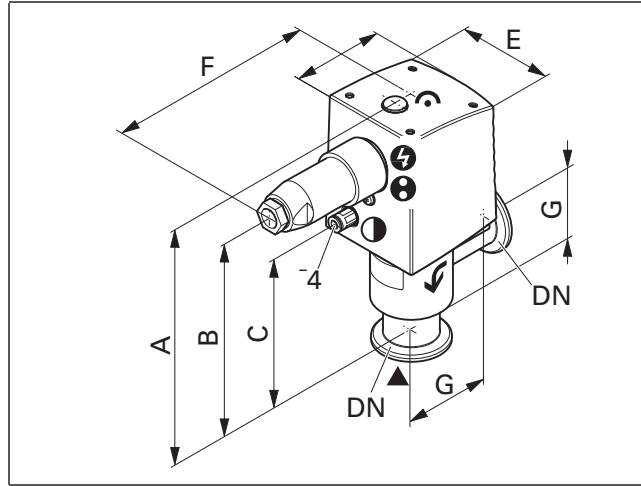
AVC = Angle valve with bellows feedthrough

PA = Pneumatically actuated, aluminum housing

PX= Pneumatically actuated, stainless steel housing

PI = Position indicator

Dimensions



| | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|---|------------|------------|------------|
| A | 142 mm | 146.9 mm | 188.8 mm |
| B | 112.9 mm | 117.8 mm | 159.7 mm |
| C | 75.1 mm | 79 mm | 114.9 mm |
| D | 55 mm | 64.3 mm | 81.3 mm |
| E | 51.4 mm | 60,1 mm | 75.7 mm |
| F | 93.2 mm | 97.8 mm | 105.3 mm |
| G | 40 mm | 50 mm | 65 mm |

| | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|---|------------|------------|------------|
| A | 144.5 mm | 150.3 mm | 191.8 mm |
| B | 115.4 mm | 121.2 mm | 162.2 mm |
| C | 77.6 mm | 82.5 mm | 117.9 mm |
| D | 55 mm | 64.3 mm | 81.3 mm |
| E | 51.4 mm | 60,1 mm | 75.7 mm |
| F | 93.2 mm | 97.8 mm | 105.3 mm |
| G | 40 mm | 50 mm | 65 mm |

| Technical data | AVC 016 PA AVC 016 PX | AVC 025 PA AVC 025 PX | AVC 040 PA AVC 040 PX |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Bakeout temperature: actuator, pilot valve | 50 °C | 50 °C | 50 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 2000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 5000 hPa | 5000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 4 cm ³ | 11 cm ³ | 35 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Conductance for molecular flow | 5 l/s | 14 l/s | 45 l/s |
| Opening time | 100 ms | 120 ms | 260 ms |
| Closing time | 100 ms | 160 ms | 540 ms |
| Service life | 10000000 cycles | 10000000 cycles | 10000000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A |

| | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 80 °C | 80 °C | 80 °C |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 0.49 kg | 0.68 kg | 1.21 kg |
| Order number | PF A36 003 | PF A46 003 | PF A56 003 |

| | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.52 kg | 0.75 kg | 1.33 kg |
| Order number | PF A36 033 | PF A46 033 | PF A56 033 |

Angle valves, pneumatic, with PI, without PV, DN 63 to 160 ISO-K



- Bellows-sealed
- With visual position indicator
- Normally closed (n.c.)
- Service life: 1.5 million operating cycles

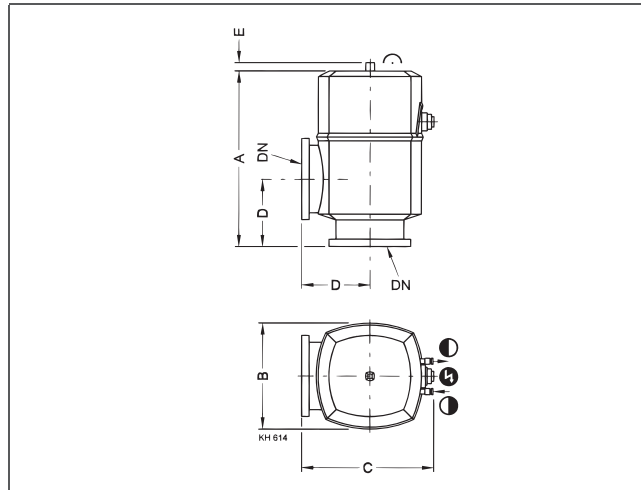
EVB = Angle valve with bellows feedthrough

PA = Pneumatically actuated, aluminum housing

PX = Pneumatically actuated, stainless steel housing

PI = Position indicator

Dimensions



| | EVB 063 PA | EVB 100 PA | EVB 160 PA |
|---|------------|------------|------------|
| A | 250 mm | 282 mm | 366 mm |
| B | 124 mm | 164 mm | 215 mm |
| C | 168 mm | 208 mm | 264 mm |
| D | 88 mm | 108 mm | 138 mm |
| E | 14 mm | 14 mm | 14 mm |

| | EVB 063 PX | EVB 100 PX |
|---|------------|------------|
| A | 250 mm | 282 mm |
| B | 124 mm | 164 mm |
| C | 168 mm | 208 mm |
| D | 88 mm | 108 mm |
| E | 14 mm | 14 mm |

| Technical data | EVB 063 PA EVB 063 PX | EVB 100 PA EVB 100 PX | EVB 160 PA |
|--|--|--|--|
| Flange (out) | DN 63 ISO-K | DN 100 ISO-K | DN 160 ISO-K |
| Flange (in) | DN 63 ISO-K | DN 100 ISO-K | DN 160 ISO-K |
| Bakeout temperature: actuator, pilot valve | 60 °C | 60 °C | 60 °C |
| Operating pressure max. | 1500 hPa (abs.) | 1500 hPa (abs.) | 1500 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 1500 hPa | 1500 hPa | 1500 hPa |
| Differential pressure in closing direction | 1500 hPa | 1500 hPa | 1500 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 75 cm ³ | 195 cm ³ | 570 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Conductance for molecular flow | 140 l/s | 330 l/s | 800 l/s |
| Opening time | 300 ms | 400 ms | 600 ms |
| Closing time | 300 ms | 400 ms | 650 ms |
| Service life | 1500000 cycles | 1500000 cycles | 1500000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0.125 A ; 50 V DC / 0.25 A | 250 V AC / 0.125 A ; 50 V DC / 0.25 A | 250 V AC / 0.125 A ; 50 V DC / 0.25 A |

| | EVB 063 PA | EVB 100 PA | EVB 160 PA |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 80 °C | 80 °C | 150 °C |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 4 kg | 6.7 kg | 11.4 kg |
| Order number | PF B16 002 | PF B26 002 | PF B36 002 |

| | EVB 063 PX | EVB 100 PX |
|------------------------------|-------------------|-------------------|
| Bakeout temperature: housing | 150 °C | 150 °C |
| Housing | Stainless steel | Stainless steel |
| Weight | 6.8 kg | 11.7 kg |
| Order number | PF B16 032 | PF B26 032 |

Angle valves, pneumatic, without PI, without PV, DN 16 to 40 ISO-KF



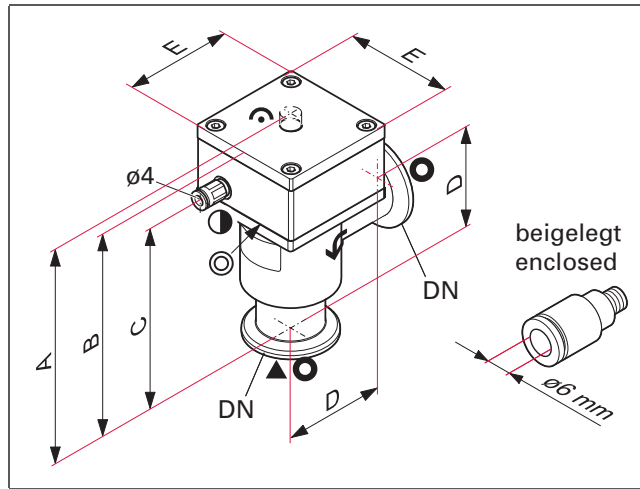
- Bellows-sealed
- With visual position indicator
- Normally closed (n.c.)
- Service life: 10 million operating cycles

AVC = Angle valve with bellows feedthrough

PA = Pneumatically actuated, aluminum housing

PX = Pneumatically actuated, stainless steel housing

Dimensions



| | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|---|------------|------------|------------|
| A | 100.5 mm | 108.5 mm | 150.5 mm |
| B | 95.7 mm | 102.6 mm | 144.7 mm |
| C | 75.6 mm | 80.6 mm | 116.6 mm |
| D | 40 mm | 50 mm | 65 mm |
| E | 45 mm | 54 mm | 69 mm |

| | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|---|------------|------------|------------|
| A | 103 mm | 112 mm | 153.5 mm |
| B | 98.2 mm | 106 mm | 147.7 mm |
| C | 78.1 mm | 84 mm | 119.6 mm |
| D | 40 mm | 50 mm | 65 mm |
| E | 45 mm | 54 mm | 69 mm |

| Technical data | AVC 016 PA AVC 016 PX | AVC 025 PA AVC 025 PX | AVC 040 PA AVC 040 PX |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Bakeout temperature: actuator, pilot valve | 120 °C | 120 °C | 120 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 2000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 5000 hPa | 5000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 400 cm ³ | 11 cm ³ | 35 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Conductance for molecular flow | 5 l/s | 14 l/s | 45 l/s |
| Opening time | 100 ms | 120 ms | 260 ms |
| Closing time | 100 ms | 160 ms | 540 ms |
| Service life | 10000000 cycles | 10000000 cycles | 10000000 cycles |

| | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 80 °C | 80 °C | 80 °C |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 0.38 kg | 0.57 kg | 1.17 kg |
| Order number | PF A35 004 | PF A45 004 | PF A55 004 |

| | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.42 kg | 0.66 kg | 1.28 kg |
| Order number | PF A35 034 | PF A45 034 | PF A55 034 |

Angle valves, electropneumatic, with PI, with PV, n.o., DN 16 to 40 ISO-KF



- Bellows-sealed
- With visual position indicator
- Normally open (n.o.)
- Service life: 10 million operating cycles

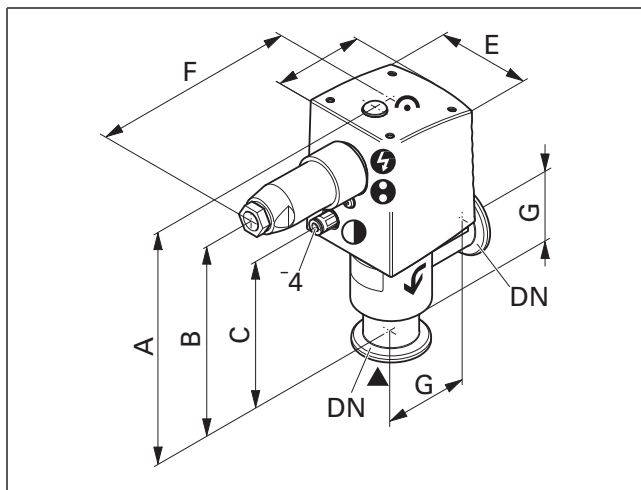
AVC = Angle valve with bellows feedthrough

PA = Electropneumatically actuated, aluminum housing

PX = Electropneumatically actuated, stainless steel housing

DC = Direct current

Dimensions



| | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|---|------------|------------|------------|
| A | 142 mm | 146.9 mm | 188.8 mm |
| B | 112.9 mm | 117.8 mm | 159.7 mm |
| C | 75.1 mm | 79 mm | 114.9 mm |
| D | 55 mm | 64.3 mm | 81.3 mm |
| E | 51.4 mm | 60.1 mm | 75.7 mm |
| F | 93.2 mm | 97.8 mm | 105.3 mm |
| G | 40 mm | 50 mm | 65 mm |

| | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|---|------------|------------|------------|
| A | 144.5 mm | 150.3 mm | 191.8 mm |
| B | 115.4 mm | 121.2 mm | 162.7 mm |
| C | 77.6 mm | 82.5 mm | 117.9 mm |
| D | 55 mm | 64.3 mm | 81.3 mm |
| E | 51.4 mm | 60.1 mm | 75.7 mm |
| F | 93.2 mm | 97.8 mm | 105.3 mm |
| G | 40 mm | 50 mm | 65 mm |

| Technical data | AVC 016 PA AVC 016 PX | AVC 025 PA AVC 025 PX | AVC 040 PA AVC 040 PX |
|--|--|--|--|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Bakeout temperature: actuator, pilot valve | 50 °C | 50 °C | 50 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 2000 hPa (abs.) |
| Operating pressure min. | 1 · 10 ⁻⁸ hPa | 1 · 10 ⁻⁸ hPa | 1 · 10 ⁻⁸ hPa |
| Tightness | 1 · 10 ⁻¹⁰ Pa m ³ /s | 1 · 10 ⁻¹⁰ Pa m ³ /s | 1 · 10 ⁻¹⁰ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 5000 hPa | 5000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 4 cm ³ | 11 cm ³ | 35 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Power pilot valve | 2.5 W | 2.5 W | 2.5 W |
| Conductance for molecular flow | 5 l/s | 14 l/s | 45 l/s |
| Opening time | 100 ms | 120 ms | 260 ms |
| Closing time | 100 ms | 160 ms | 540 ms |
| Service life | 10000000 cycles | 10000000 cycles | 10000000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A |
| Control valve | Included | Included | Included |
| Supply | 24 V DC | 24 V DC | 24 V DC |

| | AVC 016 PA | AVC 025 PA | AVC 040 PA |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 80 °C | 80 °C | 80 °C |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 0.49 kg | 0.68 kg | 1.21 kg |
| Order number | PF A38 205 | PF A48 205 | PF A58 205 |

| | AVC 016 PX | AVC 025 PX | AVC 040 PX |
|------------------------------|-------------------|-------------------|-------------------|
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.52 kg | 0.75 kg | 1.33 kg |
| Order number | PF A38 235 | PF A48 235 | PF A58 235 |

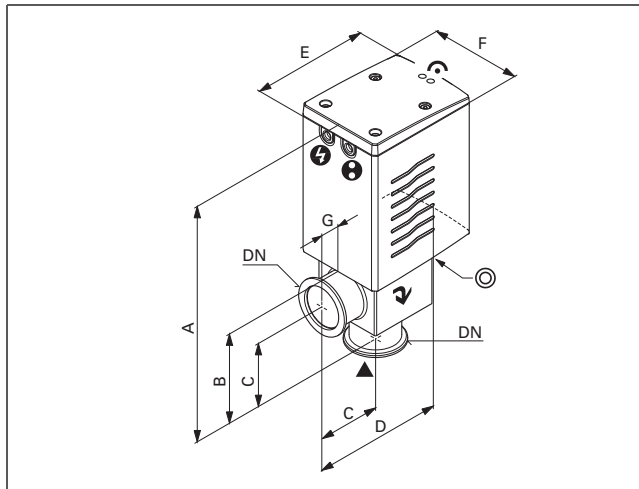
Angle valves, solenoid actuated, with PI, DN 16 to 40 ISO-KF



- Bellows-sealed
- With visible indication of open and closed positions
- Normally closed (n.c.)
- Modulation by means of line voltage or additional control voltage in remote mode
- Service life: 2 million operating cycles

AVC = Angle valve with bellows feedthrough
 MA = Solenoid actuated, aluminum housing
 MX = Solenoid actuated, stainless steel housing
 DC = Direct current

Dimensions



| | AVC 016 MA | AVC 025 MA | AVC 040 MA |
|---|------------|------------|------------|
| A | 170.9 mm | 193 mm | 246 mm |
| B | 51.4 mm | 64.9 mm | 92.9 mm |
| C | 40 mm | 50 mm | 65 mm |
| D | 96 mm | 112.7 mm | 139 mm |
| E | 86 mm | 97.3 mm | 119.5 mm |
| F | 59 mm | 70 mm | 90 mm |
| G | 10 mm | 15.4 mm | 19.5 mm |

| | AVC 016 MX | AVC 025 MX | AVC 040 MX |
|---|------------|------------|------------|
| A | 172.9 mm | 196.4 mm | 249 mm |
| B | 53.4 mm | 68.3 mm | 95.9 mm |
| C | 40 mm | 50 mm | 65 mm |
| D | 96 mm | 112.7 mm | 139 mm |
| E | 86 mm | 97.3 mm | 119.5 mm |
| F | 59 mm | 70 mm | 90 mm |
| G | 10 mm | 15.4 mm | 19.5 mm |

| Technical data | AVC 016 MA AVC 016 MX | AVC 025 MA AVC 025 MX | AVC 040 MA AVC 040 MX |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Pickup/holding power | 405 / 8.1 W | 416 / 8.3 W | 367 / 7.5 W |
| Operating pressure max. | 1300 hPa (abs.) | 1300 hPa (abs.) | 1000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 1300 hPa | 1300 hPa | 1000 hPa |
| Differential pressure in closing direction | 1300 hPa | 1300 hPa | 1300 hPa |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Mounting orientation | Any | Any | Any |
| Conductance for molecular flow | 4 l/s | 13 l/s | 35 l/s |
| Can be opened to a pressure difference of | 1300 hPa | 1300 hPa | 1300 hPa |
| Opening time | 100 ms | 120 ms | 230 ms |
| Switching frequency at 40°C | 30 min ⁻¹ | 30 min ⁻¹ | 30 min ⁻¹ |
| Switching frequency at 50°C | 20 min ⁻¹ | 20 min ⁻¹ | 20 min ⁻¹ |
| Closing time | 220 ms | 230 ms | 650 ms |
| Service life | 2000000 cycles | 2000000 cycles | 2000000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 30 V DC / 0.1 A | 30 V DC / 0.1 A | 30 V DC / 0.1 A |
| Control voltage | 15-30 V DC | 15-30 V DC | 15-30 V DC |
| Control current | 3-5 mA | 3-5 mA | 3-5 mA |
| Ambient temperature | 0-50 °C | 0-50 °C | 0-50 °C |
| Supply | 90-264 V , 47-63 Hz | 90-264 V , 47-63 Hz | 90-264 V , 47-63 Hz |

| | AVC 016 MA | AVC 025 MA | AVC 040 MA |
|---------------------|-------------------|-------------------|-------------------|
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 1.1 kg | 1.9 kg | 4.3 kg |
| Order number | PF A34 506 | PF A44 506 | PF A54 506 |

| | AVC 016 MX | AVC 025 MX | AVC 040 MX |
|---------------------|-------------------|-------------------|-------------------|
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 1.2 kg | 2 kg | 4.4 kg |
| Order number | PF A34 536 | PF A44 536 | PF A54 536 |

Angle valves, solenoid actuated, without PI, DN 10 ISO-KF

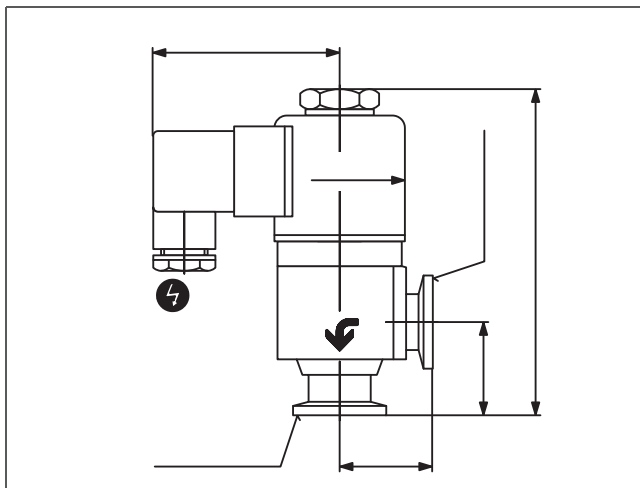


- Flange size DN 10 ISO-KF
- Housing material: Aluminum
- Solenoid actuated, without vacuum feedthrough
- Normally closed (n.c.)
- Service life: 1.5 million operating cycles

EVC = Angle valve without vacuum feedthrough

DC = Direct current

Dimensions



| Technical data | EVC 110 M |
|--|---|
| Flange (out) | DN 10 ISO-KF |
| Flange (in) | DN 10 ISO-KF |
| Pickup/holding power | 35/15 W |
| Bakeout temperature: actuator | 80 °C |
| Bakeout temperature: housing | 150 °C |
| Operating pressure max. | 1000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM |
| Differential pressure in opening direction | 1000 hPa |
| Differential pressure in closing direction | 1000 hPa |
| Housing | Aluminum |
| Weight | 0.46 kg |
| Conductance for molecular flow | 1 l/s |
| Can be opened to a pressure difference of | 2000 hPa |
| Opening time | 45 ms |
| Switching frequency | 50 min ⁻¹ |
| Closing time | 60 ms |
| Service life | 1500000 cycles |

| | |
|---------------------|-------------------|
| Supply | 24 V, 50/60 Hz |
| Order number | PF A23 101 |
| Supply | 24 V DC |
| Order number | PF A23 201 |
| Supply | 115 V, 50/60 Hz |
| Order number | PF A23 401 |
| Supply | 230 V, 50/60 Hz |
| Order number | PF A23 501 |

Inline-valves, manual, DN 16 to 40 ISO-KF

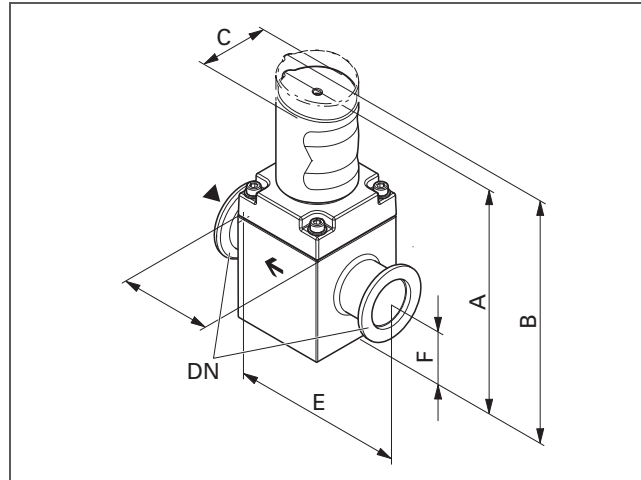


- Quick opening by partly turning the rotary knob
- Bellows-sealed
- With visual indication of open and closed positions
- Service life: 10000 operating cycles

DVC = Inline valve with bellows feedthrough

SX = Manually actuated, stainless steel housing

Dimensions



| | DVC 016 SX | DVC 025 SX | DVC 040 SX |
|---|------------|------------|------------|
| A | 125.4 mm | 132 mm | 166.5 mm |
| B | 133.6 mm | 142.4 mm | 181.7 mm |
| C | 39.6 mm | 39.6 mm | 50 mm |
| D | 45 mm | 54 mm | 69 mm |
| E | 80 mm | 100 mm | 139 mm |
| F | 20 mm | 31.8 mm | 40.8 mm |

| Technical data | DVC 016 SX | DVC 025 SX | DVC 040 SX |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Actuator | Rotary knob | Rotary knob | Rotary knob |
| Bakeout temperature: actuator | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 1500 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 1500 hPa |
| Differential pressure in closing direction | 4000 hPa | 4000 hPa | 2000 hPa |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.71 kg | 1.09 kg | 1.83 kg |
| Conductance for molecular flow | 2.5 l/s | 7 l/s | 20 l/s |
| Service life | 10000 cycles | 10000 cycles | 10000 cycles |

| Order number | | | |
|---------------|------------|------------|------------|
| Inline valves | PF D31 033 | PF D41 033 | PF D51 033 |

Inline-valves, electropneumatic, with PI, with PV, DN 16 to 40 ISO-KF



- Bellows-sealed
- With visual position indicator
- Normally closed (n.c.)
- With electrical position indicator
- Service life: 10 million operating cycles

DVC = Inline valve with bellows feedthrough

PX = Electropneumatically actuated, stainless steel housing

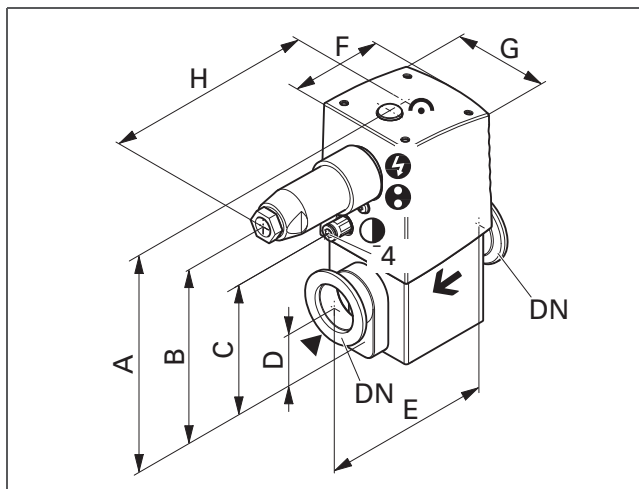
AC = Alternating current

DC = Direct current

PI = Position indicator

PV = Pilot valve

Dimensions



| | DVC 016 PX | DVC 025 PX | DVC 040 PX |
|---|------------|------------|------------|
| A | 126.1 mm | 133.6 mm | 169.1 mm |
| B | 97 mm | 104.5 mm | 140 mm |
| C | 59.2 mm | 65.7 mm | 95.2 mm |
| D | 20 mm | 31.8 mm | 40.8 mm |
| E | 80 mm | 100 mm | 130 mm |
| F | 55 mm | 64.3 mm | 81.3 mm |
| G | 51.4 mm | 60.1 mm | 75.7 mm |
| H | 93.2 mm | 97.8 mm | 105.3 mm |

| Technical data | DVC 016 PX | DVC 025 PX | DVC 040 PX |
|--|--|--|--|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Bakeout temperature: actuator, pilot valve | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 2000 hPa (abs.) |
| Operating pressure min. | 1 · 10 ⁻⁸ hPa | 1 · 10 ⁻⁸ hPa | 1 · 10 ⁻⁸ hPa |
| Tightness | 1 · 10 ⁻¹⁰ Pa m ³ /s | 1 · 10 ⁻¹⁰ Pa m ³ /s | 1 · 10 ⁻¹⁰ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 5000 hPa | 5000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 4 cm ³ | 11 cm ³ | 35 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.89 kg | 1.35 kg | 2.2 kg |
| Conductance for molecular flow | 2.5 l/s | 7 l/s | 20 l/s |
| Opening time | 100 ms | 120 ms | 260 ms |
| Closing time | 100 ms | 160 ms | 540 ms |
| Service life | 10000000 cycles | 10000000 cycles | 10000000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A | 250 V AC / 0.1 A ; 50 V DC / 0.25 A |
| Control valve | Included | Included | Included |

| | DVC 016 PX | DVC 025 PX | DVC 040 PX |
|---------------------|-------------------|-------------------|-------------------|
| Supply | 24 V AC | 24 V AC | 24 V AC |
| Power pilot valve | 4.8/3.6 W | 4.8/3.6 W | 4.8/3.6 W |
| Order number | PF D38 133 | PF D48 133 | PF D58 133 |
| Supply | 24 V DC | 24 V DC | 24 V DC |
| Power pilot valve | 2.5 W | 2.5 W | 2.5 W |
| Order number | PF D38 234 | PF D48 234 | PF D58 234 |
| Supply | 100-115 V AC | 100-115 V AC | 100-115 V AC |
| Power pilot valve | 4.8/3.6 W | 4.8/3.6 W | 4.8/3.6 W |
| Order number | PF D38 433 | PF D48 433 | PF D58 433 |
| Supply | 200-230 V AC | 200-230 V AC | 200-230 V AC |
| Power pilot valve | 4.8/3.6 W | 4.8/3.6 W | 4.8/3.6 W |
| Order number | PF D38 533 | PF D48 533 | PF D58 533 |

Inline-valves, pneumatic, with PI, without PV, DN 16 to 40 ISO-KF

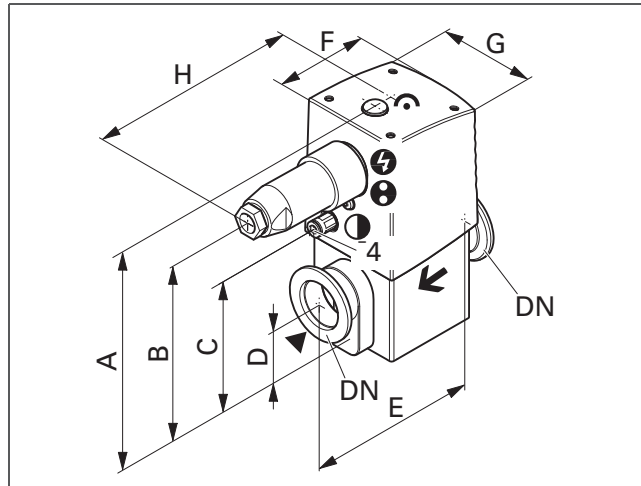


- Bellows-sealed
- With visual position indicator
- Normally closed (n.c.)
- Service life: 10 million operating cycles

DVC = Inline valve with bellows feedthrough

PX = Pneumatically actuated, stainless steel housing

Dimensions



| | DVC 016 PX | DVC 025 PX | DVC 040 PX |
|---|------------|------------|------------|
| A | 126.1 mm | 133.6 mm | 169.1 mm |
| B | 97 mm | 104.5 mm | 140 mm |
| C | 59.2 mm | 65.7 mm | 95.2 mm |
| D | 20 mm | 31.8 mm | 40.8 mm |
| E | 80 mm | 100 mm | 130 mm |
| F | 55 mm | 64.3 mm | 81.3 mm |
| G | 51.4 mm | 60.1 mm | 75.7 mm |
| H | 93.2 mm | 97.8 mm | 105.3 mm |

| Technical data | DVC 016 PX | DVC 025 PX | DVC 040 PX |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Bakeout temperature: actuator, pilot valve | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 2000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 5000 hPa | 5000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 4 cm ³ | 11 cm ³ | 35 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.89 kg | 1.35 kg | 2.2 kg |
| Conductance for molecular flow | 2.5 l/s | 7 l/s | 20 l/s |
| Opening time | 100 ms | 120 ms | 260 ms |
| Closing time | 100 ms | 160 ms | 540 ms |
| Service life | 10000000 cycles | 10000000 cycles | 10000000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0.1 A ; 50 V DC/ 0.25 A | 250 V AC / 0.1 A ; 50 V DC/ 0.25 A | 250 V AC / 0.1 A ; 50 V DC/ 0.25 A |

| Order number | | | |
|---------------|------------|------------|------------|
| Inline valves | PF D36 033 | PF D46 033 | PF D56 033 |

Inline-valves, electropneumatic with PI, with PV, n.o., DN 16 to 40 ISO-KF

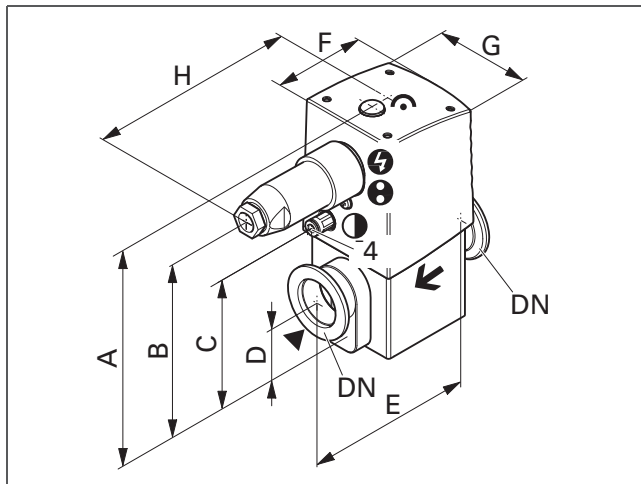


- Bellows-sealed
- With visual position indicator
- Normally open (n.o.)
- Service life: 10 million operating cycles

DVC = Inline valve with bellows feedthrough

PX = Electropneumatically actuated, stainless steel housing

Dimensions



| | DVC 016 PX | DVC 025 PX | DVC 040 PX |
|---|------------|------------|------------|
| A | 126.1 mm | 133.6 mm | 169.1 mm |
| B | 97 mm | 104.5 mm | 140 mm |
| C | 59.2 mm | 65.7 mm | 95.2 mm |
| D | 20 mm | 31.8 mm | 40.8 mm |
| E | 80 mm | 100 mm | 130 mm |
| F | 55 mm | 64.3 mm | 81.3 mm |
| G | 51.4 mm | 60.1 mm | 75.7 mm |
| H | 93.2 mm | 97.8 mm | 105.3 mm |

| Technical data | DVC 016 PX | DVC 025 PX | DVC 040 PX |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Bakeout temperature: actuator, pilot valve | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Operating pressure max. | 2000 hPa (abs.) | 2000 hPa (abs.) | 2000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 2000 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 5000 hPa | 5000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 4 cm ³ | 11 cm ³ | 35 cm ³ |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 0.89 kg | 1.35 kg | 2.2 kg |
| Power pilot valve | 2.5 W | 2.5 W | 2.5 W |
| Conductance for molecular flow | 2.5 l/s | 7 l/s | 20 l/s |
| Opening time | 100 ms | 120 ms | 260 ms |
| Closing time | 100 ms | 160 ms | 540 ms |
| Service life | 10000000 cycles | 10000000 cycles | 10000000 cycles |
| Electrical position indicator | Included | Included | Included |
| Electrical position indicator: Rating | 250 V AC / 0.1 A ; 50 V DC/ 0.25 A | 250 V AC / 0.1 A ; 50 V DC/ 0.25 A | 250 V AC / 0.1 A ; 50 V DC/ 0.25 A |
| Control valve | Included | Included | Included |
| Supply | 24 V AC | 24 V DC | 24 V DC |

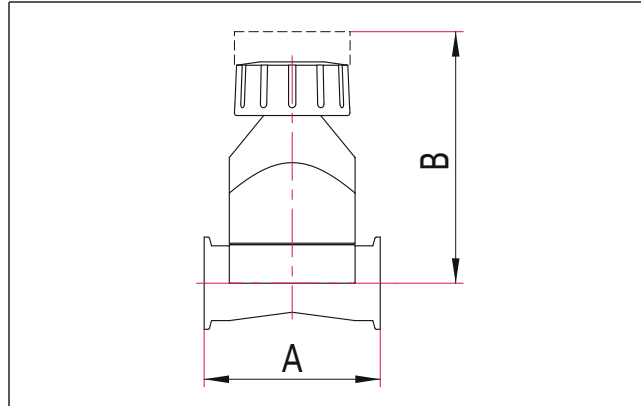
| Order number | | | |
|---------------|------------|------------|------------|
| Inline valves | PF D38 235 | PF D48 235 | PF D58 235 |

Diaphragm valves, manual



- Robust vacuum valve for venting, rough-metering and locking
- Service life: 100000 operating cycles
- The membrane seals the valve seat and the housing
- With visual indication of open and closed positions

Dimensions



| | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
|---|--------------|--------------|--------------|
| A | 52 mm | 80 mm | 105 mm |
| B | 66.5 mm | 111 mm | 132 mm |

| Technical data | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
|--------------------------------|--|--|--|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Actuator | Spindle | Spindle | Spindle |
| Bakeout temperature: actuator | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 100 °C | 100 °C | 100 °C |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Valve plate | FKM | FKM | FKM |
| Pressure range | $1 \cdot 10^{-7}$ hPa to 5000 hPa (abs.) | $1 \cdot 10^{-7}$ hPa to 5000 hPa (abs.) | $1 \cdot 10^{-7}$ hPa to 5000 hPa (abs.) |
| Housing | Aluminum | Aluminum | Aluminum |
| Conductance for molecular flow | 2 l/s | 5 l/s | 17 l/s |

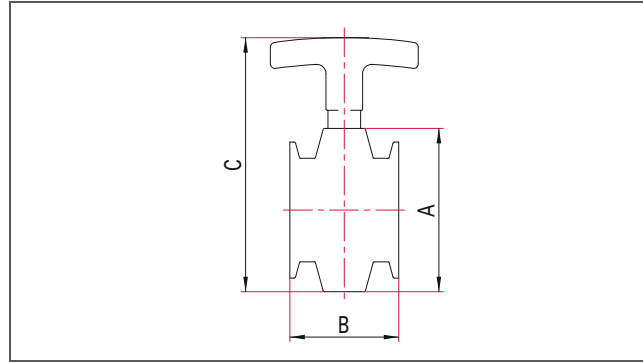
| Order number | | | |
|------------------|-----------|-----------|-----------|
| Diaphragm valves | 110VME016 | 110VME025 | 110VME040 |

Butterfly valves, manual, aluminum, DN 16 to 50 ISO-KF



- Swivel valve plate with FKM seal
- Service life: 3000 operating cycles
- Valve position indicated by T-handle
- Nearly free clearance in open position
- Double valve head seal made from FKM

Dimensions



| | DN 16 ISO- KF | DN 25 ISO- KF | DN 40 ISO- KF | DN 50 ISO- KF |
|---|---------------|---------------|---------------|---------------|
| A | 80 mm | 80 mm | 80 mm | 90 mm |
| B | 60 mm | 60 mm | 50 mm | 60 mm |
| C | 123 mm | 123 mm | 123 mm | 140 mm |

| Technical data | DN 16 ISO- KF | DN 25 ISO- KF | DN 40 ISO- KF | DN 50 ISO- KF |
|-------------------|---|---|---|---|
| Flange (out) | DN 16 ISO- KF | DN 25 ISO- KF | DN 40 ISO- KF | DN 50 ISO- KF |
| Flange (in) | DN 16 ISO- KF | DN 25 ISO- KF | DN 40 ISO- KF | DN 50 ISO- KF |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM | FKM |
| Pressure range | $1 \cdot 10^{-8}$ hPa to ambient pressure | $1 \cdot 10^{-8}$ hPa to ambient pressure | $1 \cdot 10^{-8}$ hPa to ambient pressure | $1 \cdot 10^{-8}$ hPa to ambient pressure |
| Housing | Aluminum | Aluminum | Aluminum | Aluminum |
| Temperature range | -15 to 130 °C | -15 to 130 °C | -15 to 130 °C | -15 to 130 °C |

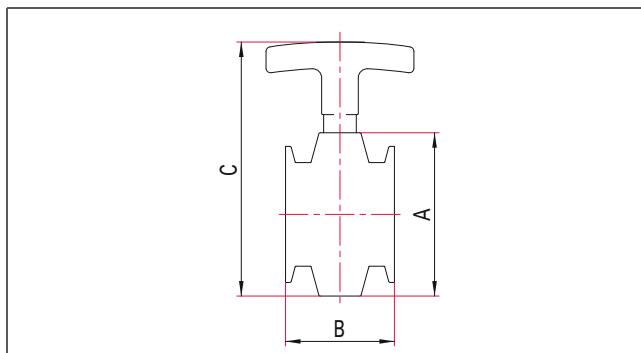
| Order number | | | | |
|------------------|------------------|------------------|------------------|------------------|
| Butterfly valves | 110VSM016 | 110VSM025 | 110VSM040 | 110VSM050 |

Butterfly valves, manual, stainless steel, DN 16 to 50 ISO-KF



- Swivel valve plate with FKM seal
- Service life: 3000 operating cycles
- Valve position indicated by T-handle
- Nearly free clearance in open position
- Double valve head seal made from FKM

Dimensions



| | DN 16 ISO- KF | DN 25 ISO- KF | DN 40 ISO- KF | DN 50 ISO- KF |
|---|---------------|---------------|---------------|---------------|
| A | 80 mm | 80 mm | 80 mm | 90 mm |
| B | 60 mm | 60 mm | 60 mm | 60 mm |
| C | 123 mm | 123 mm | 123 mm | 140 mm |

| Technical data | DN 16 ISO- KF | DN 25 ISO- KF | DN 40 ISO- KF | DN 50 ISO- KF |
|-------------------|---|---|---|---|
| Flange (out) | DN 16 ISO- KF | DN 25 ISO- KF | DN 40 ISO- KF | DN 50 ISO- KF |
| Flange (in) | DN 16 ISO- KF | DN 25 ISO- KF | DN 40 ISO- KF | DN 50 ISO- KF |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM | FKM |
| Pressure range | $1 \cdot 10^{-8}$ hPa to ambient pressure | $1 \cdot 10^{-8}$ hPa to ambient pressure | $1 \cdot 10^{-8}$ hPa to ambient pressure | $1 \cdot 10^{-8}$ hPa to ambient pressure |
| Housing | Stainless steel | Stainless steel | Stainless steel | Stainless steel |
| Temperature range | -15 to 130 °C | -15 to 130 °C | -15 to 130 °C | -15 to 130 °C |

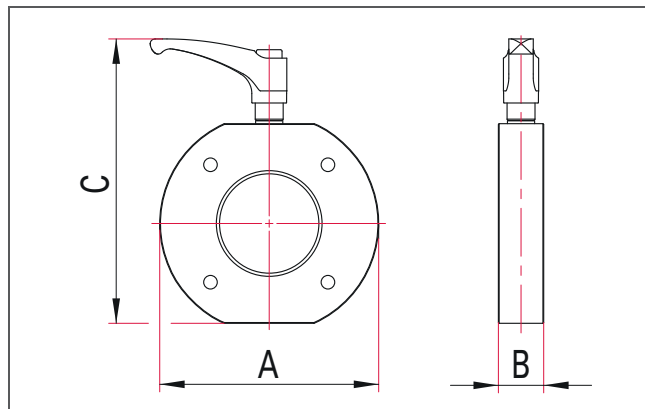
| Order number | | | | |
|------------------|-----------|-----------|-----------|-----------|
| Butterfly valves | 120VSM016 | 120VSM025 | 120VSM040 | 120VSM050 |

Butterfly valves, manual, aluminum, DN 63 ISO-F



- Swivel valve plate with FKM seal
- Service life: 3000 operating cycles
- Nearly free clearance in open position
- Valve position indicated by handle
- Double valve head seal made from FKM

Dimensions



| | DN 63 ISO-F |
|---|-------------|
| A | 145 mm |
| B | 30 mm |
| C | 190 mm |

| Technical data | DN 63 ISO-F |
|-------------------|---|
| Flange (out) | DN 63 ISO-F |
| Flange (in) | DN 63 ISO-F |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM |
| Pressure range | $1 \cdot 10^{-8}$ hPa to ambient pressure |
| Housing | Aluminum |
| Scope of delivery | with set of M8 x 75 screws |
| Temperature range | -15 to 130 °C |

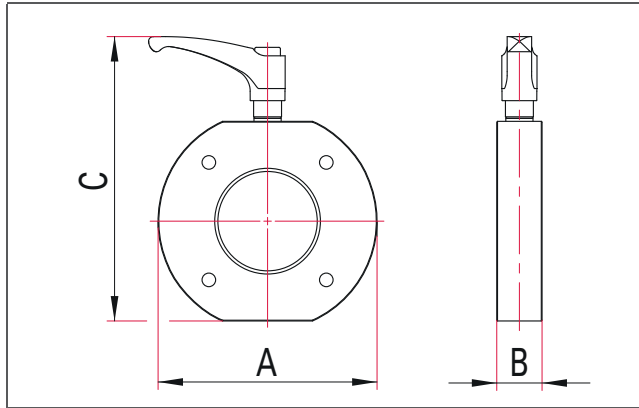
| Order number | |
|------------------|------------------|
| Butterfly valves | 510VSM063 |

Butterfly valves, manual, stainless steel, DN 63 ISO-F



- Swivel valve plate with FKM seal
- Service life: 3000 operating cycles
- Nearly free clearance in open position
- Valve position indicated by handle
- Double valve head seal made from FKM

Dimensions



| | DN 63 ISO-F |
|---|-------------|
| A | 145 mm |
| B | 30 mm |
| C | 190 mm |

| Technical data | DN 63 ISO-F |
|-------------------|---|
| Flange (out) | DN 63 ISO-F |
| Flange (in) | DN 63 ISO-F |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM |
| Pressure range | $1 \cdot 10^{-8}$ hPa to ambient pressure |
| Housing | Stainless steel |
| Temperature range | -15 to 130 °C |

| Order number | |
|------------------|-----------|
| Butterfly valves | 520VSM063 |

HV gate valve, manual, DN 16 to 40 ISO-KF

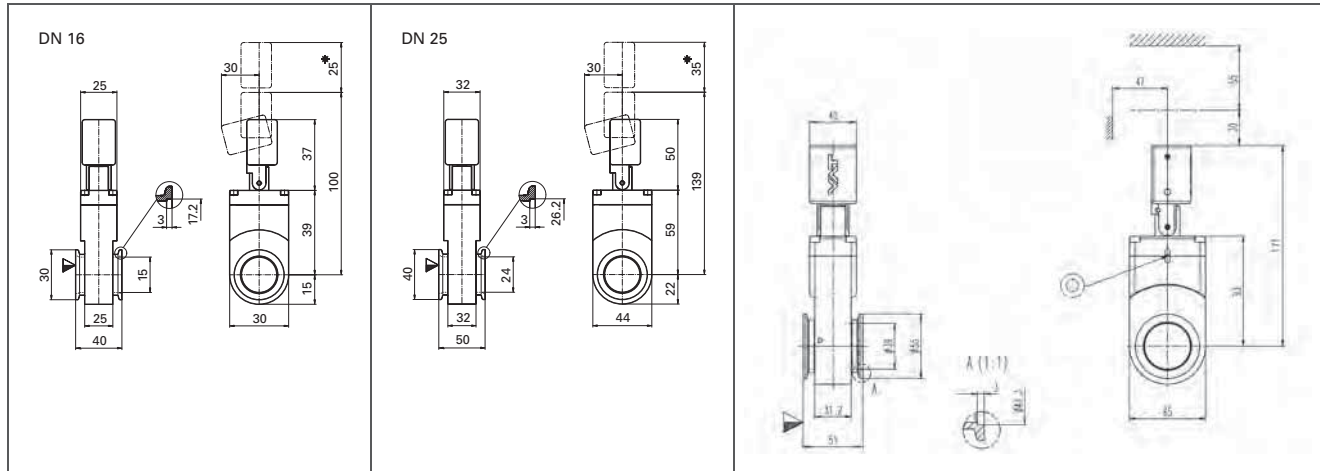


- High conductance due to free clearance
- Vulcanized valve disk seal
- Service life: 50000 operating cycles

SVV = Gate valve

HA = Manually actuated, aluminum housing

Dimensions



SVV 016 HA

SVV 025 HA

SVV 040 HA

| Technical data | SVV 016 HA | SVV 025 HA | SVV 040 HA |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Actuator | Toggle lever | Toggle lever | Toggle lever |
| Bakeout temperature: actuator | 80 °C | 80 °C | 80 °C |
| Bakeout temperature: housing | 100 °C | 100 °C | 100 °C |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Housing | FKM | FKM | FKM |
| Seal: Valve seat | FKM | FKM | FKM |
| Differential pressure in opening direction | 1000 hPa | 1000 hPa | 1000 hPa |
| Differential pressure in closing direction | 1000 hPa | 1000 hPa | 1000 hPa |
| Pressure max. | 2000 hPa | 2000 hPa | 2000 hPa |
| Pressure min. | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa |
| Feedthrough | Shaft feedthrough | Shaft feedthrough | Shaft feedthrough |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 0.4 kg | 0.4 kg | 0.7 kg |
| Conductance for molecular flow | 10 l/s | 34 l/s | 140 l/s |
| Can be opened to a pressure difference of | 30 hPa | 30 hPa | 30 hPa |
| Service life | 50000 cycles | 50000 cycles | 50000 cycles |
| Valve plate | Stainless steel | Stainless steel | Stainless steel |

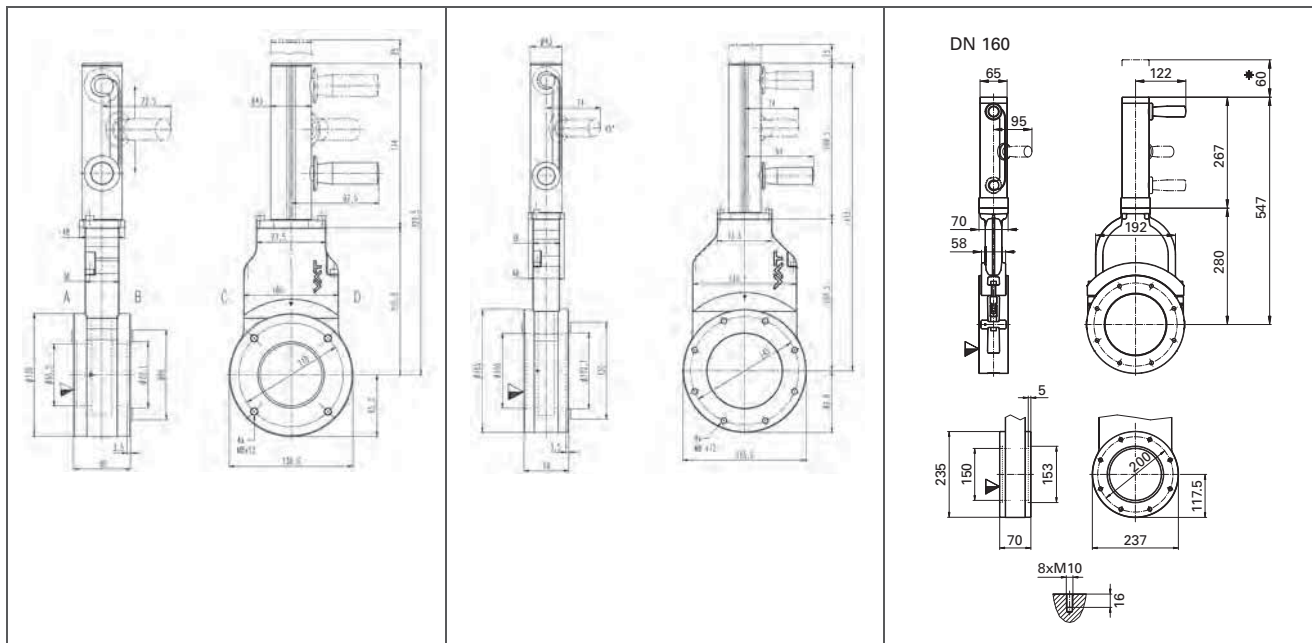
| Order number | | | |
|----------------|------------|------------|------------|
| HV gate valves | PF D31 000 | PF D41 000 | PF D51 000 |

HV gate valve, manual, DN 63 to 160 ISO-F



- High conductance due to free clearance
 - Service life: up to 200000 operating cycles
- SVV = Gate valve
HA = Manually actuated, aluminum housing

Dimensions



SVV 063 HA

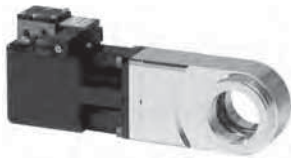
SVV 100 HA

SVV 160 HA

| Technical data | SVV 063 HA | SVV 100 HA | SVV 160 HA |
|--|---|---|---|
| Flange (out) | DN 63 ISO-F | DN 100 ISO-F | DN 160 ISO-F |
| Flange (in) | DN 63 ISO-F | DN 100 ISO-F | DN 160 ISO-F |
| Actuator | Connecting rod | Connecting rod | Connecting rod |
| Bakeout temperature: actuator | 80 °C | 80 °C | 80 °C |
| Bakeout temperature: housing | 120 °C | 120 °C | 120 °C |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Housing | FKM | FKM | FKM |
| Seal: Valve seat | FKM | FKM | FKM |
| Differential pressure in opening direction | 1600 hPa | 1600 hPa | 1600 hPa |
| Differential pressure in closing direction | 1600 hPa | 1600 hPa | 1600 hPa |
| Pressure max. | 1600 hPa (abs.) | 1600 hPa (abs.) | 1600 hPa (abs.) |
| Pressure min. | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa |
| Feedthrough | Shaft feedthrough | Shaft feedthrough | Shaft feedthrough |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 3 kg | 4.5 kg | 9 kg |
| Conductance for molecular flow | 550 l/s | 2000 l/s | 6000 l/s |
| Can be opened to a pressure difference of | 30 hPa | 30 hPa | 30 hPa |
| Service life | 200000 cycles | 200000 cycles | 100000 cycles |
| Valve plate | Stainless steel | Stainless steel | Stainless steel |

| Order number | | | |
|----------------|------------|------------|------------|
| HV gate valves | PF E11 001 | PF E21 001 | PF E31 001 |

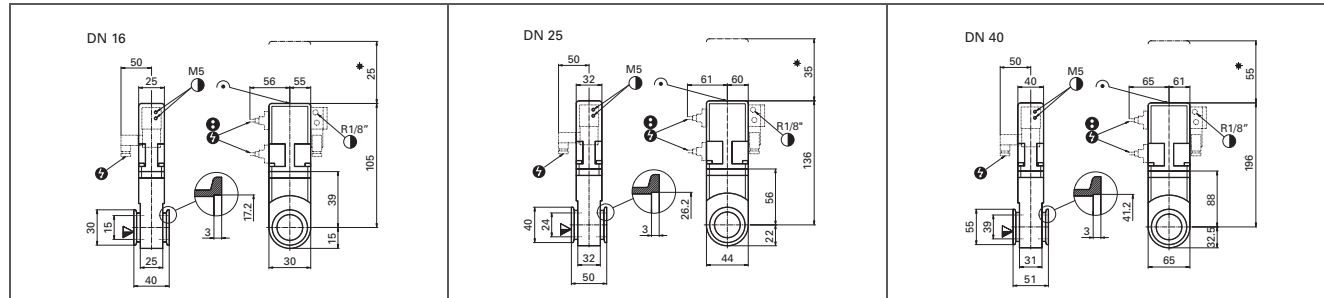
HV gate valve, electropneumatic, with PI, with PV, DN 16 to 40 ISO-KF



- High conductance due to free clearance
- Vulcanized valve disk seal
- With visible indication of open and closed positions
- Service life: 50000 operating cycles

SVV = Gate valve
 PA = Electropneumatically actuated, aluminum housing
 DC = Direct current
 PI = Position indicator
 PV = Pilot valve

Dimensions



SVV 016 PA

SVV 025 PA

SVV 040 PA

| Technical data | SVV 016 PA | SVV 025 PA | SVV 040 PA |
|--|---|---|---|
| Flange (out) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Actuator | Electropneumatic | Electropneumatic | Electropneumatic |
| Bakeout temperature: actuator | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 100 °C | 100 °C | 100 °C |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Housing | FKM | FKM | FKM |
| Seal: Valve seat | FKM | FKM | FKM |
| Differential pressure in opening direction | 1000 hPa | 1000 hPa | 1000 hPa |
| Differential pressure in closing direction | 1000 hPa | 1000 hPa | 1000 hPa |
| Compressed air (overpressure) max. | 7000 hPa | 7000 hPa | 7000 hPa |
| Compressed air (overpressure) min. | 4500 hPa | 4500 hPa | 4500 hPa |
| Compressed air volume | 10 cm ³ | 30 cm ³ | 70 cm ³ |
| Pressure max. | 1000 hPa (abs.) | 1000 hPa (abs.) | 1000 hPa (abs.) |
| Pressure min. | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa |
| Feedthrough | Shaft feedthrough | Shaft feedthrough | Shaft feedthrough |
| Housing | Aluminum | Aluminum | Aluminum |
| Weight | 0.8 kg | 0.8 kg | 1.2 kg |
| Position feedback: Load capacity | 50 V / 0.5 A / 10 W | 50 V / 0.5 A / 10 W | 50 V / 0.5 A / 10 W |
| Power consumption | 24 V DC / 5.4 W | 24 V DC / 5.4 W | 24 V DC / 5.4 W |
| Conductance for molecular flow | 10 l/s | 34 l/s | 140 l/s |
| Can be opened to a pressure difference of | 30 hPa | 30 hPa | 30 hPa |
| Closing/opening time | 0.8 s | 1.1 s | 1.2 s |
| Service life | 50000 cycles | 50000 cycles | 50000 cycles |
| Valve plate | Stainless steel | Stainless steel | Stainless steel |

| | SVV 016 PA | SVV 025 PA | SVV 040 PA |
|---------------------|-------------------|-------------------|-------------------|
| Supply | 24 V DC | 24 V DC | 24 V DC |
| Order number | PF D38 200 | PF D48 200 | PF D58 200 |
| Supply | 24 V, 50 Hz | 24 V, 50 Hz | 24 V, 50 Hz |
| Order number | PF D38 100 | PF D48 100 | PF D58 100 |
| Supply | 230 V, 50 Hz | 230 V, 50 Hz | 230 V, 50 Hz |
| Order number | PF D38 500 | PF D48 500 | PF D58 500 |

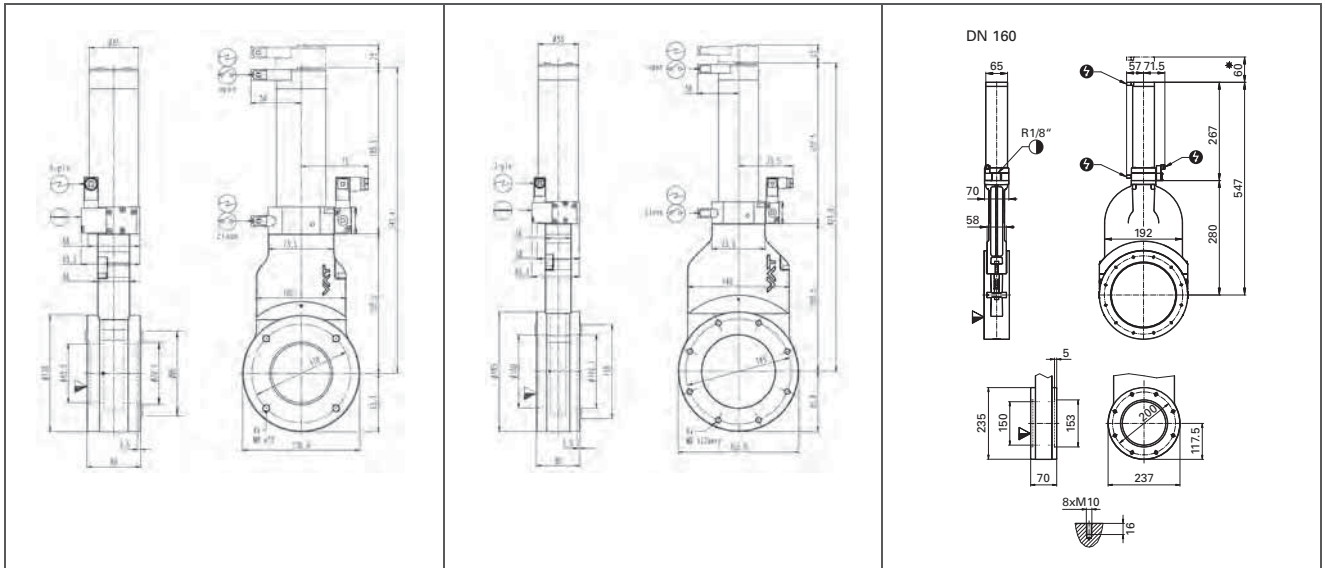
HV gate valve, electropneumatic, with PI, with PV, ISO-F Aluminum, DN 63 to 250 ISO-F



- High conductance due to free clearance
- With visual indication of open and closed positions
- Service life: up to 200000 operating cycles

SVV = Gate valve
 PA = Electropneumatically actuated
 DC = Direct current
 PI = Position indicator
 PV = Pilot valve

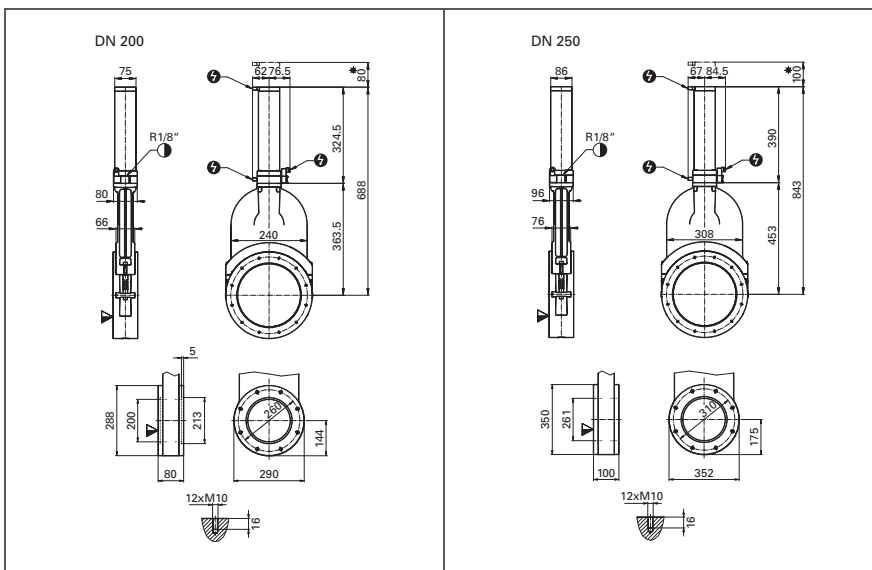
Dimensions



SVV 063 PA

SVV 100 PA

SVV 160 PA



SVV 200 PA

SVV 250 PA

| Technical data | SVV 063 PA | SVV 100 PA | SVV 160 PA | SVV 200 PA | SVV 250 PA |
|--|---|---|---|---|---|
| Flange (out) | DN 63 ISO-F | DN 100 ISO-F | DN 160 ISO-F | DN 200 ISO-F | DN 250 ISO-F |
| Flange (in) | DN 63 ISO-F | DN 100 ISO-F | DN 160 ISO-F | DN 200 ISO-F | DN 250 ISO-F |
| Actuator | Electropneumatic | Electropneumatic | Electropneumatic | Electropneumatic | Electropneumatic |
| Bakeout temperature: actuator | 50 °C | 50 °C | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 120 °C | 120 °C | 120 °C | 120 °C | 120 °C |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Housing | FKM | FKM | FKM | FKM | FKM |
| Seal: Valve seat | FKM | FKM | FKM | FKM | FKM |
| Differential pressure in opening direction | 1600 hPa | 1600 hPa | 1600 hPa | 1600 hPa | 1200 hPa |
| Differential pressure in closing direction | 1600 hPa | 1600 hPa | 1600 hPa | 1600 hPa | 1200 hPa |
| Compressed air (overpressure) max. | 7000 hPa | 7000 hPa | 7000 hPa | 7000 hPa | 7000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 160 cm ³ | 220 cm ³ | 500 cm ³ | 9000 cm ³ | 1500 cm ³ |
| Pressure max. | 1600 hPa (abs.) | 1600 hPa (abs.) | 1600 hPa (abs.) | 160 hPa (abs.) | 1200 hPa (abs.) |
| Pressure min. | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa | $1 \cdot 10^{-7}$ hPa |
| Feedthrough | Shaft feedthrough | Shaft feedthrough | Shaft feedthrough | Shaft feedthrough | Shaft feedthrough |
| Housing | Aluminum | Aluminum | Aluminum | Aluminum | Aluminum |
| Weight | 3 kg | 4.5 kg | 9 kg | 18 kg | 25 kg |
| Position feedback: Load capacity | 250 V AC / 2 A ; 50 V DC / 1.2 A | 250 V AC / 2 A ; 50 V DC / 1.2 A | 250 V AC / 2 A ; 50 V DC / 1.2 A | 250 V AC / 2 A ; 50 V DC / 1.2 A | 250 V AC / 2 A ; 50 V DC / 1.2 A |
| Power consumption | 24 V DC / 5.4 W | 24 V DC / 5.4 W | 24 V DC / 5.4 W | 24 V DC / 5.4 W | 24 V DC / 5.4 W |
| Conductance for molecular flow | 550 l/s | 2000 l/s | 6000 l/s | 12000 l/s | 22000 l/s |
| Can be opened to a pressure difference of | 30 hPa | 30 hPa | 30 hPa | 30 hPa | 30 hPa |
| Closing/opening time | 1.5 s | 2 s | 2 s | 3 s | 5 s |
| Service life | 200000 cycles | 200000 cycles | 100000 cycles | 100000 cycles | 100000 cycles |
| Valve plate | Stainless steel | Stainless steel | Stainless steel | Stainless steel | Stainless steel |

| | SVV 063 PA | SVV 100 PA | SVV 160 PA | SVV 200 PA | SVV 250 PA |
|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Supply | 24 V DC | 24 V DC | 24 V DC | 24 V DC | 24 V DC |
| Order number | PF E18 201 | PF E28 201 | PF E38 201 | PF E48 201 | PF E58 201 |
| Supply | 24 V, 50 Hz | 24 V, 50 Hz | 24 V, 50 Hz | 24 V, 50 Hz | 24 V, 50 Hz |
| Order number | PF E18 101 | PF E28 101 | PF E38 101 | PF E48 101 | PF E58 101 |
| Supply | 230 V, 50 Hz | 230 V, 50 Hz | 230 V, 50 Hz | 230 V, 50 Hz | 230 V, 50 Hz |
| Order number | PF E18 501 | PF E28 501 | PF E38 501 | PF E48 501 | PF E58 501 |

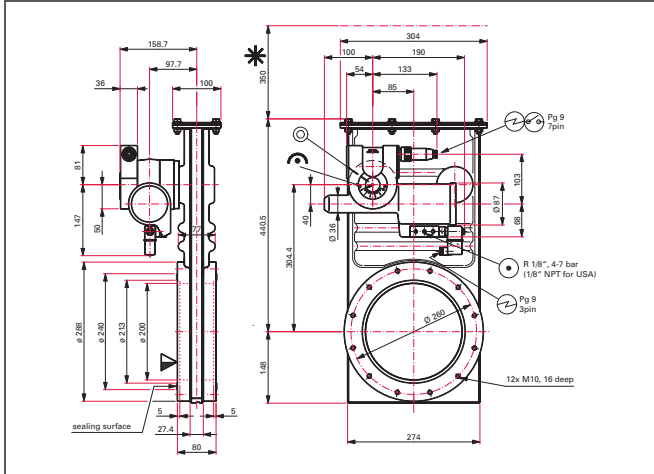
HV gate valve, electropneumatic, with PI, with PV, ISO-F Stainless steel, DN 200 to 250 ISO-F



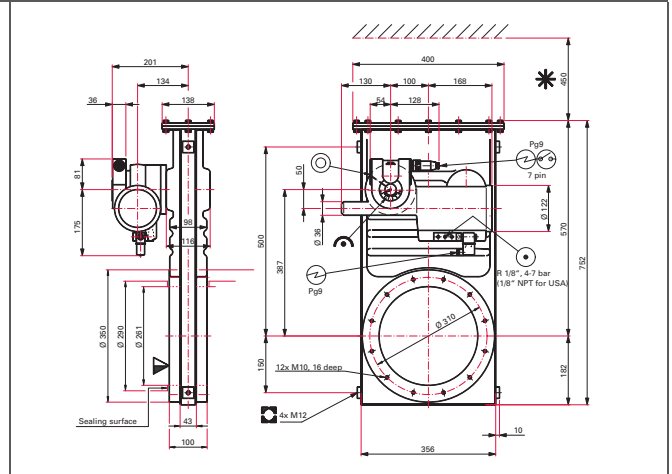
- High conductance due to free clearance
- With visual indication of open and closed positions
- Service life: 200000 operating cycles
- Stainless steel housing

SVV = Gate valve
 PA = Electropneumatically actuated
 AC = Alternating current
 DC = Direct current
 PI = Position indicator
 PV = Pilot valve

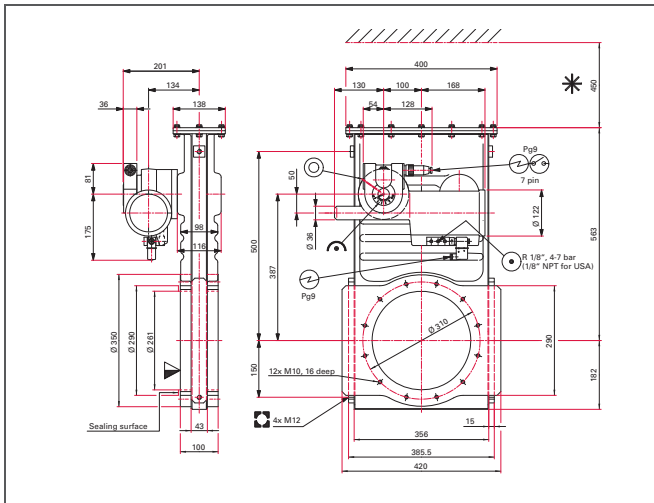
Dimensions



SVV 201 PA



SVV 251 PA



SVV 252 PA

| Technical data | SVV 201 PA | SVV 251 PA | SVV 252 PA |
|--|---|---|---|
| Flange (out) | DN 200 ISO-F | DN 250 ISO-F | DN 250 ISO-F |
| Flange (in) | DN 200 ISO-F | DN 250 ISO-F | DN 250 ISO-F |
| Actuator | Electropneumatic | Electropneumatic | Electropneumatic |
| Bakeout temperature: actuator | 50 °C | 50 °C | 50 °C |
| Bakeout temperature: housing | 150 °C | 150 °C | 150 °C |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Housing | FKM | FKM | FKM |
| Seal: Valve seat | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 1200 hPa | 1200 hPa |
| Differential pressure in closing direction | 2000 hPa | 1200 hPa | 1200 hPa |
| Compressed air (overpressure) max. | 7000 hPa | 7000 hPa | 7000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 280 cm ³ | 750 cm ³ | 750 cm ³ |
| Pressure max. | 2000 hPa (abs.) | 1200 hPa (abs.) | 1200 hPa (abs.) |
| Pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Feedthrough | Rotary feedthrough | Rotary feedthrough | Rotary feedthrough |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 30 kg | 60 kg | 60 kg |
| Position feedback: Load capacity | 250 V AC / 5 A ; 50 V DA / 3 A | 250 V AC / 5 A ; 50 V DA / 3 A | 250 V AC / 5 A ; 50 V DA / 3 A |
| Power consumption | 24 V DC / 2.5 W | 24 V DC / 2.5 W | 24 V DC / 2.5 W |
| Conductance for molecular flow | 12000 l/s | 22000 l/s | 22000 l/s |
| Can be opened to a pressure difference of | 30 hPa | 30 hPa | 30 hPa |
| Closing/opening time | 2.5 s | 4.5 s | 4.5 s |
| Service life | 200000 cycles | 200000 cycles | 200000 cycles |
| Valve plate | Stainless steel | Stainless steel | Stainless steel |

| | SVV 201 PA | SVV 251 PA | SVV 252 PA |
|---------------------|-------------------|-------------------|-------------------|
| Supply | 24 V DC | 24 V DC | 24 V DC |
| Order number | PF E48 240 | PF E58 240 | PF E58 250 |
| Supply | 24 V, 50 Hz | 24 V, 50 Hz | 24 V, 50 Hz |
| Order number | PF E48 140 | PF E58 140 | PF E58 150 |
| Supply | 230 V, 50 Hz | 230 V, 50 Hz | 230 V, 50 Hz |
| Order number | PF E48 540 | PF E58 540 | PF E58 550 |

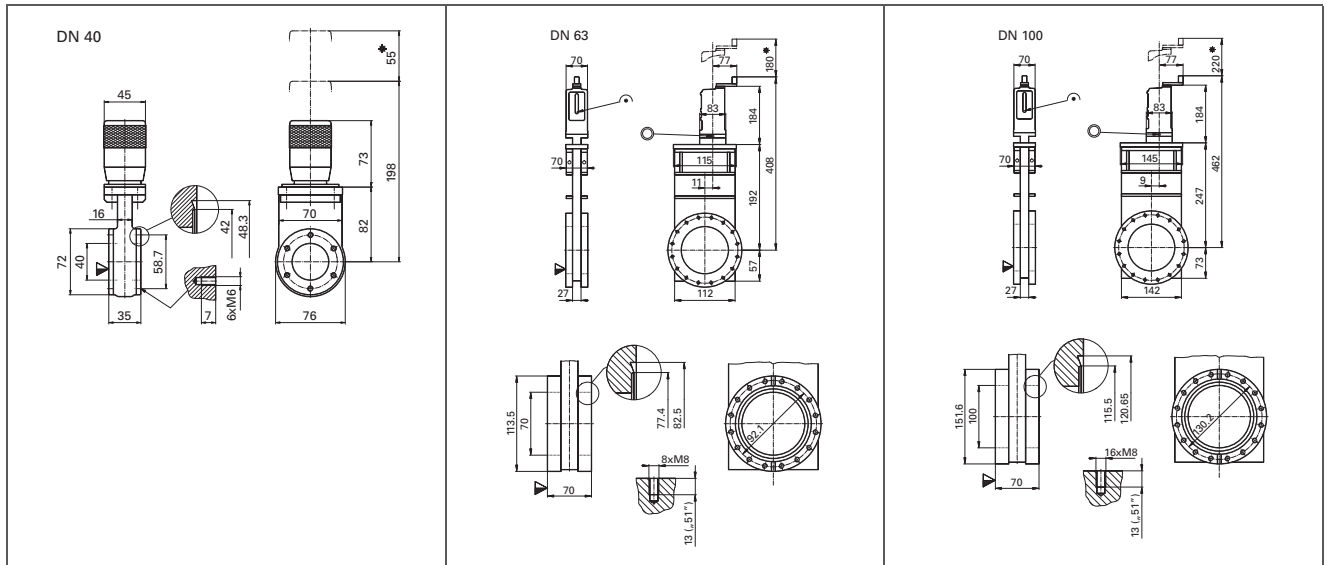
UHV gate valve, manual, DN 40 to 200 CF



- Metal-sealed stainless steel housing
- Vulcanized, cavity-free valve disk seal
- Bellows-sealed
- Lubricant-free mechanics
- High conductance due to free clearance
- Service life: 50000 operating cycles

SVV = Gate valve
 HF/HM = Manually actuated

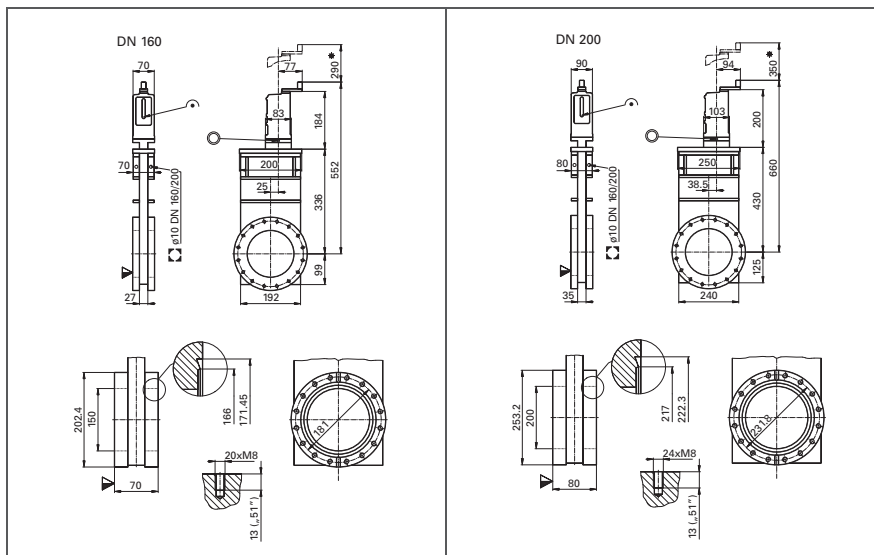
Dimensions



SVV 040 HM

SVV 063 HF

SVV 100 HF



SVV 160 HF

SVV 200 HF

| Technical data | SVV 040 HM | SVV 063 HF | SVV 100 HF |
|---|---|---|---|
| Flange (out) | DN 40 CF-F | DN 63 CF-F | DN 100 CF-F |
| Flange (in) | DN 40 CF-F | DN 63 CF-F | DN 100 CF-F |
| Actuator | Hand wheel | Hand wheel | Hand wheel |
| Bakeout temperature: Valve open, under vacuum | 250 °C | 250 °C | 250 °C |
| Bakeout temperature: Valve closed | 200 °C | 200 °C | 200 °C |
| Tightness: Housing | $5 \cdot 10^{-11}$ Pa m ³ /s | $5 \cdot 10^{-11}$ Pa m ³ /s | $5 \cdot 10^{-11}$ Pa m ³ /s |
| Tightness: Valve seat | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Housing | Metal | Metal | Metal |
| Seal: Valve seat | FKM | FKM | FKM |
| Differential pressure in opening direction | 2000 hPa | 1600 hPa | 1600 hPa |
| Differential pressure in closing direction | 2000 hPa | 1600 hPa | 1600 hPa |
| Pressure max. | 2000 hPa (abs.) | 1600 hPa (abs.) | 1600 hPa (abs.) |
| Pressure min. | $1 \cdot 10^{-10}$ hPa | $1 \cdot 10^{-10}$ hPa | $1 \cdot 10^{-10}$ hPa |
| Feedthrough | Bellows | Bellows | Bellows |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Weight | 1.8 kg | 9 kg | 12 kg |
| Conductance for molecular flow | 220 l/s | 600 l/s | 1700 l/s |
| Can be opened to a pressure difference of | 30 hPa | 30 hPa | 30 hPa |
| Service life | 50000 cycles | 50000 cycles | 50000 cycles |
| Valve plate | Stainless steel | Stainless steel | Stainless steel |

| Order number | | | |
|-----------------|------------|------------|------------|
| UHV gate valves | PF F51 031 | PF F61 031 | PF F71 031 |

| Technical data | SVV 160 HF | SVV 200 HF |
|---|---|---|
| Flange (out) | DN 160 CF-F | DN 200 CF-F |
| Flange (in) | DN 160 CF-F | DN 200 CF-F |
| Actuator | Hand wheel | Hand wheel |
| Bakeout temperature: Valve open, under vacuum | 250 °C | 250 °C |
| Bakeout temperature: Valve closed | 200 °C | 200 °C |
| Tightness: Housing | $5 \cdot 10^{-11}$ Pa m ³ /s | $5 \cdot 10^{-11}$ Pa m ³ /s |
| Tightness: Valve seat | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Housing | Metal | Metal |
| Seal: Valve seat | FKM | FKM |
| Differential pressure in opening direction | 1600 hPa | 1600 hPa |
| Differential pressure in closing direction | 1600 hPa | 1600 hPa |
| Pressure max. | 1600 hPa (abs.) | 1600 hPa (abs.) |
| Pressure min. | $1 \cdot 10^{-10}$ hPa | $1 \cdot 10^{-10}$ hPa |
| Feedthrough | Bellows | Bellows |
| Housing | Stainless steel | Stainless steel |
| Weight | 18 kg | 24 kg |
| Conductance for molecular flow | 6000 l/s | 12000 l/s |
| Can be opened to a pressure difference of | 30 hPa | 30 hPa |
| Service life | 50000 cycles | 50000 cycles |
| Valve plate | Stainless steel | Stainless steel |

| Order number | | |
|-----------------|------------|------------|
| UHV gate valves | PF F81 031 | PF F91 031 |

UHV gate valve, electropneumatic, with PI, with PV, DN 40 to 250 CF



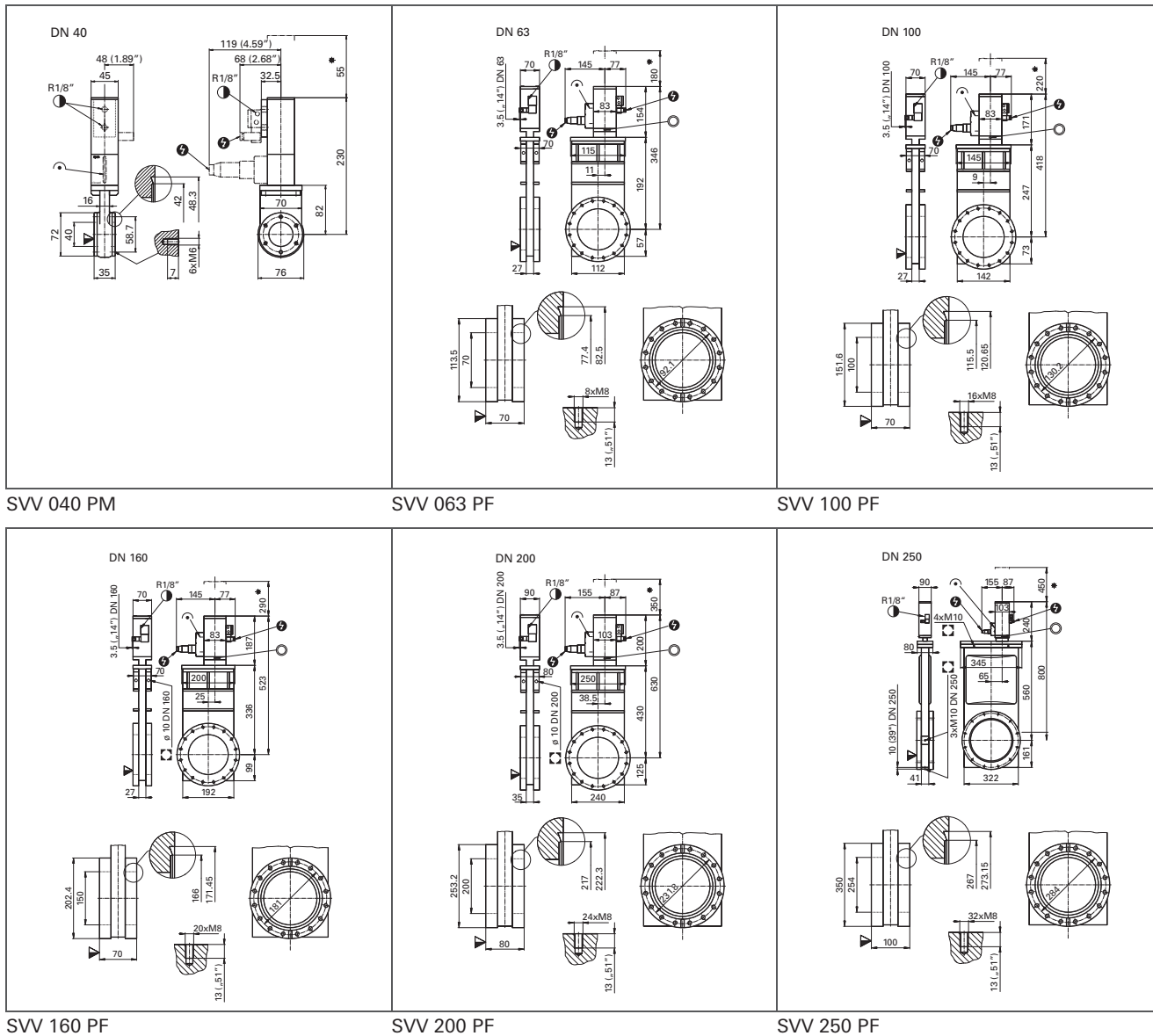
- Metal-sealed stainless steel housing
- Vulcanized, cavity-free valve disk seal (up to DN 200 CF)
- Bellows-sealed
- Lubricant-free mechanics
- Service life: 50000 operating cycles

SVV = Gate valve

PM/PF = Electropneumatically actuated

DC = Direct current

Dimensions



| General technical data | |
|---|--|
| Actuator | Electropneumatic |
| Bakeout temperature: actuator | 200 °C (position indicator 80 °C, pilot valve 50 °C) |
| Bakeout temperature: Valve open, under vacuum | 250 °C |
| Bakeout temperature: Valve closed | 200 °C |
| Tightness: Housing | $5 \cdot 10^{-11}$ Pa m ³ /s |
| Tightness: Valve seat | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal: Housing | Metal |
| Seal: Valve seat | FKM |
| Compressed air (overpressure) max. | 7000 hPa |
| Pressure min. | $1 \cdot 10^{-10}$ hPa |
| Feedthrough | Bellows |
| Housing | Stainless steel |
| Power consumption | 24 V DC / 5.4 W |
| Can be opened to a pressure difference of | 30 hPa |
| Service life | 50000 cycles |
| Valve plate | Stainless steel |

| Technical data | SVV 040 PM | SVV 063 PF | SVV 100 PF |
|------------------------------------|-----------------------------------|-------------------------------------|-------------------------------------|
| Flange (out) | DN 40 CF-F | DN 63 CF-F | DN 100 CF-F |
| Flange (in) | DN 40 CF-F | DN 63 CF-F | DN 100 CF-F |
| Compressed air (overpressure) min. | 5000 hPa | 4000 hPa | 4000 hPa |
| Compressed air volume | 60 cm ³ | 80 cm ³ | 110 cm ³ |
| Pressure max. | 2000 hPa | 1600 hPa | 1600 hPa |
| Weight | 1.8 kg | 9 kg | 12 kg |
| Position feedback: Load capacity | 250 V AC / 5 A ; 50 V DC / 3 A | 250 V AC / 2 A ; 50 V DC / 1.2 A | 250 V AC / 2 A ; 50 V DC / 1.2 A |
| Conductance for molecular flow | 220 l/s | 600 l/s | 1700 l/s |
| Closing/opening time | 0.7 s | 1 s | 1.2 s |

| | SVV 040 PM | SVV 063 PF | SVV 100 PF |
|---------------------|-------------------|-------------------|-------------------|
| Supply | 24 V DC | 24 V DC | 24 V DC |
| Order number | PF F58 231 | PF F68 231 | PF F78 231 |
| Supply | 24 V, 50 Hz | 24 V, 50 Hz | 24 V, 50 Hz |
| Order number | PF F58 131 | PF F68 131 | PF F78 131 |
| Supply | 230 V, 50 Hz | 230 V, 50 Hz | 230 V, 50 Hz |
| Order number | PF F58 531 | PF F68 531 | PF F78 531 |

| Technical data | SVV 160 PF | SVV 200 PF | SVV 250 PF |
|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Flange (out) | DN 160 CF-F | DN 200 CF-F | DN 250 CF-F |
| Flange (in) | DN 160 CF-F | DN 200 CF-F | DN 250 CF-F |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa | 5000 hPa |
| Compressed air volume | 140 cm ³ | 250 cm ³ | 350 cm ³ |
| Pressure max. | 1600 hPa | 1600 hPa | 1200 hPa |
| Weight | 18 kg | 24 kg | 42 kg |
| Position feedback: Load capacity | 250 V AC / 2 A ; 50 V DC / 1.2 A | 250 V AC / 2 A ; 50 V DC / 1.2 A | 250 V AC / 2 A ; 50 V DC / 1.2 A |
| Conductance for molecular flow | 6000 l/s | 12000 l/s | 26000 l/s |
| Closing/opening time | 1.5 s | 2 s | 4 s |

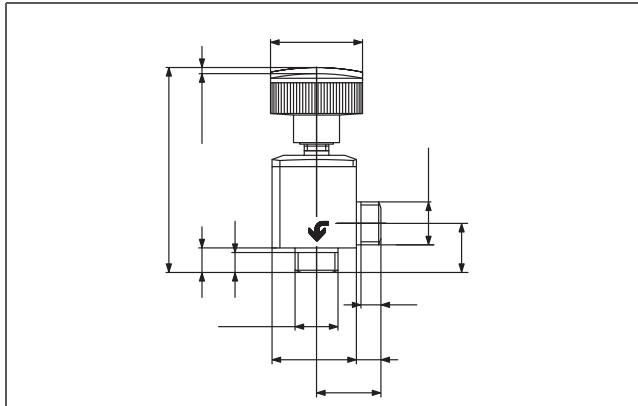
| | SVV 160 PF | SVV 200 PF | SVV 250 PF |
|---------------------|-------------------|-------------------|-------------------|
| Supply | 24 V DC | 24 V DC | 24 V DC |
| Order number | PF F88 231 | PF F98 231 | PF F98 241 |
| Supply | 24 V, 50 Hz | 24 V, 50 Hz | 24 V, 50 Hz |
| Order number | PF F88 131 | PF F98 131 | PF F98 141 |
| Supply | 230 V, 50 Hz | 230 V, 50 Hz | 230 V, 50 Hz |
| Order number | PF F88 531 | PF F98 531 | PF F98 541 |

Mini angle valves, manual, DN 5



- Two connections required as accessories
- Bellows-sealed
- Service life: 1.5 million operating cycles

Dimensions

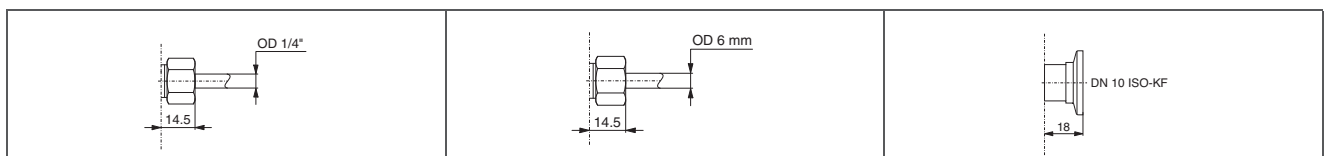


| Technical data | EVI 005 S |
|--|--|
| Flange (out) | DN 5 mm M14x1 |
| Flange (in) | DN 5 mm M14x1 |
| Bakeout temperature: actuator | 70 °C |
| Bakeout temperature: housing | 150 °C |
| Operating pressure max. | 4000 hPa (abs.) |
| Operating pressure min. | 1 · 10 ⁻⁸ hPa |
| Tightness | 1 · 10 ⁻¹⁰ Pa m ³ /s |
| Seal | FKM |
| Differential pressure in opening direction | 4000 hPa |
| Differential pressure in closing direction | 4000 hPa |
| Feedthrough | Bellows, stainless steel |
| Housing | Stainless steel |
| Weight | 150 g |
| Conductance for laminar flow | 4 l/s |
| Conductance for molecular flow | 0.4 l/s |
| Can be opened to a pressure difference of | 4000 hPa |
| Service life | 1500000 cycles |
| Ambient temperature | 5-70 °C |
| Valve plate | Stainless steel |

| Order number | |
|-------------------|------------|
| Mini angle valves | PF H12 031 |

| Accessories | |
|--------------------------------|--------------|
| Connection, for 1/4" tube O.D. | PT 420 913-T |
| Connection, for 6 mm tube O.D. | PT 420 914-T |
| Connection, DN 10 ISO-KF | PT 420 912-T |

Dimensions



Connection, for 1/4" tube O.D.

Connection, for 6 mm tube O.D.

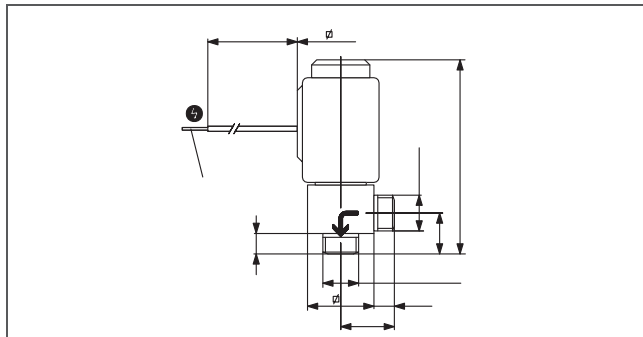
Connection, DN 10 ISO-KF

Mini angle valves, solenoid actuated, without position indicator (PI), DN 5

- Two connections required as accessories
- Normally closed (n.c.)
- Service life: 2 million operating cycles



Dimensions

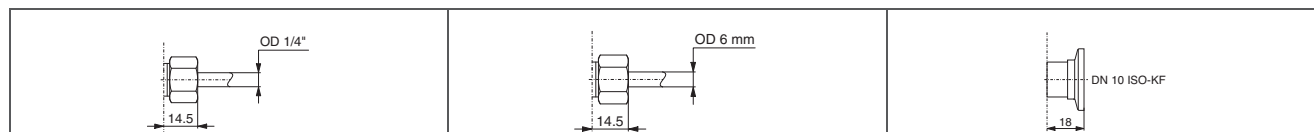


| Technical data | EVI 005 M |
|--|---|
| Flange (out) | DN 5 mm M14x1 |
| Flange (in) | DN 5 mm M14x1 |
| Actuator | Solenoid actuated |
| Version | Normally closed (n.c.) |
| Bakeout temperature: actuator | 120 °C |
| Bakeout temperature: housing | 150 °C |
| Operating pressure max. | 1500 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM |
| Differential pressure in opening direction | 1500 hPa |
| Differential pressure in closing direction | 5000 hPa |
| Housing | Stainless steel |
| Weight | 300 g |
| Conductance for laminar flow | 3 l/s |
| Conductance for molecular flow | 0.3 l/s |
| Can be opened to a pressure difference of | 1000 hPa |
| Switching frequency | 300 min ⁻¹ |
| Closing/opening time | 7/30 ms |
| Protection acc. to DIN 40050 | IP 65 |
| Service life | 2000000 cycles |
| Ambient temperature | 5-40 °C |
| Supply | 24 V DC |
| Supply: Power consumption max. | 10 W |

| Order number | |
|-------------------|-------------------|
| Mini angle valves | PF H13 231 |

| Accessories | |
|--------------------------------|---------------------|
| Connection, for 1/4" tube O.D. | PT 420 913-T |
| Connection, for 6 mm tube O.D. | PT 420 914-T |
| Connection, DN 10 ISO-KF | PT 420 912-T |

Dimensions



Connection, for 1/4" tube O.D.

Connection, for 6 mm tube O.D.

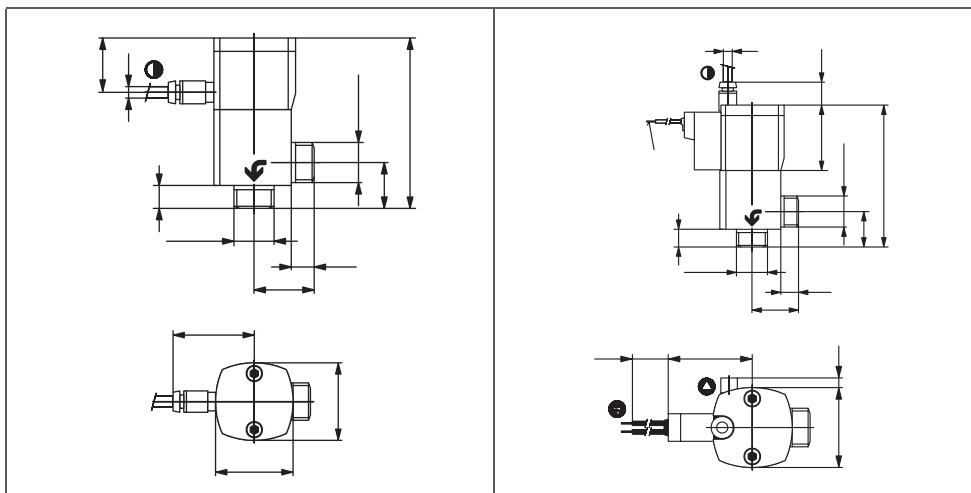
Connection, DN 10 ISO-KF

Mini angle valves, pneumatic and electropneumatic, without position indicator (PI), DN 5



- Bellows-sealed
 - Normally closed (n.c.)
 - Two connections required as accessories
 - Service life: 1.5 million operating cycles
 - Variants:
 - EVI 005 P = pneumatic (without pilot valve);
 - EVI 105 P = electropneumatic (with pilot valve)
- EVI = Mini angle valve with bellows feedthrough

Dimensions



EVI 005 P, Mini angle valve,
without control valve

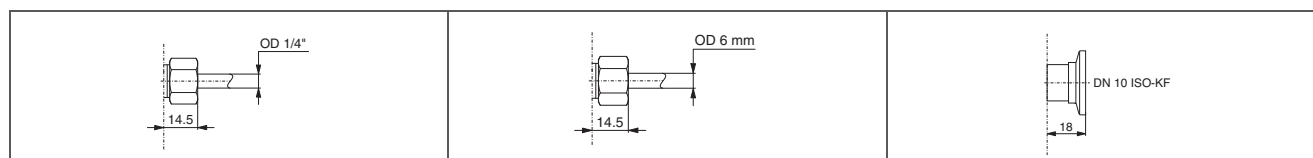
EVI 105 P, Mini angle valve,
with control valve

| Technical data | EVI 005 P | EVI 105 P |
|--|---|---|
| Flange (out) | DN 5 mm M14x1 | DN 5 mm M14x1 |
| Flange (in) | DN 5 mm M14x1 | DN 5 mm M14x1 |
| Bakeout temperature: actuator | 80 °C | 80 °C |
| Bakeout temperature: housing | 150 °C | 150 °C |
| Operating pressure max. | 4000 hPa (abs.) | 4000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM |
| Differential pressure in opening direction | 3000 hPa | 3000 hPa |
| Differential pressure in closing direction | 3000 hPa | 3000 hPa |
| Compressed air (overpressure) max. | 8000 hPa | 8000 hPa |
| Compressed air (overpressure) min. | 4000 hPa | 4000 hPa |
| Feedthrough | Bellows, stainless steel | Bellows, stainless steel |
| Housing | Stainless steel | Stainless steel |
| Weight | 200 g | 200 g |
| Conductance for laminar flow | 4 l/s | 4 l/s |
| Conductance for molecular flow | 0.4 l/s | 0.4 l/s |
| Can be opened to a pressure difference of | 3000 hPa | 3000 hPa |
| Switching frequency | 150 min ⁻¹ | 150 min ⁻¹ |
| Closing/opening time | 35/35 ms | 35/35 ms |
| Protection acc. to DIN 40050 | IP 65 | IP 65 |
| Service life | 1500000 cycles | 1500000 cycles |
| Control valve | | Included |
| Ambient temperature | 5-80 °C | 5-40 °C |
| Supply | | 24 V DC |
| Supply: Power consumption max. | | 1 W |

| Order number | | |
|-------------------|------------|------------|
| Mini angle valves | PF H15 031 | PF H17 231 |

| Accessories | | |
|--------------------------------|--------------|--------------|
| Connection, for 1/4" tube O.D. | PT 420 913-T | PT 420 913-T |
| Connection, for 6 mm tube O.D. | PT 420 914-T | PT 420 914-T |
| Connection, DN 10 ISO-KF | PT 420 912-T | PT 420 912-T |

Dimensions



Connection, for 1/4" tube O.D.

Connection, for 6 mm tube O.D.

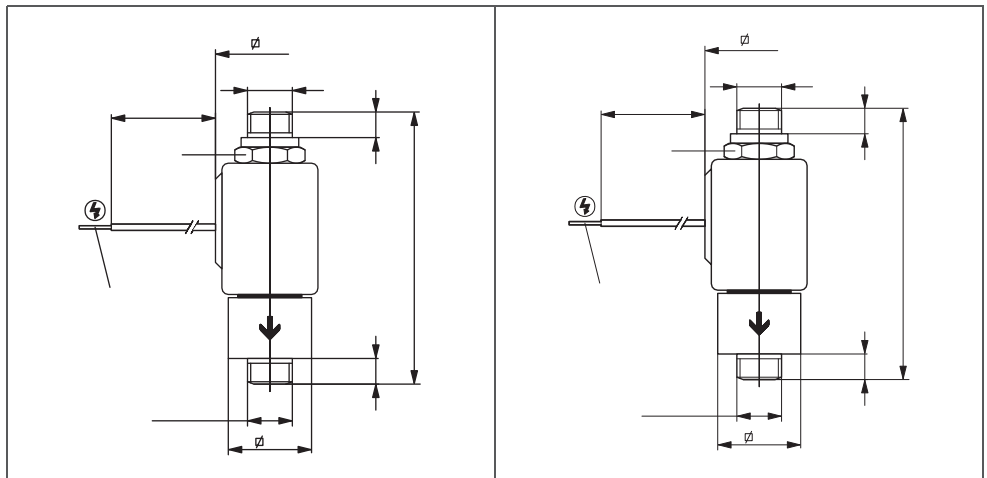
Connection, DN 10 ISO-KF

Mini-Inline-Valve, solenoid actuated, without position indicator (PI), n.c. and n.o., DN 5



- Two connections required as accessories
 - Service life: 2 million operating cycles
 - Variants:
DVI 005 M = normally closed (n.c.);
DVI 205 M = normally open (n.o.)
- DVI = Mini inline valve with bellows feedthrough
M = Solenoid actuated

Dimensions



DVI 005 M, Mini-Inline-Valve,
solenoid actuated,
normally closed

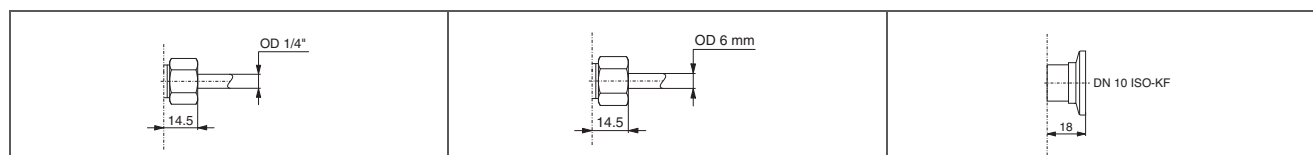
DVI 205 M, Mini-Inline-Valve,
solenoid actuated,
normally open

| Technical data | DVI 005 M | DVI 205 M |
|--|---|---|
| Flange (out) | DN 5 mm M14x1 | DN 5 mm M14x1 |
| Flange (in) | DN 5 mm M14x1 | DN 5 mm M14x1 |
| Actuator | Solenoid actuated | Solenoid actuated |
| Version | Normally closed | Normally open |
| Bakeout temperature: actuator | 120 °C | 120 °C |
| Bakeout temperature: housing | 150 °C | 150 °C |
| Operating pressure max. | 1000 hPa (abs.) | 2000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM | FKM |
| Differential pressure in opening direction | 1500 hPa | 2000 hPa |
| Differential pressure in closing direction | 5000 hPa | 4000 hPa |
| Housing | Stainless steel | Stainless steel |
| Weight | 300 g | 300 g |
| Conductance for laminar flow | 2 l/s | 2 l/s |
| Conductance for molecular flow | 0.2 l/s | 0.2 l/s |
| Can be opened to a pressure difference of | 1000 hPa | 4000 hPa |
| Switching frequency | 300 min ⁻¹ | 300 min ⁻¹ |
| Closing/opening time | 7/30 ms | 30/10 ms |
| Protection acc. to DIN 40050 | IP 65 | IP 65 |
| Service life | 2000000 cycles | 2000000 cycles |
| Ambient temperature | 5-40 °C | 5-40 °C |
| Supply | 24 V DC | 24 V DC |
| Supply: Power consumption max. | 10 W | 10 W |

| Order number | | |
|--------------------|-------------------|-------------------|
| Mini inline valves | PF H13 232 | PF H13 233 |

| Accessories | | |
|--------------------------------|---------------------|---------------------|
| Connection, for 1/4" tube O.D. | PT 420 913-T | PT 420 913-T |
| Connection, for 6 mm tube O.D. | PT 420 914-T | PT 420 914-T |
| Connection, DN 10 ISO-KF | PT 420 912-T | PT 420 912-T |

Dimensions



Connection, for 1/4" tube O.D.

Connection, for 6 mm tube O.D.

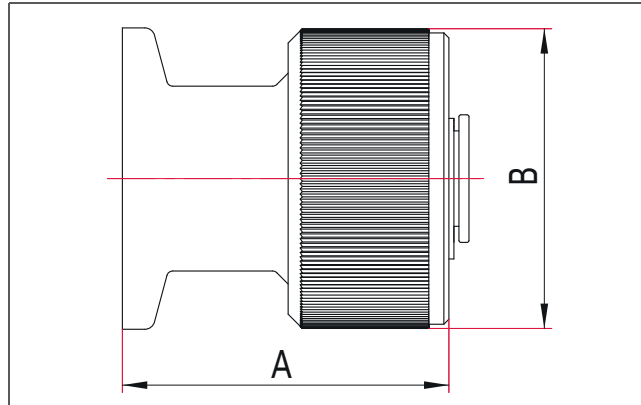
Connection, DN 10 ISO-KF

Venting valve, manual, DN 10 ISO-KF

- Manually operated screw cap for venting with ambient air



Dimensions



| | Venting valve, manually actuated, stainless steel | Venting valve, manually actuated, brass, nickel-plated |
|---|---|--|
| A | 40 mm | 40 mm |
| B | 30 mm | 30 mm |

| Technical data | Venting valve, manually actuated, stainless steel | Venting valve, manually actuated, brass, nickel-plated |
|-------------------|---|--|
| Flange (in) | DN 10 ISO-KF | DN 10 ISO-KF |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM (valve seal) | FKM (valve seal) |
| Pressure range | $1 \cdot 10^{-8}$ hPa to 3000 hPa (abs.) | $1 \cdot 10^{-8}$ hPa to 3000 hPa (abs.) |
| Materials | Stainless steel | Brass, nickel-plated |
| Temperature range | -30 to 130 °C | -30 to 130 °C |

Flanges according to ISO 2861

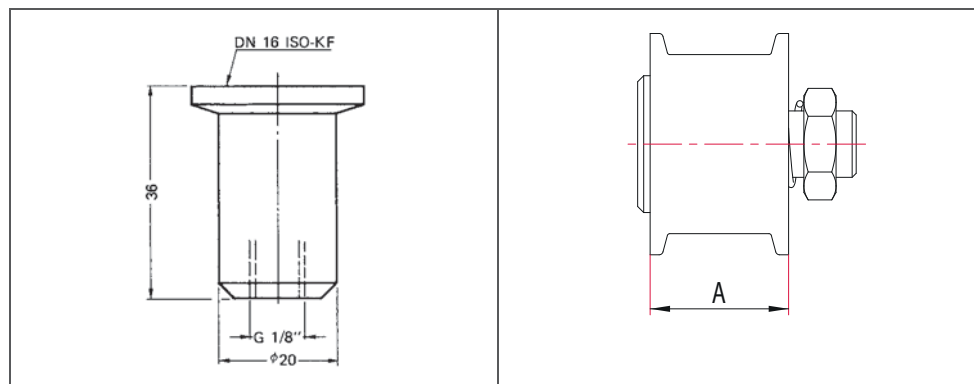
| Order number | | |
|----------------|-----------|-----------|
| Venting valves | 120VBE010 | 140VBE010 |

| Accessories | | |
|--|-----------|-----------|
| Reducer Centering Ring, Stainless Steel 304/ 1.4301, DN 10/16 ISO-KF | 122ZRR016 | 122ZRR016 |

Pressure relief valves, DN 16 and 40 ISO-KF

- Housing material: Stainless steel
- Response pressure: 1200 to 1500 hPa (abs.)
- 120VUS016 and 120VUS040 with modifiable differential pressure to app. +/- 100 hPa

Dimensions



Pressure relief valve, DN 16 ISO-KF

Pressure relief valve, DN 16 ISO-KF

| Technical data | AVA 016 X | Pressure Relief Valve, DN 16 ISO-KF | Pressure Relief Valve, DN 40 KF |
|---|--|--|--|
| Flange (out) | G 1/8" | DN 16 ISO-KF | DN 40 ISO-KF |
| Flange (in) | DN 16 ISO-KF | DN 16 ISO-KF | DN 40 ISO-KF |
| Tightness | $1 \cdot 10^{-9}$ Pa m ³ /s | $1 \cdot 10^{-9}$ Pa m ³ /s | $1 \cdot 10^{-9}$ Pa m ³ /s |
| Seal | FKM | FKM | FKM |
| Differential pressure | not modifiable | modifiable to app. +/- 100 hPa | modifiable to app. +/- 100 hPa |
| Pressure range | $1 \cdot 10^{-8}$ hPa to 1200 hPa (abs.) | $1 \cdot 10^{-7}$ hPa to 500 hPa over pressure | $1 \cdot 10^{-7}$ hPa to 500 hPa over pressure |
| Flow rate max. | 6 l/min | | |
| Housing | Stainless steel | Stainless steel | Stainless steel |
| Can be opened to a pressure difference of | 200 to 500 hPa | app. 400 hPa | app. 200 hPa |
| Temperature range | 0 to 50 °C | 5 to 60 °C | 5 to 60 °C |

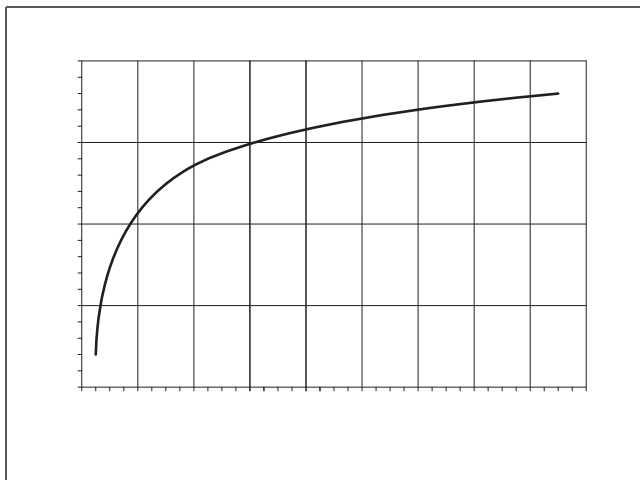
| Order number | | | |
|------------------------|------------|-----------|-----------|
| Pressure relief valves | PF 130 032 | 120VUS016 | 120VUS040 |

Coarse gas dosing valve, manual, DN 10 ISO-KF

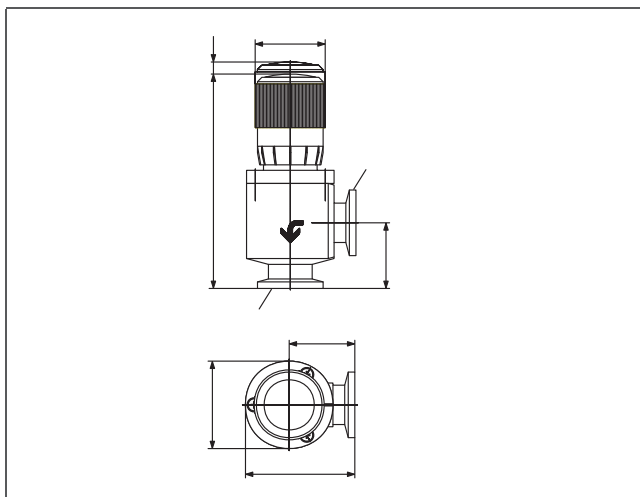
- For slow, manual venting
- Service life: 200000 operating cycles



Characteristic



Dimensions



| Technical data | EVD 010 H |
|---|--|
| Flange (in) | DN 10 ISO-KF |
| Flange (out) | DN 10 ISO-KF |
| Bakeout temperature | 100 °C |
| Operating pressure max. | 3000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-7}$ hPa |
| Tightness | $1 \cdot 10^{-9}$ Pa m ³ /s |
| Seal | FKM |
| Gas flow max. controllable | $1.7 \cdot 10^3$ hPa l/s |
| Gas flow min. controllable | 40 hPa l/s |
| Housing | Aluminum |
| Weight | 0.2 kg |
| Can be opened to a pressure difference of | 3000 hPa |

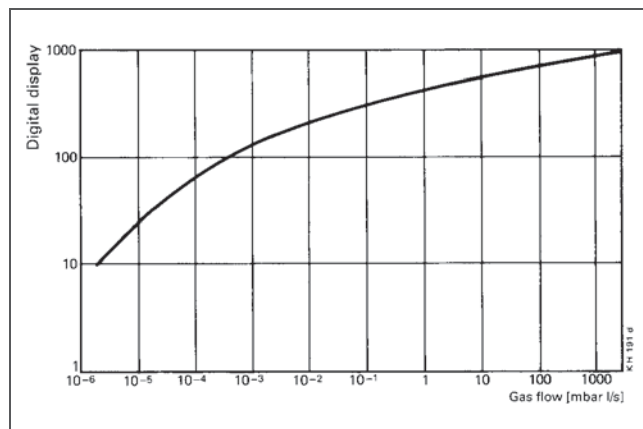
| Order number | |
|-------------------|------------|
| Gas dosing valves | PF I22 001 |

Gas dosing valve with separate shut-off valve, manual, DN 16 ISO-KF

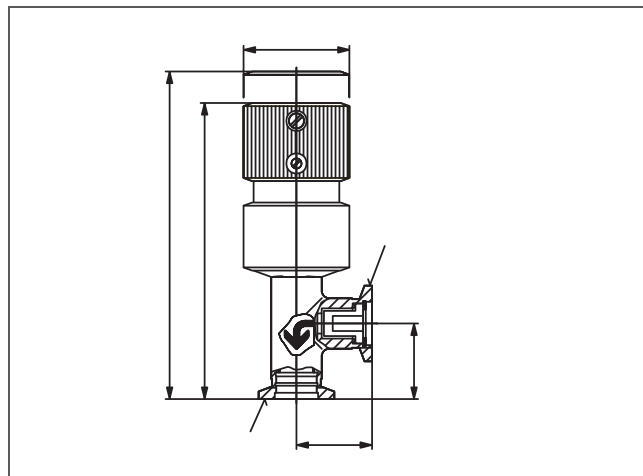


- Closable without changing the gas flow setting
- Optimum characteristic
- Digital position display
- Excellent reproducibility
- Extremely small dead volume
- Very broad regulating range

Characteristic



Dimensions



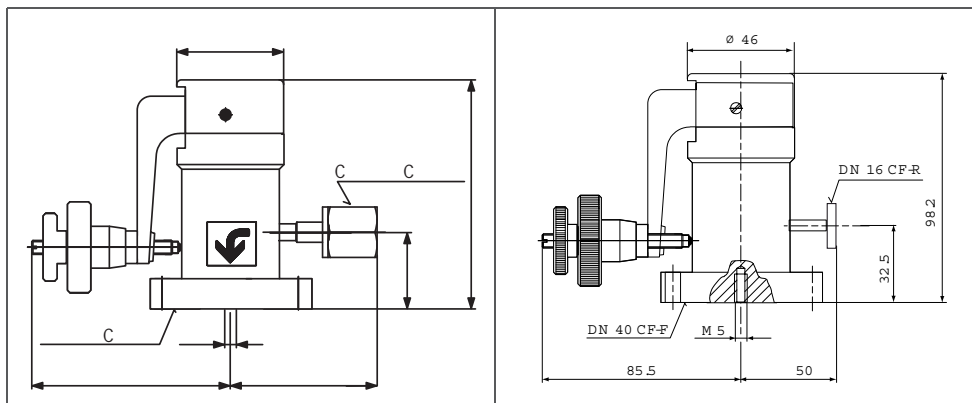
| Technical data | EVN 116 |
|------------------------------|---|
| Flange (out) | DN 16 ISO-KF |
| Flange (in) | DN 16 ISO-KF |
| Bakeout temperature: flanges | 150 °C |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM |
| Differential pressure | 2500 hPa |
| Dosing sleeve | Fluorplastomer |
| Gas flow max. controllable | 1000 hPa l/s |
| Gas flow min. controllable | $5 \cdot 10^{-6}$ hPa l/s |
| Housing/needle/filter | Stainless steel |
| Weight | 0.4 kg |
| Temperature: Operating | 80 °C |
| Dead volume | 0.032 cm ³ |

| Order number | |
|-------------------|------------|
| Gas dosing valves | PF I32 031 |

All-metal gas dosing valve, manual, DN 40 CF

- Minimum dead volume
- Operating temperature up to 200 °C
- For mass spectrometer applications
- Specific routing of gas stream when a capillary (accessory) is used

Dimensions



UDV 040, All-metal gas dosing valve

UDV 046, All-metal gas dosing valve

| Technical data | UDV 040 | UDV 046 |
|---|--|--|
| Flange (out) | DN 40 CF-F | DN 40 CF-F |
| Flange (in) | VCR 1/4" | DN 16 CF-R |
| Actuator | Manual | Manual |
| Operating pressure | 1 · 10 ⁻¹⁰ hPa to 1500 hPa (abs.) | 1 · 10 ⁻¹⁰ hPa to 1500 hPa (abs.) |
| Tightness | 1 · 10 ⁻¹² Pa m ³ /s | 1 · 10 ⁻¹² Pa m ³ /s |
| Inlet pressure max. | 1 · 10 ⁻¹⁰ hPa to 3 MP | 1 · 10 ⁻¹⁰ hPa to 3 MP |
| Gas flow max. at inlet pressure of 1000 hPa | 600 hPa | 600 hPa |
| Flow rate min. for: air | 1 · 10 ⁻⁹ hPa l/s | 1 · 10 ⁻⁹ hPa l/s |
| Flow rate min. for: pure gases | 1 · 10 ⁻¹⁰ hPa l/s | 1 · 10 ⁻¹⁰ hPa l/s |
| Housing | Stainless steel | Stainless steel |
| Weight | 1.4 kg | 1.4 kg |
| Temperature: Bakeout | 350 °C | 350 °C |
| Temperature: Operating | 200 °C | 200 °C |
| Valve seat | Copper | Copper |
| Valve plate | Sapphire | Sapphire |

| Order number | | |
|-------------------|------------|------------|
| Gas dosing valves | PF I52 031 | PF I52 035 |

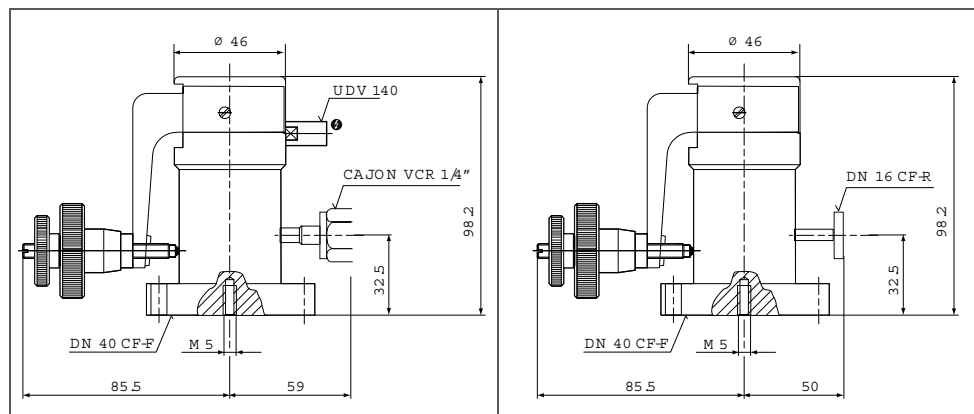
| Accessories | | |
|---|---------------|---------------|
| Complete capillary, vacuum side, length 1 m | PT 418 976 -T | PT 418 976 -T |
| Complete capillary, inlet side, length 2 m | PT 420 537 -T | PT 420 537 -T |
| Heater, 200 °C | PT 420 376-T | PT 420 376-T |

All-metal gas regulating valve, manual/thermomechanic, DN 40 CF



- Minimum dead volume
- Operating temperature up to 200 °C
- For mass spectrometer applications
- Specific routing of gas stream when a capillary (accessory) is used

Dimensions



UDV 140, All-metal gas regulating valve

UDV 146, All-metal gas regulating valve

| Technical data | UDV 140 | UDV 146 |
|---|---|---|
| Flange (out) | DN 40 CF-F | DN 40 CF-F |
| Flange (in) | VCR 1/4" | DN 16 CF-R |
| Actuator | Manual/ thermomechanic | Manual/ thermomechanic |
| Operating pressure | 1 · 10 ⁻¹⁰ hPa to 1500 hPa (abs.) | 1 · 10 ⁻¹⁰ hPa to 1500 hPa (abs.) |
| Tightness | 1 · 10 ⁻¹² Pa m ³ /s | 1 · 10 ⁻¹² Pa m ³ /s |
| Inlet pressure max. | 1 · 10 ⁻¹⁰ hPa to 3 MP | 1 · 10 ⁻¹⁰ hPa to 3 MP |
| Gas flow max. at inlet pressure of 1000 hPa | 600 hPa | 600 hPa |
| Flow rate min. for: air | 1 · 10 ⁻⁹ hPa l/s | 1 · 10 ⁻⁹ hPa l/s |
| Flow rate min. for: pure gases | 1 · 10 ⁻¹⁰ hPa l/s | 1 · 10 ⁻¹⁰ hPa l/s |
| Housing | Stainless steel | Stainless steel |
| Weight | 1.4 kg | 1.4 kg |
| Temperature: Bakeout | (Cable removed) 350 °C | (Cable removed) 350 °C |
| Temperature: Operating | 200 °C | 200 °C |
| Valve seat | Copper | Copper |
| Valve plate | Sapphire | Sapphire |

| Order number | | |
|-----------------------|------------|------------|
| Gas regulating valves | PF I52 032 | PF I52 034 |

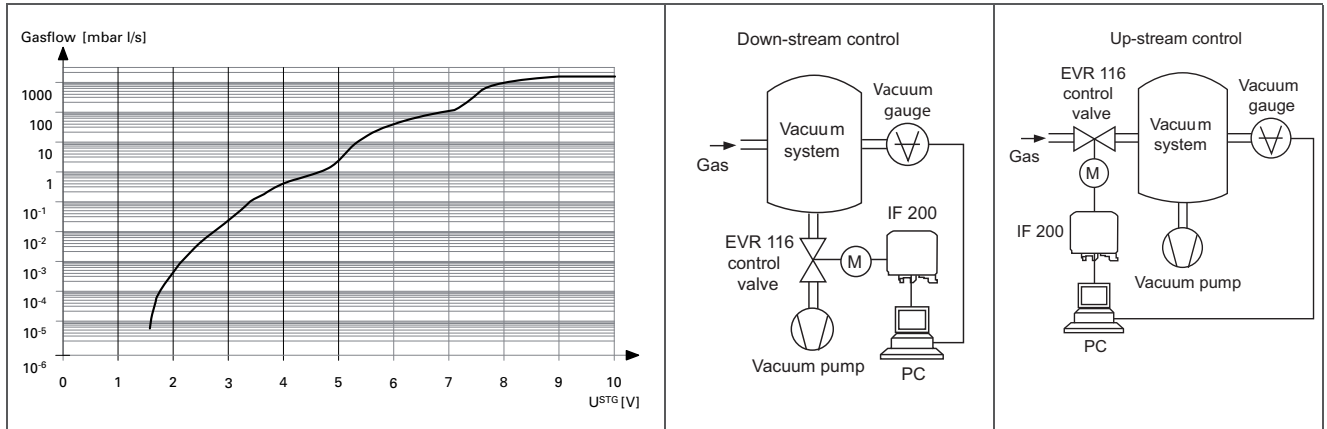
| Accessories | | |
|--|---------------|---------------|
| Complete capillary, vacuum side, length 1 m | PT 418 976 -T | PT 418 976 -T |
| Complete capillary, inlet side, length 2 m | PT 420 537 -T | PT 420 537 -T |
| Heater, 200 °C | PT 420 376-T | PT 420 376-T |
| RVG 050 C, Control unit all-metal gas regulating valves, 115/230 V | PF I00 795 | PF I00 795 |

Gas regulating valve EVR 116, motorized, DN 16 ISO-KF



- High gas throughput
- Very broad regulating range
- With integrated motor control electronics

Characteristic

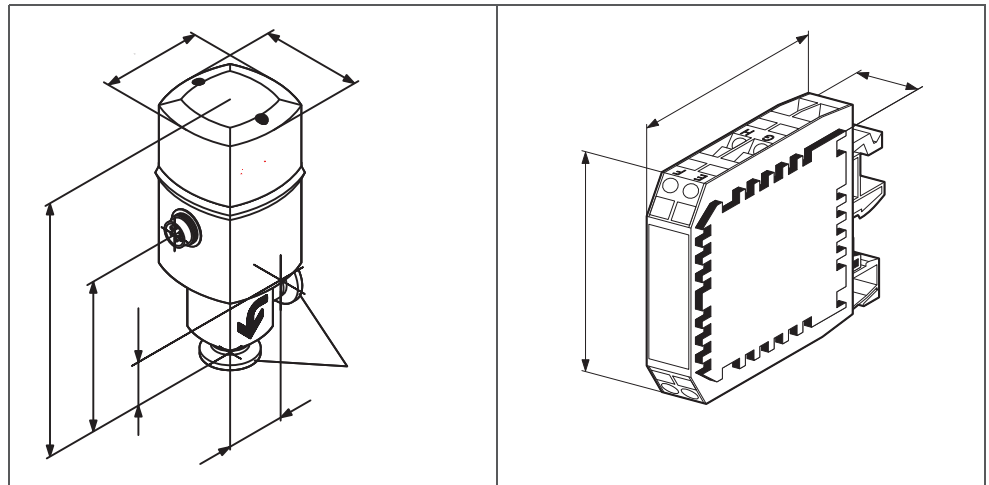


EVR 116, Gas regulating valve

IF 200, Interface for EVR 116

IF 200, Interface for EVR 116

Dimensions



EVR 116, Gas regulating valve

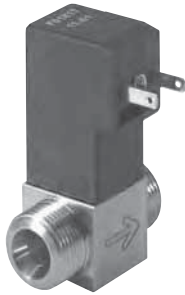
IF 200, Interface for EVR 116

| Technical data | EVR 116 | IF 200, Interface for EVR 116 |
|-------------------------------|---|-------------------------------|
| Connection | | Terminals |
| Flange (out) | DN 16 ISO-KF | |
| Flange (in) | DN 16 ISO-KF | |
| Control | RVC 300 or IF 200 | |
| Control | 60 °C | |
| Bakeout temperature: actuator | 80 °C | |
| Bakeout temperature: housing | | Mounting rail |
| Fixation | 2500 hPa (abs.) | |
| Operating pressure max. | $1 \cdot 10^{-8}$ hPa | |
| Operating pressure min. | $1 \cdot 10^{-10}$ Pa m ³ /s | |
| Tightness | FKM | |
| Seal | Fluorplastomer | |
| Dosing sleeve | 1250 hPa l/s | |
| Gas flow max. controllable | $5 \cdot 10^{-6}$ hPa l/s | |
| Gas flow min. controllable | Stainless steel | |
| Housing/needle/filter | 0.75 kg | 40 g |
| Weight | 0-10 V DC | |
| Control voltage | < 3 / 4 s | |
| Closing/opening time | | RS-232-C |
| Interface | 5-40 °C | |
| Ambient temperature | | 0.5 A |
| Supply | 24 V DC | 24 V DC |
| Supply: Voltage | 12 W | |

| Order number | | |
|-----------------------|------------|------------|
| Gas regulating valves | PF I39 931 | PF I00 091 |

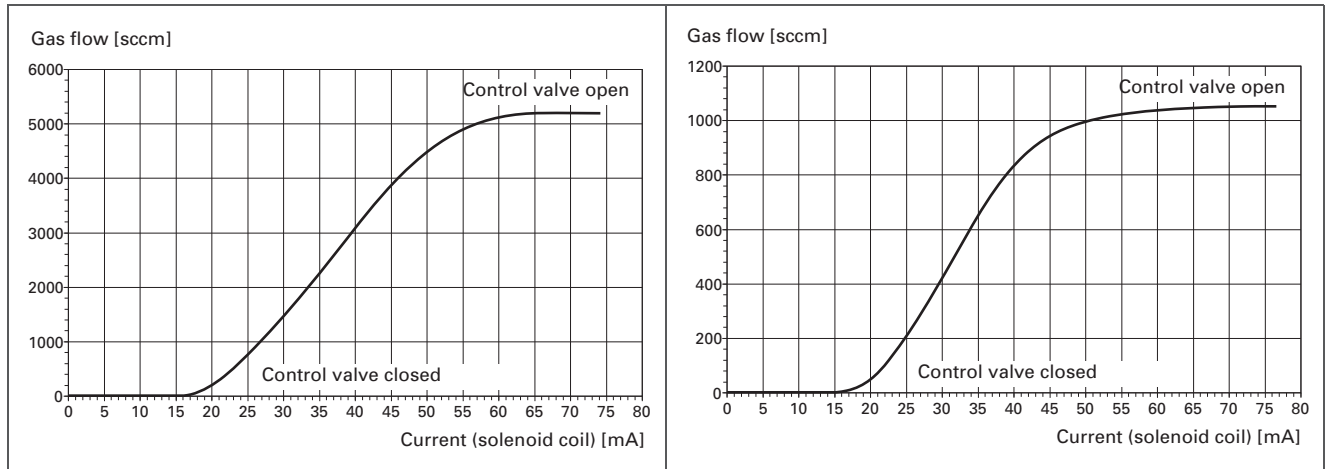
| Accessories | | |
|---------------------------------|--------------|--------------|
| RVC-EVR, connection cable, 3 m | PT 583 115-T | PT 583 115-T |
| RVC-EVR, connection cable, 5 m | PT 583 116-T | PT 583 116-T |
| RVC-EVR, connection cable, 10 m | PT 583 117-T | PT 583 117-T |
| RVC-EVR, connection cable, 15 m | PT 583 118-T | PT 583 118-T |
| RVC-EVR, connection cable, 20 m | PT 583 119-T | PT 583 119-T |

Gas regulating valves, solenoid actuated, RME 005 A, DN 5



- Two connections required as accessories
- Including connector
- Drive: Solenoid
- Regulating range from 0.85 to 85 hPa l/s
- Normally closed (n.c.)

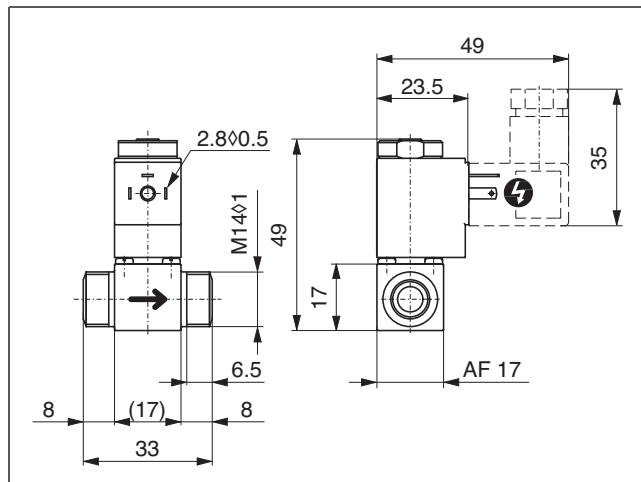
Characteristic



RME 005 A, Gas regulating valve

RME 005 A, Gas regulating valve

Dimensions



| Technical data | RME 005 A |
|--|---|
| Flange (in) | DN 5 mm M14x1 |
| Flange (out) | DN 5 mm M14x1 |
| Response time | < 30 ms |
| Control | RVC 300 |
| Bakeout temperature: actuator, powerless | 80 °C |
| Operating pressure max. | 2000 hPa (abs.) |
| Operating pressure min. | $1 \cdot 10^{-8}$ hPa |
| Tightness | $1 \cdot 10^{-10}$ Pa m ³ /s |
| Seal | FKM |
| Mounting orientation | Any, preferably perpendicular |
| Duty cycle (ED) | 100 % |
| Housing | Stainless steel |
| Weight | 96 g |
| Control voltage | 0-24 V DC |
| Ambient temperature | 5-50 °C |
| Supply: Power consumption max. | 2.5 W |

| | RME 005 A |
|----------------------------|-------------------|
| Gas flow max. controllable | 85 hPa l/s |
| Gas flow min. controllable | 0.85 hPa l/s |
| Order number | PF I13 931 |
| Gas flow max. controllable | 17 hPa l/s |
| Gas flow min. controllable | 0.17 hPa l/s |
| Order number | PF I13 932 |
| Gas flow max. controllable | 8.5 hPa l/s |
| Gas flow min. controllable | 0.085 hPa l/s |
| Order number | PF I13 933 |
| Gas flow max. controllable | 1.7 hPa l/s |
| Gas flow min. controllable | 0.017 hPa l/s |
| Order number | PF I13 934 |
| Gas flow max. controllable | 0.8 hPa l/s |
| Gas flow min. controllable | 0.008 hPa l/s |
| Order number | PF I13 935 |
| Gas flow max. controllable | 0.17 hPa l/s |
| Gas flow min. controllable | 0.0017 hPa l/s |
| Order number | PF I13 936 |

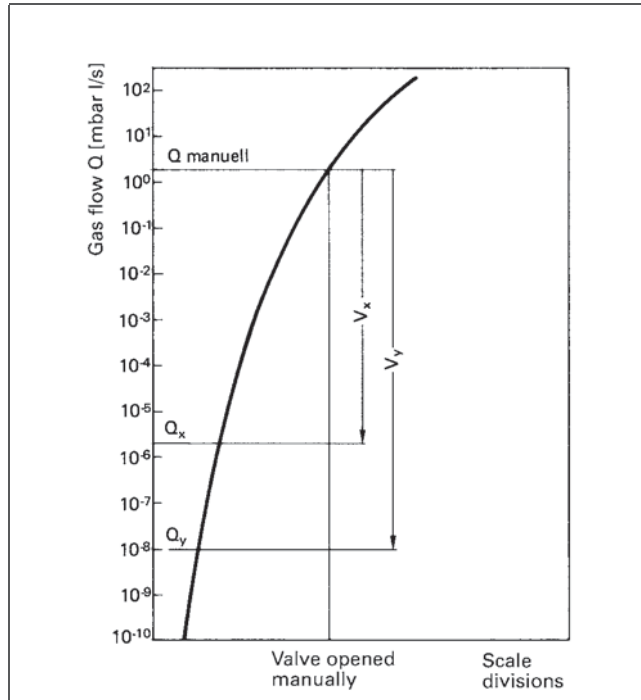
| Accessories | |
|---|--------------|
| Connection, for 1/4" tube O.D. | PT 420 913-T |
| Connection, for 6 mm tube O.D. | PT 420 914-T |
| Connection, DN 10 ISO-KF | PT 420 912-T |
| RVC 300 - RME 005, connection cable, 3 m | PT 250 003-T |
| RVC 300 - RME 005, connection cable, 5 m | PT 250 005-T |
| RVC 300 - RME 005, connection cable, 10 m | PT 250 010-T |
| RVC 300 - RME 005, connection cable, 15 m | PT 250 015-T |
| RVC 300 - RME 005, connection cable, 20 m | PT 250 020-T |
| RVC 300 - RME 005, connection cable, 25 m | PT 250 025-T |

Control unit RVG 050 C for UDV 140 and UDV 146

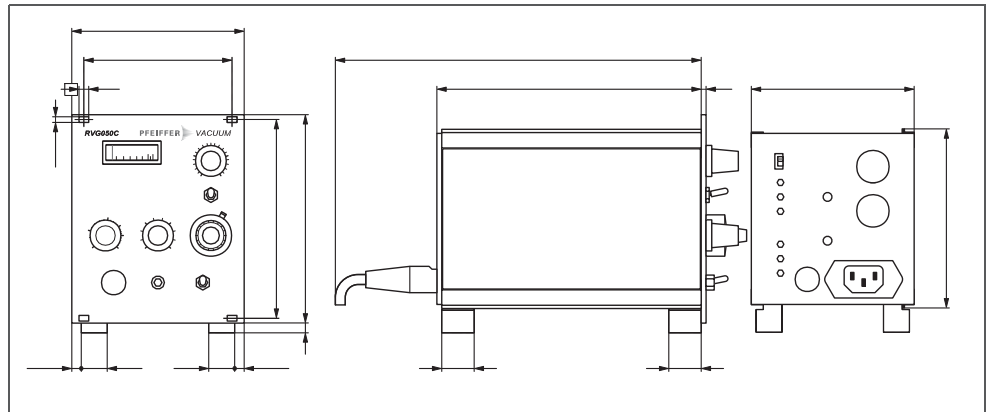


- For creating a control section in conjunction with UHV gas dosing valves UDV 140 or UDV 146

Characteristic



Dimensions



| Technical data | RVG 050 C |
|---|------------------------------------|
| Output for valve heater: Voltage | 20 V DC |
| Output for valve heater: Current | 0.5 A |
| Weight | 2.3 kg |
| Actual value input: Analog voltage | 10 V DC |
| Actual value input: Impedance | 100 kΩ |
| Power consumption | 20 VA |
| Mains requirement: voltage (selectable) | 115/230 V AC |
| Control range for 1 bar N ₂ , inlet side | 1 · 10 ⁻⁹ - 100 hPa l/s |
| Control characteristic (proportional-integral) | PI |
| Set point input: External | 10 V DC |
| Set point input: Impedance | 100 kΩ |
| Set point input: Internal (scale division) | 0-1000 |
| Ambient temperature | 5-50 °C |
| Time constant, adjustable | 2-30 s |

| Order number | |
|-----------------------|------------|
| Gas regulating valves | PF I00 795 |

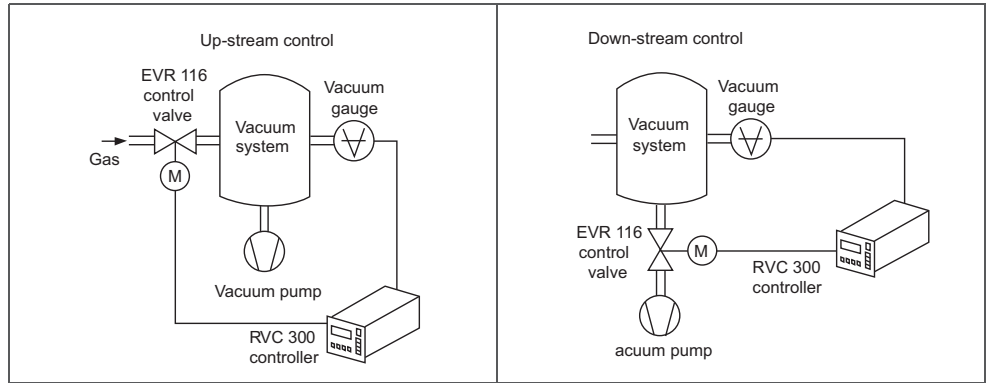
| Accessories | |
|---|---------------|
| UDV 146, All-metal gas regulating valve, DN 16 CF-F | PF I52 034 |
| RVG-UDV, extension cable, 2 m, 200 °C | PT 519 953 -T |
| RVG-UDV, connection cable, 3 m, 80 °C | PT 519 178 -T |
| RVG-UDV, connection cable, 12 m, 80 °C | PT 519 343 -T |

Control unit RVC 300 for EVR 116 and RME 005 A



- For creating a control section in conjunction with EVR 116 or RME 005 A regulating valves
- Simple operation
- Self-explanatory LCD display and function keys
- Analog/digital inputs/outputs and interfaces
- Settable PID regulating algorithm
- For system manufacturers, as a supplement to their own control unit

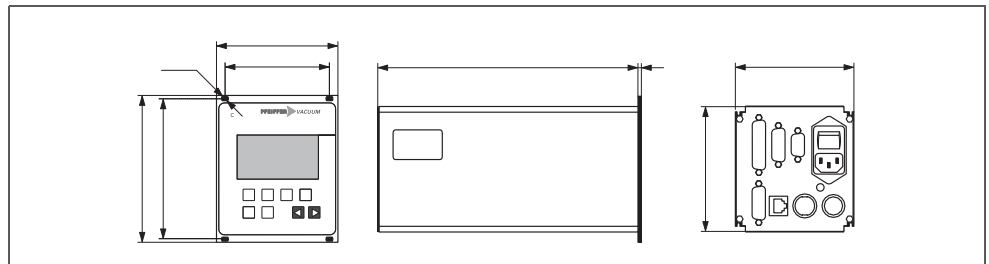
Characteristic



RVC 300, Control unit gas regulating valves

RVC 300, Control unit gas regulating valves

Dimensions



| Technical data | RVC 300 |
|--------------------------------------|---|
| Output: Analog | 4 channels: Pressure sensor signal/ valve signal (0-10 V DC)/ valve position EVR 116/ + 10 V DC reference voltage (10 mA) |
| Output: Digital | 8 channels: Valve closed/ valve open/ valve in position/ valve error/ sensor error/ ready/ emission ON/ sensor status |
| Input: Analog | 2 channels: Pressure setpoint (nominal value)/ flow setpoint (nominal value) |
| Input: Digital | 8 channels: Flow decrease/ flow increase/ external CLOSE/ external OPEN/ flow mode/ pressure mode/ emission ON/ Degas ON |
| Weight | 1.65 kg |
| Mains requirement: frequency (range) | 50/60 Hz |
| Mains requirement: power consumption | 50 VA |
| Mains requirement: voltage (range) | 90-250 V |
| Control range | APR 250/260: 1 - 1100 hPa |
| Control range | CMR 361/371: 1 - 1100 hPa |
| Control range | TPR 280/281: $5 \cdot 10^{-4}$ - 1000 hPa |
| Control range | PCR 280: $5 \cdot 10^{-4}$ - 1500 hPa |
| Control range | CMR 362/372: 0.1 - 110 hPa |
| Control range | CMR 363/373: $1 \cdot 10^{-2}$ - 11 hPa |
| Control range | CMR 364/374: $1 \cdot 10^{-3}$ - 1.1 hPa |
| Control range | CMR 365/375: $1 \cdot 10^{-4}$ - 0.11 hPa |
| Control range | IKR 251/261: $2 \cdot 10^{-9}$ - $1 \cdot 10^{-2}$ hPa |
| Control range | IMR 265: $2 \cdot 10^{-6}$ - 1000 hPa |
| Control range | PBR 260: $5 \cdot 10^{-10}$ - 1000 hPa |
| Control range | PKR 251/261: $5 \cdot 10^{-9}$ - 1000 hPa |
| Interface: Baud rates | 9600 Bd |
| Interface: Type | RS-232, RS-485 |
| Temperature: Operating | 5 to 50 °C |
| Temperature: Storage | -40 to 60 °C |

| Order number | |
|-----------------------|------------|
| Gas regulating valves | PF I00 792 |

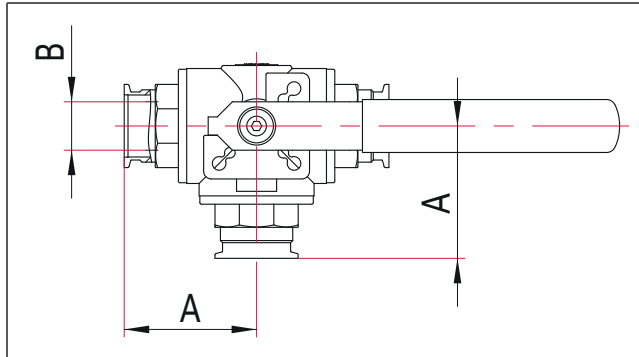
| Accessories | |
|---|--------------|
| RVC 300 - RME 005, connection cable, 3 m | PT 250 003-T |
| RVC 300 - RME 005, connection cable, 5 m | PT 250 005-T |
| RVC 300 - RME 005, connection cable, 10 m | PT 250 010-T |
| RVC 300 - RME 005, connection cable, 15 m | PT 250 015-T |
| RVC 300 - RME 005, connection cable, 20 m | PT 250 020-T |
| RVC-EVR, connection cable, 3 m | PT 583 115-T |
| RVC-EVR, connection cable, 5 m | PT 583 116-T |
| RVC-EVR, connection cable, 10 m | PT 583 117-T |
| RVC-EVR, connection cable, 15 m | PT 583 118-T |
| RVC-EVR, connection cable, 20 m | PT 583 119-T |
| RME 005 A, Gas regulating valve, regulating range from 0.0017 to 0.17 hPa l/s | PF I13 936 |
| RME 005 A, Gas regulating valve, regulating range from 0.008 to 0.8 hPa l/s | PF I13 935 |
| RME 005 A, Gas regulating valve, regulating range from 0.017 to 1.7 hPa l/s | PF I13 934 |
| RME 005 A, Gas regulating valve, regulating range from 0.085 to 8.5 hPa l/s | PF I13 933 |
| RME 005 A, Gas regulating valve, regulating range from 0.17 to 17 hPa l/s | PF I13 932 |
| RME 005 A, Gas regulating valve, regulating range from 0.85 to 85 hPa l/s | PF I13 931 |
| EVR 116, Gas regulating valve | PF I39 931 |

Ball valve, 3-way, manual, DN 16 to 40 ISO-KF



- Ball made from stainless steel (1.4401) with a T- or L-shaped through hole
- Ball valve with large-scale free clearance
- Not overlap-free

Dimensions



| | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
|---|--------------|--------------|--------------|
| A | 60 mm | 75 mm | 87.5 mm |
| B | 11 mm | 20 mm | 32 mm |

| Technical data | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
|-------------------|--|--|--|
| Actuator | 90° turning of handle | 90° turning of handle | 90° turning of handle |
| Tightness | $< 1 \cdot 10^{-7}$ Pa m ³ /s | $< 1 \cdot 10^{-7}$ Pa m ³ /s | $< 1 \cdot 10^{-7}$ Pa m ³ /s |
| Seal | Ball: PTFE (reinforced with fiberglass); Stem: PTFE/FKM | Ball: PTFE (reinforced with fiberglass); Stem: PTFE/FKM | Ball: PTFE (reinforced with fiberglass); Stem: PTFE/FKM |
| Pressure range | $1 \cdot 10^{-5}$ hPa to 500 hPa over pressure | $1 \cdot 10^{-5}$ hPa to 500 hPa over pressure | $1 \cdot 10^{-5}$ hPa to 500 hPa over pressure |
| Flange | Stainless steel 1.4301 | Stainless steel 1.4301 | Stainless steel 1.4301 |
| Housing | Stainless steel 1.4408 | Stainless steel 1.4408 | Stainless steel 1.4408 |
| Nominal diameter | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Service life | 20000 Cycles | 20000 Cycles | 20000 Cycles |
| Temperature range | -20 to 80 °C media temperature | -20 to 80 °C media temperature | -20 to 80 °C media temperature |

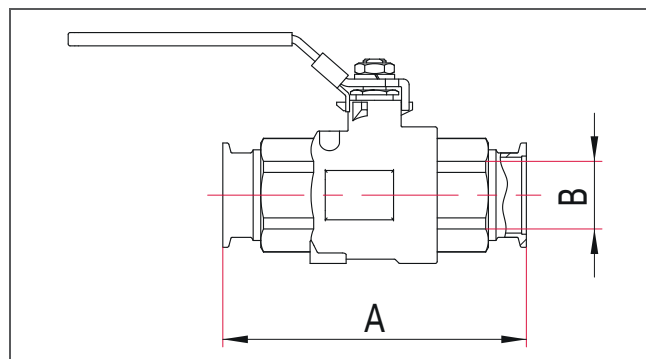
| Order number | | | |
|--------------|-------------|-------------|-------------|
| Ball valves | 120VKD016-L | 120VKD025-L | 120VKD040-L |
| Ball valves | 120VKD016-T | 120VKD025-T | 120VKD040-T |

Ball valve, manual, stainless steel, DN 10 to 40 ISO-KF

- Ball valve with large-scale free clearance
- Ball made from stainless steel (1.4401)



Dimensions



| | DN 10 ISO-KF | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
|---|--------------|--------------|--------------|--------------|
| A | 100 mm | 110 mm | 130 mm | 160 mm |
| B | 10 mm | 15 mm | 24 mm | 36 mm |

| Technical data | DN 10 ISO-KF | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
|-------------------|---|---|---|---|
| Actuator | 90° turning of handle | 90° turning of handle | 90° turning of handle | 90° turning of handle |
| Tightness | $< 1 \cdot 10^{-7}$ Pa m ³ /s | $< 1 \cdot 10^{-7}$ Pa m ³ /s | $< 1 \cdot 10^{-7}$ Pa m ³ /s | $< 1 \cdot 10^{-7}$ Pa m ³ /s |
| Seal | PTFE (glass fiber reinforced) | PTFE (glass fiber reinforced) | PTFE (glass fiber reinforced) | PTFE (glass fiber reinforced) |
| Pressure range | 1 · 10 ⁻⁵ hPa bis 500 hPa over pressure | 1 · 10 ⁻⁵ hPa bis 500 hPa over pressure | 1 · 10 ⁻⁵ hPa bis 500 hPa over pressure | 1 · 10 ⁻⁵ hPa bis 500 hPa over pressure |
| Flange | Stainless steel 1.4301 | Stainless steel 1.4301 | Stainless steel 1.4301 | Stainless steel 1.4301 |
| Housing | Stainless steel 1.4408 | Stainless steel 1.4408 | Stainless steel 1.4408 | Stainless steel 1.4408 |
| Nominal diameter | DN 10 ISO-KF | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Service life | 20000 Cycles | 20000 Cycles | 20000 Cycles | 20000 Cycles |
| Temperature range | -20 to 80 °C media temperature | -20 to 80 °C media temperature | -20 to 80 °C media temperature | -20 to 80 °C media temperature |

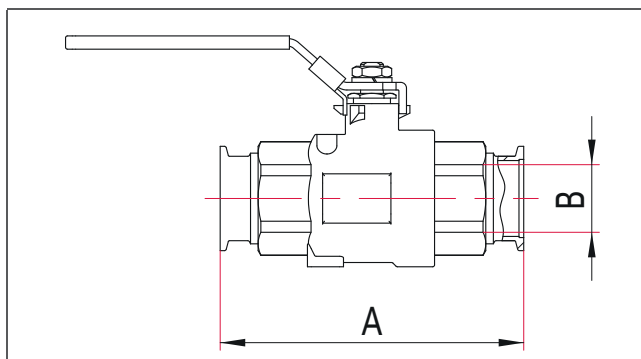
| Order number | | | | |
|--------------|------------------|------------------|------------------|------------------|
| Ball valves | 120VKZ010 | 120VKZ016 | 120VKZ025 | 120VKZ040 |

Ball valve, manual, brass, nickel-plated, DN 10 to 40 ISO-KF

- Ball valve with large-scale free clearance
- Ball made from brass, hard-chrome plated



Dimensions



| | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
|---|--------------|--------------|--------------|
| A | 90 mm | 110 mm | 135 mm |
| B | 15 mm | 24 mm | 40 mm |

| Technical data | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
|-------------------|--|--|--|
| Actuator | 90° turning of handle | 90° turning of handle | 90° turning of handle |
| Tightness | $< 1 \cdot 10^{-7}$ Pa m ³ /s | $< 1 \cdot 10^{-7}$ Pa m ³ /s | $< 1 \cdot 10^{-7}$ Pa m ³ /s |
| Seal | Ball: PTFE; Stem: FKM/NBR | Ball: PTFE; Stem: FKM/NBR | Ball: PTFE; Stem: FKM/NBR |
| Pressure range | 1 · 10 ⁻⁵ hPa bis 500 hPa over pressure | 1 · 10 ⁻⁵ hPa bis 500 hPa over pressure | 1 · 10 ⁻⁵ hPa bis 500 hPa over pressure |
| Flange | Stainless steel 1.4301 | Stainless steel 1.4301 | Stainless steel 1.4301 |
| Housing | Brass, nickel plated | Brass, nickel plated | Brass, nickel plated |
| Nominal diameter | DN 16 ISO-KF | DN 25 ISO-KF | DN 40 ISO-KF |
| Service life | 20000 Cycles | 20000 Cycles | 20000 Cycles |
| Temperature range | -20 to 80 °C media temperature | -20 to 80 °C media temperature | -20 to 80 °C media temperature |

| Order number | | | |
|--------------|-----------|-----------|-----------|
| Ball valves | 140VKZ016 | 140VKZ025 | 140VKZ040 |

Feedthroughs

Transfer of electrical currents, signals, fluids and movements into the vacuum



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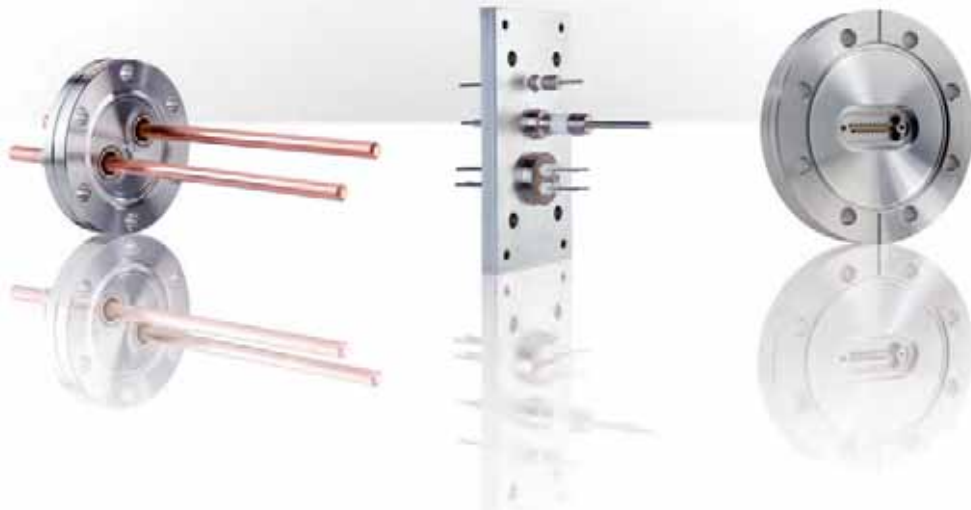


Feedthroughs

Transfer of electrical currents, signals, fluids and movements into the vacuum

The operation of vacuum equipment often requires the transfer of electrical currents, voltages and signals, fluids or mechanical movements through the recipient walls. Pfeiffer Vacuum offers a vast selection of feedthroughs that serve as solutions for various requirements for vacuum sealed installation in flanges. The range extends from elastomer sealed components for high vacuum use to hermetically sealed feedthroughs for UHV applications.

In addition to our standard solutions we also offer custom solutions on request. In accordance with your requirements, we can combine every possible selection of standard feedthroughs on a flange, or weld additional conventionally used feedthroughs.



Overview of series and applications

| | Analytics | Semiconductor | Coating | Industry | R & D | |
|----------------------------|---|---------------|---------|----------|-------|------|
| ■ = recommended | Electron microscopy | | | | | |
| | Leak detection | | | | | |
| | Mass spectrometry | | | | | |
| | Surface analysis | | | | | |
| | Plasma monitoring | | | | | |
| | Residual gas analysis | | | | | |
| | Lithography | | | | | |
| | PVD (Physical Vapor Deposition) | | | | | |
| | CVD (Chemical Vapor Deposition) | | | | | |
| | Plasma etching | | | | | |
| | Implantation – source | | | | | |
| | Implantation – beamline | | | | | |
| | Inspection | | | | | |
| | Bonding | | | | | |
| | MBE (Molecular Beam Epitaxy) | | | | | |
| | Load locks, transfer chambers, handling systems | | | | | |
| | Flat panel display (FPD) | | | | | |
| | LED / OLED | | | | | |
| | Hard disk coating | | | | | |
| | Photovoltaics | | | | | |
| | Glass coating (PVD) | | | | | |
| | CD, DVD, Blu-ray production (PVD) | | | | | |
| | Optical coating (PVD) | | | | | |
| | Wear protection (PVD, CVD) | | | | | |
| | Hard coating | | | | | |
| | Medical technology | | | | | |
| | Industrial leak detection | | | | | |
| | Electron beam welding | | | | | |
| | Insulation vacuums | | | | | |
| | Bulb and tube manufacturing | | | | | |
| | Heat treatment | | | | | |
| | Vacuum drying | | | | | |
| | Vacuum furnaces | | | | | |
| | Nuclear research | | | | | |
| | Fusion technology | | | | | |
| | Plasma research | | | | | |
| | Particle accelerators | | | | | |
| | Space simulation | | | | | |
| | Low temperature research | | | | | |
| | Elementary particle physics | | | | | |
| | Nanotechnology | | | | | |
| | Biotechnology | | | | | |
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| Feedthroughs | | | | | | |
| Electrical feedthroughs | ■ | ■ | ■ | ■ | ■ | 306 |
| Thermocouple feedthroughs | ■ | ■ | ■ | ■ | ■ | 330 |
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| Rotary feedthroughs | ■ | ■ | ■ | ■ | ■ | 340 |
| Rotary/linear feedthroughs | ■ | ■ | ■ | ■ | ■ | 346 |
| Rotary feedthroughs | ■ | ■ | ■ | ■ | ■ | 350 |

Features at a glance

| | Nominal diameter | | | | | | Flange systems | | | Page |
|----------------------------|------------------|-------|-------|-------|-------|--------|----------------|-------|----|------|
| | DN 16 | DN 25 | DN 40 | DN 50 | DN 63 | DN 100 | ISO-KF | ISO-K | CF | |
| Feedthroughs | | | | | | | | | | |
| Electrical feedthroughs | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 306 |
| Thermocouple feedthroughs | ■ | ■ | ■ | | | | ■ | | ■ | 330 |
| Fluid feedthroughs | ■ | | ■ | | | | ■ | | ■ | 334 |
| Isolators | ■ | | ■ | | | | ■ | | ■ | 338 |
| Pipe feedthroughs | ■ | ■ | ■ | | | | ■ | | | 339 |
| Rotary feedthroughs | ■ | | ■ | | ■ | | ■ | ■ | ■ | 340 |
| Rotary/linear feedthroughs | ■ | ■ | ■ | | | | ■ | | ■ | 346 |
| Linear feedthroughs | ■ | | ■ | | | | ■ | | ■ | 350 |



Customer benefits

- Specific applications possible
- Compact
- High reliability
- Very long service life



Electrical feedthroughs



Thermocouple feedthroughs



Fluid feedthroughs

Series

Electrical feedthroughs serve to transfer electrical power or signals. We offer individual and multiple feedthroughs, for operating voltages up to 30 kV and currents of up to 600 A. We offer wire conductor, coaxial, sub-D and round socket connector versions. In addition you can also find the appropriate plugs, connectors and terminals for air and vacuum side connections.

Thermocouple feedthroughs transmit weak thermal electrical voltages and need to be adapted to the thermocouple used. The materials in the two-wire conductor of our feedthroughs for type K thermocouples are identical with those of the thermocouple and thus provide a thermoelectrically neutral transmission of the thermoelectric voltage. Should additional electrical capacity be transmitted, you may select a combination feedthrough. For mantle thermocouples we offer elastomer-sealed feedthroughs with o-rings that provide a vacuum seal for the mantle.

Fluid Feedthroughs are pipes welded into the flange, whose ends are open or have Swagelok® or VCR connections. Should cold or warm fluid be fed through, the use of thermally isolated versions is recommended.

Isolators are used for the galvanic separation of areas. The ceramics soldered to the flange connections provide a hermetic seal and are designed for potential differences of up to 30 kV.

Pipe Feedthroughs provide a vacuum sealed clamp around glass or metal tubes through two elastomeric O-rings positioned in series. The feedthroughs are available in diameters of 10 to 25 mm.

Mechanical feedthroughs are devices for transmitting movements into the vacuum. Their actuator is fitted vacuum-sealed in a flange. We offer rotary feedthroughs, rotary/linear feedthroughs and linear feedthroughs: elastomer-sealed for the high vacuum range or hermetically sealed and UHV capable as bellows-sealed or magnetically coupled variants. A further selection of devices for transferring movement in the vacuum can be found in the „Manipulators“ chapter.

General information

All Pfeiffer Vacuum components meet the quality requirements for vacuum components. The feedthroughs are helium leak tested and have a better leakage rate than 10^{-10} Pa m³/s for ISO-KF, ISO-K flanges and 10^{-11} Pa m³/s for CF flanges. The welding adapters are welded from the inside making them vacuum suitable and avoiding virtual leaks such as cracks and blind holes.

Important information relating to the technical data

The minimum final pressure which can be attained in the overall system depends on a number of factors, in particular the pump system, the desorption rates, the interior surface and the pump-down time. Minimum pressures listed in the product description are empirical values that can be achieved with a well designed vacuum system. In individual cases they may be exceeded or not achieved. When using elastomer seals the gas permeability (permeation) also needs to be taken into account. This is dependent on the material, temperature and type of gas.

The permissible upper and lower temperature limits for the overall system are based on the lowest upper value and the highest lower value for the system components involved. Please take into account the various maximum temperature conditions in the vacuum and air. High temperatures in the air create corrosion on the conducting materials or at the soldering spots. Low temperatures can lead to condensation of humidity and thus to corrosion or flashovers. Such conditions need to be prevented along with the use of fluids that may damage the feedthroughs.

The flange connections and components were developed to provide vacuum sealed connections. They are only able to bear limited loads. It is therefore necessary to examine whether structural or dynamic loads need to be borne by additional elements (e.g. brackets) when designing a vacuum system.

Feedthroughs insulated using ceramics must not to be subjected to mechanical loads. Damage to the ceramics generally leads to a leak and may result in a reduction or loss of electrical isolation.

The operating voltages listed are based on the direct voltage and the ambient conditions: Room temperature, external dry air, internal vacuum < 10^{-4} hPa. In the event of particularly high gas pressures, flashovers may occur depending on the combination of the residual gas, the electrode intervals and the orientation of the electrical field. High temperatures reduce the maximum permitted operating voltages and currents.

When connecting and operating feedthroughs, relevant local safety regulations must be adhered to.



Isolators



Pipe feedthroughs



Mechanical feedthroughs

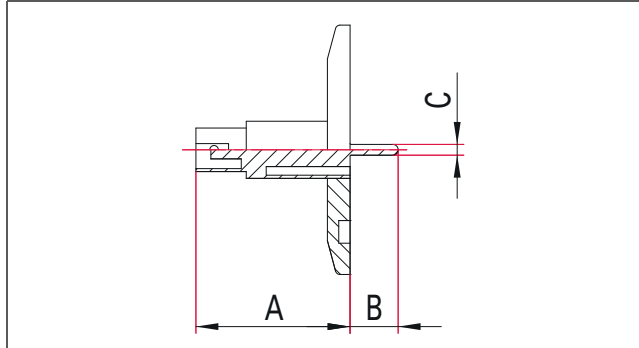
Coaxial Feedthrough, Flanged, BNC

- Flange material: Stainless steel
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 500 V DC
- Current: 3 A per pin
- Temperature range: -100 to 300 °C (vacuum side)
- Including atmosphere sided plug (-65 to 165 °C)

ISO-KF, BNC, Grounded Shield

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 KF | 1 | 36 | 8 | 2.4 | 120XBG016-1 |
| DN 40 KF | 1 | 36 | 10 | 2.4 | 120XBG040-1 |
| DN 40 KF | 2 | 36 | 10 | 2.4 | 120XBG040-2 |
| DN 40 KF | 4 | 36 | 10 | 2.4 | 120XBG040-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

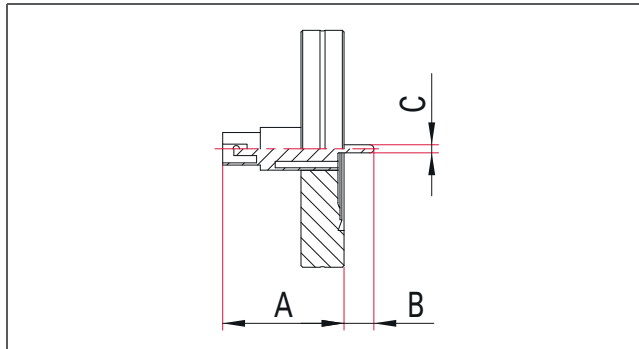
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, BNC, Grounded Shield

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 CF | 1 | 35 | 8 | 2.4 | 420XBG016-1 |
| DN 40 CF | 1 | 35 | 8 | 2.4 | 420XBG040-1 |
| DN 40 CF | 2 | 35 | 8 | 2.4 | 420XBG040-2 |
| DN 40 CF | 4 | 35 | 8 | 2.4 | 420XBG040-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

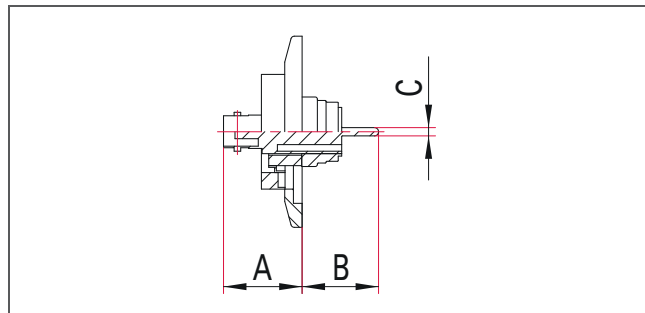
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-KF, BNC, Floating Shield

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



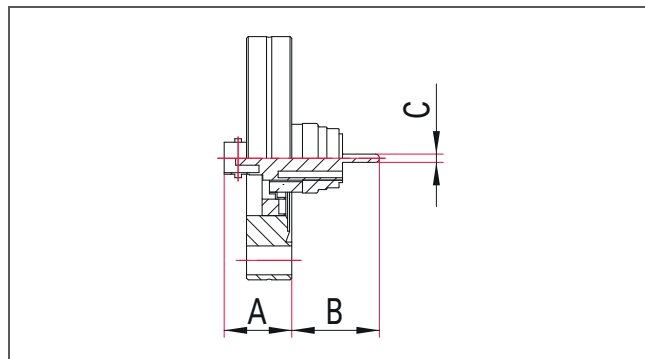
| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 KF | 1 | 65 | 17 | 2.4 | 120XBF016-1 |
| DN 40 KF | 1 | 53 | 30 | 2.4 | 120XBF040-1 |

The specified voltages and currents refer to the following ambient conditions:
 room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa
 ISO-KF Flanges according to ISO 2861
 CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, BNC, Floating Shield

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 CF | 1 | 51 | 32 | 2.4 | 420XBF016-1 |
| DN 40 CF | 1 | 18 | 25 | 2.4 | 420XBF040-1 |

The specified voltages and currents refer to the following ambient conditions:
 room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa
 ISO-KF Flanges according to ISO 2861
 CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

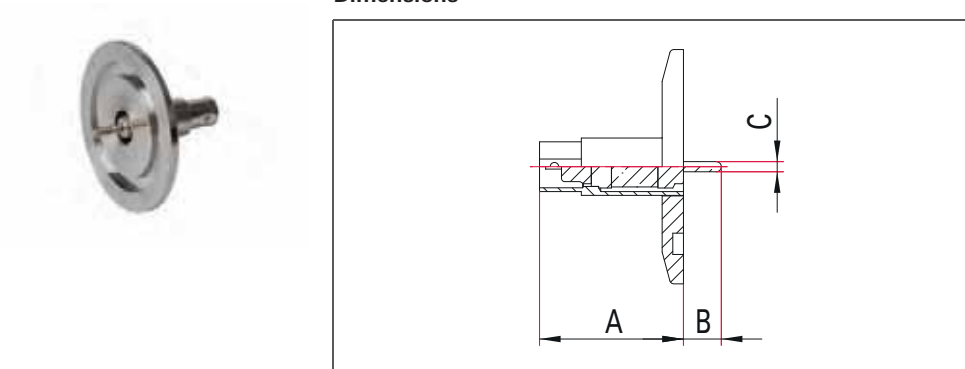
Coaxial Feedthrough, Flanged, MHV

- Flange material: Stainless steel
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 5 kV DC
- Current: 3 A per pin
- Temperature range: -100 to 300 °C (vacuum side)
- Including atmosphere sided plug (-65 to 165 °C)

ISO-KF, MHV, Grounded Shield

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 KF | 1 | 36 | 6 | 2.4 | 120XMG016-1 |
| DN 40 KF | 1 | 34 | 9 | 2.4 | 120XMG040-1 |
| DN 40 KF | 2 | 34 | 9 | 2.4 | 120XMG040-2 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

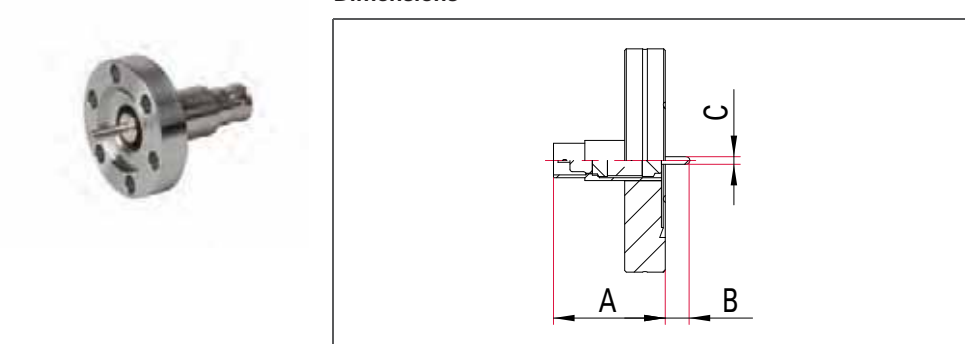
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, MHV, Grounded Shield

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 CF | 1 | 35 | 8 | 2.4 | 420XMG016-1 |
| DN 40 CF | 1 | 35 | 8 | 2.4 | 420XMG040-1 |
| DN 40 CF | 2 | 35 | 8 | 2.4 | 420XMG040-2 |

The specified voltages and currents refer to the following ambient conditions:

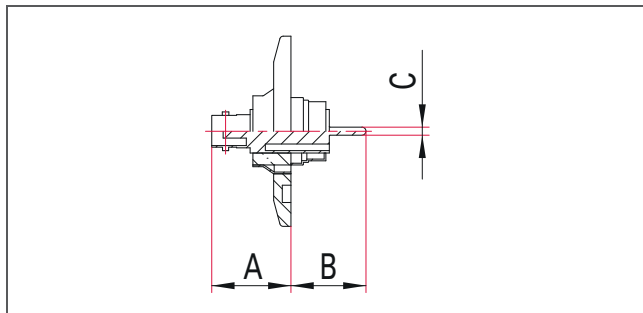
room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-KF, MHV, Floating Shield

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions

| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 KF | 1 | 66 | 17 | 2.4 | 120XMF016-1 |
| DN 40 KF | 1 | 53 | 30 | 2.4 | 120XMF040-1 |

The specified voltages and currents refer to the following ambient conditions:

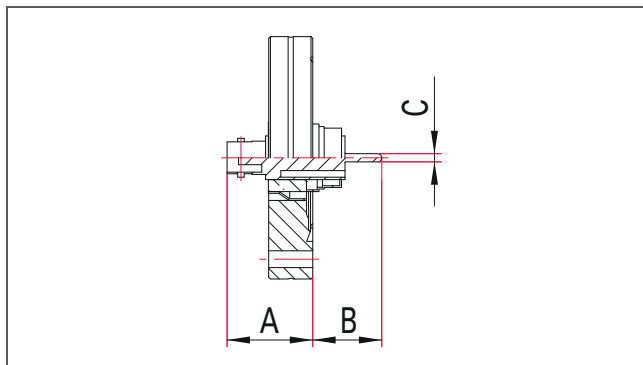
room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, MHV, Floating Shield

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions

| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 CF | 1 | 51 | 32 | 2.4 | 420XMF016-1 |
| DN 40 CF | 1 | 18 | 25 | 2.4 | 420XMF040-1 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

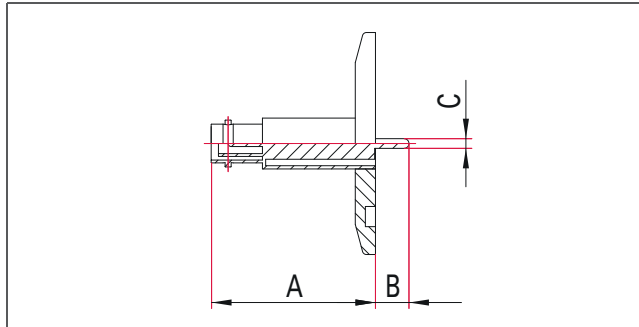
Coaxial Feedthrough, Flanged, SHV

- Flange material: Stainless steel
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 5 kV DC
- Current: 5 A per pin
- Temperature range: -100 to 300 °C (vacuum side)
- Including atmosphere sided plug (-65 to 165 °C)

ISO-KF, SHV-5, Grounded Shield

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 KF | 1 | 43 | 7 | 2.4 | 120XSG016-1 |
| DN 40 KF | 1 | 41 | 9 | 2.4 | 120XSG040-1 |
| DN 40 KF | 2 | 41 | 9 | 2.4 | 120XSG040-2 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

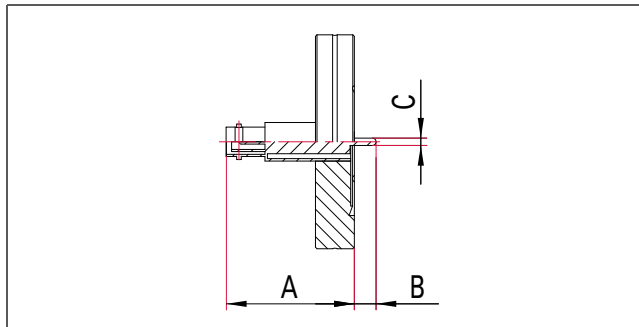
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, SHV-5, Grounded Shield

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 CF | 1 | 42 | 8 | 2.4 | 420XSG016-1 |
| DN 40 CF | 1 | 42 | 8 | 2.4 | 420XSG040-1 |
| DN 40 CF | 2 | 42 | 8 | 2.4 | 420XSG040-2 |

The specified voltages and currents refer to the following ambient conditions:

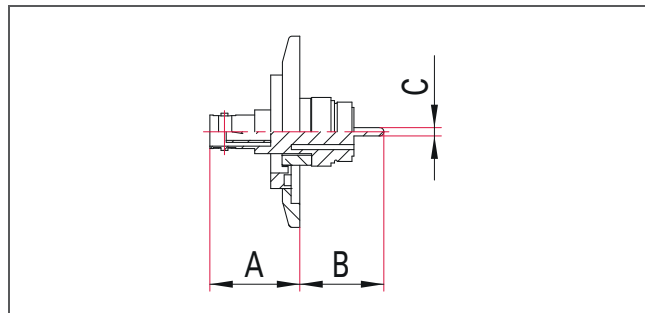
room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

ISO-KF, SHV-5, Floating Shield

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions

| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 KF | 1 | 51 | 36 | 2.4 | 120XSF016-1 |
| DN 40 KF | 1 | 49 | 38 | 2.4 | 120XSF040-1 |

The specified voltages and currents refer to the following ambient conditions:

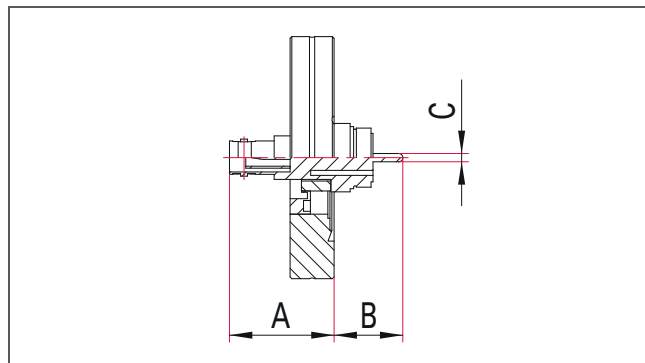
room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, SHV-5, Floating Shield

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions

| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------|
| DN 16 CF | 1 | 52 | 35 | 2.4 | 420XSF016-1 |
| DN 40 CF | 1 | 58 | 30 | 2.4 | 420XSF040-1 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

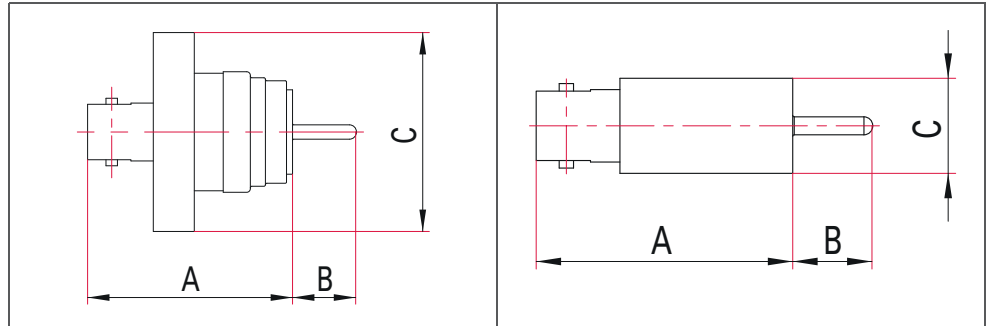
Coaxial Feedthrough, Weld Adapter

- Item no. suffix -os: Plug not included
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Temperature range: -100 to 300 °C (vacuum side)
- Including atmosphere sided plug (-65 to 165 °C)

BNC, 500 V DC, 3 A

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure
- Current: 3 A
- Voltage: 500 V DC

Dimensions



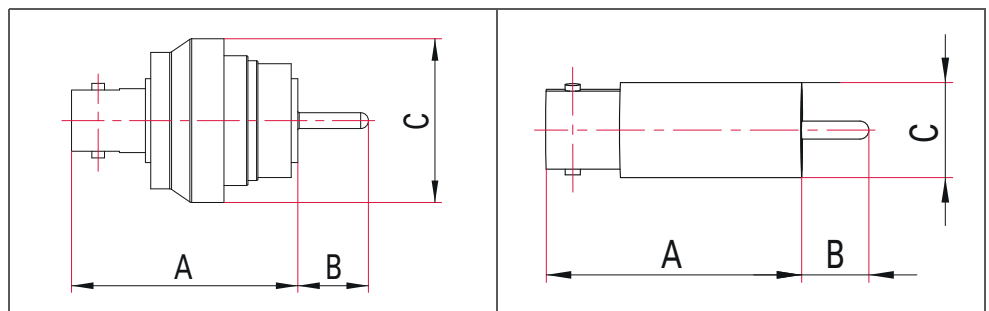
| Shield | A [mm] | B [mm] | C [mm] | Order number |
|----------|--------|--------|--------|--------------|
| Floating | 34 | 10 | 33 | XBF |
| Floating | 34 | 10 | 25 | XBF-Mini |
| Grounded | 34 | 10 | 13 | XBG |
| Grounded | 34 | 10 | 13 | XBG-os |

The specified voltages and currents refer to the following ambient conditions:
room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

MHV, 5 kV DC, 3 A

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure
- Current: 3 A
- Voltage: 5 kV DC

Dimensions



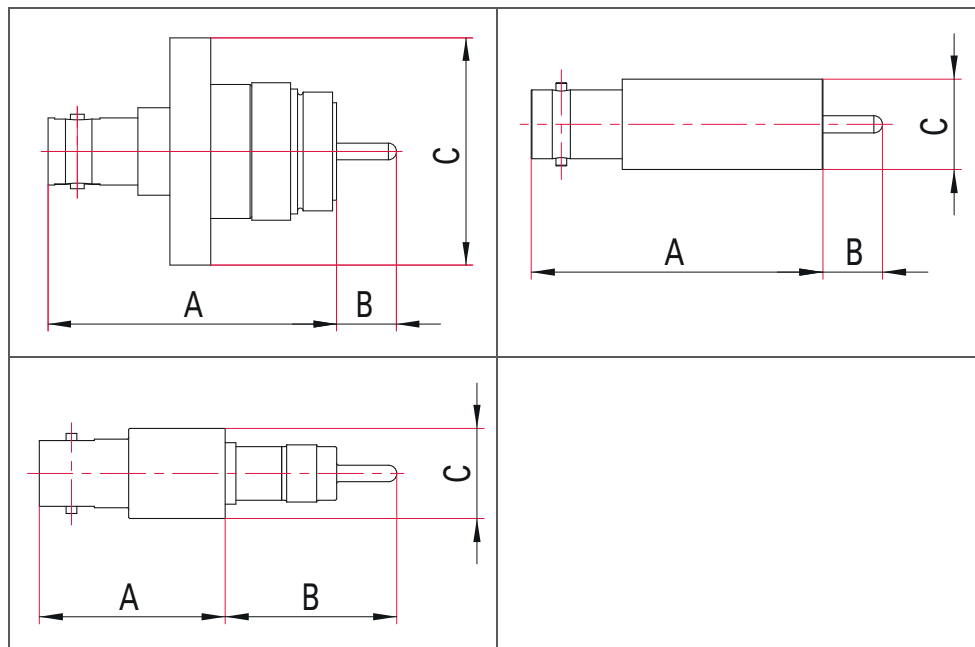
| Shield | A [mm] | B [mm] | C [mm] | Order number |
|----------|--------|--------|--------|--------------|
| Floating | 35 | 9 | 33 | XMF |
| Floating | 34 | 10 | 25 | XMF-Mini |
| Grounded | 34 | 9 | 13 | XMG |
| Grounded | 34 | 9 | 13 | XMG-os |

The specified voltages and currents refer to the following ambient conditions:
room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

SHV, 5 and 10 kV DC, 5 A

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure
- Current: 5 A
- Voltage: XSF-5 and XSG-5: 5 kV DC; XSG-10: 10 kV DC

Dimensions



| Shield | A [mm] | B [mm] | C [mm] | Order number |
|-------------------|--------|--------|--------|--------------|
| Floating | 41 | 9 | 33 | XSF-5 |
| Grounded | 41 | 9 | 13 | XSG-5 |
| Grounded, exposed | 41 | 9 | 13 | XSG-5-exp |
| Grounded | 61 | 9 | 13 | XSG-10 |
| Grounded, exposed | 61 | 9 | 13 | XSG-10-exp |

The specified voltages and currents refer to the following ambient conditions:
 room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

Plug Atmosphere Side

- Material: Plastic
- Temperature range: -65 to 165 °C

Plug, Atmosphere Side

| Shield | Bestellnummer |
|-----------|---------------|
| BNC | XB-st |
| MHV | XM-st |
| SHV, 5 kV | XS5-st |

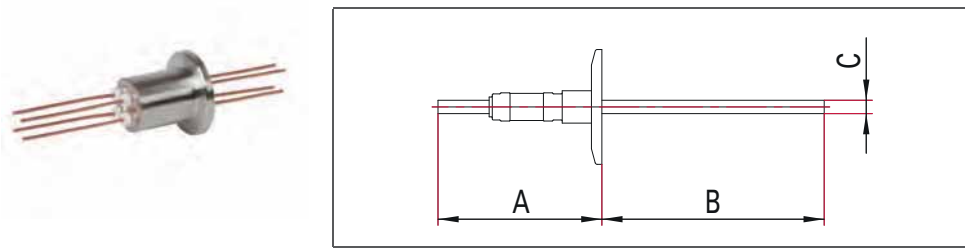
Electrical Feedthrough (Wire Conductor), Flanged, 1 kV, 20 A

- Flange material: Stainless steel
- Conductor material: Copper
- Conductor material stainless steel, molybdenum, nickel on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 1 kV DC
- Current: 20 A
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|------------------|
| DN 16 KF | 2 | 67 | 35 | 1.3 | 120XST016-1-20-2 |
| DN 16 KF | 4 | 67 | 35 | 1.3 | 120XST016-1-20-4 |
| DN 25 KF | 2 | 56 | 45 | 1.3 | 120XST025-1-20-2 |
| DN 25 KF | 4 | 56 | 46 | 1.3 | 120XST025-1-20-4 |
| DN 40 KF | 2 | 53 | 49 | 1.3 | 120XST040-1-20-2 |
| DN 40 KF | 4 | 53 | 49 | 1.3 | 120XST040-1-20-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

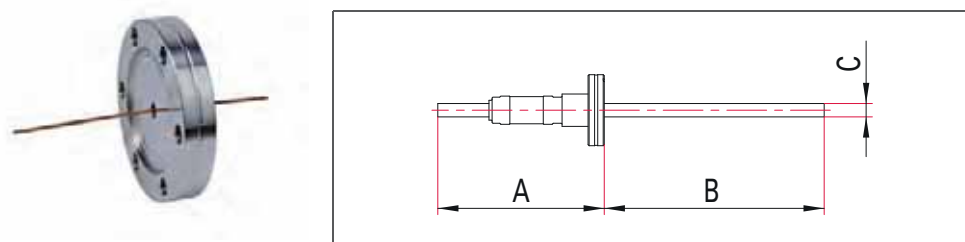
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|------------------|
| DN 16 CF | 2 | 67 | 35 | 1.3 | 420XST016-1-20-2 |
| DN 16 CF | 4 | 67 | 35 | 1.3 | 420XST016-1-20-4 |
| DN 40 CF | 2 | 55 | 46 | 1.3 | 420XST040-1-20-2 |
| DN 40 CF | 4 | 53 | 49 | 1.3 | 420XST040-1-20-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

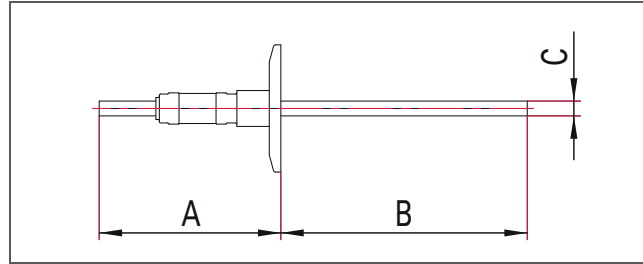
Electrical Feedthrough (Wire Conductor), Flanged, 5 kV, 15 A

- Flange material: Stainless steel
- Conductor material: Copper
- Conductor material stainless steel, molybdenum, nickel on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 5 kV DC
- Current: 15 A
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|------------------|
| DN 16 KF | 2 | 60 | 42 | 1.3 | 120XST016-5-15-2 |
| DN 16 KF | 4 | 60 | 42 | 1.3 | 120XST016-5-15-4 |
| DN 40 KF | 2 | 47 | 55 | 1.3 | 120XST040-5-15-2 |
| DN 40 KF | 4 | 47 | 55 | 1.3 | 120XST040-5-15-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

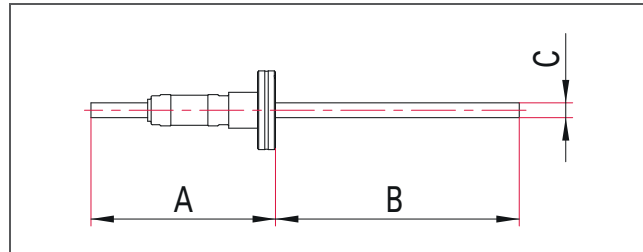
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|------------------|
| DN 16 CF | 2 | 60 | 41 | 1.3 | 420XST016-5-15-2 |
| DN 16 CF | 4 | 60 | 41 | 1.3 | 420XST016-5-15-4 |
| DN 40 CF | 2 | 57 | 45 | 1.3 | 420XST040-5-15-2 |
| DN 40 CF | 4 | 57 | 45 | 1.3 | 420XST040-5-15-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

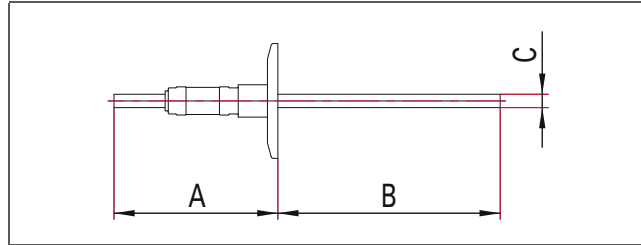
Electrical Feedthrough (Wire Conductor), Flanged, 5 KV, 30 A

- Flange material: Stainless steel
- Conductor material: Copper
- Conductor material stainless steel, molybdenum, nickel on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 5 kV DC
- Current: 30 A
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|------------------|
| DN 16 KF | 1 | 50 | 135 | 2.4 | 120XST016-5-30-1 |
| DN 16 KF | 2 | 50 | 135 | 2.4 | 120XST016-5-30-2 |
| DN 40 KF | 1 | 50 | 135 | 2.4 | 120XST040-5-30-1 |
| DN 40 KF | 2 | 50 | 135 | 2.4 | 120XST040-5-30-2 |
| DN 40 KF | 4 | 50 | 135 | 2.4 | 120XST040-5-30-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

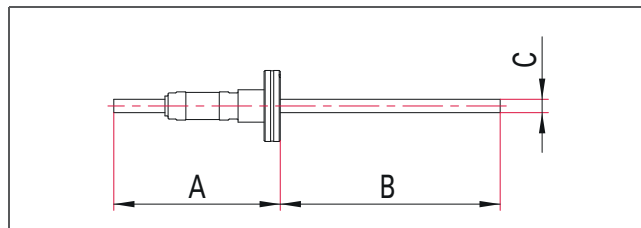
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|------------------|
| DN 16 CF | 1 | 52 | 132 | 2.4 | 420XST016-5-30-1 |
| DN 16 CF | 2 | 52 | 132 | 2.4 | 420XST016-5-30-2 |
| DN 40 CF | 1 | 57 | 127 | 2.4 | 420XST040-5-30-1 |
| DN 40 CF | 2 | 57 | 127 | 2.4 | 420XST040-5-30-2 |
| DN 40 CF | 4 | 57 | 127 | 2.4 | 420XST040-5-30-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

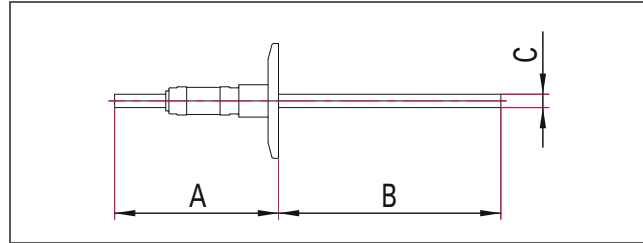
Electrical Feedthrough (Wire Conductor), Flanged, 10 kV, 30 A

- Flange material: Stainless steel
- Conductor material: Copper
- Conductor material stainless steel, molybdenum, nickel on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 10 kV DC
- Current: 30 A
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|-------------------|
| DN 16 KF | 1 | 59 | 125 | 2.4 | 120XST016-10-30-1 |
| DN 16 KF | 2 | 59 | 125 | 2.4 | 120XST016-10-30-2 |
| DN 40 KF | 1 | 59 | 125 | 2.4 | 120XST040-10-30-1 |
| DN 40 KF | 2 | 59 | 125 | 2.4 | 120XST040-10-30-2 |
| DN 40 KF | 4 | 59 | 125 | 2.4 | 120XST040-10-30-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

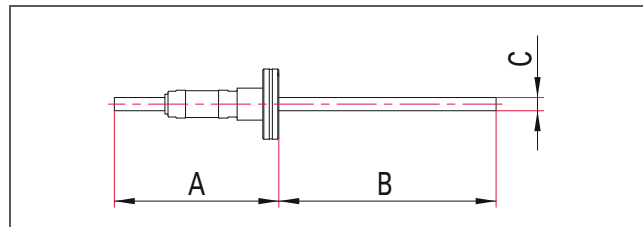
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|-------------------|
| DN 16 CF | 1 | 62 | 122 | 2.4 | 420XST016-10-30-1 |
| DN 16 CF | 2 | 67 | 117 | 2.4 | 420XST016-10-30-2 |
| DN 40 CF | 1 | 62 | 122 | 2.4 | 420XST040-10-30-1 |
| DN 40 CF | 2 | 67 | 117 | 2.4 | 420XST040-10-30-2 |
| DN 40 CF | 4 | 67 | 117 | 2.4 | 420XST040-10-30-4 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

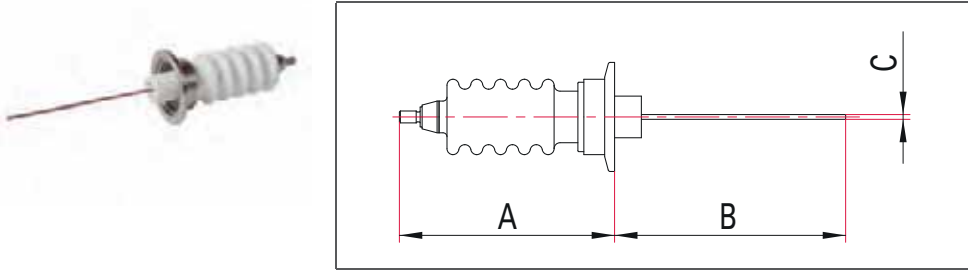
Electrical Feedthrough (Wire Conductor), Flanged, 30 kV, 30 A

- Flange material: Stainless steel
- Conductor material: Copper
- Conductor material stainless steel on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 30 kV DC
- Current: 30 A
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|-------------------|
| DN 40 KF | 1 | 105 | 121 | 2.4 | 120XST040-30-30-1 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

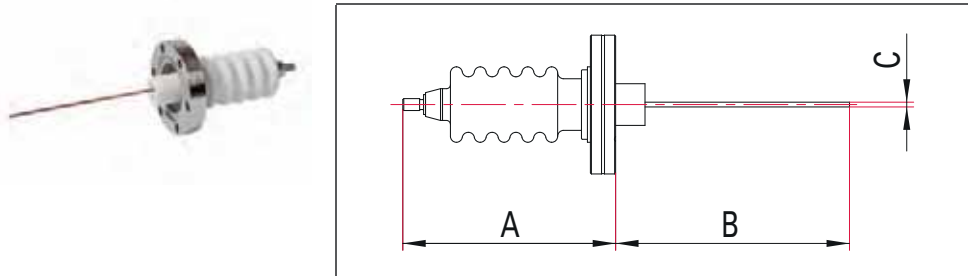
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|-------------------|
| DN 40 CF | 1 | 108 | 116 | 2.4 | 420XST040-30-30-1 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

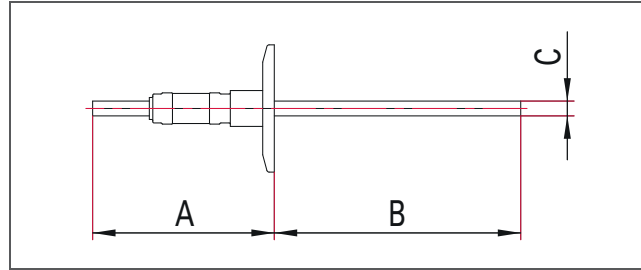
Electrical Feedthrough (Wire Conductor), Flanged, 5 kV, 150 A

- Flange material: Stainless steel
- Conductor material: Copper
- Conductor material stainless steel, Ni on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 5 kV DC
- Current: 150 A
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|-------------------|
| DN 16 KF | 1 | 66 | 118 | 6.35 | 120XST016-5-150-1 |
| DN 25 KF | 1 | 80 | 105 | 6.35 | 120XST025-5-150-1 |
| DN 40 KF | 1 | 80 | 105 | 6.35 | 120XST040-5-150-1 |
| DN 40 KF | 2 | 80 | 105 | 6.35 | 120XST040-5-150-2 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

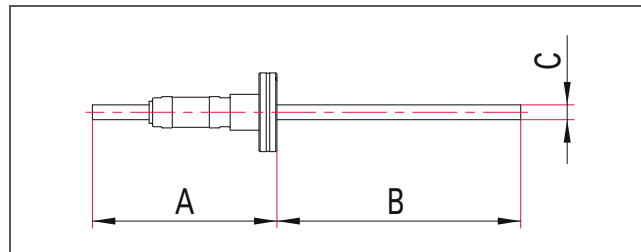
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|-------------------|
| DN 16 CF | 1 | 68 | 116 | 6.35 | 420XST016-5-150-1 |
| DN 40 CF | 1 | 81 | 103 | 6.35 | 420XST040-5-150-1 |
| DN 40 CF | 2 | 81 | 103 | 6.35 | 420XST040-5-150-2 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

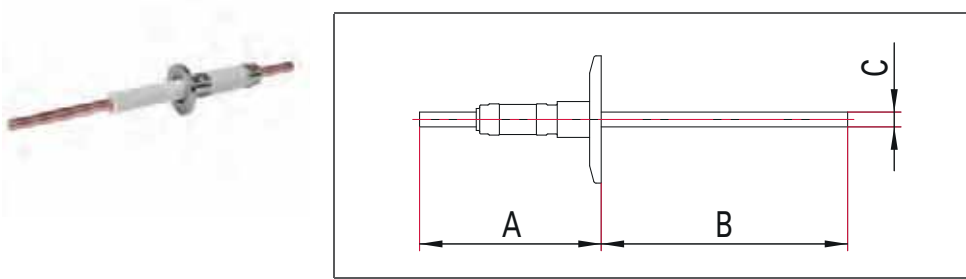
Electrical Feedthrough (Wire Conductor), Flanged, 12 kV, 150 A

- Flange material: Stainless steel
- Conductor material: Copper
- Conductor material stainless steel, Ni on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 12 kV DC
- Current: 150 A
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------------|
| DN 16 KF | 1 | 83 | 102 | 6.35 | 120XST016-12-150-1 |
| DN 40 KF | 1 | 91 | 93 | 6.35 | 120XST040-12-150-1 |
| DN 40 KF | 2 | 91 | 93 | 6.35 | 120XST040-12-150-2 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

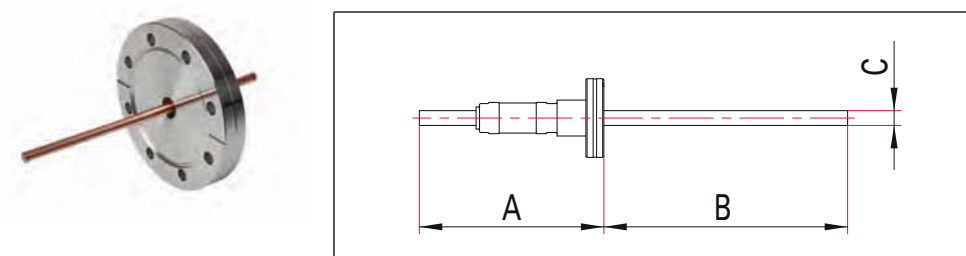
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|--------------------|
| DN 16 CF | 1 | 83 | 102 | 6.35 | 420XST016-12-150-1 |
| DN 40 CF | 1 | 88 | 97 | 6.35 | 420XST040-12-150-1 |
| DN 40 CF | 2 | 88 | 97 | 6.35 | 420XST040-12-150-2 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

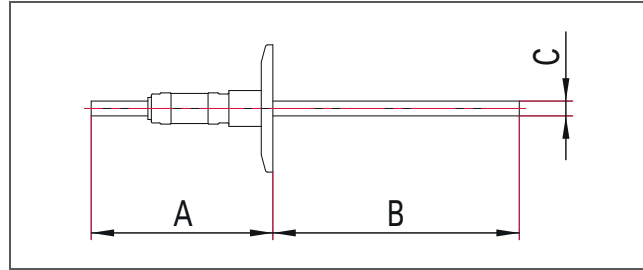
Electrical Feedthrough (Wire Conductor), Flanged, 3 kV, 600 A

- Flange material: Stainless steel
- Conductor material: Copper
- Conductor material Ni on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 3 kV DC
- Current: 600 A
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|-------------------|
| DN 40 KF | 1 | 97 | 88 | 19.05 | 120XST040-3-600-1 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

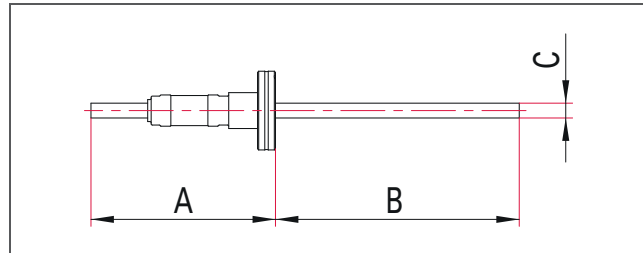
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|--------|--------|--------|-------------------|
| DN 40 CF | 1 | 97 | 85 | 19.05 | 420XST040-3-600-1 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

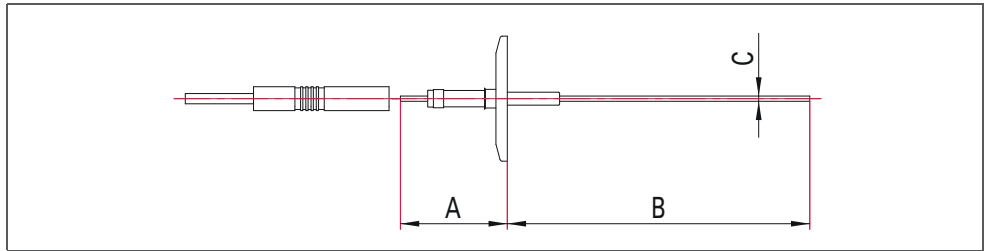
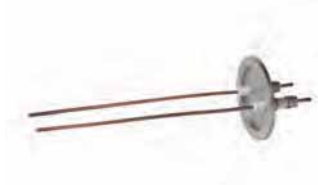
Electrical Feedthroughs (Wire Conductor), Flanged, with Silicone Plug

- Plug and silicone cable (length 2.4 m) included (-55 to 125 °C)
- Conductor material: Copper
- Flange material: Stainless steel
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Voltage [kV] | Current [A] | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------------|-------------|------|--------|--------|--------|-------------------|
| DN 40 KF | 10 | 30 | 2 | 45 | 133 | 2.4 | 120XSP040-10-30-2 |
| DN 40 KF | 10 | 30 | 4 | 45 | 133 | 2.4 | 120XSP040-10-30-4 |
| DN 40 KF | 5 | 30 | 2 | 35 | 142 | 2.4 | 120XSP040-5-30-2 |
| DN 40 KF | 5 | 30 | 4 | 35 | 142 | 2.4 | 120XSP040-5-30-4 |

The specified voltages and currents refer to the following ambient conditions: room temperature, outside:

dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

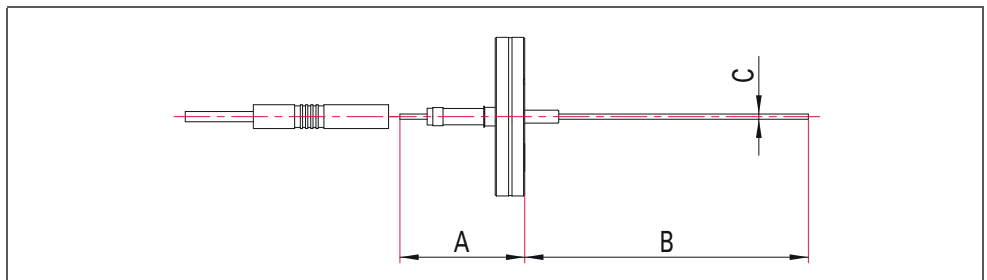
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Voltage [kV] | Current [A] | Pins | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------------|-------------|------|--------|--------|--------|-------------------|
| DN 40 CF | 10 | 30 | 2 | 52 | 135 | 2.4 | 420XSP040-10-30-2 |
| DN 40 CF | 10 | 30 | 4 | 52 | 135 | 2.4 | 420XSP040-10-30-4 |
| DN 40 CF | 5 | 30 | 2 | 43 | 135 | 2.4 | 420XSP040-5-30-2 |
| DN 40 CF | 5 | 30 | 4 | 43 | 135 | 2.4 | 420XSP040-5-30-4 |

The specified voltages and currents refer to the following ambient conditions: room temperature, outside:

dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

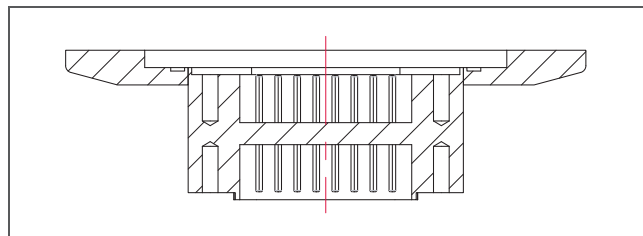
D-Sub Feedthroughs, Flanged

- Pin material: Stainless steel (gold-plated)
- Flange material: Stainless steel
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 500 V DC
- Current: 5 A per pin
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF/ISO-K, Male

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | Order number |
|------------------|------|--------------|
| DN 40 KF | 9 | 120XSD040-9 |
| DN 50 KF | 15 | 120XSD050-15 |
| DN 63 ISO-K | 25 | 320XSD063-25 |
| DN 100 ISO-K | 50 | 320XSD100-50 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

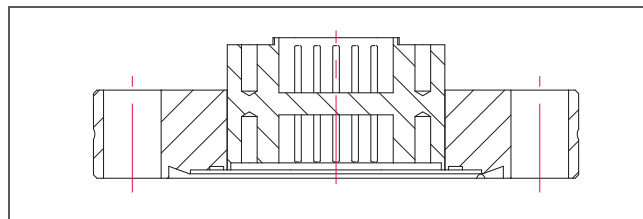
ISO-K Flanges according to ISO 1609

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF, Male

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | Order number |
|------------------|--------|----------------|
| DN 40 CF | 9 | 420XSD040-9 |
| DN 63 CF | 15 | 420XSD063-15 |
| DN 63 CF | 25 | 420XSD063-25 |
| DN 63 CF | 2 x 25 | 420XSD063-25-2 |
| DN 100 CF | 50 | 420XSD100-50 |

The specified voltages and currents refer to the following ambient conditions:

room temperature, outside: dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

ISO-K Flanges according to ISO 1609

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

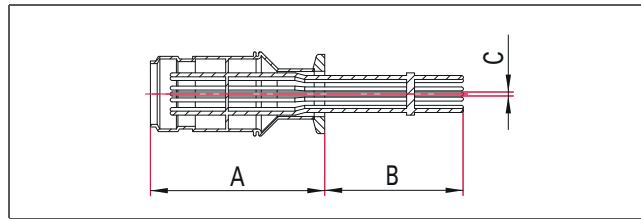
Electrical Feedthroughs (Wire Conductor), with Outside Plug, Flanged

- Plug with soldering pins included, atmosphere side MIL-C-5015-compliant (-65 to 125 °C)
- Conductor material: Alumel
- Flange material: Stainless steel
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Voltage: 700 V DC
- Current: up to 10 A per pin (do not exceed maximum total current)
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | Current [A] | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|-------------|--------|--------|--------|--------------|
| DN 16 KF | 4 | 28 | 74 | 67 | 1.42 | 120XSS016-4 |
| DN 16 KF | 6 | 36 | 74 | 67 | 1.42 | 120XSS016-6 |
| DN 16 KF | 10 | 50 | 74 | 67 | 1.42 | 120XSS016-10 |
| DN 40 KF | 4 | 28 | 62 | 79 | 1.42 | 120XSS040-4 |
| DN 40 KF | 6 | 36 | 62 | 79 | 1.42 | 120XSS040-6 |
| DN 40 KF | 10 | 50 | 62 | 79 | 1.42 | 120XSS040-10 |
| DN 40 KF | 20 | 75 | 64 | 88 | 1.42 | 120XSS040-20 |

The specified voltages and currents refer to the following ambient conditions: room temperature, outside:

dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

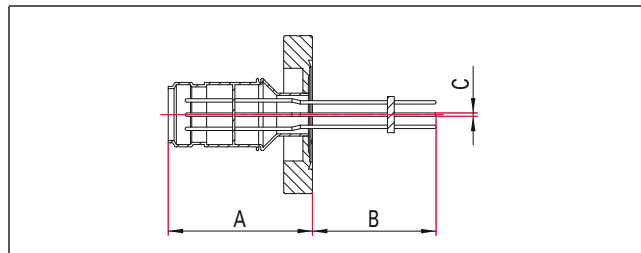
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Pins | Current [A] | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------|-------------|--------|--------|--------|--------------|
| DN 16 CF | 4 | 28 | 74 | 67 | 1.42 | 420XSS016-4 |
| DN 16 CF | 6 | 36 | 74 | 67 | 1.42 | 420XSS016-6 |
| DN 16 CF | 10 | 50 | 74 | 67 | 1.42 | 420XSS016-10 |
| DN 40 CF | 20 | 75 | 66 | 87 | 1.42 | 420XSS040-20 |

The specified voltages and currents refer to the following ambient conditions: room temperature, outside:

dry air, inside: vacuum $< 1 \cdot 10^{-4}$ hPa

ISO-KF Flanges according to ISO 2861

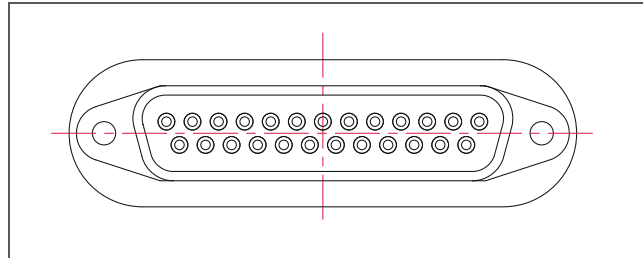
CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

D-Sub Feedthroughs, Weld Adapter, Male



- Weldable with a welding lip, please note welding instructions
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure
- Materials: Stainless steel; Pins: stainless steel (gold-plated)
- Voltage: 500 V DC
- Current: 5 A per pin
- Temperature range: -100 to 300 °C (vacuum side)

Dimensions



Weld Adapter, male

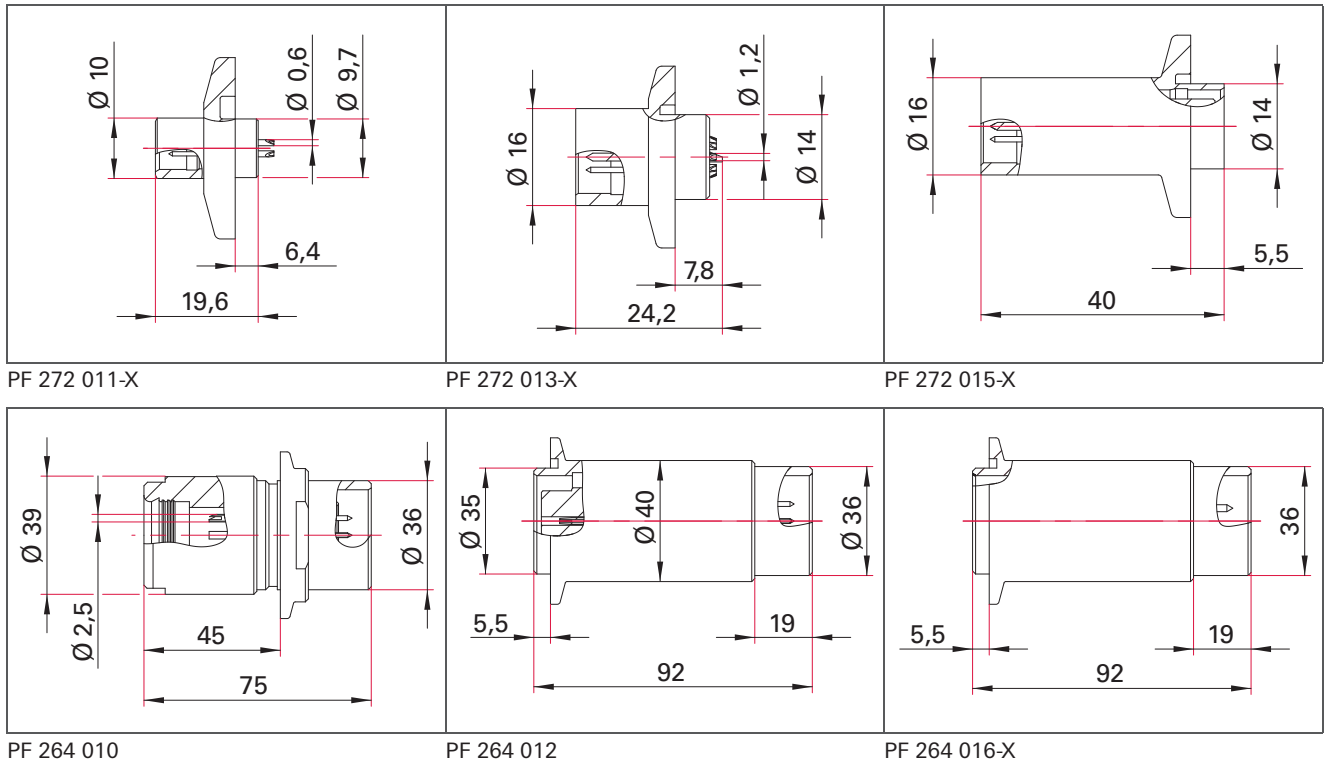
| Pins | Order number |
|------|--------------|
| 9 | XSD-9 |
| 15 | XSD-15 |
| 25 | XSD-25 |
| 50 | XSD-50 |

Electrical Feedthrough Round Socket, Flanged



- Electrical feedthroughs for currents of up to 16 A and voltages of up to 800 V
- Nickel-plated or chrome-plated steel
- Connector (accessorie) for PF 272 015-X, PF 264 012, PF 264 016-X
- Soldered connection for PF 272 011-X, PF 272 013-X, PF 264 010
- Connection: Atmospheric side: Connector (accessorie)
- Bakeout temperature: 130 °C
- Tightness: $1 \cdot 10^{-10}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Isolator: PTFE/Araldit
- Contact: Gold-plated bronze

Dimensions



ISO-KF

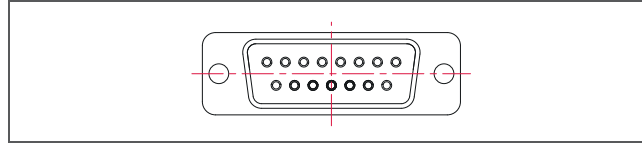
| Nominal diameter | Voltage, per pole [V] | Current, per pole [A] | Pins | Order number |
|------------------|-----------------------|-----------------------|------|--------------|
| DN 16 ISO-KF | 50 | 1 | 4 | PF 272 011-X |
| DN 16 ISO-KF | 50 | 2 | 9 | PF 272 013-X |
| DN 16 ISO-KF | 50 | 2 | 9 | PF 272 015-X |
| DN 40 ISO-KF | 380 | 16 | 7 | PF 264 010 |
| DN 40 ISO-KF | 380 | 16 | 7 | PF 264 012 |
| DN 40 ISO-KF | 800 | 16 | 4 | PF 264 016-X |

Accessories for D-Sub Feedthroughs

D-Sub plug, Female, Atmosphere Side, with Pins

- comes with pins
- Heat up and cool down speed: max. 25 K/min
- Voltage: 500 V DC
- Current: 5 A per pin
- Temperature range: -55 to 80 °C

Dimensions

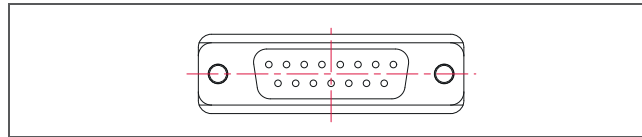


| Pins | Order number |
|------|--------------|
| 9 | XSD-9-s-atm |
| 15 | XSD-15-s-atm |
| 25 | XSD-25-s-atm |
| 50 | XSD-50-s-atm |

D-Sub Plug, Female, Vacuum Side, PEEK, without Pins

- without pins
- UHV suitable
- Heat up and cool down speed: max. 25 K/min
- Voltage: 500 V DC
- Current: 5 A per pin
- Temperature range: -196 to 250 °C

Dimensions



| Pins | Order number |
|------|--------------|
| 9 | XSD-9-s-vac |
| 15 | XSD-15-s-vac |
| 25 | XSD-25-s-vac |
| 50 | XSD-50-s-vac |

Flat Cable for D-Sub, Vacuum-suitable

- Conductor: copper, with kapton isolation and monofilment PEEK tissue
- UHV suitable
- Cable length: 990 mm
- Wire diameter: 0.89 mm
- Temperature range: -55 to 250 °C

| Pins | Order number |
|------|--------------|
| 9 | XSD-9-cable |
| 15 | XSD-15-cable |
| 25 | XSD-25-cable |
| 50 | XSD-50-cable |

Pins for D-Sub Plug, Vacuum and Atmosphere Side, Female

- Installation with crimping tool (not included)

| Pins | Order number |
|------|--------------|
| 10 | XSD-contacts |

Accessories for Electrical Feedthroughs Round Socket

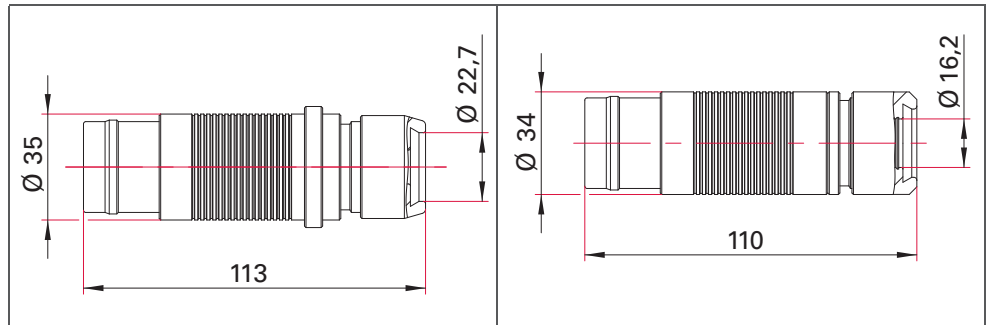


- PF 296 022-T for feedthrough PF 264 016-X
- PF 297 010 for feedthrough PF 272 011-X

Outside Connector, Atmosphere Side

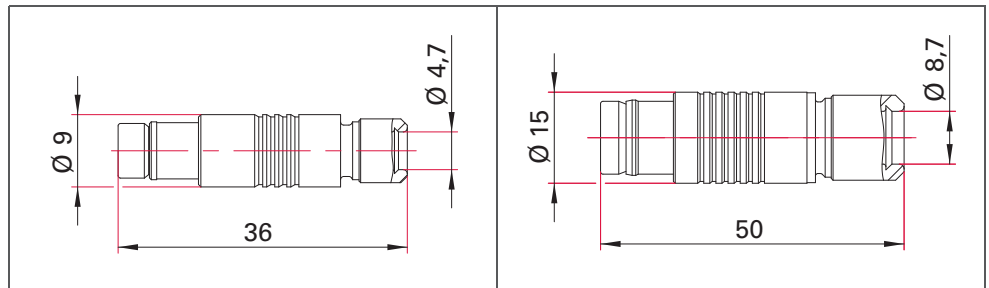
| Pins | Order number |
|------|--------------|
| 7 | PF 296 010 |
| 4 | PF 296 022-T |
| 4 | PF 297 010 |
| 9 | PF 297 013-T |

Dimensions



PF 296 010

PF 296 022-T



PF 297 010

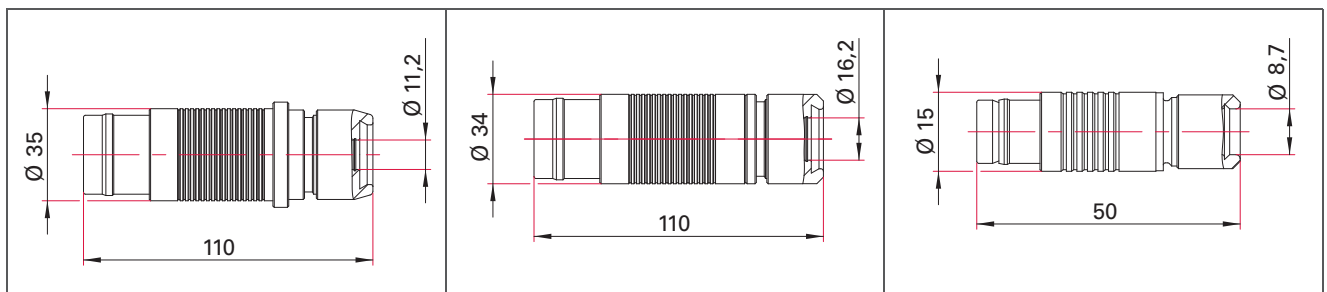
PF 297 013-T

Inside Connector, Vacuum Side



| Pins | Order number |
|------|--------------|
| 7 | PF 296 012 |
| 4 | PF 296 024-T |
| 9 | PF 297 015-T |

Dimensions



PF 296 012

PF 296 024-T

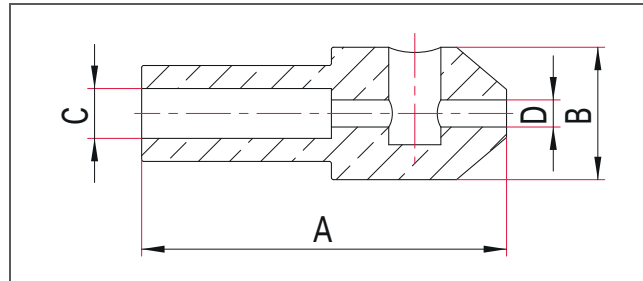
PF 297 015-T

Plug-on Connectors for Wire Conductor and Coaxial Feedthroughs



- Quantity: 10 per package
- Including hexagon socket wrench for flat head screw
- Materials: BeCu (gold-plated)
- Current max.: XAK015A: 15 A; XAK030A: 30 A
- Temperature range: max. air: 150 °C, vacuum: 200 °C

Dimensions



BeCu (gold-plated)

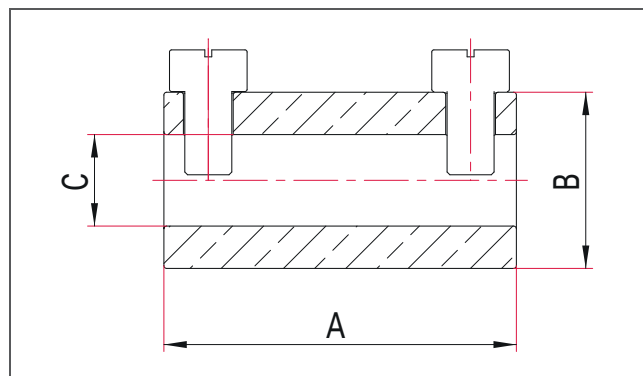
| Wire diameter [mm] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|--------------------|--------|--------|--------|--------|--------------|
| 1.3 | 17.5 | 6.35 | 1.3 | 1.3 | XAK015A |
| 2.4 | 17.5 | 6.35 | 2.4 | 1.3 | XAK030A |

Contact Clamp for Wire Conductor and Coaxial Feedthroughs



- 1 piece per package
- Materials: BeCu (gold-plated)
- Current max.: XKL015A: 15 A; XKL030A: 30 A; XKL150A: 150 A
- Temperature range: max. air: 150 °C, vacuum: 400 °C

Dimensions



BeCu (gold-plated)

| Wire diameter [mm] | A [mm] | B [mm] | C [mm] | Order number |
|--------------------|--------|--------|--------|--------------|
| 1.3 | 12.7 | 4.75 | 1.5 | XKL015A |
| 2.4 | 14.2 | 6.35 | 3.1 | XKL030A |
| 6.35 | 25.4 | 12.7 | 6.6 | XKL150A |

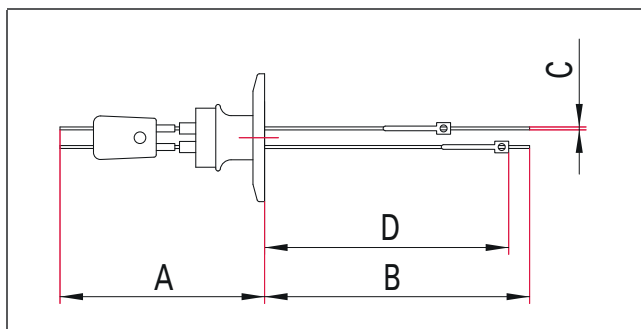
Combi-Feedthroughs, Flanged, Electrical and Thermocouple, Type K

- Thermocouple, 1 pair type K: Chromel (+)/Alumel (-), (type C, E, J on request)
- 2 conductors made of copper (nickel on request)
- Includes atmosphere sided miniature plug for thermocouple (-65 to 125 °C)
- Other flange combinations on request
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Materials: Stainless steel (flange)
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Voltage [kV] | Current [A] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------------|-------------|--------|--------|--------|--------|----------------|
| DN 16 KF | 5 | 30 | 83 | 114 | 2.4 | 102 | 120XK0016-5-30 |

Electrical specifications are based on ambient pressure on the air side and $1 \cdot 10^{-4}$ hPa on the vacuum side.

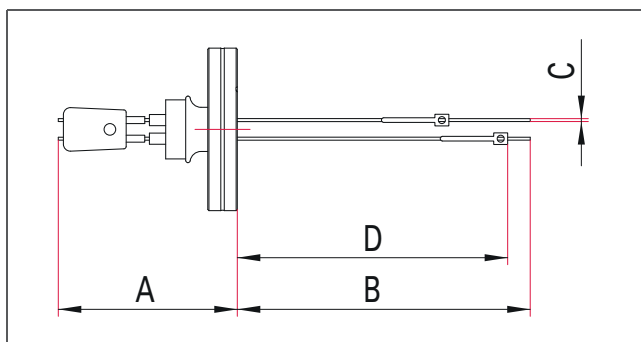
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Voltage [kV] | Current [A] | A [mm] | B [mm] | C [mm] | D [mm] | Order number |
|------------------|--------------|-------------|--------|--------|--------|--------|----------------|
| DN 16 CF | 5 | 30 | 83 | 114 | 2.4 | 102 | 420XK0016-5-30 |
| DN 40 CF | 5 | 30 | 72 | 126 | 2.4 | 113 | 420XK0040-5-30 |

Electrical specifications are based on ambient pressure on the air side and $1 \cdot 10^{-4}$ hPa on the vacuum side.

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

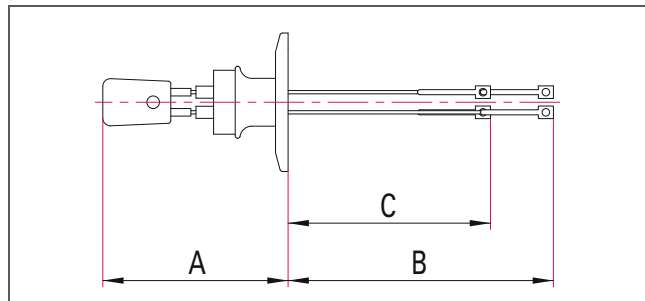
Thermocouple Feedthrough, Flanged, Type K

- Thermocouple Type K: Chromel (+)/Alumel (-), (types C, E, J, T, N, R, S on request)
- Vacuum-side lugs with screw connections for the thermo wire (including screws)
- Including atmosphere sided miniature plug (-65 to 125 °C)
- Wire Pairs: 1-4
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Materials: Stainless steel (flange)
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Wire pairs | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------------|--------|--------|--------|--------------|
| DN 16 KF | 1 | 47 | 102 | 76 | 120XTK016-1 |
| DN 16 KF | 2 | 67 | 102 | 76 | 120XTK016-2 |
| DN 16 KF | 3 | 71 | 102 | 76 | 120XTK016-3 |
| DN 40 KF | 1 | 35 | 110 | 85 | 120XTK040-1 |
| DN 40 KF | 2 | 57 | 117 | 91 | 120XTK040-2 |
| DN 40 KF | 4 | 51 | 93 | 67 | 120XTK040-4 |

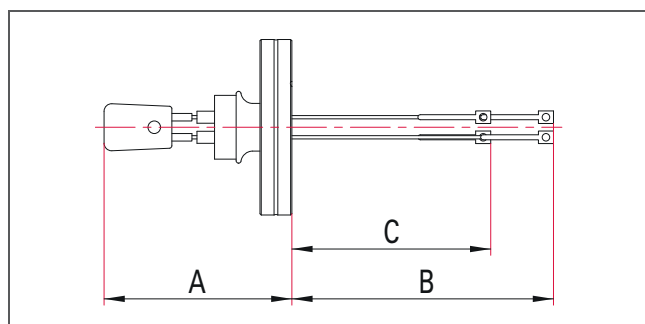
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Wire pairs | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------------|--------|--------|--------|--------------|
| DN 16 CF | 1 | 47 | 102 | 76 | 420XTK016-1 |
| DN 16 CF | 2 | 65 | 104 | 78 | 420XTK016-2 |
| DN 16 CF | 3 | 71 | 102 | 76 | 420XTK016-3 |
| DN 40 CF | 1 | 36 | 110 | 85 | 420XTK040-1 |
| DN 40 CF | 2 | 47 | 117 | 91 | 420XTK040-2 |
| DN 40 CF | 4 | 50 | 102 | 76 | 420XTK040-4 |

ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

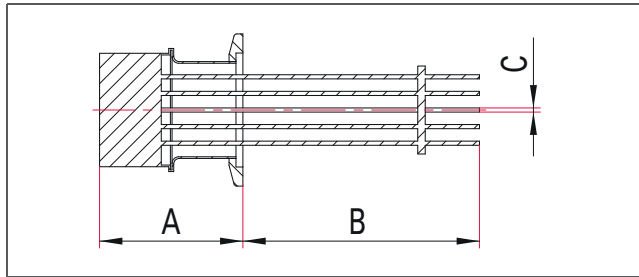
Thermocouple Feedthrough, Type K, Flanged, with MS Plug

- Thermocouple Type K: Chromel (+)/Alumel (-), (type E, J on request)
- Including atmosphere sided MIL-C-5015-compliant MS plug (-65 to 125 °C)
- Thermocouples: 3 and 5
- Heat up and cool down speed: max. 25 K/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Materials: Stainless steel (flange)
- Temperature range: -100 to 300 °C (vacuum side)

ISO-KF

- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Wire pairs | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------------|--------|--------|--------|---------------|
| DN 16 KF | 3 | 71 | 69 | 1.4 | 120XTK016-3-S |
| DN 16 KF | 5 | 71 | 69 | 1.4 | 120XTK016-5-S |

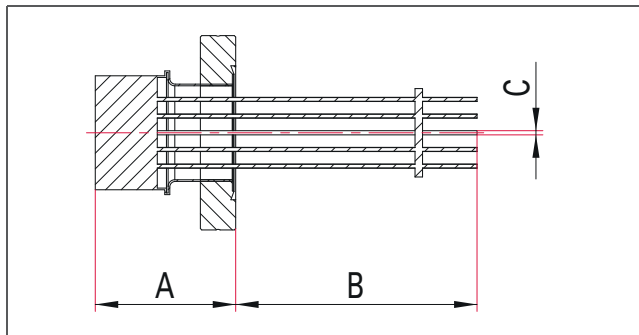
ISO-KF Flanges according to ISO 2861

CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF

- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure

Dimensions



| Nominal diameter | Wire pairs | A [mm] | B [mm] | C [mm] | Order number |
|------------------|------------|--------|--------|--------|---------------|
| DN 16 CF | 3 | 71 | 69 | 1.4 | 420XTK016-3-S |
| DN 16 CF | 5 | 71 | 69 | 1.4 | 420XTK016-5-S |

ISO-KF Flanges according to ISO 2861

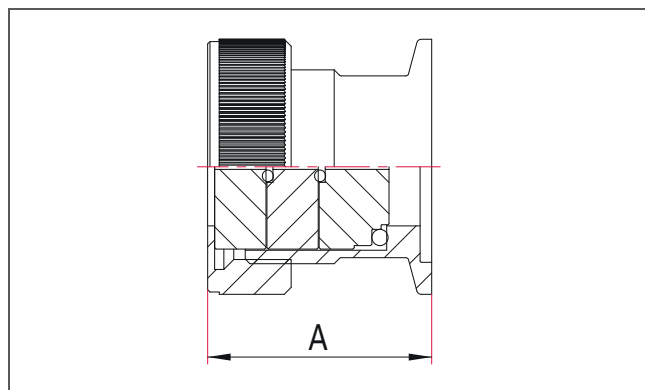
CF Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Mantle Thermocouple Feedthrough, Flanged



- Mantle thermocouples with diameter 1.5 mm (bigger diameters on request)
- Vacuum-suitable sealing with two in-line arranged FKM seals
- Number of wire feedthroughs: 1 to 4 (wires not included)
- Unused, open wire feedthroughs have to be closed
- Tightness: $1 \cdot 10^{-9}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-7}$ hPa to ambient pressure
- Materials: Stainless steel
- Temperature range: -15 to 130 °C

Dimensions



Stainless Steel

| Nominal diameter | Number of feedthroughs | A [mm] | Order number |
|------------------|------------------------|--------|--------------|
| DN 16 KF | 1 wire | 38 | 120XTD016-1 |
| DN 16 KF | 2 wires | 38 | 120XTD016-2 |
| DN 25 KF | 1 wire | 42 | 120XTD025-1 |
| DN 25 KF | 2 wires | 42 | 120XTD025-2 |
| DN 25 KF | 3 wires | 42 | 120XTD025-3 |
| DN 25 KF | 4 wires | 42 | 120XTD025-4 |

Fluid Feedthroughs ISO-KF

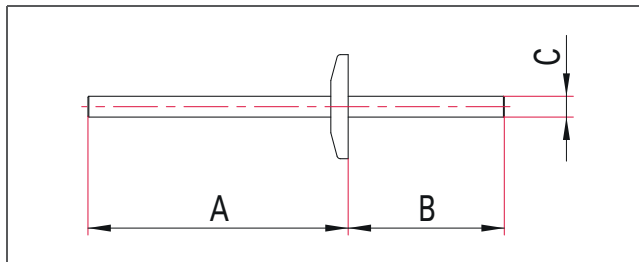
- Flange material: Stainless steel
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-8}$ hPa to 500 hPa over pressure
- Temperature range: -196 to 300 °C (vacuum side)

Note

Please note: VCR adapters cannot be installed on the vacuum side of DN 16 flanges due to their size.

ISO-KF Fluid Feedthrough, Single Tube

Dimensions

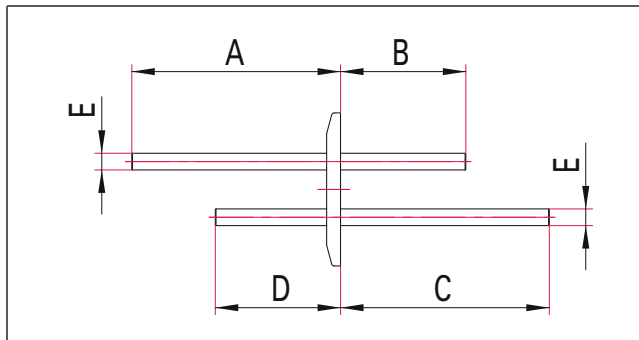


| Nominal diameter | Vacuum side | Atmosphere side | A [mm] | B [mm] | C [mm] | Order number |
|------------------|-------------|-----------------|--------|--------|--------|--------------|
| DN 16 KF | P | P | 75 | 45 | 6 | 120XFL016-PP |
| DN 16 KF | S | S | 103 | 73 | 6 | 120XFL016-SS |
| DN 40 KF | P | P | 75 | 45 | 6 | 120XFL040-PP |
| DN 40 KF | S | S | 103 | 73 | 6 | 120XFL040-SS |
| DN 40 KF | V | V | 105 | 75 | 6 | 120XFL040-VV |

P = tube end; V = VCR male; S = Swagelok® fitting
Flanges according to ISO 2861

ISO-KF Fluid Feedthrough, Double Tube

Dimensions



| Nominal diameter | Vacuum side | Atmosphere side | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-------------|-----------------|--------|--------|--------|--------|--------|----------------|
| DN 40 KF | P | P | 75 | 45 | 75 | 45 | 6 | 120XFL040-2-PP |
| DN 40 KF | S | S | 103 | 73 | 103 | 73 | 6 | 120XFL040-2-SS |
| DN 40 KF | V | V | 105 | 75 | 105 | 75 | 6 | 120XFL040-2-VV |

P = tube end; V = VCR male; S = Swagelok® fitting
Flanges according to ISO 2861

Fluid Feedthroughs CF

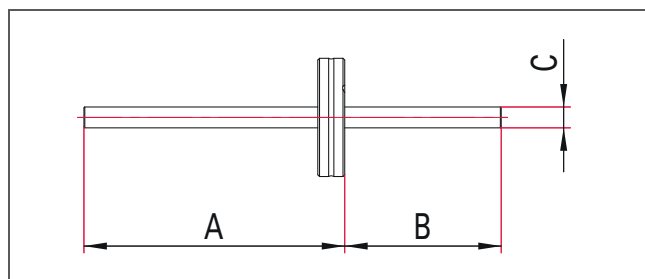
- Flange material: Stainless steel
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure
- Temperature range: -196 to 300 °C (vacuum side)

Note

Please note: VCR adapters cannot be installed on the vacuum side of DN 16 flanges due to their size.

CF Fluid Feedthrough, Single Tube

Dimensions



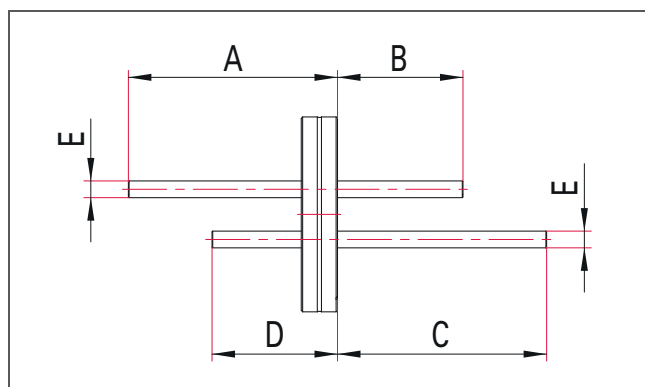
| Nominal diameter | Vacuum side | Atmosphere side | A [mm] | B [mm] | C [mm] | Order number |
|------------------|-------------|-----------------|--------|--------|--------|--------------|
| DN 16 CF | P | P | 75 | 45 | 6 | 420XFL016-PP |
| DN 16 CF | S | S | 73 | 103 | 6 | 420XFL016-SS |
| DN 40 CF | P | P | 75 | 45 | 6 | 420XFL040-PP |
| DN 40 CF | S | S | 103 | 73 | 6 | 420XFL040-SS |
| DN 40 CF | V | V | 105 | 75 | 6 | 420XFL040-VV |

P = tube end; V = VCR male; S = Swagelok® fitting

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Fluid Feedthrough, Double Tube

Dimensions



| Nominal diameter | Vacuum side | Atmosphere side | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-------------|-----------------|--------|--------|--------|--------|--------|----------------|
| DN 40 CF | P | P | 75 | 45 | 75 | 45 | 6 | 420XFL040-2-PP |
| DN 40 CF | S | S | 104 | 73 | 103 | 73 | 6 | 420XFL040-2-SS |
| DN 40 CF | V | V | 105 | 75 | 104 | 74 | 6 | 420XFL040-2-VV |

P = tube end; V = VCR male; S = Swagelok® fitting

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Fluid Feedthroughs, Thermally insulated ISO-KF

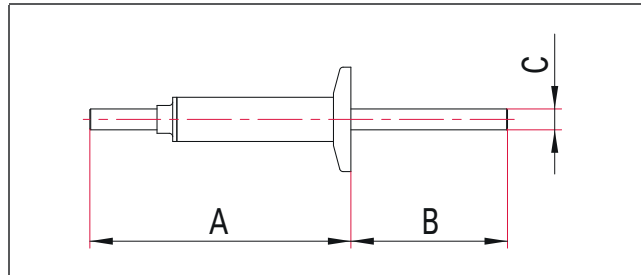
- Flange-tube connection: Thermally insulated tube
- Flange material: Stainless steel
- Suitable for liquid nitrogen
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-8}$ hPa to 1500 hPa over pressure
- Temperature range: -196 to 300 °C (vacuum side)

Note

Please note: VCR adapters cannot be installed on the vacuum side of DN 16 flanges due to their size.

ISO-KF Fluid Feedthrough, Single Tube

Dimensions

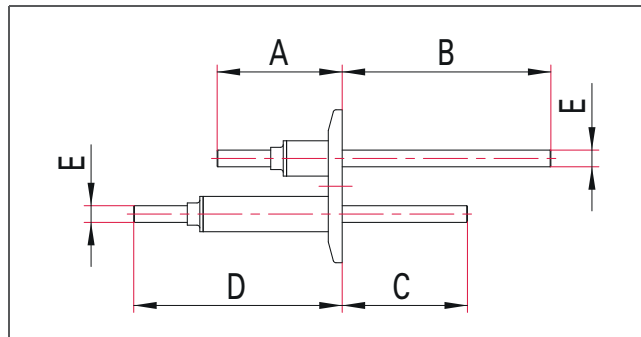


| Nominal diameter | Vacuum side | Atmosphere side | A [mm] | B [mm] | C [mm] | Order number |
|------------------|-------------|-----------------|--------|--------|--------|--------------|
| DN 16 KF | P | P | 75 | 45 | 6 | 120XFN016-PP |
| DN 16 KF | S | S | 103 | 73 | 6 | 120XFN016-SS |
| DN 40 KF | P | P | 75 | 45 | 6 | 120XFN040-PP |
| DN 40 KF | S | S | 103 | 73 | 6 | 120XFN040-SS |
| DN 40 KF | V | V | 105 | 75 | 6 | 120XFN040-VV |

P = tube end; V = VCR male; S = Swagelok® fitting
Flanges according to ISO 2861

ISO-KF Fluid Feedthrough, Double Tube

Dimensions



| Nominal diameter | Vacuum side | Atmosphere side | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-------------|-----------------|--------|--------|--------|--------|--------|----------------|
| DN 40 KF | P | P | 45 | 75 | 45 | 75 | 6 | 120XFN040-2-PP |
| DN 40 KF | S | S | 73 | 103 | 73 | 103 | 6 | 120XFN040-2-SS |
| DN 40 KF | V | V | 75 | 105 | 75 | 105 | 6 | 120XFN040-2-VV |

P = tube end; V = VCR male; S = Swagelok® fitting
Flanges according to ISO 2861

Fluid Feedthroughs, Thermally insulated CF

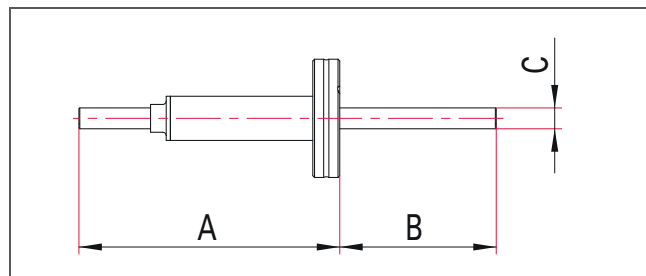
- Flange-tube connection: Thermally insulated tube
- Flange material: Stainless steel
- Suitable for liquid nitrogen
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-11}$ hPa to 1500 hPa over pressure
- Temperature range: -196 to 300 °C (vacuum side)

Note

Please note: VCR adapters cannot be installed on the vacuum side of DN 16 flanges due to their size.

CF Fluid Feedthrough, Single Tube

Dimensions



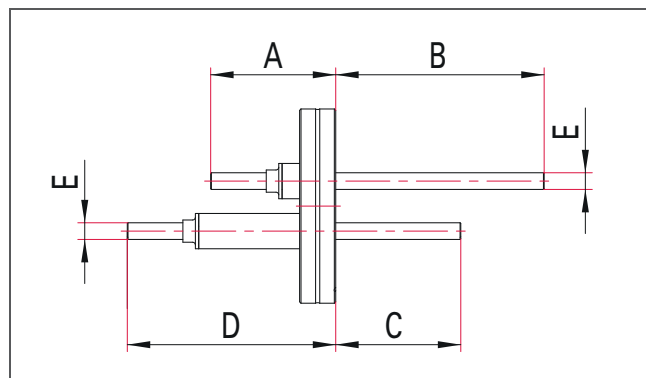
| Nominal diameter | Vacuum side | Atmosphere side | A [mm] | B [mm] | C [mm] | Order number |
|------------------|-------------|-----------------|--------|--------|--------|--------------|
| DN 16 CF | P | P | 75 | 45 | 6 | 420XFN016-PP |
| DN 16 CF | S | S | 103 | 73 | 6 | 420XFN016-SS |
| DN 40 CF | P | P | 75 | 45 | 6 | 420XFN040-PP |
| DN 40 CF | S | S | 103 | 73 | 6 | 420XFN040-SS |
| DN 40 CF | V | V | 105 | 75 | 6 | 420XFN040-VV |

P = tube end; V = VCR male; S = Swagelok® fitting

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

CF Fluid Feedthrough, Double Tube

Dimensions



| Nominal diameter | Vacuum side | Atmosphere side | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|-------------|-----------------|--------|--------|--------|--------|--------|----------------|
| DN 40 CF | P | P | 45 | 75 | 45 | 75 | 6 | 420XFN040-2-PP |
| DN 40 CF | S | S | 73 | 103 | 73 | 103 | 6 | 420XFN040-2-SS |
| DN 40 CF | V | V | 75 | 105 | 75 | 105 | 6 | 420XFN040-2-VV |

P = tube end; V = VCR male; S = Swagelok® fitting

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

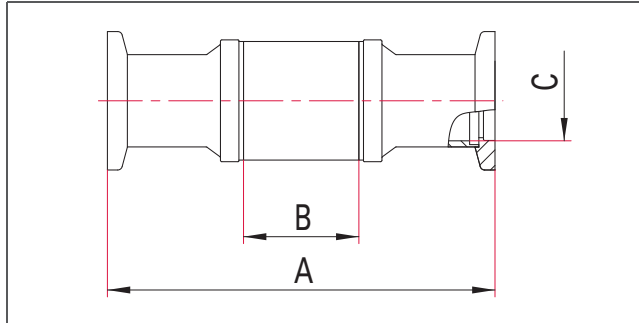
Isolators ISO-KF



- Stainless steel flange
- Heat up and cool down speed: max. 25 °C/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Temperature range: 0 to 250 °C

ISO-KF Isolators

Dimensions



| Nominal diameter | Voltage [kV] | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------------|--------|--------|--------|--------------|
| DN 16 KF | 15 | 92 | 25 | 16 | 120XIS016-15 |
| DN 16 KF | 30 | 117 | 51 | 16 | 120XIS016-30 |
| DN 40 KF | 30 | 104 | 51 | 35 | 120XIS040-30 |

Flanges according to ISO 2861

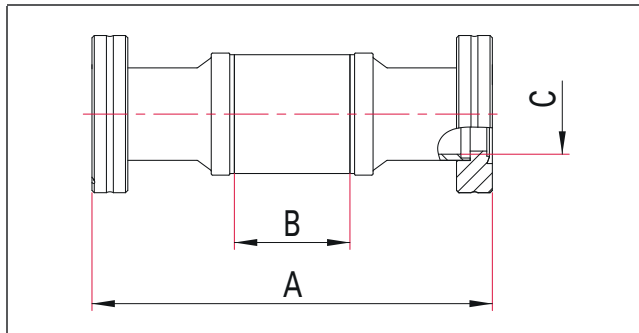
Isolators CF



- Stainless steel flange
- Heat up and cool down speed: max. 25 °C/min
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-11}$ hPa to ambient pressure
- Temperature range: 0 to 250 °C

CF Isolators

Dimensions



| Nominal diameter | Voltage [kV] | A [mm] | B [mm] | C [mm] | Order number |
|------------------|--------------|--------|--------|--------|--------------|
| DN 16 CF | 15 | 92 | 25 | 16 | 420XIS016-15 |
| DN 16 CF | 30 | 117 | 51 | 16 | 420XIS016-30 |
| DN 40 CF | 30 | 107 | 51 | 35 | 420XIS040-30 |

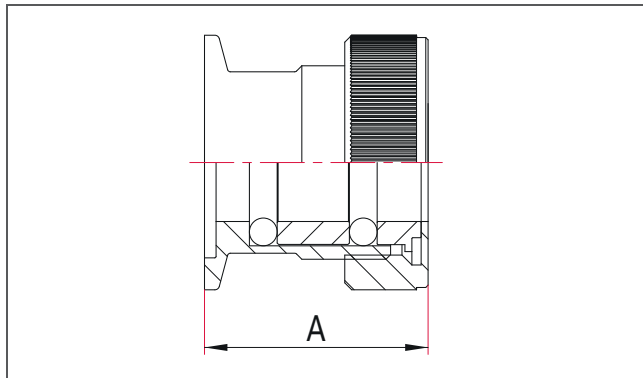
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Tube Compression Fittings ISO-KF



- Tube can be fed through
- Manual opening and closing
- Double-sealed with FKM O-rings
- Pressure range: $1 \cdot 10^{-7}$ hPa to ambient pressure
- Temperature range: -15 to 130 °C

Dimensions



Stainless Steel 304/1.4301

| Nominal diameter | Tube diameter [mm] | A [mm] | Order number |
|------------------|--------------------|--------|--------------|
| DN 16 KF | 10 | 38 | 120XQV016-10 |
| DN 16 KF | 12 | 38 | 120XQV016-12 |
| DN 25 KF | 16 | 45 | 120XQV025-16 |
| DN 40 KF | 20 | 46 | 120XQV040-20 |
| DN 40 KF | 25 | 46 | 120XQV040-25 |

Bellows-sealed Rotary Feedthrough



420MRB016

- Hermetically sealed, suitable for UHV
- Bellows-sealed
- Stainless steel ball bearing with dry lubrication, suitable for UHV
- Mode of operation: DN 16: Operating handle with snap-in stages in 10 ° increments; DN 40: shaft connections on both sides
- Operating temperature: DN 16: up to 80 °C; DN 40: up to 300 °C
- Tightness: $< 1 \cdot 10^{-11} \text{ Pa m}^3/\text{s}$
- Pressure range: $1 \cdot 10^{-9} \text{ hPa}$ to 500 hPa over pressure
- Mounting orientation: any
- Materials: Stainless steel

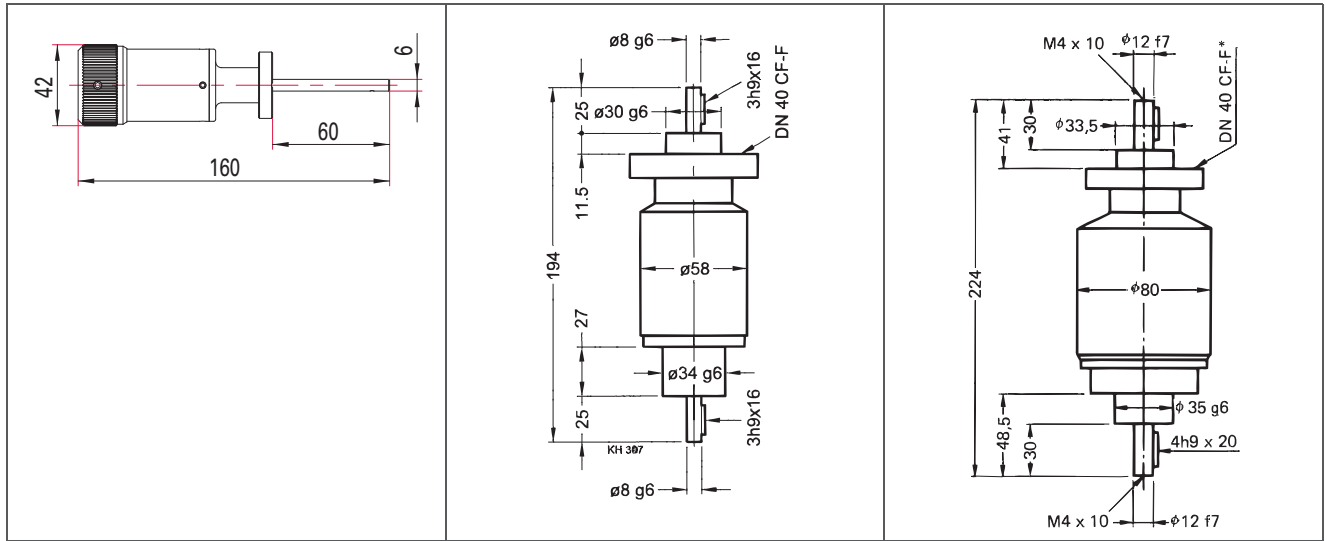


PF 621 010-T
PF 621 012-T

Note

Options for 420MRB: customized shaft

Dimensions



420MRB016

PF 621 010-T

PF 621 012-T

Manual/Shaft Connections

| Nominal diameter | Transferable torque static [Nm] | Transferable torque dynamic [Nm] | Shaft load, axial [N] | Shaft load, radial [N] | Thread | Order number |
|------------------|---------------------------------|----------------------------------|-----------------------|------------------------|--------|--------------|
| DN 16 CF | 0.1 | 0.2 | 10 | 20 | M3 | 420MRB016 |
| DN 40 CF-F | 3 | 4 | 20 | 60 | No | PF 621 010-T |
| DN 40 CF-F | 5 | 10 | 30 | 100 | No | PF 621 012-T |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

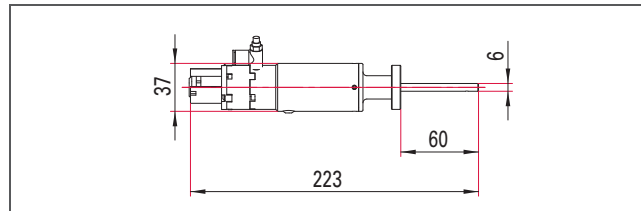
Bellows-sealed Rotary Feedthrough, Pneumatic



- Hermetically sealed, suitable for UHV
- Bellows-sealed
- Stainless steel ball bearing with dry lubrication, suitable for UHV
- Adjustable swivel speed
- Connection: (compressed air) 6 mm hose connection
- Bakeout temperature: up to 250 °C, pneumatic drive (removable) up to 60 °C
- Mode of operation: Pneumatically operated; double acting
- Operating temperature: up to 60 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Angle of rotation: 0 to 180 ° (final position adjustable)
- Compressed air (overpressure) max.: 0.7 MPa
- Compressed air (overpressure) min.: 0.15 MPa
- Mounting orientation: any
- Materials: Stainless steel
- Service life: 500000 cycles

Pneumatic

Dimensions



| Nominal diameter | Transferable torque static [Nm] | Transferable torque dynamic [Nm] | Shaft load, axial [N] | Shaft load, radial [N] | Thread | Order number |
|------------------|---------------------------------|----------------------------------|-----------------------|------------------------|--------|--------------|
| DN 16 CF | 0.1 | 0.2 | 10 | 20 | M3 | 420MRB016-p |

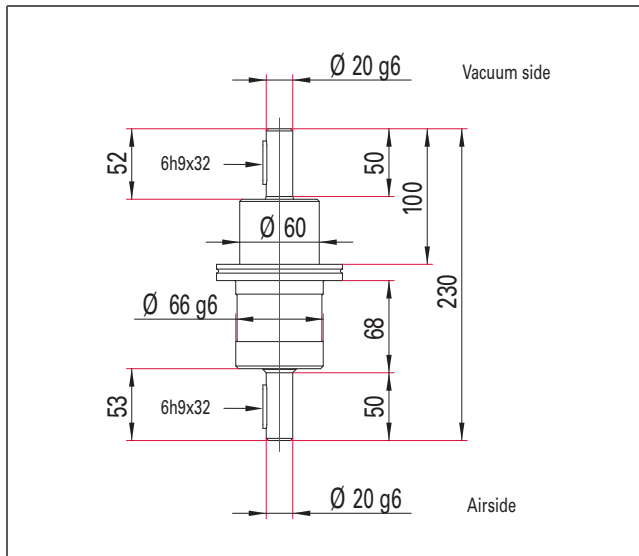
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Elastomer-sealed Rotary Feedthrough DN 63 ISO-K



- With FKM shaft seal and ball bearing, greased to be suitable for vacuum
- Rotary speed can be increased by up to a factor of two if reduced service life is acceptable
- With through shaft for directly transmitting high torques
- Bakeout temperature: 110 °C
- Operating temperature: 50 °C
- Tightness (static): $1 \cdot 10^{-10}$ Pa m³/s
- Seal: FKM
- Rotation speed: 500 min⁻¹
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Mounting orientation: any
- Materials: Housing: aluminum; shaft: stainless steel
- Service life (revolutions): 10000000

Dimensions



ISO-K

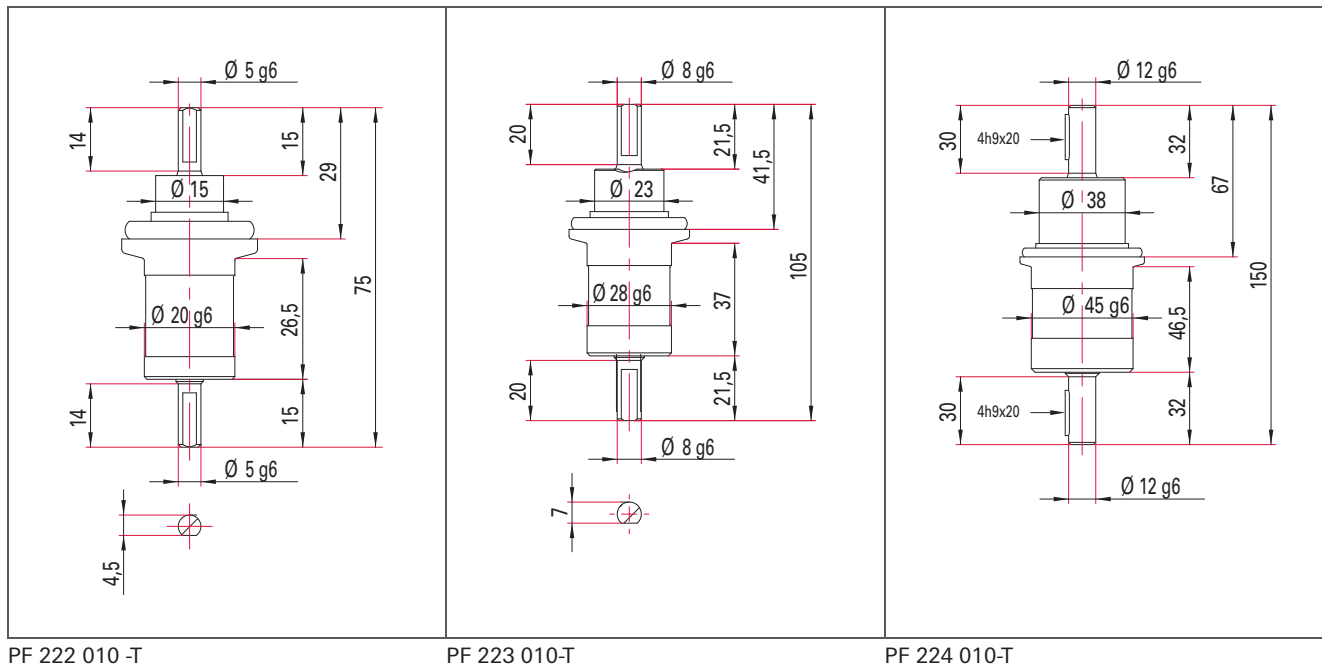
| Nominal diameter | Transferable torque [Nm] | Shaft connection [mm] | Shaft load, axial [N] | Shaft load, radial [N] | Order number |
|------------------|--------------------------|----------------------------|-----------------------|------------------------|--------------|
| DN 63 ISO-K | 100 | $\varnothing 20 \times 50$ | 100 | 500 | PF 420 010-T |

Elastomer-sealed Rotary Feedthrough DN 16 - 40 ISO-KF



- With FKM shaft seal and ball bearing, greased to be suitable for vacuum
- Rotary speed can be increased by up to a factor of two if reduced service life is acceptable
- With through shaft for directly transmitting high torques
- With integrated FKM O-ring, installation without additional seal
- Bakeout temperature: 110 °C
- Operating temperature: up to 50 °C
- Tightness (static): $1 \cdot 10^{-10}$ Pa m³/s
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Mounting orientation: any
- Materials: Housing: aluminum; shaft: stainless steel
- Service life (revolutions): 20000000

Dimensions



ISO-KF

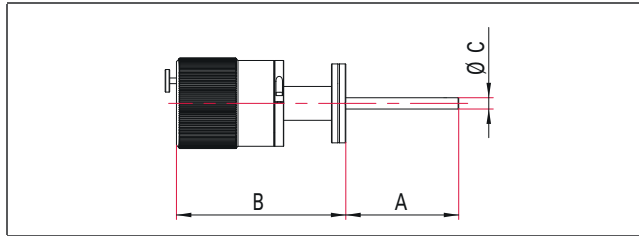
| Nominal diameter | Transferable torque [Nm] | Shaft connection [mm] | Shaft load, axial [N] | Shaft load, radial [N] | Order number |
|------------------|--------------------------|----------------------------|-----------------------|------------------------|--------------|
| DN 16 ISO-KF | 1.5 | $\varnothing 5 \times 14$ | 30 | 60 | PF 222 010-T |
| DN 25 ISO-KF | 6 | $\varnothing 8 \times 20$ | 50 | 150 | PF 223 010-T |
| DN 40 ISO-KF | 25 | $\varnothing 12 \times 30$ | 60 | 250 | PF 224 010-T |

Rotary Magnetic Feedthrough



- Magnetic coupling with samarium-cobalt magnets
- Stainless steel ball bearing with dry lubrication, suitable for UHV
- Hermetically sealed, suitable for UHV
- Fixing brake
- Bakeout temperature: 200 °C
- Operating temperature: -15 to 80 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Angle of rotation: 360 °
- Pressure range: $1 \cdot 10^{-10}$ hPa to 500 hPa over pressure
- Scale: (DN 40) Accuracy of reading 1/10 °
- Shaft connection: with threaded hole, vented: DN 16: M3x6; DN 40: M5x10

Dimensions



Note

Upon exceeding the maximum torque, the magnets snap into the next stable position, the feedthrough does not suffer any damage.

Manual

| Nominal diameter | A [mm] | B [mm] | C [mm] | Torque [Nm] | Order number |
|------------------|--------|--------|--------|-------------|--------------|
| DN 16 CF | 50 | 82 | 6 | 0.5 | 420MRM016 |
| DN 40 CF | 100 | 150 | 10 | 8 | 420MRM040 |

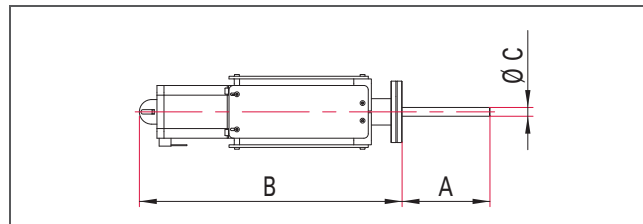
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Rotary Magnetic Feedthrough, Motorized

- Magnetic coupling with samarium-cobalt magnets
- Stainless steel ball bearing with dry lubrication, suitable for UHV
- Hermetically sealed, suitable for UHV
- Bakeout temperature with electric parts: 80 °C
- Bakeout temperature without electric parts: 200 °C
- Operating temperature: -10 to 50 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Angle of rotation: 360 °
- Pressure range: $1 \cdot 10^{-10}$ hPa to 500 hPa over pressure
- Shaft connection: with threaded hole, vented: DN 16: M3x6; DN 40: M5x10

Motorized

Dimensions



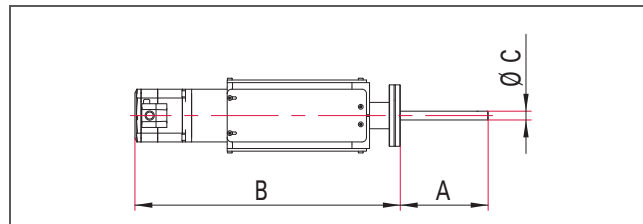
- Torque: max. 3 Nm
- Rotation speed: 500 min⁻¹
- Transmission: optional available
- Motor version: 2-phase stepper motor

| Nominal diameter | A [mm] | B [mm] | C [mm] | Lowest angular resolution [°] | Order number |
|------------------|--------|--------|--------|-------------------------------|--------------|
| DN 40 CF | 100 | 299 | 10 | 0.45 | 420MRM040-m |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Motorized, high precision

Dimensions



- Including resolver control, driver and controller
- Torque: max. 8 Nm
- Rotation speed: 30 min⁻¹
- Transmission: backlash-free Harmonic Drive® gear (gear reduction 100:1)
- Motor version: 2-phase stepper motor

| Nominal diameter | A [mm] | B [mm] | C [mm] | Lowest angular resolution [°] | Order number |
|------------------|--------|--------|--------|-------------------------------|--------------|
| DN 40 CF | 100 | 302 | 10 | 0.0036 | 420MRM040-hm |

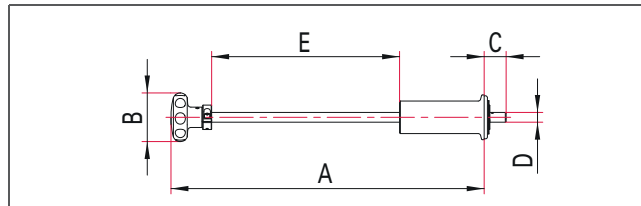
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Elastomer-sealed Rotary/Linear Feedthrough Long Version MDD



- Direct power transmission using elastomer-sealed shaft
- Shaft made from hardened stainless steel, diameter 12 mm
- Freely rotatable and slidable
- Adjustable stroke limiting stops
- Bakeout temperature: 200 °C
- Operating temperature: -15 to 150 °C
- Tightness (static): $1 \cdot 10^{-10}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Lubricant: Perfluoropolyether grease
- Transferable torque dynamic: 20 Nm
- Shaft connection: with threaded hole, vented: M6x12
- Shaft load, axial: 100 N

Dimensions



Note

Options: additional stroke lengths, motor drive, alternative vacuum grease: mineral or silicone grease

Elastomer-sealed Rotary/Linear Feedthrough Long Version

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|----------------|
| DN 40 KF | 404 | 60 | 27 | 12 | 250 | 120MDD040-0250 |
| DN 40 KF | 654 | 60 | 27 | 12 | 500 | 120MDD040-0500 |
| DN 40 KF | 904 | 60 | 27 | 12 | 750 | 120MDD040-0750 |

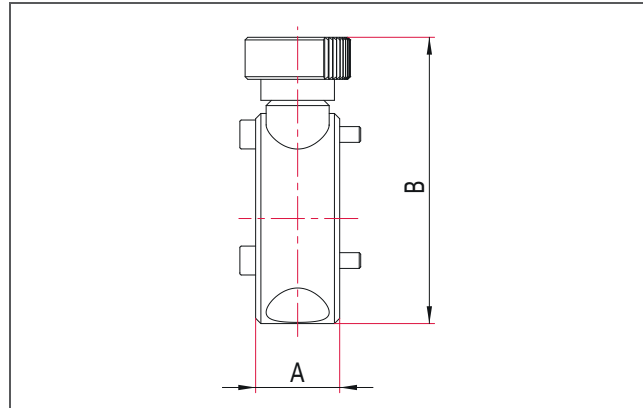
Flanges according to ISO 2861

Clamping Device for Rotary/Linear Feedthroughs MDD



- To fix the guide rod in any position
- Can be installed after system installation and removed again as desired
- Bakeout temperature: 200 °C

Dimensions



Clamping Device for Rotary/Linear Feedthroughs MDD

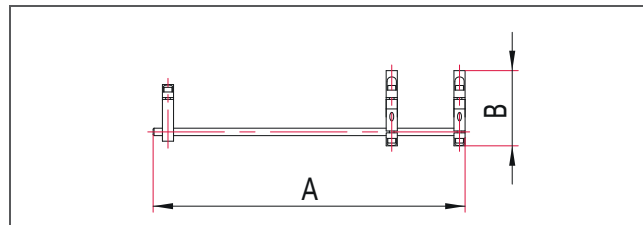
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 40 KF | 16 | 55 | 120MDD-B |

Anti-twist Lock for Rotary/Linear Feedthroughs MDD



- Fixes angle position if only linear movement is to be transferred
- Can be installed after system installation and removed again as desired
- Bakeout temperature: 200 °C

Dimensions



Anti-twist Lock for Rotary/Linear Feedthroughs MDD

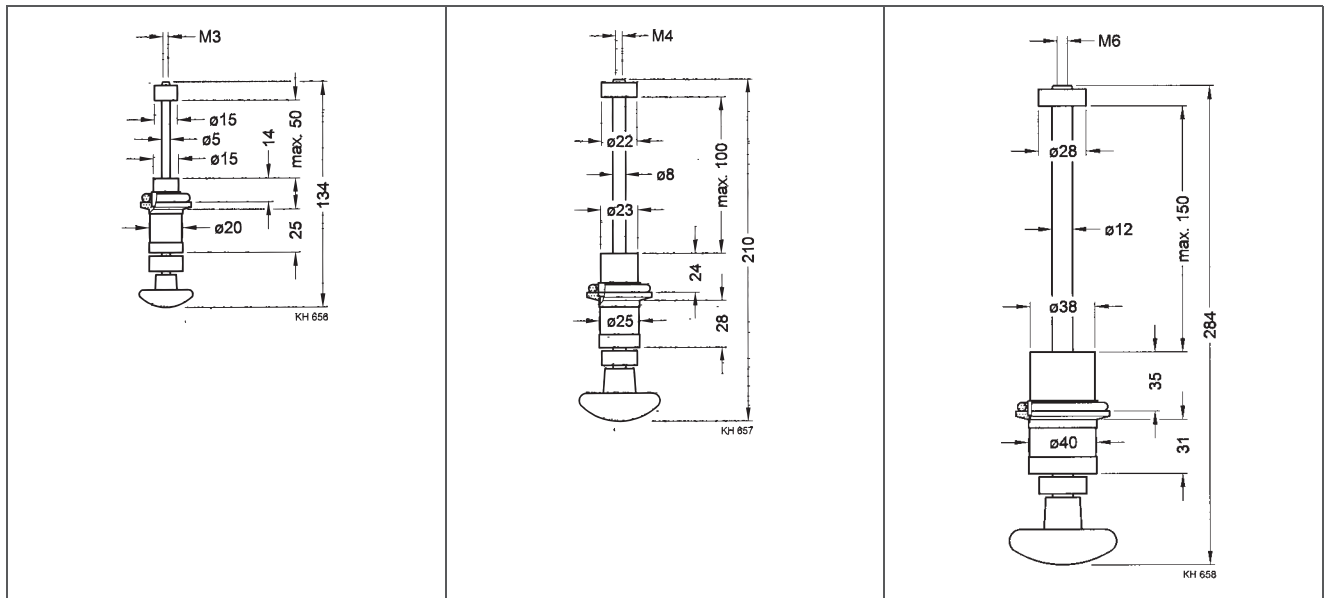
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|-------------------|
| DN 40 KF | 386 | 81 | 120MDD040-0250-VS |
| DN 40 KF | 636 | 81 | 120MDD040-0500-VS |
| DN 40 KF | 886 | 81 | 120MDD040-0750-VS |

Elastomer-sealed Rotary/Linear Feedthrough DS



- Direct power transmission using elastomer-sealed shaft
- Freely rotatable and slidable
- Adjustable stroke limiting stops
- Bakeout temperature: 110 °C
- Operating temperature: max. 50 °C
- Tightness (static): $1 \cdot 10^{-10}$ Pa m³/s
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Materials: Housing: aluminum; shaft: stainless steel

Dimensions



PF 242 010 -T

PF 243 010 -T

PF 244 011 -T

Elastomer-sealed Rotary/Linear Feedthrough

| Nominal diameter | Load capacity radial: at max. displacement [N] | Load capacity radial: at max. displacement [Nm] | Stroke [mm] | Shaft connection | Order number |
|------------------|--|---|-------------|-------------------|---------------|
| DN 16 ISO-KF | 10 | 2 | 50 | M3 x 6 / ø 5 mm | PF 242 010 -T |
| DN 25 ISO-KF | 15 | 8 | 100 | M4 x 8 / ø 8 mm | PF 243 010 -T |
| DN 40 ISO-KF | 30 | 20 | 150 | M6 x 10 / ø 12 mm | PF 244 011 -T |

Anti-twist Lock for Rotary/Linear Feedthroughs DS

- Fixes angle position if only linear movement is to be transferred
- Can be installed after system installation and removed again as desired
- Bakeout temperature: 200 °C

Anti-twist Lock for Rotary/Linear Feedthroughs DS

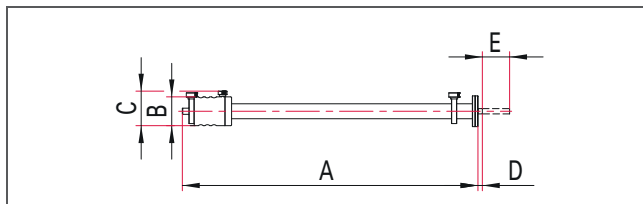
| Nominal diameter | Length [mm] | Order number |
|------------------|-------------|---------------|
| DN 16 CF | 50 | PT 226 978 -T |
| DN 25 CF | 100 | PT 226 979 -T |
| DN 40 CF | 150 | PT 226 980 -T |

Magnetically Guided Rotary/Linear Feedthrough MDM



- Stainless steel ball bearing for linear and rotational movement with dry lubrication suitable for UHV
- Magnetic coupling with samarium-cobalt magnets
- Hermetically sealed, suitable for UHV
- Shaft made from hardened stainless steel, diameter 12 mm
- Freely rotatable and slidable
- Adjustable stroke limiting stops
- Bakeout temperature: 200 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-10}$ hPa to 500 hPa
- Transferable torque: 2.3 Nm
- Shaft connection: threaded hole, vented: M6x15
- Shaft load, axial: 50 N

Dimensions



Note

Options: additional stroke lengths, additional flange sizes, higher axial force and higher torque

Magnetically Guided Rotary/Linear Feedthrough

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|----------------|
| DN 40 CF | 422 | 65.5 | 79 | 20 | 250 | 420MDM040-0250 |
| DN 40 CF | 672 | 65.5 | 79 | 20 | 500 | 420MDM040-0500 |
| DN 40 CF | 922 | 65.5 | 79 | 20 | 750 | 420MDM040-0750 |

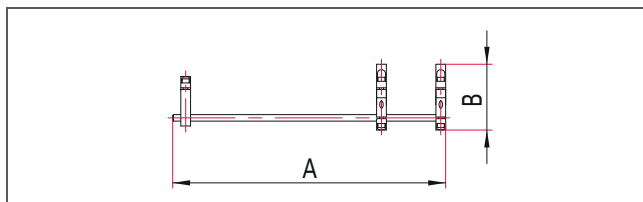
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Anti-twist Lock for Rotary/Linear Feedthroughs MDM



- Fixes angle position if only linear movement is to be transferred
- Angle position adjustable
- Can be installed after system installation and removed again as desired
- Bakeout temperature: 200 °C

Dimensions



Anti-twist Lock for Rotary/Linear Feedthroughs MDM

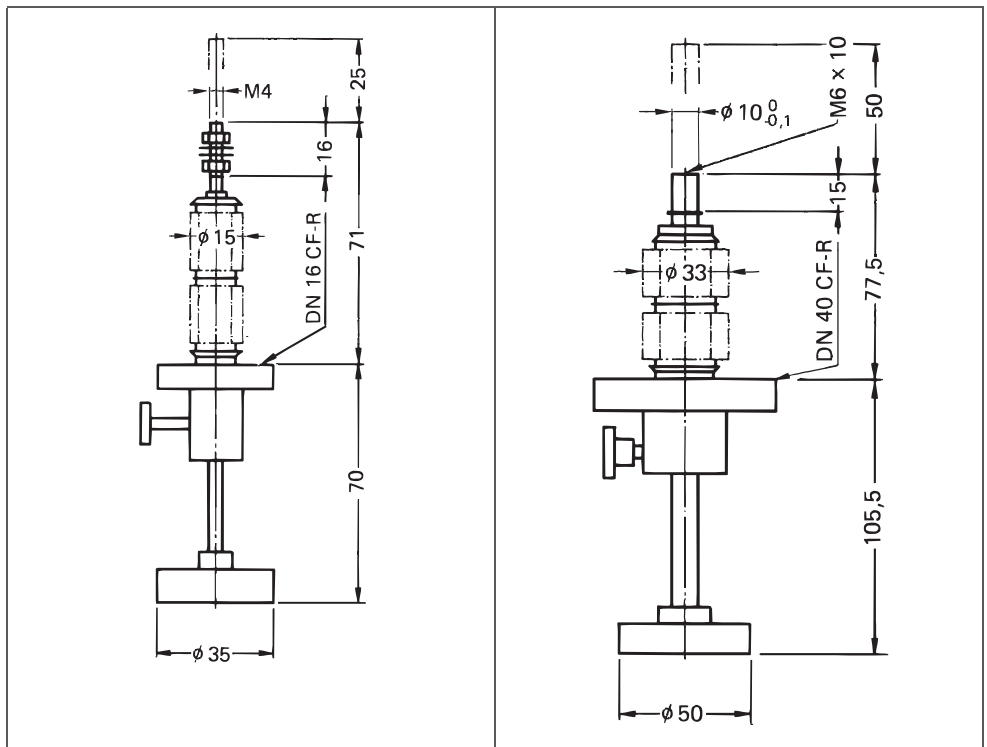
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|-------------------|
| DN 40 CF | 381 | 103 | 420MDM040-0250-VS |
| DN 40 CF | 631 | 103 | 420MDM040-0500-VS |
| DN 40 CF | 881 | 103 | 420MDM040-0750-VS |

Bellows-sealed Linear Feedthrough



- Hermetically sealed, suitable for UHV
- Bellows-sealed
- Direct manual push/pull actuation
- With setscrew
- Bakeout temperature: up to 300 °C
- Load capacity radial: at max. displacement: DN 16: 20 N; DN 40: 100 N
- Load capacity: torsion: DN 16: 0.2 Nm; DN 40: 0.5 Nm
- Mode of operation: handle
- Operating temperature: up to 300 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure
- Mounting orientation: any
- Materials: Stainless steel; hand knob: aluminum
- Service life: 10000 cycles

Dimensions



PF 630 010-T

PF 631 010-T

Manual

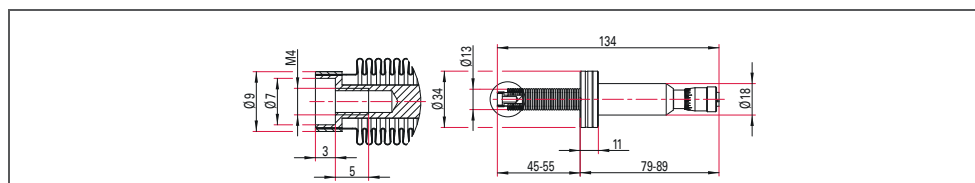
| Nominal diameter | Stroke [mm] | Shaft load, axial: to atmosphere [N] | Shaft load, axial: to vacuum [N] | Order number |
|------------------|-------------|--------------------------------------|----------------------------------|--------------|
| DN 16 CF-R | 25 | 100 | 85 | PF 630 010-T |
| DN 40 CF-R | 50 | 200 | 140 | PF 631 010-T |

Bellows-sealed Precision Linear Feedthrough

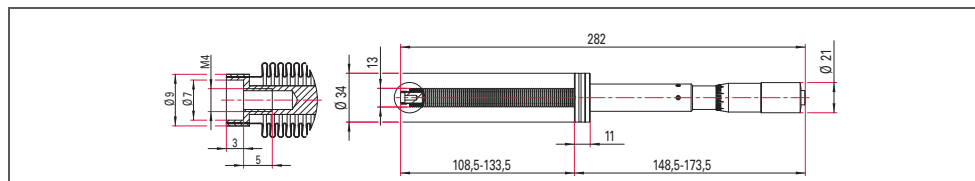
- Hermetically sealed, suitable for UHV
- Bellows-sealed
- Bakeout temperature: feedthrough: up to 300 °C
- Bakeout temperature: micrometer screw/piston: up to 100 °C
- Mode of operation: Micrometer screw
- Operating temperature: up to 50 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure
- Mounting orientation: any
- Service life: 10000 cycles

Manual, Fine

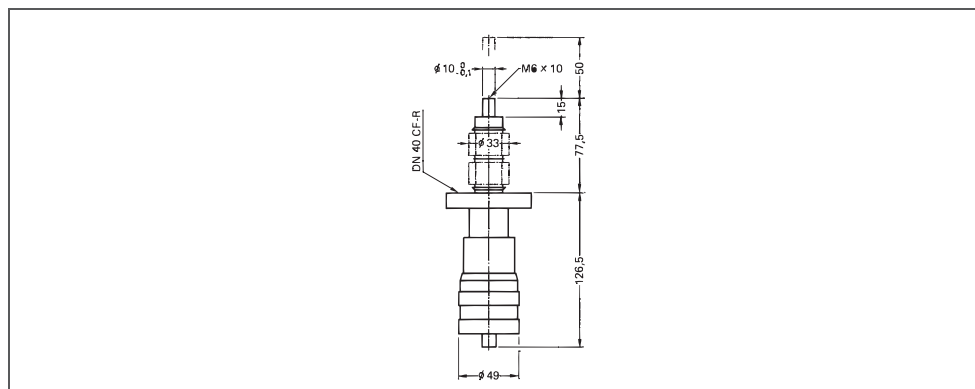
Dimensions



420MZF016-010



420MZF016-025

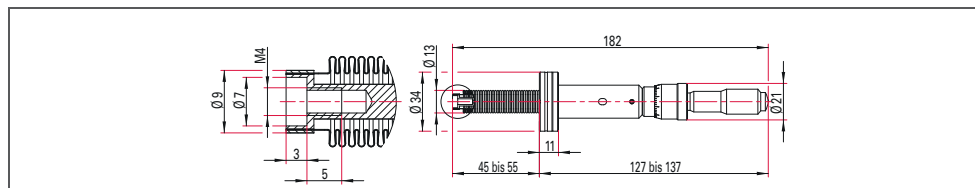


PF 631 012-T

| Nominal diameter | Stroke [mm] | Resolution [μ m] | Accuracy [μ m] | Order number |
|------------------|-------------|-----------------------|---------------------|---------------|
| DN 16 CF | 10 | 5 | 5 | 420MZF016-010 |
| DN 16 CF | 25 | 10 | 10 | 420MZF016-025 |
| DN 40 CF-R | 50 | 5 | 5 | PF 631 012-T |

Manual, Superfine

Dimensions



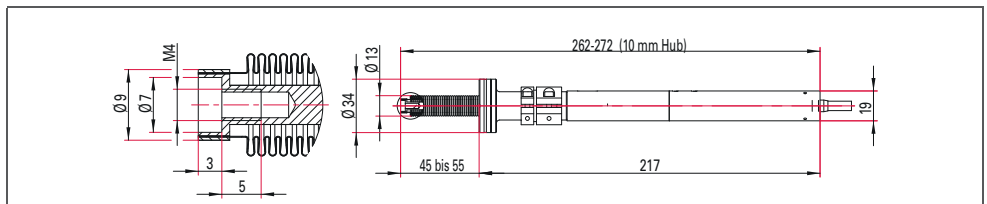
| Nominal diameter | Stroke [mm] | Resolution [μ m] | Accuracy [μ m] | Order number |
|------------------|-------------|-----------------------|---------------------|-----------------|
| DN 16 CF | 10 | 0.5 | 3 | 420MZF016-010-s |

Bellows-sealed Precision Linear Feedthrough Motorized

- Hermetically sealed, suitable for UHV
- Bellows-sealed
- For motorized fine positioning of components in the vacuum
- Maximum load moment on bellows: 0.2 Nm
- Easy bakeout with comfortable motor disassembly and position fixing device
- Bakeout temperature with electric parts: 70 °C
- Bakeout temperature without electric parts: 200 °C
- Axial force: max. 45 N
- Fixation: Screw M4 x 5 (on actuator)
- Operating temperature: max. 65 °C
- Pressure range: $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure
- Service life: 10000 cycles
- Motor version: 2-phase stepper motor

Motorized, 10 mm Adjustment Travel

Dimensions

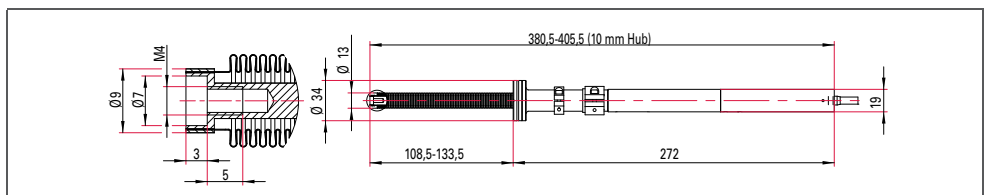


| Nominal diameter | Stroke [mm] | Resolution [μ m] | Accuracy [μ m] | Order number |
|------------------|-------------|-----------------------|---------------------|-----------------|
| DN 16 CF | 10 | 0.05 | 3 | 420MZF016-010-m |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2.

Motorized, 25 mm Adjustment Travel

Dimensions



| Nominal diameter | Stroke [mm] | Resolution [μ m] | Accuracy [μ m] | Order number |
|------------------|-------------|-----------------------|---------------------|-----------------|
| DN 16 CF | 25 | 0.05 | 3 | 420MZF016-025-m |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2.



Manipulators

Movement and positioning in the vacuum



Contents

Manipulators

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Movement and positioning in the vacuum

Movement often needs to be transmitted by vacuum sealed manipulators or mechanical feedthroughs to push, rotate or tilt probes or components such as measuring and analytical equipment within the vacuum. Devices which have free flange connections on both sides and an open passageway are referred to as manipulators while components whose actuators are installed vacuum sealed in a flange are referred to as mechanical feedthroughs. The latter are characterized by their compact design. Manipulators may be combined with each other and expanded. In addition, mechanical feedthroughs can be fitted onto them. Thus a wide range of movements can be transferred into the vacuum and wide-ranging tasks can be performed.

Manipulator flanges are subjected to sizable forces due to atmospheric pressure, particularly where large nominal diameters are involved. To ensure that flanges remain in a stable position even under vacuum, we place great importance on the inherent rigidity when designing our manipulators and optimize them by using the Finite Elements Method (FEM) in our calculations. Together with the installation of high quality mechanical components this means that movements are extremely precise, smooth and free of play with excellent reproducibility. The low wear also means higher reliability and a very long service life.

Pfeiffer Vacuum offers a large selection of manipulators and mechanical feedthroughs for axial and lateral movements, for rotation and angle shifting. In addition to manually operated equipment we also offer motor drives for automated processes.



Features at a glance

| | Nominal diameter | | | | | Deflection | | Axial hub | | | | | | | | Rotary and adjusting angle | | | Resolution | | | | | Actuator type | | | Page | | | | | | | | | | |
|---|------------------|-------|-------|-------|--------|-------------|-----------|-----------|-------|-------|--------|--------|--------|--------|--------|----------------------------|--------|--------|------------|------|------|---------|--------|---------------|---------|------|------|------|-------|--------|-----------|-----------|---|---|---|-----|-----|
| | DN 16 | DN 25 | DN 40 | DN 63 | DN 100 | +/- 12,5 mm | +/- 25 mm | 10 mm | 25 mm | 50 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 500 mm | 750 mm | 3° | 180° | 360° | 0.05 µm | 0.5 µm | 1 µm | 1.25 µm | 2 µm | | 5 µm | 10 µm | Manual | Motorized | Pneumatic | | | | | |
| Manipulators | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z-axis manipulators | | | ■ | ■ | ■ | | | | | | ■ | ■ | ■ | | ■ | ■ | | | | | | | | | | | | | | | | ■ | ■ | | | 362 | |
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| Elastomer-sealed feedthroughs | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | ■ | | | | | | | | | | | | ■ | | | 371 | |
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**Customer benefits**

- A wide variety of movements possible
- Highest precision and excellent reproducibility
- Can be used in automation processes
- High reliability
- Very long service life



Z-/XY-/XYZ-Precision manipulators



Rotary manipulators



Port aligner

Series

Z-/XY-/XYZ-Precision manipulators have a metallic seal through welded diaphragm bellows and are designed for ambient pressure of up to 10^{-10} hPa. We supply standard versions in nominal diameter DN 40 CF to DN 100 CF axial travel of up to 400 mm and lateral movements of up to ± 25 mm actuated both manually and with multiphase motors.

Rotary manipulators in the nominal diameter DN 40 CF to DN 100 CF have PTFE sliding gaskets with two differentially pumped intermediate spaces. They are used in a pressure range from atmospheric pressure up to 10^{-10} hPa.

Port aligners serve as angle (3°) and length (± 5 mm) compensation in the nominal diameter DN 40 CF to DN 100 CF. They have a metallic seal through welded diaphragm bellows and are designed for ambient pressure of up to 10^{-10} hPa.

Rotary feedthroughs are available in three vacuum sealed versions: hermetically sealed with diaphragm bellows and UHV capable, or magnetically coupled or elastomer sealed with FKM shaft seals for transferring high torques. The diaphragm bellows-sealed and elastomer-sealed versions have free shaft ends on the air side to enable drive units to be mounted. Magnetically coupled rotary feedthroughs do not have any free shaft ends. We therefore supply them as manually operated and motor driven versions.

Rotary/Linear feedthroughs are available in two vacuum sealed versions; as a hermetically sealed and magnetically coupled UHV version, and as an elastomer-sealed version using FKM seals for transferring high torques.

Linear feedthroughs for the transmission of linear movements in the pressure range of 10^{-9} hPa to 1000 hPa overpressure are hermetically sealed with welded corrugated bellows. They are fitted with micrometer screws or are motorized for precision movements.

General information

All manipulators and mechanical feedthroughs from Pfeiffer Vacuum are helium leak tested and have leak rates better than 10^{-10} Pa m³/s in an ISO-KF and ISO-K and 10^{-11} Pa m³/s in a CF version.

Important information relating to the technical data

The minimum final pressure that can be attained in the overall system depends on a number of factors, in particular the pump system, the desorption rates, the interior surface and the pump-down time. Minimum pressures listed in the product descriptions are empirical values that can be achieved with a well designed vacuum system. In individual cases they may be exceeded or not achieved. When using elastomer seals the gas permeability (permeation) also needs to be taken into account. This is dependent on the material, temperature and type of gas.

The permissible upper and lower temperature limits for the overall system are based on the lowest upper value and the highest lower value for the system components involved. The flange connections of the components were developed to provide vacuum sealed connections. They can only bear limited mechanical loads. It is therefore necessary to examine whether structural or dynamic loads need to be borne by additional elements (e.g. brackets) when designing a vacuum system.



Rotary feedthroughs



Rotary/linear feedthroughs



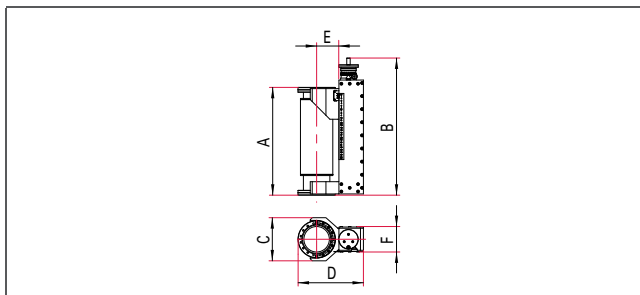
Linear feedthroughs

Z-Axis Precision Manipulator



- Recirculating ball guidance system and recirculating ball bearing drive
- Zero-backlash and no stick-slip effect
- Guidance and drive wear-free and maintenance-free
- Extremely stable design concept minimizes position offset due to pressure changes
- Fixing brake prevents independent movement
- Connection flange with through holes, traversable flange with threaded holes
- Bakeout temperature: 230 °C
- Operating temperature: -15 to 80 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-10}$ hPa to ambient pressure
- Mounting orientation: any
- Inner diameter: DN 40: 38 mm; DN 63: 65 mm; DN 100: 102 mm
- Service life: min. 10000 cycles at full deflection (bellows easy to replace)
- Materials: Stainless steel (bellows: 316L, flange and tube: 304L, housing: 304)

Dimensions



Note

Options: additional travel ways, more cycles for bellows, spindle tolerance class IT3 or IT1 (standard IT5), kit for converting to motorized drive, FEM-simulation for custom load and installation

Customer benefit

- Maximum accuracy and excellent reproducibility
- Very long service life
- High reliability
- Easy, ergonomic operability

Z-Axis Precision Manipulator

- Resolution: 5 µm
- Repeatable precision: 5 µm

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|------------|--------|--------|--------|--------|--------|---------------|
| DN 40 CF | 150 to 250 | 370 | 84 | 175 | 50 | 82 | 420MZA040-100 |
| DN 40 CF | 150 to 300 | 420 | 84 | 175 | 50 | 82 | 420MZA040-150 |
| DN 40 CF | 165 to 365 | 485 | 84 | 175 | 50 | 82 | 420MZA040-200 |
| DN 40 CF | 190 to 490 | 610 | 84 | 175 | 50 | 82 | 420MZA040-300 |
| DN 40 CF | 220 to 620 | 740 | 84 | 175 | 50 | 82 | 420MZA040-400 |
| DN 63 CF | 150 to 250 | 370 | 128 | 217 | 70 | 82 | 420MZA063-100 |
| DN 63 CF | 150 to 300 | 420 | 128 | 217 | 70 | 82 | 420MZA063-150 |
| DN 63 CF | 165 to 365 | 485 | 128 | 217 | 70 | 82 | 420MZA063-200 |
| DN 63 CF | 190 to 490 | 610 | 128 | 217 | 70 | 82 | 420MZA063-300 |
| DN 63 CF | 220 to 620 | 740 | 128 | 217 | 70 | 82 | 420MZA063-400 |
| DN 100 CF | 190 to 290 | 410 | 176 | 267 | 91 | 104 | 420MZA100-100 |
| DN 100 CF | 190 to 340 | 460 | 176 | 267 | 91 | 104 | 420MZA100-150 |
| DN 100 CF | 190 to 390 | 510 | 176 | 267 | 91 | 104 | 420MZA100-200 |
| DN 100 CF | 190 to 490 | 610 | 176 | 267 | 91 | 104 | 420MZA100-300 |
| DN 100 CF | 212 to 612 | 732 | 176 | 267 | 91 | 104 | 420MZA100-400 |

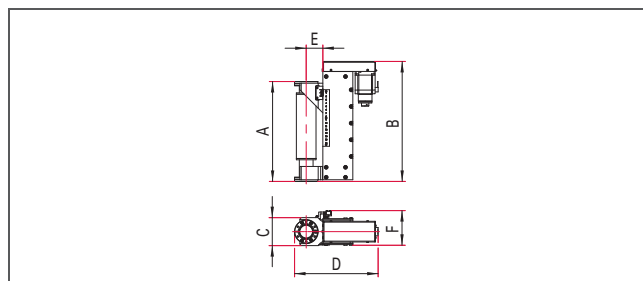
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Z-Axis Precision Manipulator Motorized



- Recirculating ball guidance system and recirculating ball bearing drive
- Zero-backlash and no stick-slip effect
- Guidance and drive wear-free and maintenance-free
- Extremely stable design concept minimizes position offset due to pressure changes
- Adjustable end switches
- Fixing brake (currentless closed) prevents independent movement
- Connection flange with through holes, traversable flange with threaded holes
- Bakeout temperature with electric parts: 80 °C
- Bakeout temperature without electric parts: 230 °C
- Operating temperature: -10 to 50 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-10}$ hPa to ambient pressure
- Mounting orientation: any
- Inner diameter: DN 40: 38 mm; DN 63: 65 mm; DN 100: 102 mm
- Service life: min. 10000 cycles at full deflection (bellows easy to replace)
- Power consumption: motor: 4.8 V DC, max. 2.8 A/phase bipolar parallel; brake: 24 V DC, 0.5 A
- Materials: Stainless steel (bellows: 316L, flange and tube: 304L, housing: 304)
- Motor version: 2-phase stepper motor

Dimensions



Note

Options: additional travel ways, more cycles for bellows, displacement sensor, spindle tolerance class IT3 or IT1 (standard IT5), servo or DC motor, FEM-simulation for custom load and installation

Customer benefit

- Maximum accuracy and excellent reproducibility
- Very long service life
- High reliability
- Suitable for process automation

Z-Axis Precision Manipulator Motorized

- Resolution: 1.25 µm (at 1/8 motor step)
- Repeatable precision: 1.25 µm (at 1/8 motor step)

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Order number |
|------------------|-------------|--------|--------|--------|--------|--------|-----------------|
| DN 40 CF | 150 to 250 | 310 | 84 | 251 | 50 | 104 | 420MZA040-100-m |
| DN 40 CF | 150 bis 300 | 360 | 84 | 251 | 50 | 104 | 420MZA040-150-m |
| DN 40 CF | 165 to 365 | 425 | 84 | 251 | 50 | 104 | 420MZA040-200-m |
| DN 40 CF | 190 to 490 | 550 | 84 | 251 | 50 | 104 | 420MZA040-300-m |
| DN 40 CF | 220 to 620 | 680 | 84 | 251 | 50 | 104 | 420MZA040-400-m |
| DN 63 CF | 150 to 250 | 310 | 128 | 293 | 70 | 104 | 420MZA063-100-m |
| DN 63 CF | 150 to 300 | 360 | 128 | 293 | 70 | 104 | 420MZA063-150-m |
| DN 63 CF | 165 to 365 | 425 | 128 | 293 | 70 | 104 | 420MZA063-200-m |
| DN 63 CF | 190 to 490 | 550 | 128 | 293 | 70 | 104 | 420MZA063-300-m |
| DN 63 CF | 220 to 620 | 680 | 128 | 293 | 70 | 104 | 420MZA063-400-m |
| DN 100 CF | 190 to 290 | 350 | 176 | 343 | 91 | 126 | 420MZA100-100-m |
| DN 100 CF | 190 to 340 | 400 | 176 | 343 | 91 | 126 | 420MZA100-150-m |
| DN 100 CF | 190 to 390 | 450 | 176 | 343 | 91 | 126 | 420MZA100-200-m |
| DN 100 CF | 190 to 490 | 550 | 176 | 343 | 91 | 126 | 420MZA100-300-m |
| DN 100 CF | 212 to 612 | 672 | 176 | 343 | 91 | 126 | 420MZA100-400-m |

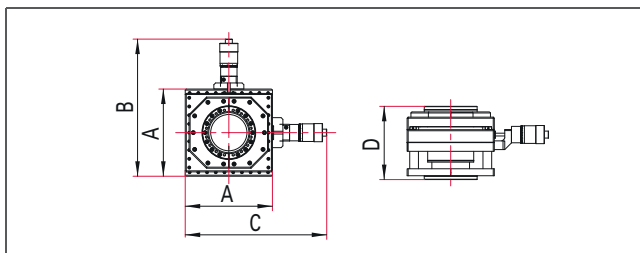
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

XY-Axis Precision Manipulator



- Precision cross roller guides
- Zero-backlash and no stick-slip effect
- Guidance and drive wear-free and maintenance-free
- Extremely stable design concept minimizes position offset due to pressure changes
- Micrometer screws with big knobs - easy to handle and easy to read
- Opposite-sense scale with zero-mid-position
- Maximum x and y deflection fully usable simultaneously
- Connection flange with through holes, traversable flange with threaded holes
- Bakeout temperature: 230 °C
- Operating temperature: -15 to 80 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-10}$ hPa to ambient pressure
- Mounting orientation: any
- Inner diameter: DN 40: 38 mm, DN 63: 65 mm, DN 100: 102 mm
- Service life: min. 10000 cycles at full deflection (bellows easy to replace)
- Materials: bellows: stainless steel 316L, flange and tube: stainless steel 304L, housing: aluminum anodized

Dimensions



Note

Options: more cycles for bellows, FEM-simulation for custom load and installation

Customer benefit

- Maximum accuracy and excellent reproducibility
- Very long service life
- High reliability
- Easy, ergonomic operability

X/Y Deflection: +/- 12.5 mm

- Repeatability precision: $< 5 \mu\text{m}$

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Resolution [μm] | Accuracy [μm] | Order number |
|------------------|--------|--------|--------|--------|-----------------|---------------|--------------|
| DN 40 CF | 154 | 270 | 270 | 130 | 5 | < 5 | 420MXY040-12 |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

X/Y Deflection: +/- 25 mm

- Repeatability precision: $< 3 \mu\text{m}$

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Resolution [μm] | Accuracy [μm] | Order number |
|------------------|--------|--------|--------|--------|-----------------|---------------|--------------|
| DN 63 CF | 204 | 371 | 371 | 184 | 2 | < 3 | 420MXY063-25 |
| DN 100 CF | 254 | 394 | 406 | 210 | 2 | < 3 | 420MXY100-25 |

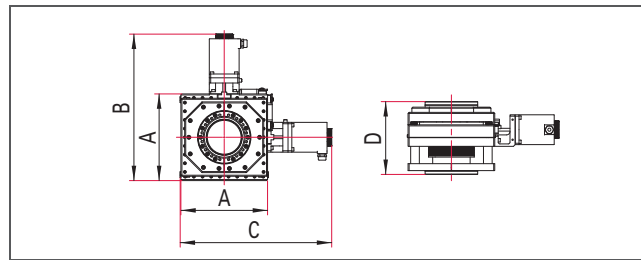
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

XY-Axis Precision Manipulator Motorized



- Precision cross roller guides
- Zero-backlash and no stick-slip effect
- Guidance and drive wear-free and maintenance-free
- Extremely stable design concept minimizes position offset due to pressure changes
- Maximum x and y deflection fully usable simultaneously
- Connection flange with through holes, traversable flange with threaded holes
- Bakeout temperature with electric parts: 80 °C
- Bakeout temperature without electric parts: 230 °C
- Operating temperature: -10 to 50 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-10}$ hPa to ambient pressure
- Mounting orientation: any
- Inner diameter: DN 40: 38 mm, DN 63: 65 mm, DN 100: 102 mm
- Service life: min. 10000 cycles at full deflection (bellows easy to replace)
- Materials: bellows: stainless steel 316L, flange and tube: stainless steel 304L, housing: aluminum anodized
- Motor version: 2-phase stepper motor

Dimensions



Note

Options: more cycles for bellows, displacement sensor, FEM-simulation for custom load and installation

Customer benefit

- Maximum accuracy and excellent reproducibility
- Very long service life
- High reliability
- Suitable for process automation

X/Y Deflection: +/- 12.5 mm

- Motor with additional micrometer screw for manual adjustment
- Power consumption: Motor: 4.1 V DC, max. 1.2 A/phase bipolar
- Repeatable precision: 3 µm (at full motor step)

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Resolution [µm] | Accuracy [µm] | Order number |
|------------------|--------|--------|--------|--------|-----------------|---------------|----------------|
| DN 40 CF | 154 | 270 | 270 | 130 | 1 | < 3 | 420MXY040-12-m |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

X/Y Deflection: +/- 25 mm

- Motor with additional handwheel for manual adjustment
- Power consumption: Motor: 2 V DC, max. 4 A/phase bipolar
- Repeatable precision: 1.25 µm (at half motor step)

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | Resolution [µm] | Accuracy [µm] | Order number |
|------------------|--------|--------|--------|--------|-----------------|---------------|----------------|
| DN 63 CF | 204 | 389 | 389 | 184 | 1.25 | < 3 | 420MXY063-25-m |
| DN 100 CF | 254 | 423 | 437 | 210 | 1.25 | < 3 | 420MXY100-25-m |

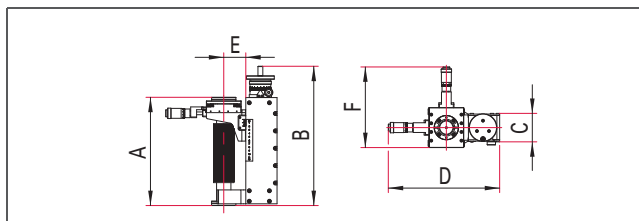
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

XYZ-Axis Precision Manipulator



- Compact design for precise 3-axis manipulation
- Z-axis: recirculating ball bearing guides and ball bearing spindle drives
- XY-axis: precision cross roller guides
- Zero-backlash and no stick-slip effect
- Guidance and drive wear-free and maintenance-free
- Extremely stable design concept minimizes position offset due to pressure changes
- Micrometer screws with big knobs - easy to handle and easy to read
- Z-axis fixing brake prevents independent movement
- Connection flange with through holes, traversable flange with threaded holes
- Resolution: 5 µm
- Bakeout temperature: 230 °C
- Operating temperature: -15 to 80 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-10}$ hPa to ambient pressure
- Mounting orientation: any
- Accuracy: < 5 µm (XY-axis)
- Inner diameter: 38 mm
- Service life: min. 10000 cycles at full deflection (bellows easy to replace)
- Materials: bellows: stainless steel 316L, flange and tube: stainless steel 304L, housing: stainless steel 304, XY-unit: aluminum anodized
- Repeatable precision: 5 µm

Dimensions



Note

Options: additional z-axis travel ways, more cycles for bellows, motor drive for one or all axis, spindle tolerance class IT3 or IT1 (standard IT5), FEM-simulation for custom load and installation

Customer benefit

- Maximum accuracy and excellent reproducibility
- Very long service life
- High reliability
- Easy, ergonomic operability

X/Y Deflection: +/- 12.5 mm

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | F [mm] | Z-Deflection [mm] | Order number |
|------------------|------------|--------|--------|--------|--------|--------|-------------------|----------------|
| DN 40 CF | 210 to 310 | 400 | 82 | 321 | 63.5 | 232 | 100 | 420MXYZ040-100 |
| DN 40 CF | 210 to 360 | 450 | 82 | 321 | 63.5 | 232 | 150 | 420MXYZ040-150 |
| DN 40 CF | 225 to 425 | 515 | 82 | 321 | 63.5 | 232 | 200 | 420MXYZ040-200 |
| DN 40 CF | 250 to 550 | 640 | 82 | 321 | 63.5 | 232 | 300 | 420MXYZ040-300 |
| DN 40 CF | 280 to 680 | 770 | 82 | 321 | 63.5 | 232 | 400 | 420MXYZ040-400 |

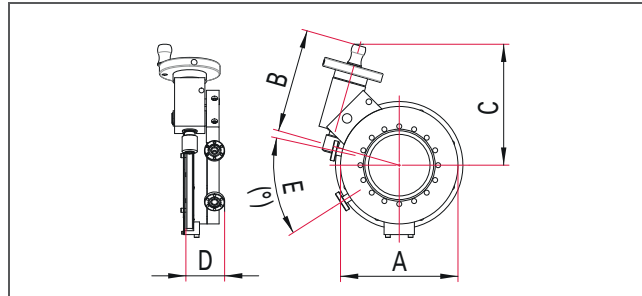
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Rotary Manipulator, Differentially-pumped



- Continuous rotation
- UHV compatible
- Two differentially pumped sections, PTFE-sealed
- Connection differentially-pumped sections: DN16CF
- Resolution: 5 μ m
- Bakeout temperature: 150 °C
- Operating temperature: max. 50 °C
- Pressure range: $1 \cdot 10^{-10}$ hPa to ambient pressure
- Mounting orientation: any
- Inner diameter: DN 40: 38 mm; DN 63: 64 mm; DN 100: 102 mm
- Repeatable precision: 5 ' (arc minutes)

Dimensions



Note

Options: stepper motor on request

Rotary Manipulator, differentially pumped

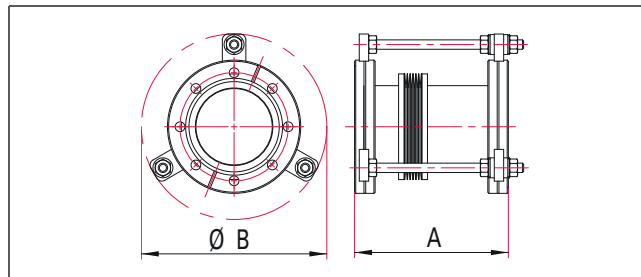
| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [°] | Order number |
|------------------|--------|--------|--------|--------|-------|--------------|
| DN 40 CF | 115 | 76 | 81 | 41 | 60 | 420MDP040 |
| DN 63 CF | 146 | 93 | 91 | 48 | 45 | 420MDP063 |
| DN 100 CF | 197 | 116 | 110 | 54 | 45 | 420MDP100 |

Port Aligner for Angular and Linear Adjustment



- Ball joint for easy angular adjustment
- Adjustment angle: 3 °
- Maximum angle and stroke simultaneously usable
- Flanges with through holes
- Bakeout temperature: 250 °C
- Axial stroke: +/- 5 mm
- Operating temperature: -15 to 80 °C
- Tightness: <math> < 1 \cdot 10^{-11} \text{ Pa m}^3/\text{s}</math>
- Pressure range: $1 \cdot 10^{-10}$ hPa to 500 hPa over pressure
- Mounting orientation: any
- Inner diameter: DN 40: 38 mm; DN 63: 65 mm; DN 100: 102 mm
- Service life: Min. 10000 cycles at full deflection
- Materials: Stainless steel (bellows 316L, flange and tube 304L, holders 304)

Dimensions



Note

Options: longer axial stroke, shorter design concept

Port Aligner for Angular and Linear Adjustment

| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|-----------|--------|--------------|
| DN 40 CF | 105 - 115 | 115 | 420MPA040 |
| DN 63 CF | 135 - 145 | 159 | 420MPA063 |
| DN 100 CF | 145 - 155 | 206 | 420MPA100 |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Bellows-sealed Rotary Feedthrough



420MRB016

- Hermetically sealed, suitable for UHV
- Bellows-sealed
- Stainless steel ball bearing with dry lubrication, suitable for UHV
- Mode of operation: DN 16: Operating handle with snap-in stages in 10 ° increments; DN 40: shaft connections on both sides
- Operating temperature: DN 16: up to 80 °C; DN 40: up to 300 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure
- Mounting orientation: any
- Materials: Stainless steel

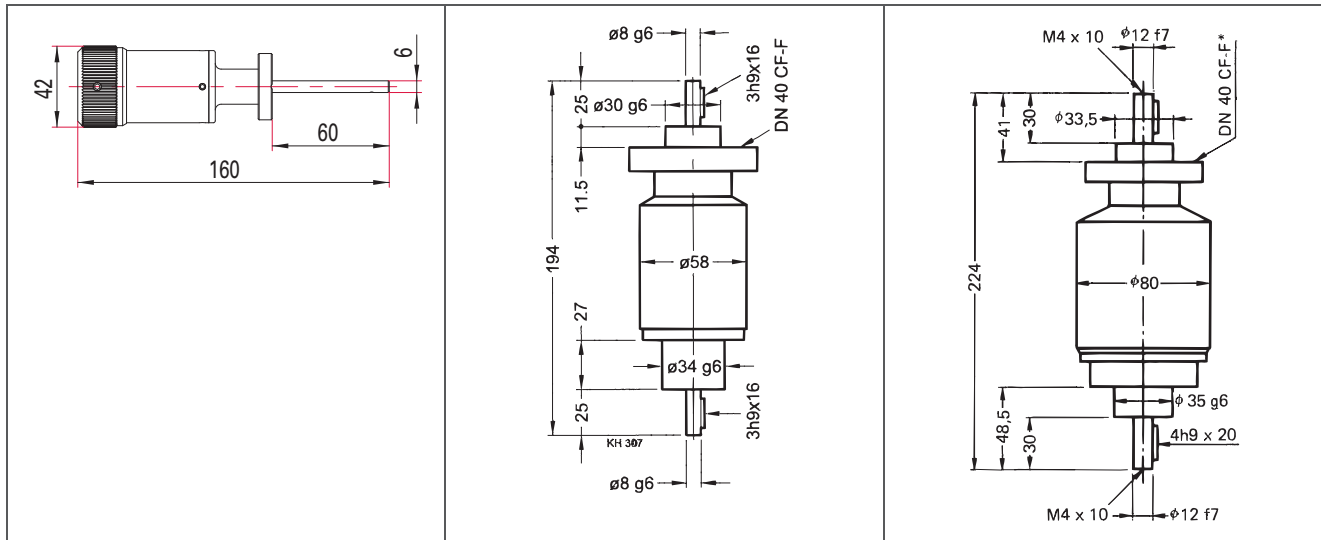


PF 621 010-T
PF 621 012-T

Note

Options for 420MRB: customized shaft

Dimensions



420MRB016

PF 621 010-T

PF 621 012-T

Manual/Shaft Connections

| Nominal diameter | Transferable torque static [Nm] | Transferable torque dynamic [Nm] | Shaft load, axial [N] | Shaft load, radial [N] | Thread | Order number |
|------------------|---------------------------------|----------------------------------|-----------------------|------------------------|--------|--------------|
| DN 16 CF | 0.1 | 0.2 | 10 | 20 | M3 | 420MRB016 |
| DN 40 CF-F | 3 | 4 | 20 | 60 | No | PF 621 010-T |
| DN 40 CF-F | 5 | 10 | 30 | 100 | No | PF 621 012-T |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

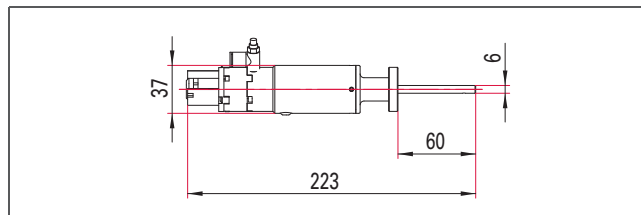
Bellows-sealed Rotary Feedthrough, Pneumatic



- Hermetically sealed, suitable for UHV
- Bellows-sealed
- Stainless steel ball bearing with dry lubrication, suitable for UHV
- Adjustable swivel speed
- Connection: (compressed air) 6 mm hose connection
- Bakeout temperature: up to 250 °C, pneumatic drive (removable) up to 60 °C
- Mode of operation: Pneumatically operated; double acting
- Operating temperature: up to 60 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Angle of rotation: 0 to 180 ° (final position adjustable)
- Compressed air (overpressure) max.: 0.7 MPa
- Compressed air (overpressure) min.: 0.15 MPa
- Mounting orientation: any
- Materials: Stainless steel
- Service life: 500000 cycles

Pneumatic

Dimensions



| Nominal diameter | Transferable torque static [Nm] | Transferable torque dynamic [Nm] | Shaft load, axial [N] | Shaft load, radial [N] | Thread | Order number |
|------------------|---------------------------------|----------------------------------|-----------------------|------------------------|--------|--------------|
| DN 16 CF | 0.1 | 0.2 | 10 | 20 | M3 | 420MRB016-p |

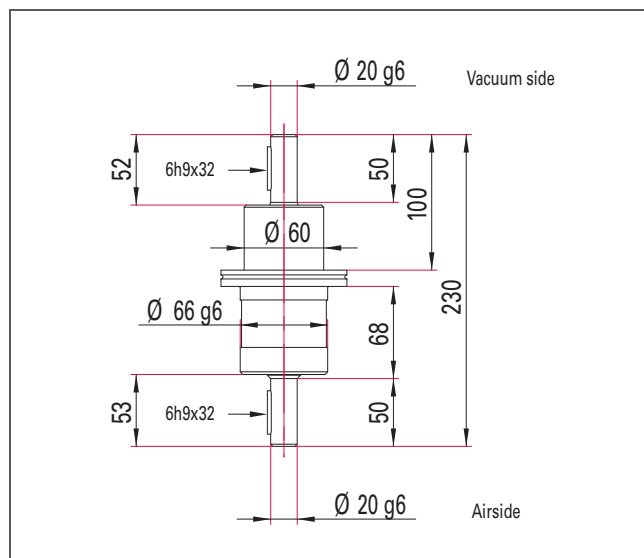
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Elastomer-sealed Rotary Feedthrough DN 63 ISO-K



- With FKM shaft seal and ball bearing, greased to be suitable for vacuum
- Rotary speed can be increased by up to a factor of two if reduced service life is acceptable
- With through shaft for directly transmitting high torques
- Bakeout temperature: 110 °C
- Operating temperature: 50 °C
- Tightness (static): $1 \cdot 10^{-10}$ Pa m³/s
- Seal: FKM
- Rotation speed: 500 min⁻¹
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Mounting orientation: any
- Materials: Housing: aluminum; shaft: stainless steel
- Service life (revolutions): 10000000

Dimensions



ISO-K

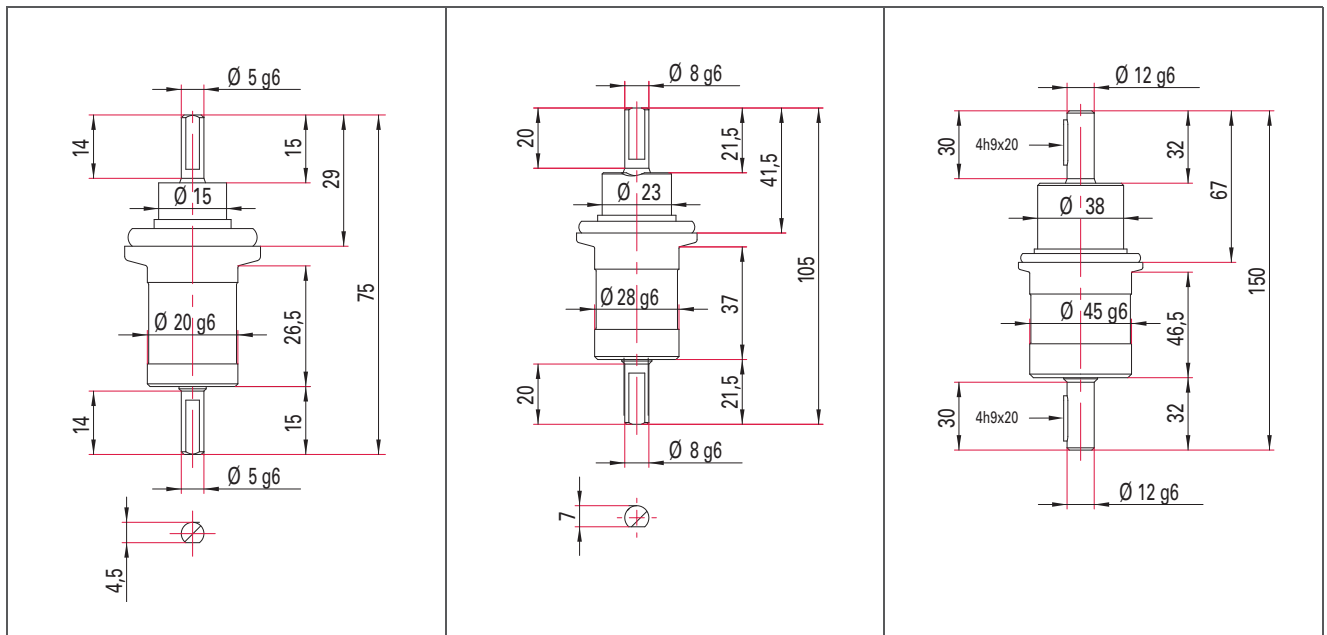
| Nominal diameter | Transferable torque [Nm] | Shaft connection [mm] | Shaft load, axial [N] | Shaft load, radial [N] | Order number |
|------------------|--------------------------|-----------------------|-----------------------|------------------------|--------------|
| DN 63 ISO-K | 100 | ø 20 x 50 | 100 | 500 | PF 420 010-T |

Elastomer-sealed Rotary Feedthrough DN 16 - 40 ISO-KF



- With FKM shaft seal and ball bearing, greased to be suitable for vacuum
- Rotary speed can be increased by up to a factor of two if reduced service life is acceptable
- With through shaft for directly transmitting high torques
- With integrated FKM O-ring, installation without additional seal
- Bakeout temperature: 110 °C
- Operating temperature: up to 50 °C
- Tightness (static): $1 \cdot 10^{-10}$ Pa m³/s
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Mounting orientation: any
- Materials: Housing: aluminum; shaft: stainless steel
- Service life (revolutions): 20000000

Dimensions



PF 222 010 -T

PF 223 010-T

PF 224 010-T

ISO-KF

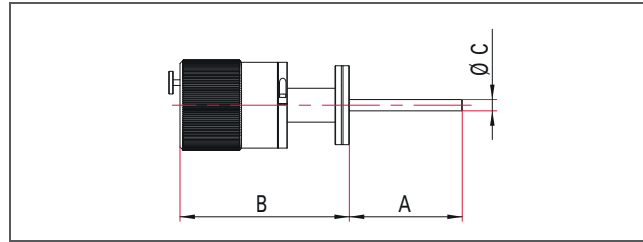
| Nominal diameter | Transferable torque [Nm] | Shaft connection [mm] | Shaft load, axial [N] | Shaft load, radial [N] | Order number |
|------------------|--------------------------|-----------------------|-----------------------|------------------------|---------------|
| DN 16 ISO-KF | 1.5 | ø 5 x 14 | 30 | 60 | PF 222 010 -T |
| DN 25 ISO-KF | 6 | ø 8 x 20 | 50 | 150 | PF 223 010-T |
| DN 40 ISO-KF | 25 | ø 12 x 30 | 60 | 250 | PF 224 010-T |

Rotary Magnetic Feedthrough



- Magnetic coupling with samarium-cobalt magnets
- Stainless steel ball bearing with dry lubrication, suitable for UHV
- Hermetically sealed, suitable for UHV
- Fixing brake
- Bakeout temperature: 200 °C
- Operating temperature: -15 to 80 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Angle of rotation: 360 °
- Pressure range: $1 \cdot 10^{-10}$ hPa to 500 hPa over pressure
- Scale: (DN 40) Accuracy of reading 1/10 °
- Shaft connection: with threaded hole, vented: DN 16: M3x6; DN 40: M5x10

Dimensions



Note

Upon exceeding the maximum torque, the magnets snap into the next stable position, the feedthrough does not suffer any damage.

Manual

| Nominal diameter | A [mm] | B [mm] | C [mm] | Torque [Nm] | Order number |
|------------------|--------|--------|--------|-------------|--------------|
| DN 16 CF | 50 | 82 | 6 | 0.5 | 420MRM016 |
| DN 40 CF | 100 | 150 | 10 | 8 | 420MRM040 |

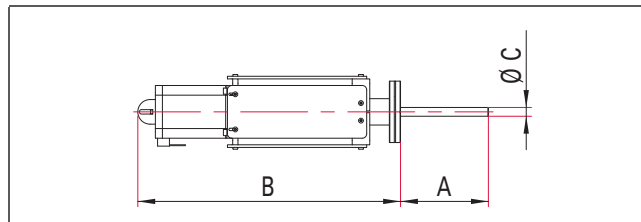
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Rotary Magnetic Feedthrough, Motorized

- Magnetic coupling with samarium-cobalt magnets
- Stainless steel ball bearing with dry lubrication, suitable for UHV
- Hermetically sealed, suitable for UHV
- Bakeout temperature with electric parts: 80 °C
- Bakeout temperature without electric parts: 200 °C
- Operating temperature: -10 to 50 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Angle of rotation: 360 °
- Pressure range: $1 \cdot 10^{-10}$ hPa to 500 hPa over pressure
- Shaft connection: with threaded hole, vented: DN 16: M3x6; DN 40: M5x10

Motorized

Dimensions



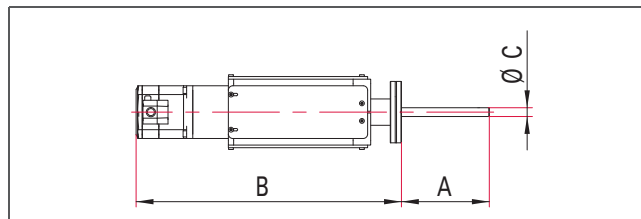
- Torque: max. 3 Nm
- Rotation speed: 500 min⁻¹
- Transmission: optional available
- Motor version: 2-phase stepper motor

| Nominal diameter | A [mm] | B [mm] | C [mm] | Lowest angular resolution [°] | Order number |
|------------------|--------|--------|--------|-------------------------------|--------------|
| DN 40 CF | 100 | 299 | 10 | 0.45 | 420MRM040-m |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Motorized, high precision

Dimensions



- Including resolver control, driver and controller
- Torque: max. 8 Nm
- Rotation speed: 30 min⁻¹
- Transmission: backlash-free Harmonic Drive® gear (gear reduction 100:1)
- Motor version: 2-phase stepper motor

| Nominal diameter | A [mm] | B [mm] | C [mm] | Lowest angular resolution [°] | Order number |
|------------------|--------|--------|--------|-------------------------------|--------------|
| DN 40 CF | 100 | 302 | 10 | 0.0036 | 420MRM040-hm |

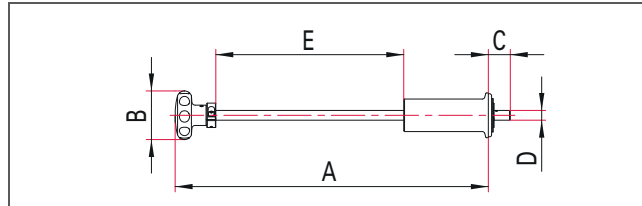
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Elastomer-sealed Rotary/Linear Feedthrough Long Version MDD



- Direct power transmission using elastomer-sealed shaft
- Shaft made from hardened stainless steel, diameter 12 mm
- Freely rotatable and slidable
- Adjustable stroke limiting stops
- Bakeout temperature: 200 °C
- Operating temperature: -15 to 150 °C
- Tightness (static): $1 \cdot 10^{-10}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Lubricant: Perfluoropolyether grease
- Transferable torque dynamic: 20 Nm
- Shaft connection: with threaded hole, vented: M6x12
- Shaft load, axial: 100 N

Dimensions



Note

Options: additional stroke lengths, motor drive, alternative vacuum grease: mineral or silicone grease

Elastomer-sealed Rotary/Linear Feedthrough Long Version

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|----------------|
| DN 40 KF | 404 | 60 | 27 | 12 | 250 | 120MDD040-0250 |
| DN 40 KF | 654 | 60 | 27 | 12 | 500 | 120MDD040-0500 |
| DN 40 KF | 904 | 60 | 27 | 12 | 750 | 120MDD040-0750 |

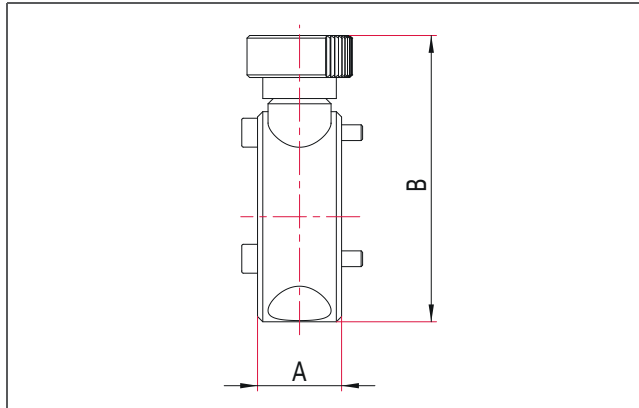
Flanges according to ISO 2861

Clamping Device for Rotary/Linear Feedthroughs MDD



- To fix the guide rod in any position
- Can be installed after system installation and removed again as desired
- Bakeout temperature: 200 °C

Dimensions



Clamping Device for Rotary/Linear Feedthroughs MDD

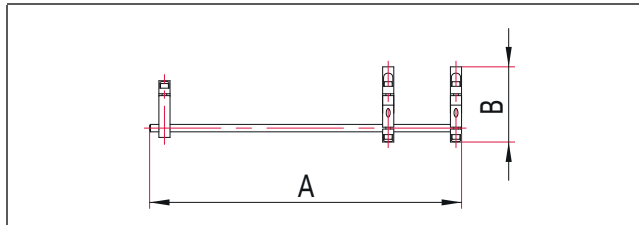
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|--------------|
| DN 40 KF | 16 | 55 | 120MDD-B |

Anti-twist Lock for Rotary/Linear Feedthroughs MDD



- Fixes angle position if only linear movement is to be transferred
- Can be installed after system installation and removed again as desired
- Bakeout temperature: 200 °C

Dimensions



Anti-twist Lock for Rotary/Linear Feedthroughs MDD

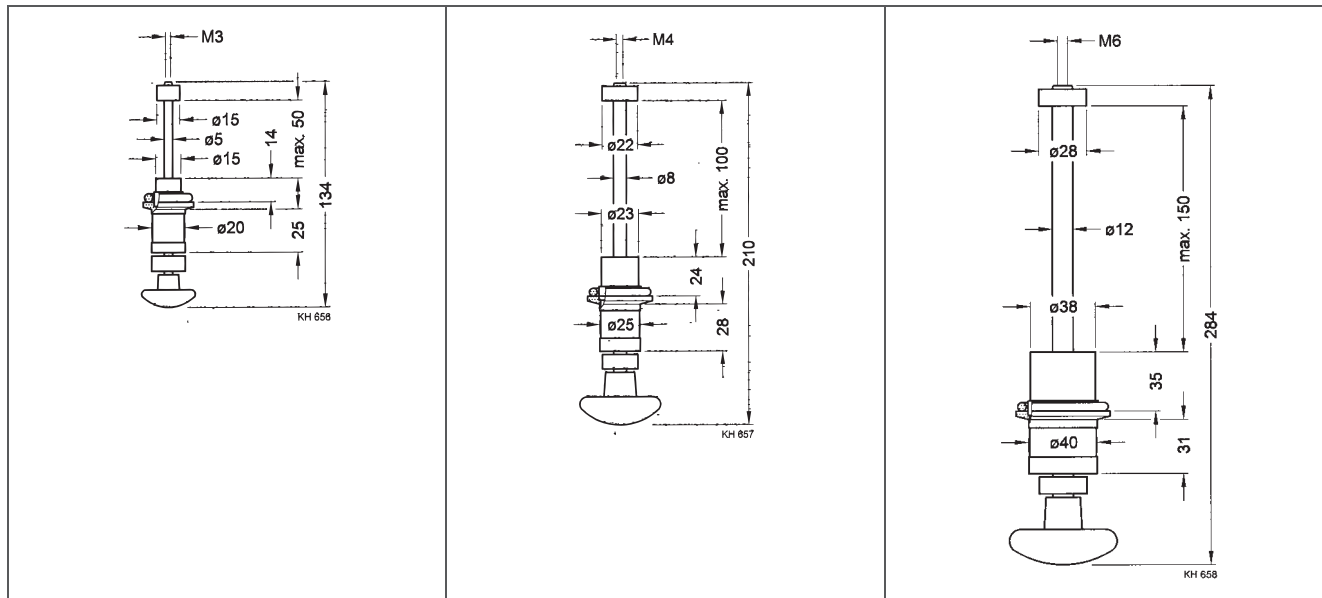
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|-------------------|
| DN 40 KF | 386 | 81 | 120MDD040-0250-VS |
| DN 40 KF | 636 | 81 | 120MDD040-0500-VS |
| DN 40 KF | 886 | 81 | 120MDD040-0750-VS |

Elastomer-sealed Rotary/Linear Feedthrough DS



- Direct power transmission using elastomer-sealed shaft
- Freely rotatable and slidable
- Adjustable stroke limiting stops
- Bakeout temperature: 110 °C
- Operating temperature: max. 50 °C
- Tightness (static): $1 \cdot 10^{-10}$ Pa m³/s
- Seal: FKM
- Pressure range: $1 \cdot 10^{-8}$ hPa to ambient pressure
- Materials: Housing: aluminum; shaft: stainless steel

Dimensions



PF 242 010 -T

PF 243 010 -T

PF 244 011 -T

Elastomer-sealed Rotary/Linear Feedthrough

| Nominal diameter | Load capacity radial: at max. displacement [N] | Load capacity radial: at max. displacement [Nm] | Stroke [mm] | Shaft connection | Order number |
|------------------|--|---|-------------|-------------------------------|---------------|
| DN 16 ISO-KF | 10 | 2 | 50 | M3 x 6 / \varnothing 5 mm | PF 242 010 -T |
| DN 25 ISO-KF | 15 | 8 | 100 | M4 x 8 / \varnothing 8 mm | PF 243 010 -T |
| DN 40 ISO-KF | 30 | 20 | 150 | M6 x 10 / \varnothing 12 mm | PF 244 011 -T |

Anti-twist Lock for Rotary/Linear Feedthroughs DS

- Fixes angle position if only linear movement is to be transferred
- Can be installed after system installation and removed again as desired
- Bakeout temperature: 200 °C

Anti-twist Lock for Rotary/Linear Feedthroughs DS

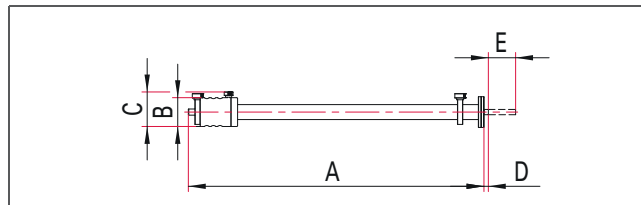
| Nominal diameter | Length [mm] | Order number |
|------------------|-------------|---------------|
| DN 16 CF | 50 | PT 226 978 -T |
| DN 25 CF | 100 | PT 226 979 -T |
| DN 40 CF | 150 | PT 226 980 -T |

Magnetically Guided Rotary/Linear Feedthrough MDM



- Stainless steel ball bearing for linear and rotational movement with dry lubrication suitable for UHV
- Magnetic coupling with samarium-cobalt magnets
- Hermetically sealed, suitable for UHV
- Shaft made from hardened stainless steel, diameter 12 mm
- Freely rotatable and slidable
- Adjustable stroke limiting stops
- Bakeout temperature: 200 °C
- Tightness: $< 1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-10}$ hPa to 500 hPa
- Transferable torque: 2.3 Nm
- Shaft connection: threaded hole, vented: M6x15
- Shaft load, axial: 50 N

Dimensions



Note

Options: additional stroke lengths, additional flange sizes, higher axial force and higher torque

Magnetically Guided Rotary/Linear Feedthrough

| Nominal diameter | A [mm] | B [mm] | C [mm] | D [mm] | E [mm] | Order number |
|------------------|--------|--------|--------|--------|--------|----------------|
| DN 40 CF | 422 | 65.5 | 79 | 20 | 250 | 420MDM040-0250 |
| DN 40 CF | 672 | 65.5 | 79 | 20 | 500 | 420MDM040-0500 |
| DN 40 CF | 922 | 65.5 | 79 | 20 | 750 | 420MDM040-0750 |

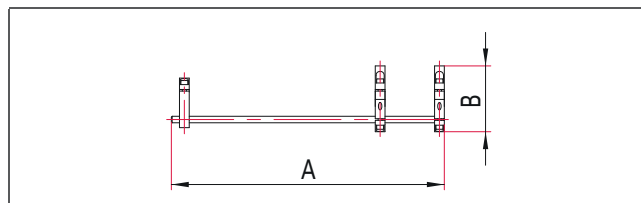
Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2

Anti-twist Lock for Rotary/Linear Feedthroughs MDM



- Fixes angle position if only linear movement is to be transferred
- Angle position adjustable
- Can be installed after system installation and removed again as desired
- Bakeout temperature: 200 °C

Dimensions



Anti-twist Lock for Rotary/Linear Feedthroughs MDM

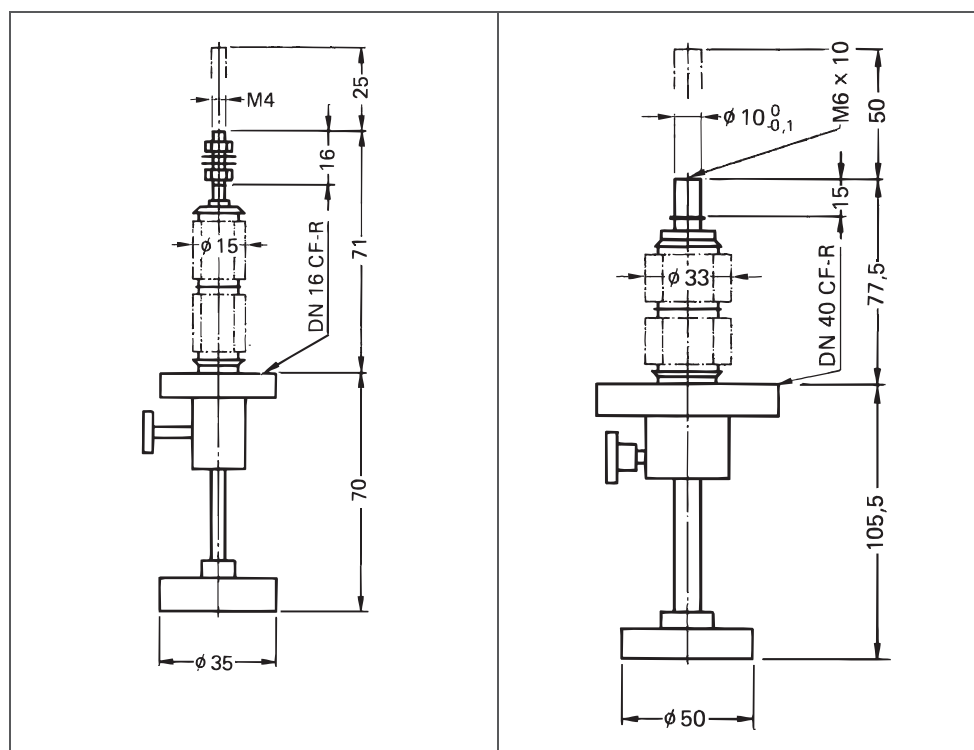
| Nominal diameter | A [mm] | B [mm] | Order number |
|------------------|--------|--------|-------------------|
| DN 40 CF | 381 | 103 | 420MDM040-0250-VS |
| DN 40 CF | 631 | 103 | 420MDM040-0500-VS |
| DN 40 CF | 881 | 103 | 420MDM040-0750-VS |

Bellows-sealed Linear Feedthrough



- Hermetically sealed, suitable for UHV
- Bellows-sealed
- Direct manual push/pull actuation
- With setscrew
- Bakeout temperature: up to 300 °C
- Load capacity radial: at max. displacement: DN 16: 20 N; DN 40: 100 N
- Load capacity: torsion: DN 16: 0.2 Nm; DN 40: 0.5 Nm
- Mode of operation: handle
- Operating temperature: up to 300 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure
- Mounting orientation: any
- Materials: Stainless steel; hand knob: aluminum
- Service life: 10000 cycles

Dimensions



PF 630 010-T

PF 631 010-T

Manual

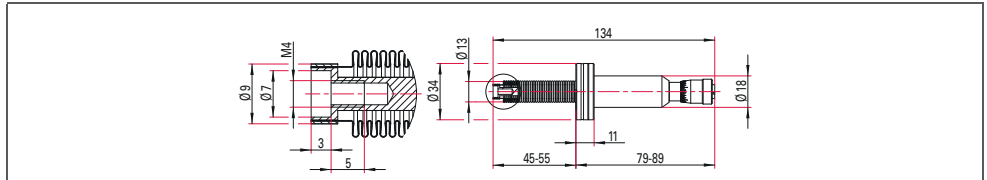
| Nominal diameter | Stroke [mm] | Shaft load, axial: to atmosphere [N] | Shaft load, axial: to vacuum [N] | Order number |
|------------------|-------------|--|--|--------------|
| DN 16 CF-R | 25 | 100 | 85 | PF 630 010-T |
| DN 40 CF-R | 50 | 200 | 140 | PF 631 010-T |

Bellows-sealed Precision Linear Feedthrough

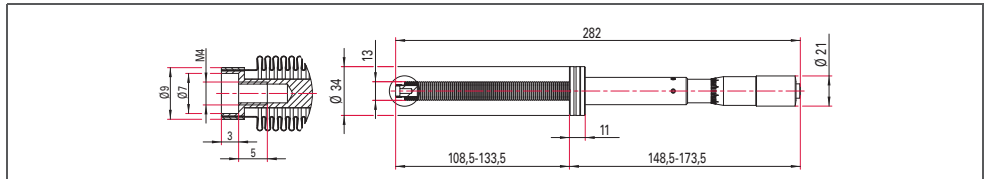
- Hermetically sealed, suitable for UHV
- Bellows-sealed
- Bakeout temperature: feedthrough: up to 300 °C
- Bakeout temperature: micrometer screw/piston: up to 100 °C
- Mode of operation: Micrometer screw
- Operating temperature: up to 50 °C
- Tightness: $1 \cdot 10^{-11}$ Pa m³/s
- Pressure range: $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure
- Mounting orientation: any
- Service life: 10000 cycles

Manual, Fine

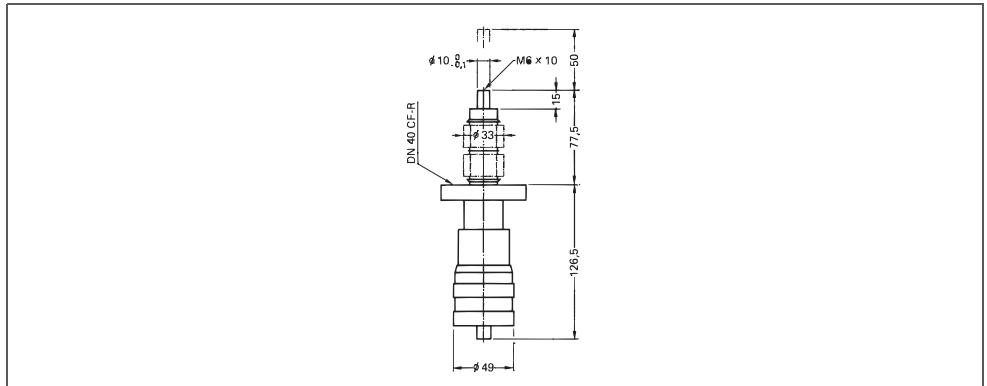
Dimensions



420MZF016-010



420MZF016-025

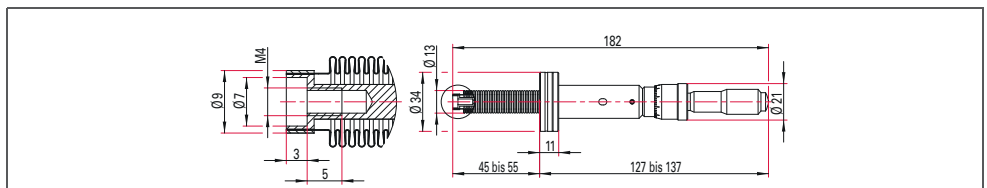


PF 631 012-T

| Nominal diameter | Stroke [mm] | Resolution [μ m] | Accuracy [μ m] | Order number |
|------------------|-------------|-----------------------|---------------------|---------------|
| DN 16 CF | 10 | 5 | 5 | 420MZF016-010 |
| DN 16 CF | 25 | 10 | 10 | 420MZF016-025 |
| DN 40 CF-R | 50 | 5 | 5 | PF 631 012-T |

Manual, Superfine

Dimensions



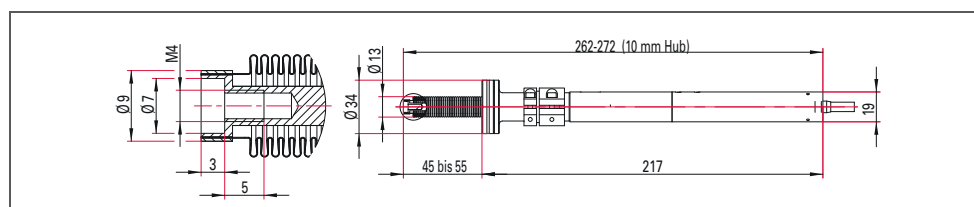
| Nominal diameter | Stroke [mm] | Resolution [μ m] | Accuracy [μ m] | Order number |
|------------------|-------------|-----------------------|---------------------|-----------------|
| DN 16 CF | 10 | 0.5 | 3 | 420MZF016-010-s |

Bellows-sealed Precision Linear Feedthrough Motorized

- Hermetically sealed, suitable for UHV
- Bellows-sealed
- For motorized fine positioning of components in the vacuum
- Maximum load moment on bellows: 0.2 Nm
- Easy bakeout with comfortable motor disassembly and position fixing device
- Bakeout temperature with electric parts: 70 °C
- Bakeout temperature without electric parts: 200 °C
- Axial force: max. 45 N
- Fixation: Screw M4 x 5 (on actuator)
- Operating temperature: max. 65 °C
- Pressure range: $1 \cdot 10^{-9}$ hPa to 500 hPa over pressure
- Service life: 10000 cycles
- Motor version: 2-phase stepper motor

Motorized, 10 mm Adjustment Travel

Dimensions

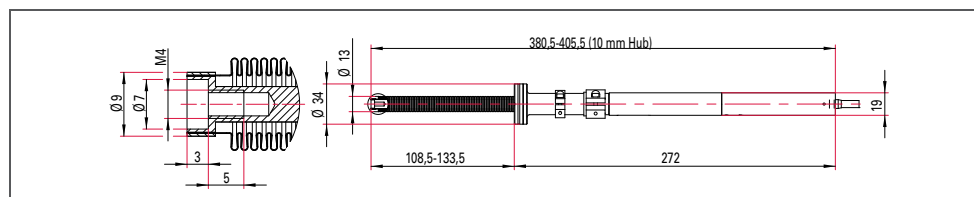


| Nominal diameter | Stroke [mm] | Resolution [μm] | Accuracy [μm] | Order number |
|------------------|-------------|------------------------------|----------------------------|-----------------|
| DN 16 CF | 10 | 0.05 | 3 | 420MZF016-010-m |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2.

Motorized, 25 mm Adjustment Travel

Dimensions



| Nominal diameter | Stroke [mm] | Resolution [μm] | Accuracy [μm] | Order number |
|------------------|-------------|------------------------------|----------------------------|-----------------|
| DN 16 CF | 25 | 0.05 | 3 | 420MZF016-025-m |

Flange sizes DN16 to DN250 according to ISO 3669 and compatible with ISO/TS 3669-2.

Custom manipulators

Individual solutions from Pfeiffer Vacuum –
Innovative. Precise. Dependable.



Custom manipulators

Pfeiffer Vacuum offers more than just standard solutions. To meet your requirements, manipulators and mechanical feedthroughs can be modified and manufactured as customized solutions to perfectly meet your needs. Thanks to our years of experience we are conversant with almost all possible requirements and will provide extensive advice on matters of system specifications, design and engineering.

Based on proven basic structures we manufacture every possible variant and develop individual solutions for movement and positioning specifications to meet your requirements from the prototype stage right up to serial production.

Examples of customized developments:

- Additional axial travel distances
- Increased axial force
- Increased torque
- Adjusted shaft ends and lengths
- Adjustment of connecting flanges or flange materials
- Increased cycle count
- Increased precision
- Gear between motor and feedthrough to adjust the speed or phase resolution
- Displacement transducer or tachometer
- Servo motor or DC motor instead of multiphase motor

Examples of product modifications

- Very large travel distances
- Very large additional loads
- Additional nominal diameters
- Additional shaft diameter
- Motorization (if not available as standard version)
- Motor controls

Our manipulators and mechanical feedthroughs can also be combined with other Pfeiffer Vacuum products and optimally configured to one another. For example, the installation situation in vacuum chambers can be examined and the impact of external loads simulated using the FEM (Finite Element Method) calculations in the design phase.

A

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