# novotek
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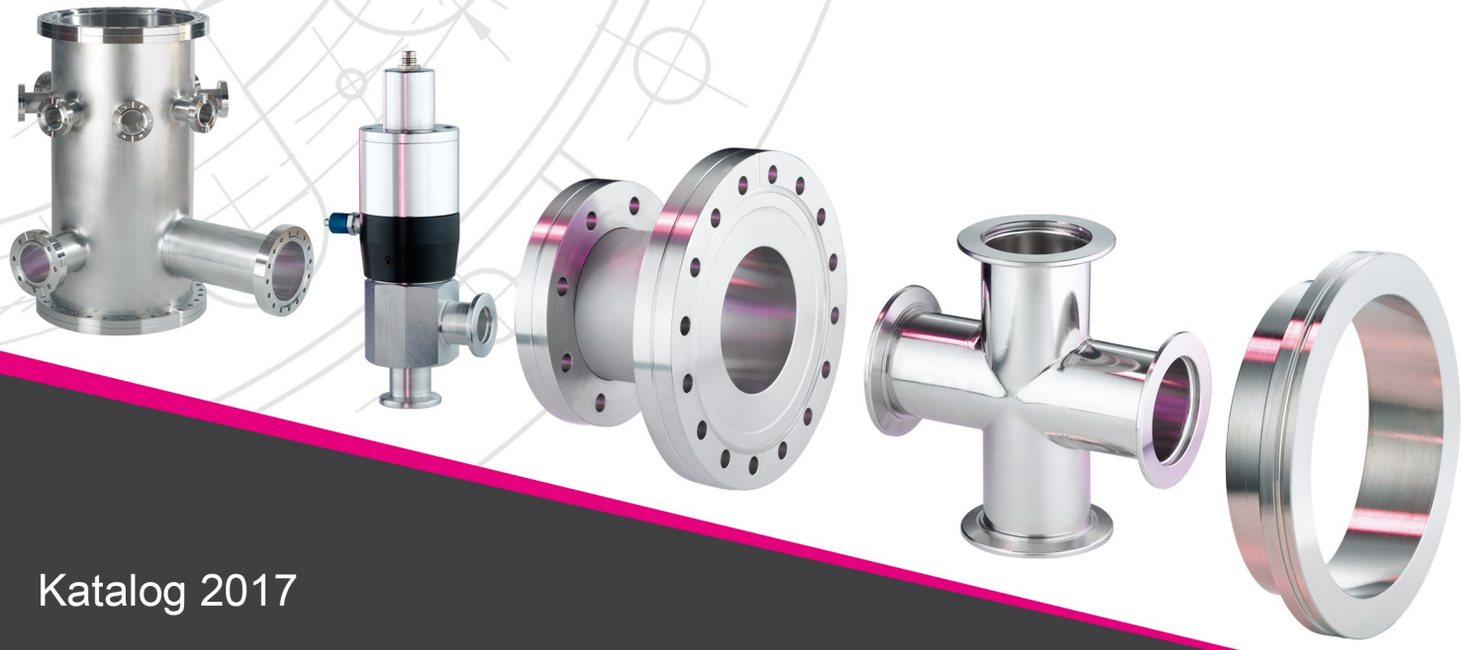

Katalog 2017

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General information:

This Product Catalogue is valid from January 2017 onwards.

The catalogue is designed to inform you as comprehensively as possible about our products and manufacturing options! You are very welcome to contact us for consultation. We reserve the right of make changes and corrections to errors in the catalogue without prior notice. Furthermore, all specifications on our products are without engagement. Accessory parts included in some of the figures are not included in the scope of delivery. We do not accept liability for printing errors.

**Company details**

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ISO 9001
EINGETRAGENE FIRMA

# Contents


novotek Mai 2016



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# novotek – about us

novotek GmbH was founded in August 1973. The focal point of business was the development and manufacturing of laser-optical devices, in particular for laboratories and universities. As of 1976, the area of high vacuum increasingly became the object of our business activities and ultimately replaced the laser area.

Business activity concentrated initially on the development and design of high-vacuum products, whereby the production of the individual components was initially transferred to manufacturing shops and external suppliers. The long-standing partnership with almost all suppliers forms the basis of the present-day well-established co-operation. Following the decision to produce not only the standard components but also, cost-effectively, special components corresponding to customer specifications, it became necessary set up our own production facilities.

We always had a conservative approach to company growth: our principles are excellent relations with our business partners and fair, sound working principles. Furthermore, we set high standards for ourselves with regard to product quality, competitive prices and short delivery times. In almost all cases, our standard products can be called directly from stock. A further example is the close, and often personal, contact to our customers with the aim of taking care of customer problems and of finding solutions. A very good working atmosphere in the workforce as well as the above-mentioned trusting business relations with our customers and suppliers is the result of our constant turnover growth.

The development of novotek from a supplier of universities and institutes to a supplier of industry was an important step towards sustained growth. The product range now covers all components in the KF, ISO-K and CF range. The continuous further development of all valves is also one of our great strengths.

A further strong point of novotek is the preparation of special components according to customer specifications, diagrams, drawings or CAD data. For years now, these special components have been gaining importance and expanding their market presence.

Since 2011, we have also been manufacturing cubic and cylindrical vacuum chambers with different dimensions according to customer drawings. Our vast experience in this area has proved to be beneficial to our customers.

The excellent customer relations, the wide product range, high-quality products at competitive prices and comprehension of the technical problems of our customers, provide us with a solid basis for future success of the company.



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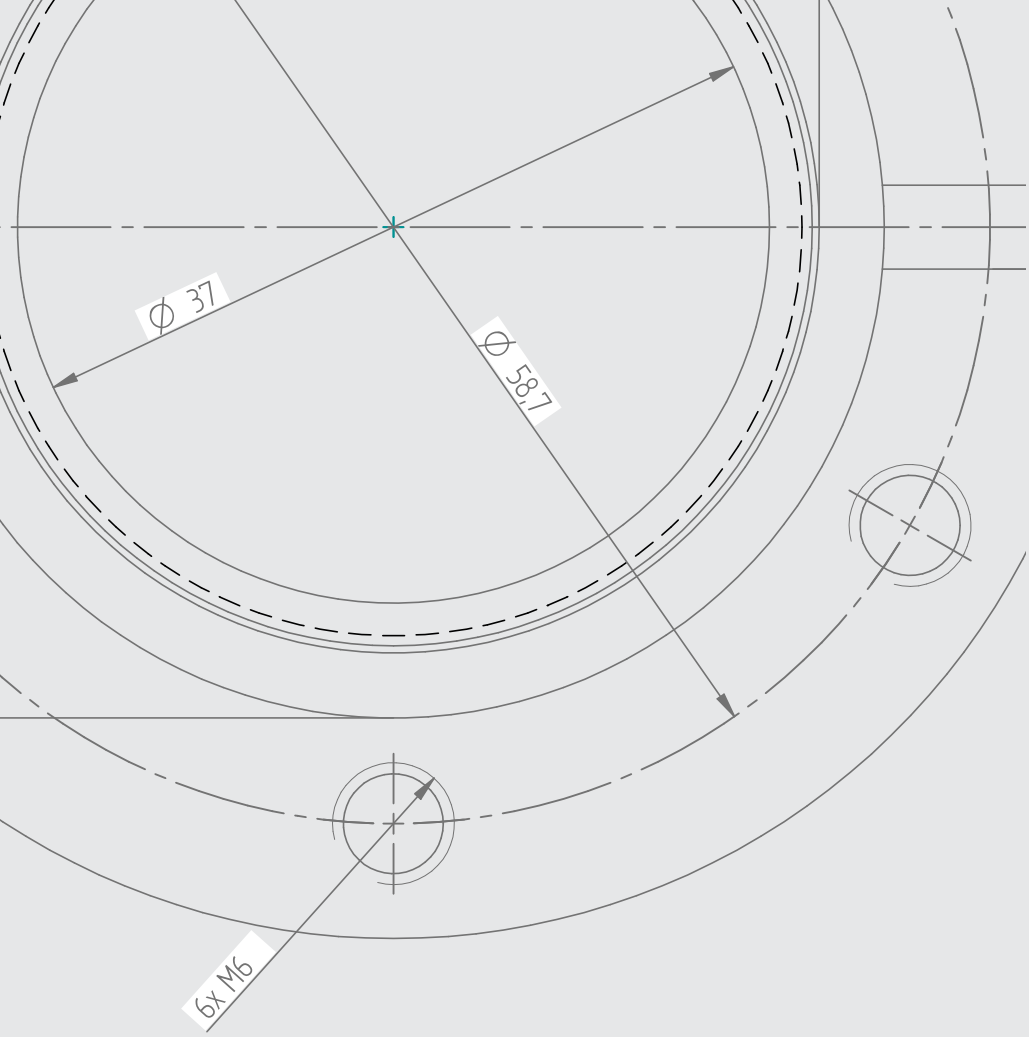


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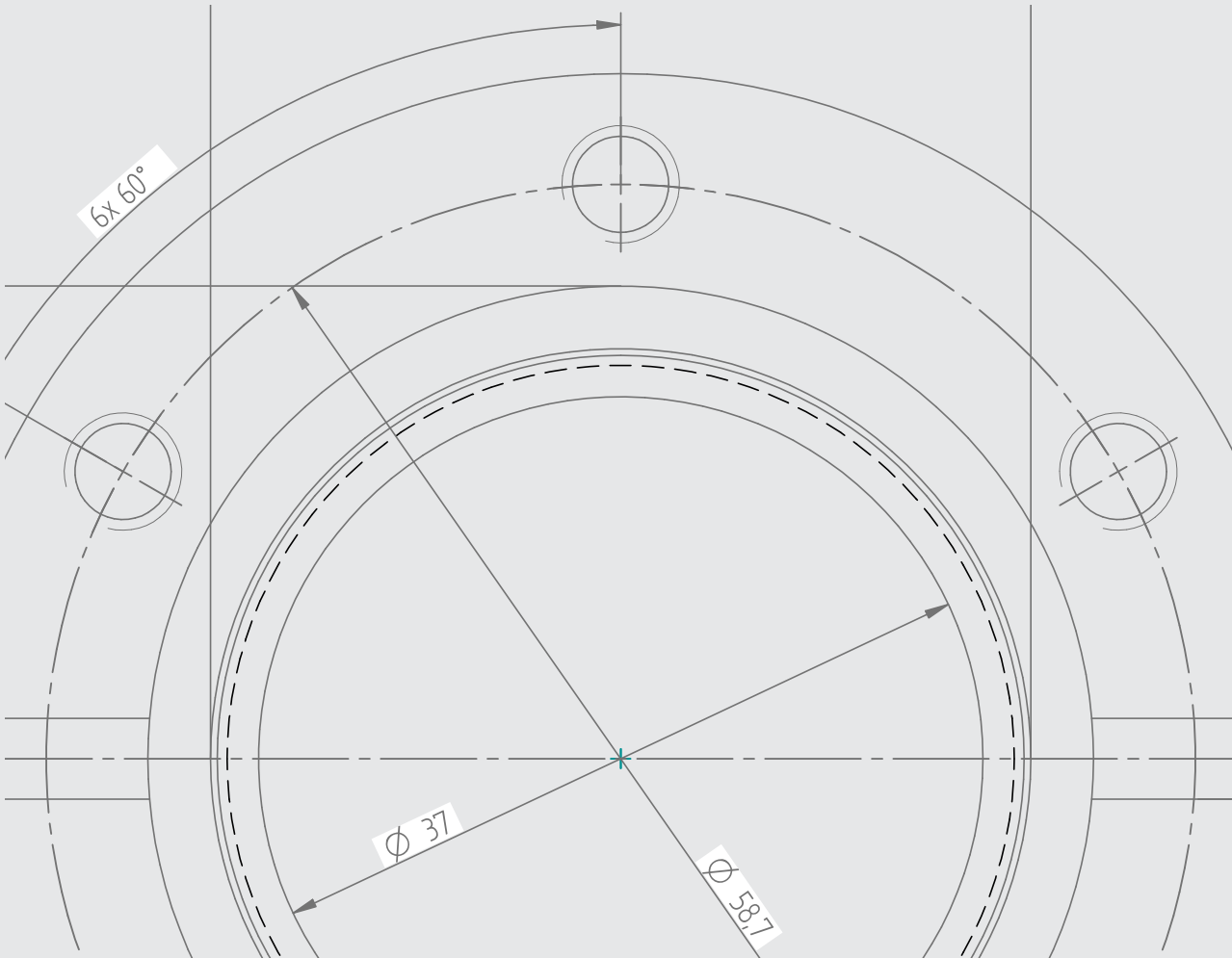

# Materials

High-grade steel is the primary material of choice in vacuum technology. It has sufficient strength even during bake-out processes, can be welded vacuum-compatibly and its surface is sufficiently protected for numerous application areas.

## Overview of all common high-grade steels and their composition.

**Table for chemical composition (as a %) of high-grade steel as per ISO 3506 / EN 10 088-3 (European material designation)**

| Material number (AISI No.) | Material abbreviation | Cr (%) | Ni (%) | Mo (%) | C (%) | Si (%) | Mn (%) | P (%) | S (%) | other additives / comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.4301 (304) | X5CrNi 18 10 | 15-20 | 8-19 | * | 0.1 | 1 | 2 | 0.05 | 0.015 | * MO permissible |
| 1.4303 (305) | X4CrNi 18 12 | 15-20 | 8-19 | * | 0.1 | 1 | 2 | 0.05 | 0.015 | * MO permissible |
| 1.4305 (303) | X8CrNiS 18 9 | 16-19 | 5-10 | max. 0.7 | 0.12 | 1 | 6.5 | 0.2 | 0.15-0.35 | Cu, sulphur can be substituted with selenium |
| 1.4306 (304L) | X2CrNi 19 11 | 18-20 | 10-12 | - | 0.03 | 1 | 2 | 0.045 | 0.015 | |
| 1.4307 (304L) | X2CrNi 18 9 | 17.5-19.5 | 8-10.5 | - | 0.03 | 1 | 2 | 0.045 | 0.015 | |
| 1.4310 (301) | X10CrNi 18 10 | 16-18 | 6-9.5 | max. 0.8 | 0.05-0.15 | 2 | 2 | 0.045 | 0.015 | |
| 1.4401 (316) | X5CrNiMo 17-12-2 | 16-18.5 | 10-15 | 2-3 | 0.08 | 1 | 2 | 0.045 | 0.03 | |
| 1.4404 (316L) | X2CrNiMo 17-13-2 | 16-18.5 | 10-13 | 2-2.5 | 0.03 | 1 | 2 | 0.045 | 0.015 | |
| 1.4429 (316LN) | X2CrNiMo 17-13-3 | 16.5-18.5 | 11-14 | 2.5-3 | 0.03 | 1 | 2 | 0.045 | 0.015 | |
| 1.4435 (316L) | X2CrNiMo 18-14-3 | 17-19 | 12.5-15 | 2.5-3 | 0.03 | 1 | 2 | 0.045 | 0.015 | |
| 1.4541 (321) | X6CrNiTi 18-10 | 17-19 | 9-12 | - | 0.08 | 1 | 2 | 0.045 | 0.015 | Mo permissible, must contain Ti or Nb or Ta for stability |
| 1.4571 (316Ti) | X6CrNiMoTi 17 12 2 | 16.5-18 | 10.5-13.5 | 2-2.5 | 0.08 | 1 | 2 | 0.045 | 0.015 | |





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## Table of properties of high-grade steels

| Material number (AISI No.) | 0.2% yield point at 20 °C in N/mm2 | 0.2% yield point at 300 °C in N/mm2 | Ten-sile-strength in N/mm2 | Coefficient of linear expansion α in 10–6 K–1 bet. 20 °C and 300 °C | Max. operation tempe-rature of air | Structure | Magneti-sability |
|---|---|---|---|---|---|---|---|
| 1.4301 (304) | 210-250 | 110 | 520-720 | 17 | 300 | Austenitic steel with small ferrite content | possible |
| 1.4306 (304L) | 220-250 | 100 | 520-670 | 17 | 350 | Austenitic steel with small ferrite content | possible |
| 1.4307 | 220-240 | 100 | 520-670 | 17 | 350 | Austenitic steel with small ferrite content | possible |
| 1.4401 (316) | 220-250 | 128 | 530-680 | 17 | 300 | Austenitic steel with small ferrite content | less possible |
| 1.4404 (316L) | 220-260 | 118 | 530-680 | 17 | 400 | Austenitic steel with small ferrite content | less possible |
| 1.4429 (316LN) | 280-310 | 155 | 580-770 | 17 | 400 | Austenitic steel | not possible |
| 1.4435 (316L) | 220-260 | 118 | 540-700 | 17 | 400 | Austenitic steel | not possible |
| 1.4541 (321) | 200-250 | 135 | 520-710 | 17 | 400 | Austenitic steel with small ferrite content | possible |
| 1.4571 (316Ti) | 220-260 | 145 | 540-690 | 18 | 400 | Austenitic steel with small ferrite content | possible |



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## Description of individual high-grade steel types

**1.4301:**
Austenitic stainless steel. Very high cold formability. Easily weldable. High corrosion resistance. Polishable. Highly suited for vacuum applications.

**1.4305:**
Easy to machine. Lower corrosion resistance than 1.4301. Not weldable. Moderately suitable for vacuum applications.

**1.4306, 1.4307:**
Low-carbon variant of 1.4301 with similar properties. Highly weldable due to low carbon level, very insusceptible to intergranular corrosion. Highly suited for vacuum applications.

**1.4401:**
Very high cold formability. Easily weldable. Due to molybdenum additive, more resistant than 1.4301 to non-oxidising acids and chlorine compound, polishable, well suited for vacuum applications.

**1.4404:**
Significantly less carbon than 1.4401 but with similar properties. Highly weldable due to low carbon level, very insusceptible to intergranular corrosion. Highly suited for vacuum applications.

**1.4429:**
Similar properties to 1.4435 but higher strength due to higher nitrogen share. The nitrogen share also stabilises the austenitic structure. Highly suited for vacuum applications.

**1.4435:**
Similar properties to 1.4404. The increased share of molybdenum makes 1.4435 more resistant to non-oxidising acids and media containing chlorine than 1.4404. Highly suited for vacuum applications.

**1.4541:**
Similar properties to 1.4301 but not polishable. Titan-stabilised, which makes is highly weldable in all dimensions without being susceptible to intergranular corrosion. Well suited for vacuum applications.

**1.4571:**
Similar properties to 1.4401. Titan-stabilised, which makes is highly weldable in all dimensions without being susceptible to intergranular corrosion. Not polishable. Well suited for vacuum applications.

**1.4429 ESR:**
Very high homogeneity including purity combined with a high hardness level. Of particular importance is its very low magnetic permeability. Other properties correspond to 1.4429 although highly suitable for vacuum applications.





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## Aluminium components

**3.1645/AlCU4PbMgMn or AlCuMgPbF38**
**3.1655/AlCu4BiPb 3.3214/AlMg1SiCu**

Standard aluminium compositions with novotek components. They can be used for a temperature range from –196 °C to 150 °C and a pressure range of 2.5 bar to $10^{-7}$mbar. They are very well suited for static loads.

## Aluminium sealing materials and welded parts

**3.2315/AlMgSi1**

Standard aluminium composition of novotek sealing materials and welded parts. The slightly lower rigidity compared to materials for standard aluminium components makes it perfectly suitable as a sealing material. Furthermore, no permeation of gases takes place. However, these seals can only be used once.

## Nickel-plated brass

**2.0401/CuZn39Pb3 (MS 58)**

Standard turned brass in novotek components. This material is then chem. nickel-plated. This achieves an improved corrosion resistance, hardness, toughness and ductility.

## Steel (structural steel)

**1.0036-38 (St37-2) 1.0570 or 1.0577 (St52-3)**

Standard steel grades for novotek components. They can be welded very easily and can be stress-relieved. Furthermore, they are highly suitable for nickel or zinc coating.

# Sealing materials

**Elastomer seals** are permeable to gas and also emit gases. The gas permeability, or permeation, depends on the material, the type of gas and ambient conditions – mainly the temperature. After an adequate evacuation time, the outward gas stream decreases considerably, which means that a relatively constant permeation gas stream materialises.

Permeation and outgassing are diffusion-dependent. High gas-proofness also means slower outgassing, which means that it takes longer until a constant permeation gas stream is created. This can take up to well over 100 hours. Heating up speeds up this procedure considerably. FPM, for example, has a low gas permeability for air. A final pressure of approx. $10^{-7}$mbar is reached in typical cases. The possible final pressure that can be reached is determined by the number of elastomers used. Elastomer seals can be used several times due to their elastic deformation. They require a contact force of a new N/mm$^2$. Under the following conditions, elastomer seals can age relatively quickly: UV radiation, oxygen, ozone, heat, cold, high temperature variation, moisture, solvents or mechanical loads.

**Storage conditions of elastomer seals:**
To ensure that their properties are retained as long as possible, we recommend the following ambient conditions during storage:

- little temperature variation
- where possible, temperatures between 10 °C and 25 °C
- storage in light-proof containers
- atmosphere free of chemicals
- air humidity bet. 60% and 70%

**Metal seals made of aluminium** are suitable for assembly on high-grade steel flanges and can be used in a temperature range from –196 °C to 150 °C. They can only be used once. For assembly, special clamping elements for metal seals that generate significantly higher contact forces can be used.

**Metal seals made of copper** are suitable for assembly on high-grade steel flanges and can be used in a temperature range from –196 °C to 200 °C. A silver coating increases the maximum temperature to 450 °C. They can only be used once. They are suitable for a pressure range of 1 bar to $10^{-13}$mbar. For assembly, special clamping elements for metal seals that generate significantly higher contact forces must be used.

## Properties of elastomer seals

| Chemical designation | Abbreviation | Trade name | Temperature application range | Properties and application range |
|---|---|---|---|---|
| Nitrile rubber | NBR | Perbunan®<br>Buna N® | –30 to +110 | Increased media resistance to: hydraulics, pneumatics, petroleum, silicone oils and greases, water up to 80 °C and air. Good helium-proofness final pressures up to $1x100^{-6}$mbar |
| Fluorocarbon rubber | FKM / FPM | Viton® | –20 to +200 | Increased media resistance to: mineral oils and grease, aliphatic, aromatic and chlorinated hydrocarbons, petroleum, diesel, acids, alkaline solutions and silicone oils Suitable for high vacuum $1x10^{-7}$mbar Age resistant, good mechanical properties |
| Ethylene propylene diene monomer rubber | EPDM | Dutral® | –60 to +150 | Increased media resistance to: hot water, steam, alcohols, org. and inorganic acids and alkalis, high cold resistance, ageing resistance and ozone resistance, non-mineral oil resistant, final pressures up to $1x10^{-6}$mbar<br><br>novotek standard<br>• EPDM with peroxide crosslinking<br>• Advantage: high temperature resistance<br>• More durable<br>• No discolouration after contact with metals and other different materials |
| Chlorobutadiene rubber | CR | Neoprene® | –40 to +110 | Increased media resistance to: ammonia, carbon dioxide, silicone oils, remaining properties comparable to NBR final pressures up to $1x10^{-6}$mbar |
| Silicone rubber | VMQ | Silicone | –60 to +200 | Increased media resistance to: hot air, oxygen, inert gases, ozone and UV radiation. Only suitable for static applications! Final pressures up to $1x10^{-5}$mbar |
| Perfluor rubber | FFKM | Kalrez®<br>Perlast® | –20 to +330 | Very high temperature and chemical resistance. FFKM is mainly used in areas where safety standards are extremely high. It unites the chemical properties of PTFE and the mechanical properties of Viton. Final pressures up to $1x10^{-7}$mbar |

# KF flange components

# KF flange components and connecting elements

**Description:**

KF connections are used in vacuum systems that work with low, medium and high vacuum. These components are manufactured at novotek in accordance with DIN 28403 and ISO 2861 in sizes NW10 to NW50 and are compatible with components from other well-known manufacturers.

All welded parts have been leak-tested using helium and are leak-proof up to $10^{-9}$mbarl/s.

The KF connection consists of two symmetrical flanges with a centring ring with O-ring seal and a clamping ring (Fig. 1). The necessary contact pressure for the seal is generated via the conical tightening surfaces at the KF flange and clamping ring. Instead of a clamping ring, collar half shells can also be used.

For the assembly of KF connections on base plates, claws (Fig. 2) are used.

KF connections are suitable for a pressure of 2.5 bar (1.5 bar excess pressure) and pressure of up to $10^{-9}$mbar. At a max. pressure of up to 4 bar (3 bar excess pressure), an outer retaining ring in conjunction with a solid clamping ring must be installed.

Please refer to the Materials chapter for operation temperatures, sealing materials and clamping elements.

**Design information:**

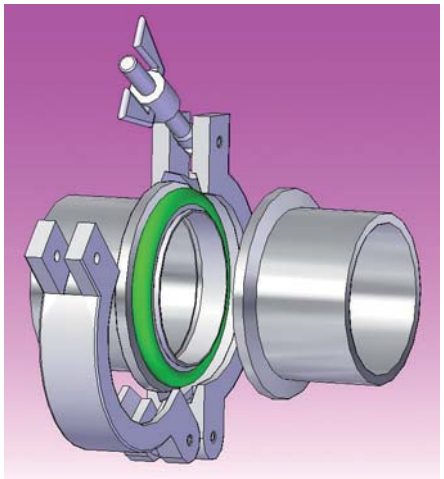


Fig. 1

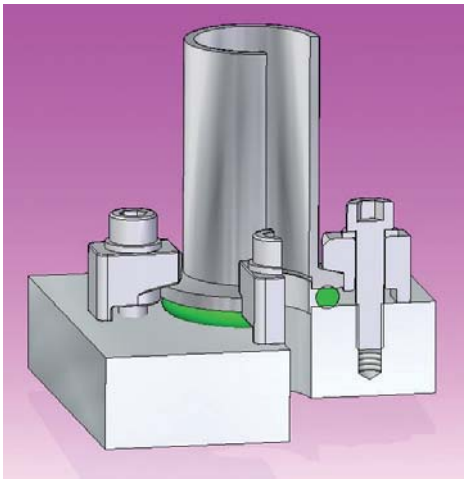
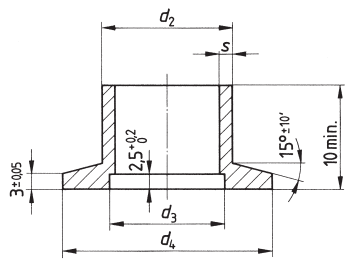


Fig. 2

The KF connections and their components are suitable for vacuum-tight connections. Mechanical loads can only be absorbed to a limited extent. Additional mounts are often necessary if other forces are added to the static or dynamic loads of the vacuum system.

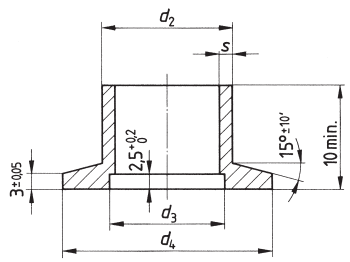
### KF flange with flanged socket




### Main dimensions in accordance with DIN 28403

| Nominal width DN | $d_2$ [mm] | $d_3$ [mm] | $d_4$ [mm] | s [mm] |
|---|---|---|---|---|
| 10 | 14 | 12.2 | 30 | 2 |
| 16 | 20 | 17.2 | 30 | 2 |
| 20 | 25 | 22.2 | 40 | 2 |
| 25 | 28 | 26.2 | 40 | 2 |
| 32 | 38 | 34.2 | 55 | 2 |
| 40 | 44.5 | 41.2 | 55 | 2 |
| 50 | 57 | 52.4 | 75 | 3.2 |

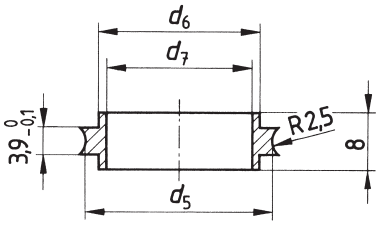
### KF flange with flanged socket with imperial pipe




### Main dimensions in accordance with DIN 28403

| Nominal width DN | $d_2$ [mm] | $d_3$ [mm] | $d_4$ [mm] | s [mm] |
|---|---|---|---|---|
| 10 | 6.35 (1/4“) | 12.2 | 30 | 0.91 |
| 10 | 12.7 (1/2“) | 12.2 | 30 | 1.65 |
| 16 | 19.05 (3/4“) | 17.2 | 30 | 1.65 |
| 25 | 1“ (25.4) | 26.2 | 40 | 1.65 |
| 40 | 38.1 (1 1/2“) | 41.2 | 55 | 1.65 |
| 40 | 44.5 (1 ¾“) | 41.2 | 55 | 2.0 |
| 50 | 50.8 (2“) | 52.4 | 75 | 1.65 |

### Centring ring




### Main dimension in accordance with DIN 28403

| Nominal width DN | $d_5$ [mm] | $d_6$ / –0.1 [mm] | $d_7$ [mm] |
|---|---|---|---|
| 10 | 15.3 | 12 | 10 |
| 16 | 18.5 | 17 | 16 |
| (20) | 25.5 | 22 | 21 |
| 25 | 28.5 | 26 | 25 |
| (32) | 40.5 | 34 | 32 |
| 40 | 43 | 41 | 40 |
| 50 | 55.5 | 52 | 50 |





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# KF junctions

**Properties, aluminium 3.1645:**

- high leak rate (<$10^{-7}$mbarl/s)
- high conductance
- low level of outgassing
- compact structure

**Description:**

The novotek KF junctions made of aluminium are made of solid material. The criteria for selection of the special aluminum alloy are low vapour pressure, high corrosion resistance and a high level of hardness. The elaborate manufacturing process of these KF components made of solid material has been selected to avoid the porosity associated with cast aluminium. The high level of hardness of this aluminum alloy compared to conventional cast aluminium reduces the risk of damage to the sensitive surfaces prepared with precision. The special novotek forming with high variation in the length of legs permits either a space-saving or – if necessary – a stretched out structure. The dimensional arrangement of the junctions allows easy installation of the clamping rings.

**Area of application:**

The novotek junctions made of aluminium allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-7}$mbar.

**Properties of high-grade steel 1.4301 /1.4404:**

- high leak rate (<$10^{-9}$mbarl/s)
- high conductance
- gap-free welded
- can be baked out up to 300 °C/350 °C

**Description:**

The KF junctions made of high-grade steel are either turned parts or welded constructions with interior welded novotek welding flanges.

**Area of application:**

The novotek junctions made of high-grade steel allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-9}$mbar. They are mainly used in high-vacuum technology if a bake-out capacity or special corrosion resistance is required.

**Properties of polyoxymethylene (POM):**

- electr. dielectric strength 25KV/mm
- light weight
- bake-out capacity up to 70°

**Description:**

The novotek KF junctions made of polyoxymethylene are manufactured using turning and milling technology. The special novotek forming with high variation in the length of legs permits either a space-saving or – if necessary – a stretched out structure. The dimensional arrangement of the junctions allows easy installation of the clamping rings.

**Area of application:**

The novotek junctions made of polyoxymethylene allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-5}$mbar. Polyoxymethylene is characterised by its high strength, hardness and stiffness in a wide temperature range. It retains its high toughness up to –40 °C, has a high abrasion resistance, a low friction coefficient, high thermoforming stability, good electrical and dielectric properties and low water absorption. Due to the high crystallinity, the natural colour is opal white but the material can be dyed in all muted colours. Delivery state at novotek is opal white.





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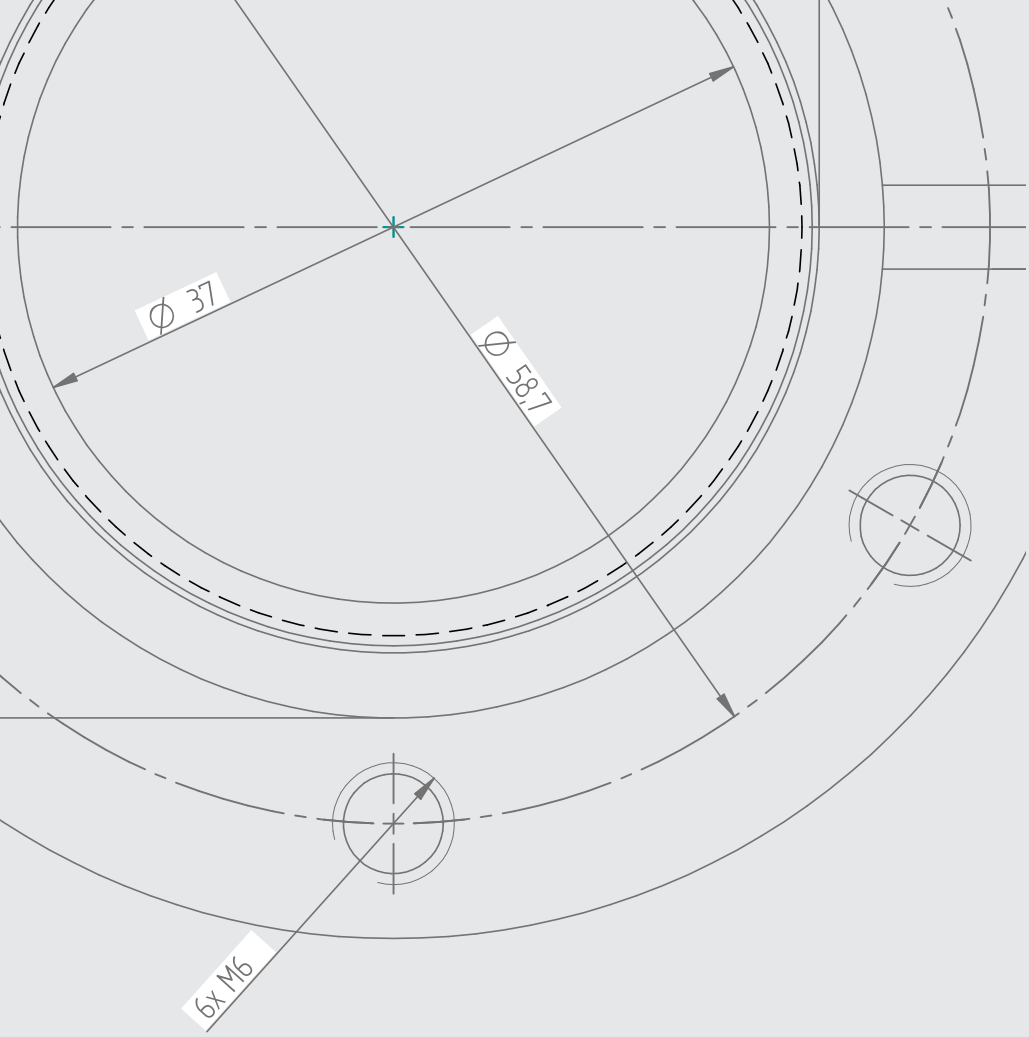


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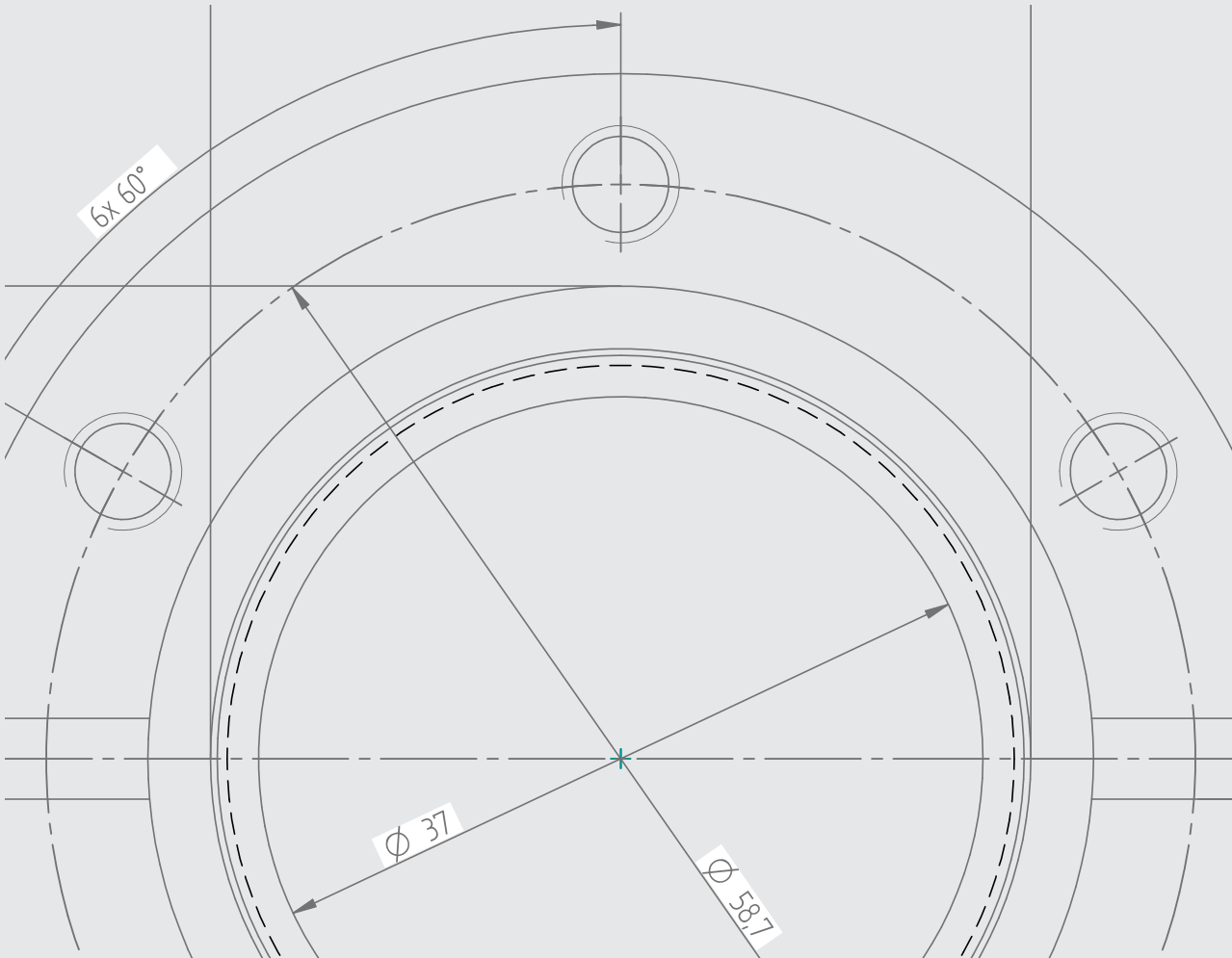
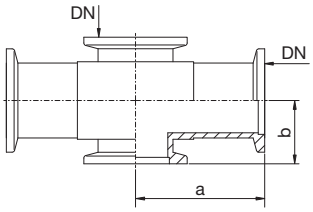
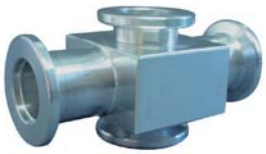


# KF crosspiece

> Pressure range: $10^{-7}$mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

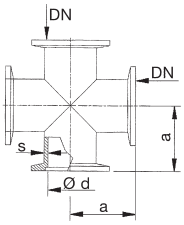


## Aluminium 3.1645

| Nominal width DN | a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10** | 40 | 20 | 1011 | 25.50 |
| **16** | 40 | 20 | 1012 | 25.50 |
| **25** | 50 | 25 | 1014 | 30.00 |
| **40** | 65 | 35 | 1016 | 48.00 |

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



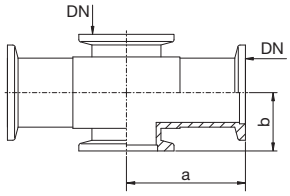

## High-grade steel 1.4301

| Nominal width DN | a [mm] | dia.d [mm] | S [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 30 | 9 | 1.5 | 1111 | 79.00 |
| **16** | 40 | 15 | 1.5 | 1112 | 79.90 |
| **25** | 50 | 25 | 1.5 | 1114 | 79.50 |
| **40** | 65 | 37 | 1.5 | 1116 | 93.00 |
| **50** | 75 | 49 | 1.5 | 1117 | 112.00 |

## High-grade steel 1.4404

| Nominal width DN | A [mm] | dia.d [mm] | S [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 30 | 9 | 1.5 | 11114 | 82.00 |
| **16** | 40 | 15 | 1.5 | 11124 | 83.00 |
| **25** | 50 | 25 | 1.5 | 11144 | 79.90 |
| **40** | 65 | 37 | 1.5 | 11164 | 99.40 |
| **50** | 75 | 49 | 1.5 | 11174 | 149.00 |

> Pressure range: $10^{-5}$mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

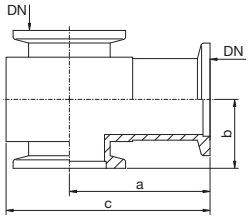



## Polyoxymethylene (POM)

| Nominal width DN | a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 40 | 20 | 1012P | 27.50 |
| **25** | 50 | 25 | 1014P | 34.50 |
| **40** | 65 | 35 | 1016P | 62.00 |

# T piece KF

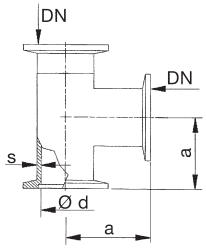
> Pressure range: $10^{-7}$ mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration




## Aluminium 3.1645

| Nominal width DN | a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 40 | 20 | 57.5 | 1021 | 19.50 |
| **16** | 40 | 20 | 57.5 | 1022 | 21.50 |
| **25** | 50 | 25 | 72.5 | 1024 | 26.50 |
| **40** | 65 | 35 | 95 | 1026 | 35.50 |
| **50** | 80 | 50 | 120 | 1027 | 72.00 |

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



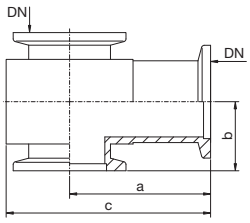

## High-grade steel 1.4301

| Nominal width DN | a [mm] | dia.d [mm] | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 30 | 9 | 1.5 | 1121 | 49.50 |
| **16** | 40 | 15 | 1.5 | 1122 | 49.80 |
| **25** | 50 | 25 | 1.5 | 1124 | 47.20 |
| **40** | 65 | 37 | 1.5 | 1126 | 58.90 |
| **50** | 75 | 49 | 1.5 | 1127 | 79.90 |

## High-grade steel 1.4404

| Nominal width DN | a [mm] | dia.d [mm] | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 30 | 9 | 1.5 | 11214 | 53.00 |
| **16** | 40 | 15 | 1.5 | 11224 | 49.90 |
| **25** | 50 | 25 | 1.5 | 11244 | 47.50 |
| **40** | 65 | 37 | 1.5 | 11264 | 74.00 |
| **50** | 75 | 49 | 1.5 | 11274 | 95.00 |

> Pressure range: $10^{-6}$ mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

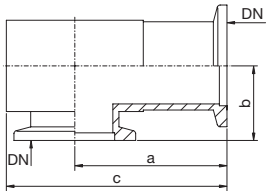


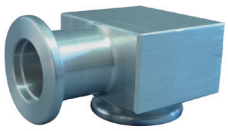

## Polyoxymethylene (POM)

| Nominal width DN | a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 40 | 20 | 57.5 | 1022P | 22.50 |
| **25** | 50 | 25 | 72.5 | 1024P | 26.50 |
| **40** | 65 | 35 | 95 | 1026P | 39.90 |

# KF elbow piece

> Pressure range: $10^{-7}$mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

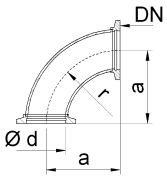


## Aluminium 3.1645

| Nominal width DN | a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 40 | 20 | 57.5 | 1031 | 19.50 |
| **16** | 40 | 20 | 57.5 | 1032 | 18.00 |
| **25** | 50 | 24.5 | 72.5 | 1034 | 21.60 |
| **40** | 65 | 34.5 | 95 | 1036 | 35.50 |
| **50** | 80 | 49.5 | 120 | 1037 | 83.00 |

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



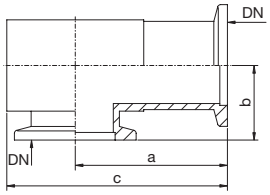

## High-grade steel 1.4301

| Nominal width DN | a [mm] | dia.d [mm] | s [mm] | r [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10** | 30 | 9 | 1.5 | 26 | 1131 | 35.50 |
| **16** | 40 | 15 | 1.5 | 35 | 1132 | 25.00 |
| **25** | 50 | 25 | 1.5 | 45 | 1134 | 36.00 |
| **40** | 65 | 41 | 2 | 55 | 1136 | 39.00 |
| **50** | 75 | 49 | 1.5 | 70 | 1137 | 57.00 |

## High-grade steel 1.4404

| Nominal width DN | A [mm] | dia.d [mm] | s [mm] | r [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10** | 30 | 9 | 1.5 | 26 | 11314 | 35.00 |
| **16** | 40 | 15 | 1.5 | 35 | 11324 | 48.00 |
| **25** | 50 | 25 | 1.5 | 45 | 11344 | 37.00 |
| **40** | 65 | 41 | 2 | 55 | 11364 | 45.00 |
| **50** | 75 | 49 | 1.5 | 70 | 11374 | 84.00 |

> Pressure range: $10^{-5}$ mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

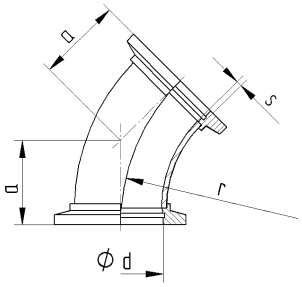



## Polyoxymethylene (POM)

| Nominal width DN | a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 40 | 20 | 57.5 | 1032P | 19.50 |
| **25** | 50 | 25 | 72.5 | 1034P | 23.50 |
| **40** | 65 | 35 | 95 | 1036P | 42.00 |

# KF elbow piece 45°

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

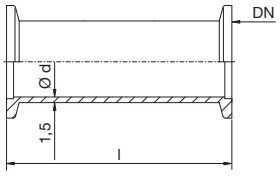
| Nominal width DN | a [mm] | dia.d [mm] | s [mm] | r [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10** | 14.3 | 9 | 1.5 | 26 | 1131-45 | 43.50 |
| **16** | 19.5 | 15 | 1.5 | 35 | 1132-45 | 43.50 |
| **25** | 25.7 | 25 | 1.5 | 50 | 1134-45 | 47.00 |
| **40** | 29.85 | 37 | 1.5 | 60 | 1136-45 | 53.50 |
| **50** | 34 | 49 | 1.5 | 70 | 1137-45 | 67.50 |

## High-grade steel 1.4404

| Nominal width DN | a [mm] | dia.d [mm] | s [mm] | r [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10** | 14.3 | 9 | 1.5 | 26 | 1131-454 | 44.00 |
| **16** | 19.5 | 15 | 1.5 | 35 | 1132-454 | 56.50 |
| **25** | 25.7 | 25 | 1.5 | 50 | 1134-454 | 59.50 |
| **40** | 29.85 | 37 | 1.5 | 60 | 1136-454 | 59.00 |
| **50** | 34 | 49 | 1.5 | 70 | 1137-454 | 77.00 |

# KF connecting piece

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Clean metallic surface on inside and outside
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

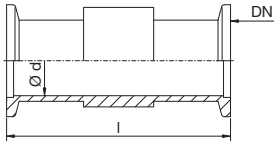
| Nominal width DN | l [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10** | 60 | 9 | 1171 | 24.50 |
| **16** | 80 | 15 | 1172 | 24.90 |
| **25** | 100 | 25 | 1174 | 27.90 |
| **40** | 130 | 37 | 1176 | 32.90 |
| **50** | 150 | 49 | 1177 | 42.90 |

## High-grade steel 1.4404

| Nominal width DN | l [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10** | 60 | 9 | 11714 | 37.00 |
| **16** | 80 | 15 | 11724 | 37.70 |
| **25** | 100 | 25 | 11744 | 42.90 |
| **40** | 130 | 37 | 11764 | 53.70 |
| **50** | 150 | 49 | 11774 | 87.20 |

# KF connecting piece

> Pressure range: $10^{-7}$mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration




## Aluminium 3.1645

| Nominal width DN | l [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 80 | 16 | 1072 | 18.90 |
| **25** | 100 | 25 | 1074 | 21.70 |
| **40** | 130 | 40 | 1076 | 29.90 |

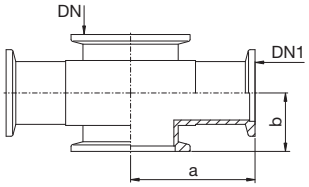
> Pressure range: $10^{-5}$ mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

## Polyoxymethylene (POM)

| Nominal width DN | l [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 80 | 16 | 1072P | 19.00 |
| **25** | 100 | 25 | 1074P | 22.00 |
| **40** | 130 | 40 | 1076P | 32.00 |

# KF Reducing crosspiece

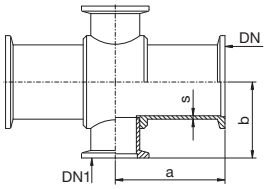
> Pressure range: $10^{-7}$mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration




## Aluminium 3.1645

| Nominal width DN | Reduced nominal width DN 1 | a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **25** | **10** | 40 | 22 | 1042 | 45.00 |
| **25** | **16** | 40 | 22 | 1046 | 43.50 |
| **40** | **10** | 50 | 30 | 1044 | 61.50 |
| **40** | **16** | 50 | 30 | 1047 | 62.50 |
| **40** | **25** | 50 | 30 | 1048 | 64.50 |
| **50** | **10** | 60 | 40 | 1045 | 74.50 |

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration

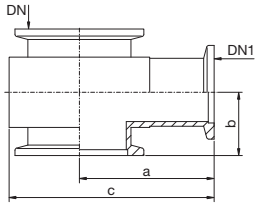



## High-grade steel 1.4301

| Nominal width DN | Reduced nominal width DN 1 | a [mm] | b [mm] | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **25** | **10** | 50 | 38 | 1.5 | 1142 | 92.50 |
| **25** | **16** | 50 | 40 | 1.5 | 1146 | 99.50 |
| **40** | **10** | 60 | 40 | 1.5 | 1144 | 112.50 |
| **40** | **16** | 65 | 40 | 1.5 | 1147 | 124.50 |
| **40** | **25** | 65 | 50 | 1.5 | 1148 | 134.50 |
| **50** | **10** | 75 | 45 | 1.5 | 1145 | 167.00 |
| **50** | **16** | 75 | 40 | 1.5 | 1149 | 167.50 |

# Reducing T piece, KF

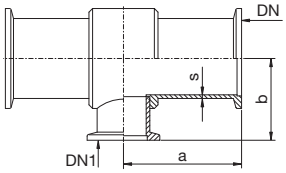
> Pressure range: $10^{-7}$mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration




## Aluminium 3.1645

| Nominal width DN | Reduced nominal width DN 1 | a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **25** | **10** | 40 | 22 | 62.5 | 1052 | 40.00 |
| **25** | **16** | 40 | 22 | 62.5 | 1056 | 40.00 |
| **40** | **10** | 55 | 30 | 80 | 1054 | 54.50 |
| **40** | **16** | 50 | 30 | 80 | 1057 | 53.50 |
| **40** | **25** | 50 | 30 | 80 | 1058 | 54.50 |
| **50** | **10** | 70 | 40 | 110 | 1055 | 82.50 |

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Surface polished on inside and outside
* Take sealing materials and connecting elements into consideration



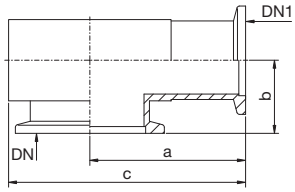

## High-grade steel 1.4301

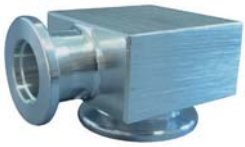
| Nominal width DN | Reduced nominal width DN 1 | a [mm] | b [mm] | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **25** | **10** | 50 | 38 | 1.5 | 1152 | 69.50 |
| **25** | **16** | 50 | 40 | 1.5 | 1156 | 62.00 |
| **40** | **10** | 60 | 40 | 1.5 | 1154 | 97.20 |
| **40** | **16** | 65 | 40 | 1.5 | 1157 | 82.00 |
| **40** | **25** | 65 | 50 | 1.5 | 1158 | 87.00 |
| **50** | **10** | 75 | 45 | 1.5 | 1155 | 124.70 |

**(Optical appearance of bodies can deviate!)**

# Reducing elbow piece, KF

> Pressure range: $10^{-7}$mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



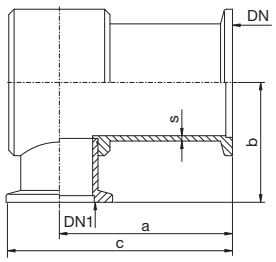



## Aluminium 3.1645

| Nominal width DN | Reduced nominal width DN 1 | a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **25** | **16** | 40 | 22 | 62.5 | 1086 | 32.50 |
| **40** | **16** | 55 | 30 | 80 | 1087 | 47.50 |
| **40** | **25** | 55 | 30 | 80 | 1088 | 47.50 |

# Reducing elbow piece, KF

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Surfaces in turning quality
* Take sealing materials and connecting elements into consideration

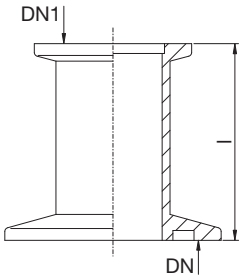


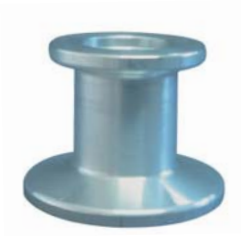

## High-grade steel 1.4301

| Nominal width DN | Reduced nominal width DN 1 | a [mm] | b [mm] | c [mm] | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| 25 | 16 | 50 | 40 | 65 | 1.5 | 1186 | 59.50 |
| 40 | 16 | 65 | 40 | 80 | 1.5 | 1187 | 67.50 |
| 40 | 25 | 65 | 50 | 84 | 1.5 | 1188 | 77.50 |

# KF reducing fitting

> Pressure range: $10^{-7}$mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration



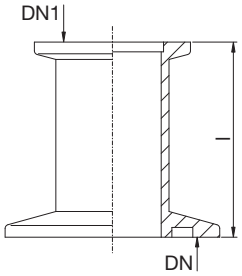



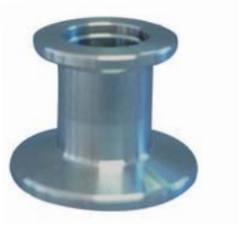
## Aluminium 3.1645

| Nominal width DN | Reduced nominal width DN 1 | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| 25 | 10 | 30 | 1061 | 17.50 |
| 25 | 16 | 30 | 1062 | 17.00 |
| 40 | 10 | 30 | 1063 | 19.50 |
| 40 | 16 | 30 | 1065 | 19.70 |
| 40 | 25 | 30 | 1066 | 18.50 |
| 50 | 40 | 30 | 1068 | 24.70 |
| 50 | 16 | 30 | 1069 | 24.70 |
| 50 | 25 | 30 | 1070 | 24.50 |
| **Nominal width DN** | **Reduced nominal width DN 1** | **l [mm]** | **Article no.** | **Price €** |
| 25 | 10 | 40 | 1061-4 | 18.90 |
| 25 | 16 | 40 | 1062-4 | 16.00 |
| 40 | 10 | 40 | 1063-4 | 21.20 |
| 40 | 16 | 40 | 1065-4 | 16.95 |
| 40 | 25 | 40 | 1066-4 | 18.00 |
| 50 | 40 | 40 | 1068-4 | 22.95 |
| 50 | 16 | 40 | 1069-4 | 27.00 |
| 50 | 25 | 40 | 1070-4 | 26.00 |

# KF reducing fitting

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration



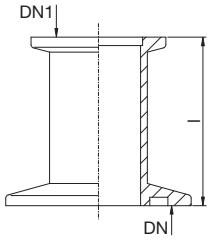
## High-grade steel 1.4301

| Nominal width DN | Reduced nominal width DN 1 | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| **25** | **10** | 30 | 1161 | 20.00 |
| **25** | **16** | 30 | 1162 | 18.50 |
| **40** | **10** | 30 | 1163 | 26.50 |
| **40** | **16** | 30 | 1165 | 24.50 |
| **40** | **25** | 30 | 1166 | 26.00 |
| **50** | **40** | 30 | 1168 | 30.00 |
| **50** | **16** | 30 | 1169 | 32.00 |
| **50** | **25** | 30 | 1170 | 29.00 |
| **Nominal width DN** | **Reduced nominal width DN 1** | **l [mm]** | **Article no.** | **Price €** |
| **25** | **10** | 40 | 1161-4 | 21.50 |
| **25** | **16** | 40 | 1162-4 | 20.50 |
| **40** | **10** | 40 | 1163-4 | 32.00 |
| **40** | **16** | 40 | 1165-4 | 27.90 |
| **40** | **25** | 40 | 1166-4 | 27.50 |
| **50** | **40** | 40 | 1168-4 | 35.00 |
| **50** | **16** | 40 | 1169-4 | 36.00 |
| **50** | **25** | 40 | 1170-4 | 35.00 |

## High-grade steel 1.4404

| Nominal width DN | Reduced nominal width DN 1 | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| **25** | **16** | 30 | 11624 | 20.00 |
| **40** | **16** | 30 | 11654 | 26.00 |
| **40** | **25** | 30 | 11664 | 29.50 |
| **50** | **25** | 30 | 11704 | 39.50 |
| **50** | **40** | 30 | 11684 | 41.50 |
| **50** | **16** | 30 | 11694 | 32.00 |

# KF reducing fitting

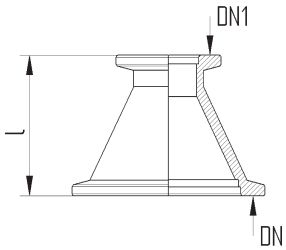



> Pressure range: $10^{-5}$ mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

## Polyoxymethylene (POM)

| Nominal width DN | Reduced nominal width DN 1 | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| 25 | 16 | 30 | 1062P | 21.00 |
| 40 | 16 | 30 | 1065P | 23.00 |
| 40 | 25 | 30 | 1066P | 23.00 |

# KF conical reducing fitting




> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301

| Nominal width DN | Reduced nominal width DN 1 | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| 25 | 16 | 40 | 1162-4k | 19.50 |
| 40 | 16 | 40 | 1165-4k | 21.50 |
| 40 | 25 | 40 | 1166-4k | 22.50 |
| 50 | 40 | 40 | 1168-4k | 29.90 |
| 50 | 16 | 40 | 1169-4k | 33.50 |
| 50 | 25 | 40 | 1170-4k | 33.70 |

## High-grade steel 1.4404

| Nominal width DN | Reduced nominal width DN 1 | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| 25 | 16 | 40 | 1162-4k4 | 23.50 |
| 40 | 16 | 40 | 1165-4k4 | 30.50 |
| 40 | 25 | 40 | 1166-4k4 | 23.00 |
| 50 | 40 | 40 | 1168-4k4 | 45.00 |
| 50 | 16 | 40 | 1169-4k4 | 50.00 |
| 50 | 25 | 40 | 1170-4k4 | 49.00 |

# KF components

**Properties, aluminium 3.1645:**

- high leak rate (<$10^{-7}$ mbarl/s)
- high conductance
- low level of outgassing
- compact structure

**Description:**

The novotek aluminium components are made of solid material. The criteria for selection of the special aluminum alloy are low vapour pressure, high corrosion resistance and a high level of hardness. The elaborate manufacturing process of these KF components made of solid material has been selected to avoid the porosity associated with cast aluminium. The high level of hardness of this aluminum alloy compared to conventional cast aluminium reduces the risk of damage to the sensitive surfaces prepared with precision.

**Area of application:**

The novotek components made of aluminium allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-7}$mbar.

**Properties of high-grade steel 1.4301 /1.4404:**

- high leak rate (<$10^{-9}$mbarl/s)
- high conductance
- gap-free welded
- can be baked out up to 300 °C/350 °C

**Description:**

The novotek KF components are designed in accordance with DIN 28403. This ensures compatibility of all components with one another. The components blind flange and KF with hose nozzle are designed with a nominal width combination, i.e. they can be used for two nominal widths.

**Area of application:**

The novotek components made of high-grade steel allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-9}$mbar. They are mainly used in high-vacuum technology if a bake-out capacity or special corrosion resistance is required.

**Properties of polyoxymethylene (POM):**

- resistant to diluted alkaline solutions
- electr. dielectric strength. 25KV/mm
- light weight
- bake-out capacity up to 70°

**Description:**

The novotek components made of polyoxymethylene are prepared with turning technology. The dimensional arrangement of the junctions allows easy installation of the clamping rings.

**Area of application:**

The novotek components made of polyoxymethylene allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-5}$mbar. Polyoxymethylene is characterised by its high strength, hardness and stiffness in a wide temperature range. It retains its high toughness up to –40 °C, has a high abrasion resistance, a low friction coefficient, high thermoforming stability, good electrical and dielectric properties and low water absorption. Due to the high crystallinity, the natural colour is opal white but the material can be dyed in all muted colours. Delivery state at novotek is opal white.

**Properties of steel (1.0037 / 1.0577):**

- high leak rate (<$10^{-9}$mbarl/s)
- high conductance
- bake-out capacity up to 300 °C

**Description:**

The KF components are manufactured from steels of grade 1.0036-38 (St37-2) 1.0570 or 1.0577 (St52-3). They can be welded very easily and can be stress-relieved. Furthermore, they are highly suitable for nickel or zinc coating.

**Area of application:**

The novotek components made of steel allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-9}$mbar. They are mainly used in vacuum technology if special corrosion resistance is not required.

**Properties of brass 2.0401 / MS58):**

- high leak rate (<$10^{-9}$mbarl/s)
- high conductance
- bake-out capacity up to 110 °C

**Description:**

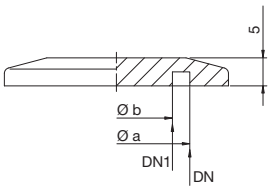
The KF components are manufactured from turned brass of grade 2.0401. They are very easily soldered. Furthermore, they are highly suitable for nickel plating.

**Area of application:**

The novotek components made of brass allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-9}$mbar. The nickel-plated variant is often used in high-vacuum technology as a more cost-effective alternative to high-grade steel. However, the corrosion resistance is still high.

# KF blind flange

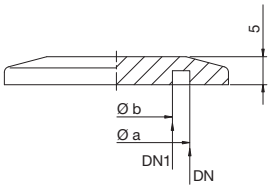
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration




## Aluminium 3.1645

| Nominal width DN | Nominal width DN1 | a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 17.2 | 9.8 | 1402 | 2.95 |
| **25** | **20** | 26.2 | 19.8 | 1404 | 3.25 |
| **40** | **32** | 41.2 | 31.8 | 1406 | 4.15 |
| **50** | | 52.4 | 46.00 | 1407 | 8.95 |

> Pressure range: $10^{-5}$ mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

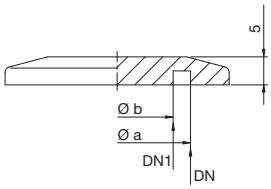


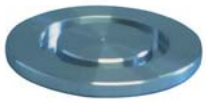

## Polyoxymethylene (POM)

| Nominal width DN | Nominal width DN1 | a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 17.2 | 9.8 | 1402P | 4.50 |
| **25** | **20** | 26.2 | 19.8 | 1404P | 5.30 |
| **40** | **32** | 41.2 | 31.8 | 1406P | 6.80 |
| **50** | | 52.4 | 46.00 | 1407P | Upon request |

# KF blind flange

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration



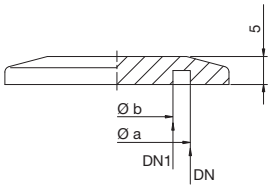
## High-grade steel 1.4301

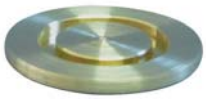
| Nominal width DN | Nominal width DN1 | a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 17.2 | 9.8 | 1422 | 3.45 |
| **25** | **20** | 26.2 | 19.8 | 1424 | 4.45 |
| **40** | **32** | 41.2 | 31.8 | 1426 | 6.15 |
| **50** | | 52.4 | 46.00 | 1427 | 10.20 |

## High-grade steel 1.4404

| Nominal width DN | Nominal width DN1 | a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 17.2 | 9.8 | 14224 | 6.00 |
| **25** | **20** | 26.2 | 19.8 | 14244 | 7.00 |
| **40** | **32** | 41.2 | 31.8 | 14264 | 9.50 |
| **50** | | 52.4 | 46.00 | 14274 | 14.00 |

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 110 °C
* Take sealing materials and connecting elements into consideration



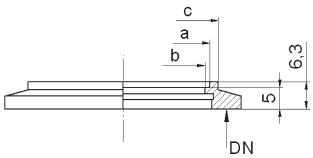



## Brass 2.0401

| Nominal width DN | Nominal width DN1 | a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 17.2 | 9.8 | 1412 | 5.30 |
| **25** | **20** | 26.2 | 19.8 | 1414 | 5.70 |
| **40** | **32** | 41.2 | 31.8 | 1416 | 8.30 |
| **50** | | 52.4 | 46.00 | 1417 | 15.00 |

# KF welded flange

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

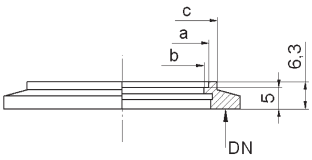



## High-grade steel 1.4301

| Nominal width DN | a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | **12.4** | 10 | 14.5 | 1531 | 5.90 |
| **16** | **18.3** | 16 | 20.3 | 1532 | 4.40 |
| **16** | **19.3** | 16 | 20.3 | 1532-19 | 4.60 |
| **25** | **28.3** | 25.5 | 30.5 | 1534 | 7.45 |
| **40** | **40.3** | 38 | 44.3 | 1536 | 9.80 |
| **40** | **44.7** | 40.5 | / | 1536-45 | 10.20 |
| **50** | **52.3** | 50 | 56 | 1537 | 14.40 |

# KF welded flange

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196°C to 350 °C
* Take sealing materials and connecting elements into consideration

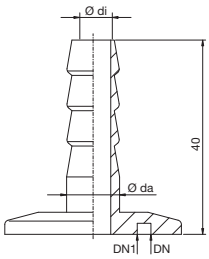



## High-grade steel 1.4404

| Nominal width DN | a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 12.4 | 10 | 14.5 | 15314 | 6.30 |
| **16** | 18.3 | 16 | 20.3 | 15324 | 6.15 |
| **16** | 19.3 | 16 | 20.3 | 15324-19 | 6.30 |
| **25** | 28.3 | 25.5 | 30.5 | 15344 | 7.95 |
| **40** | 40.3 | 38 | 44.3 | 15364 | 10.95 |
| **40** | 44.7 | 40.5 | / | 15364-45 | 11.30 |
| **50** | 52.3 | 50 | 56 | 15374 | 14.95 |

# KF hose nozzle (12/8. 8/4 and 16/13)

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration




## Aluminium 3.1645 12/8

| Nominal width DN | Nominal width DN1 | dia.da [mm] | dia.di [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 12 | 8 | 1602 | 7.50 |
| **25** | **20** | 12 | 8 | 1604 | 10.75 |
| **40** | **32** | 12 | 8 | 1606 | 14.45 |
| **50** | | 12 | 8 | 1608 | 28.30 |

## Aluminium 3.1645 8/4

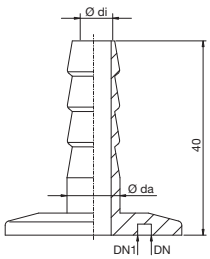
| Nominal width DN | Nominal width DN1 | dia.da [mm] | dia.di [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 8 | 4 | 1601 | 10.50 |
| **25** | **20** | 8 | 4 | 1603 | 12.50 |
| **40** | **32** | 8 | 4 | 1605 | 15.00 |
| **50** | | 8 | 4 | 1607 | 26.00 |

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301 16/13

| Nominal width DN | Nominal width DN1 | dia.da [mm] | dia.di [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 16 | 13 | 1622 | 27.00 |
| **25** | **20** | 16 | 13 | 1624 | 29.50 |
| **40** | **32** | 16 | 13 | 1626 | 33.20 |
| **50** | | 16 | 13 | 1627 | 43.70 |

# KF hose nozzle (12/8 and 8/4)




> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

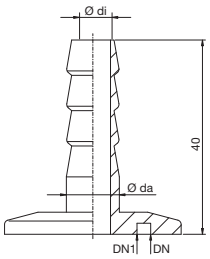
## High-grade steel 1.4301 12/8

| Nominal width DN | Nominal width DN1 | dia.da [mm] | dia.di [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 12 | 8 | 1612 | 18.90 |
| **25** | **20** | 12 | 8 | 1614 | 24.50 |
| **40** | **32** | 12 | 8 | 1616 | 29.50 |
| **50** | | 12 | 8 | 1618 | 45.20 |

## High-grade steel 1.4301 8/4

| Nominal width DN | Nominal width DN1 | dia.da [mm] | dia.di [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 8 | 4 | 1611 | 18.90 |
| **25** | **20** | 8 | 4 | 1613 | 24.80 |
| **40** | **32** | 8 | 4 | 1615 | 27.80 |

# KF hose nozzle (12/8 )



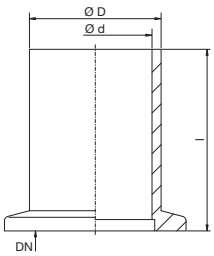

> Pressure range: $10^{-5}$ mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

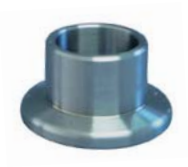
## Polyoxymethylene (POM) 12/8

| Nominal width DN | Nominal width DN1 | dia.da [mm] | dia.di [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | **10** | 12 | 8 | 1602P | 11.00 |
| **25** | **20** | 12 | 8 | 1604P | 12.50 |
| **40** | **32** | 12 | 8 | 1606P | 17.50 |

# KF with flanged socket, short

(novotek standard)



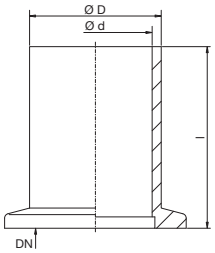
> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

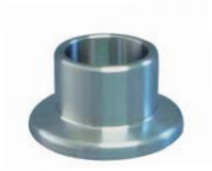
## Steel 1.0037

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 16 | 14 | 10 | 1511 | 6.70 |
| **16** | 16 | 20 | 16 | 1512 | 6.70 |
| **20** | 20 | 25 | 20 | 1513 | 9.20 |
| **25** | 20 | 29 | 25 | 1514 | 9.30 |
| **32** | 25 | 38 | 32 | 1515 | 11.40 |
| **40** | 25 | 45 | 40 | 1516 | 10.90 |
| **50** | 25 | 55 | 50 | 1517 | 20.70 |

# KF with flanged socket, short

(novotek standard)

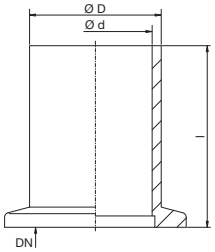


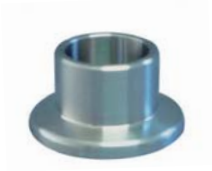



> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 16 | 14 | 10 | 1521 | 7.80 |
| **16** | 16 | 20 | 16 | 1522 | 6.45 |
| **20** | 20 | 25 | 20 | 1523 | 11.50 |
| **25** | 20 | 29 | 25 | 1524 | 6.90 |
| **32** | 25 | 38 | 32 | 1525 | 17.20 |
| **40** | 25 | 45 | 40 | 1526 | 11.25 |
| **50** | 25 | 55 | 50 | 1527 | 19.45 |

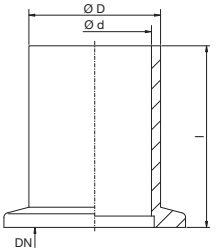


> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Temperature range: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4404

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 16 | 14 | 10 | 15214 | 7.90 |
| **16** | 16 | 20 | 16 | 15224 | 7.90 |
| **25** | 20 | 29 | 25 | 15244 | 9.90 |
| **40** | 25 | 45 | 40 | 15264 | 14.50 |
| **50** | 25 | 55 | 50 | 15274 | 24.20 |



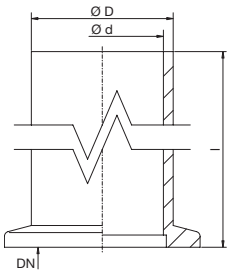

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Temperature range: –196 °C to 110 °C
* Take sealing materials and connecting elements into consideration

## Brass 2.0401

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 16 | 14 | 10 | 1501 | 7.20 |
| **16** | 16 | 20 | 16 | 1502 | 7.50 |
| **20** | 20 | 25 | 20 | 1503 | 10.90 |
| **25** | 20 | 29 | 25 | 1504 | 11.70 |
| **32** | 25 | 38 | 32 | 1505 | 17.20 |
| **40** | 25 | 45 | 40 | 1506 | 19.20 |
| **50** | 25 | 55 | 50 | 1507 | 24.20 |

# KF with flanged socket, long

(novotek standard)



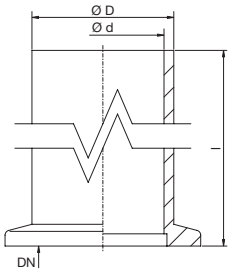

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Temperature range: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 52 | 14 | 10 | 1571 | 10.85 |
| **16** | 52 | 20 | 16 | 1572 | 10.85 |
| **20** | 55 | 25 | 20 | 1573 | 17.90 |
| **25** | 55 | 29 | 25 | 1574 | 13.40 |
| **32** | 58 | 38 | 32 | 1575 | 24.50 |
| **40** | 58 | 45 | 40 | 1576 | 19.90 |
| **50** | 58 | 55 | 50 | 1577 | 28.60 |

## High-grade steel 1.4404

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 52 | 14 | 10 | 15714 | 10.90 |
| **16** | 52 | 20 | 16 | 15724 | 12.90 |
| **25** | 55 | 29 | 25 | 15744 | 13.90 |
| **40** | 58 | 45 | 40 | 15764 | 24.50 |
| **50** | 58 | 55 | 50 | 15774 | 39.90 |



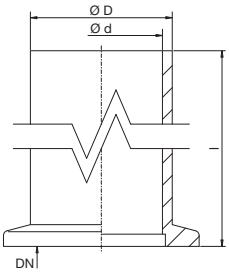

> Pressure range: $10^{-5}$mbar to 2.5 bar*
> Temperature range: –40 °C to 70 °C*
* Take sealing materials and connecting elements into consideration

## Polyoxymethylene (POM)

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 52 | 20 | 16 | 1572P | 11.00 |
| **25** | 55 | 29 | 25 | 1574P | 15.00 |
| **40** | 58 | 45 | 40 | 1576P | 19.00 |

# KF with flanged socket, long

(novotek standard)



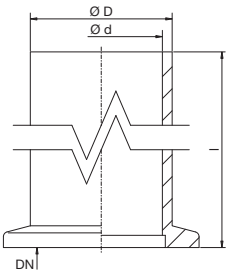

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

## Steel 1.0037

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 52 | 14 | 10 | 1561 | 8.95 |
| **16** | 52 | 20 | 16 | 1562 | 8.95 |
| **20** | 55 | 25 | 20 | 1563 | 15.70 |
| **25** | 55 | 29 | 25 | 1564 | 11.95 |
| **32** | 58 | 38 | 32 | 1565 | 20.70 |
| **40** | 58 | 45 | 40 | 1566 | 14.95 |
| **50** | 58 | 55 | 50 | 1567 | 27.95 |

# KF with flanged socket, long

(novotek standard)



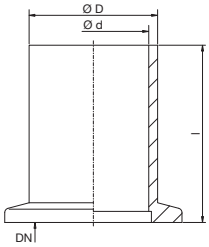

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Temperature range: –196 °C to 110 °C
* Take sealing materials and connecting elements into consideration

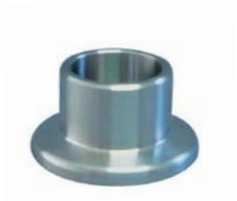
## Brass 2.0401

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 52 | 14 | 10 | 1551 | 11.90 |
| **16** | 52 | 20 | 16 | 1552 | 11.90 |
| **20** | 55 | 25 | 20 | 1553 | 20.30 |
| **25** | 55 | 29 | 25 | 1554 | 21.70 |
| **32** | 58 | 38 | 32 | 1555 | 29.00 |
| **40** | 58 | 45 | 40 | 1556 | 31.50 |
| **50** | 58 | 55 | 50 | 1557 | 49.20 |

# KF with flanged socket l = 30

(according to DIN28403)



> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Temperature range: –196°C to 350 °C
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301

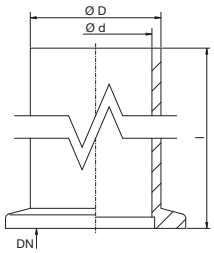
| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 30 | 14 | 10 | 1521-3 | 8.70 |
| **16** | 30 | 20 | 16 | 1522-3 | 8.45 |
| **25** | 30 | 28 | 24 | 1524-3 | 9.90 |
| **40** | 30 | 44.5 | 40.5 | 1526-3 | 13.80 |
| **50** | 30 | 57 | 51 | 1527-3 | 22.90 |

## High-grade steel 1.4404

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 30 | 14 | 10 | 1521-34 | 9.40 |
| **16** | 30 | 20 | 16 | 1522-34 | 9.40 |
| **25** | 30 | 28 | 24 | 1524-34 | 11.70 |
| **40** | 30 | 44.5 | 40.5 | 1526-34 | 14.50 |
| **50** | 30 | 57 | 51 | 1527-34 | 23.40 |

# KF with flanged socket l = 70

(according to DIN28403)




> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
> Temperature range: –196°C to 350 °C
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301

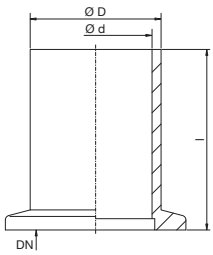
| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 70 | 14 | 10 | 1571-7 | 13.45 |
| **16** | 70 | 20 | 16 | 1572-7 | 13.45 |
| **25** | 70 | 28 | 24 | 1574-7 | 16.40 |
| **40** | 70 | 44.5 | 40.5 | 1576-7 | 19.95 |
| **50** | 70 | 57 | 51 | 1577-7 | 42.00 |

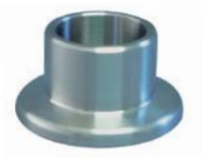
## High-grade steel 1.4404

| Nominal width DN | l [mm] | dia.D [mm] | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 70 | 14 | 10 | 1571-74 | 18.90 |
| **16** | 70 | 20 | 16 | 1572-74 | 20.00 |
| **25** | 70 | 28 | 24 | 1574-74 | 21.00 |
| **40** | 70 | 44.5 | 40.5 | 1576-74 | 24.50 |
| **50** | 70 | 57 | 51 | 1577-74 | 43.00 |

# KF with flanged socket, imperial (for pipe dimensions according to DIN2462/2463)

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 110 °C (brass)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration



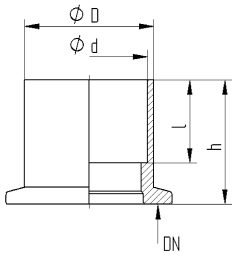



## High-grade steel 1.4404

| Nominal width DN | l [mm] | dia.D [mm] | Wall thickness [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 30 | 1/4“ 6.35 | 0.91 | 1520-34Z | Upon request |
| **10** | 30 | 1/2“ 12.7 | 1.65 | 1521-34Z | 11.00 |
| **16** | 30 | 3/4“ 19.05 | 1.65 | 1522-34Z | 9.45 |
| **25** | 30 | 1“ 25.4 | 1.65 | 1524-34Z | 14.20 |
| **40** | 30 | 1 1/2“ 38.1 | 1.65 | 1525-34Z | 16.70 |
| **40** | 30 | 1 1/4“ 42.4 | 2.0 | 15255-34Z | 16.70 |
| **40** | 30 | 1 3/4“ 44.5 | 2.0 | 1526-34Z | 16.45 |
| **50** | 30 | 2“ 50.8 | 1.65 | 1527-34Z | 26.50 |

# KF brass solder flange for metric copper pipe

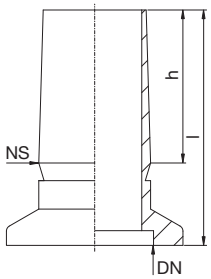
> For pipe dimensions in accordance with DIN 2462/2463
> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 110 °C (brass)
* Take sealing materials and connecting elements into consideration




## Brass 2.0401

| Nominal width DN | dia.d [mm] (for CU pipe) | dia.D [mm] | l [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10** | 12.1 (12x1) | 14 | 10 | 20 | 1520M | 8.70 |
| **16** | 15.1 (15x1) | 17 | 12 | 20 | 1521M | 8.70 |
| **16** | 18.1 (18x1) | 20 | 14 | 30 | 1522M | 8.70 |
| **25** | 22.12 (22x1) | 25 | 17 | 30 | 1523M | 16.00 |
| **25** | 28.12 (28x1.5) | 31 | 20 | 30 | 1524M | 16.00 |
| **40** | 35.15 (35x1.5) | 38 | 24 | 40 | 1525M | 21.00 |
| **40** | 42.16 (42x1.5) | 45 | 29 | 40 | 1526M | 21.00 |
| **50** | 54.17 (54x2) | 57 | 29 | 40 | 1527M | 28.50 |

# KF with male ground joint

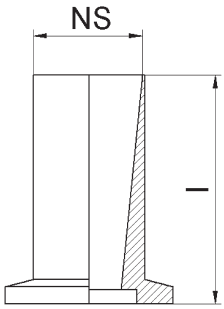



> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301

| Nominal width DN | NS | h [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | **19/26** | 26 | 40 | 1701 | 35.00 |
| **16** | **19/26** | 26 | 40 | 1702 | 37.00 |
| **25** | **29/32** | 32 | 41.5 | 1704 | 52.00 |
| **40** | **40/45** | 40 | 49.5 | 1706 | 56.00 |

# KF with female ground joint



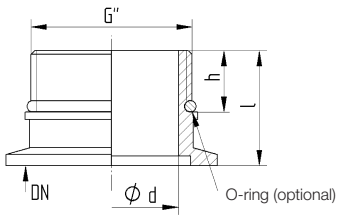

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

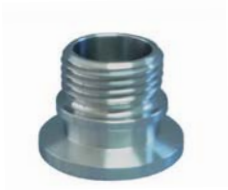
## High-grade steel 1.4301

| Nominal width DN | NS | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10** | **14/35** | 38 | 1711 | 53.00 |
| **10** | **19/38** | 41 | 1712 | 57.00 |

# KF male thread flange

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
**> Optional O-ring, all sizes 2.50 Euro, order example: 1594-OR**
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration



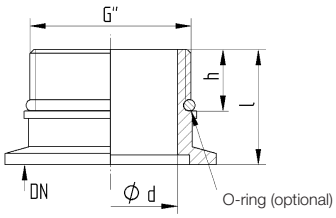



## High-grade steel 1.4301

| Nominal width DN | Thread [Inches] | dia.d [mm] | h [mm] | l [mm] | O-ring (optional) [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **10** | **¼“** | 10 | 11 | 18 | 14x3 | 1590 | 17.90 |
| **10** | **3/8“** | 10 | 9 | 18 | 14x3 | 1591 | 17.90 |
| **16** | **½“** | 16 | 11 | 22 | 17x3 | 1592 | 17.95 |
| **25** | **¾“** | 20 | 15 | 26.5 | 24x3 | 1593 | 21.90 |
| **25** | **1“** | 25 | 15 | 26.5 | 28x3 | 1594 | 21.90 |
| **40** | **1 ¼“** | 35 | 16 | 30 | 38x3 | 1595 | 27.90 |
| **40** | **1 ½“** | 40 | 16 | 30 | 42x3 | 1596 | 27.90 |
| **50** | **2“** | 50 | 18 | 33 | 55x4 | 1597 | 37.90 |

# KF male thread flange

> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
**> Optional O-ring, all sizes 2.50 Euro, order example: 1584-OR**
> Temperature range: –196 °C to 110 °C
* Take sealing materials and connecting elements into consideration

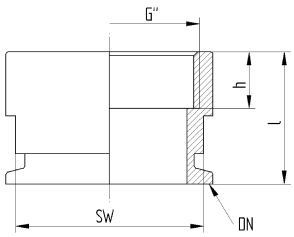



## Brass 2.0401 nickel-plated

| Nominal width DN | Thread [Inches] | dia.d [mm] | h [mm] | l [mm] | O-ring (optional) [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **10** | **¼“** | 10 | 11 | 18 | 14x3 | 1580 | 17.50 |
| **10** | **3/8“** | 10 | 9 | 18 | 14x3 | 1581 | 17.50 |
| **16** | **½“** | 16 | 11 | 22 | 17x3 | 1582 | 17.50 |
| **25** | **¾“** | 20 | 15 | 26.5 | 24x3 | 1583 | 21.50 |
| **25** | **1“** | 25 | 15 | 26.5 | 28x3 | 1584 | 21.50 |
| **40** | **1 ¼“** | 35 | 16 | 30 | 38x3 | 1585 | 27.00 |
| **40** | **1 ½“** | 40 | 16 | 30 | 42x3 | 1586 | 27.00 |
| **50** | **2“** | 50 | 18 | 33 | 55x4 | 1587 | 36.00 |

# KF female thread flange

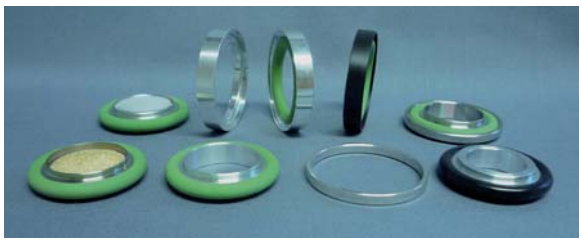
> Pressure range: $10^{-7}$ mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$ mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | Thread [Inches] | A/F | l [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10** | **¼“** | 22 | 35 | 15 | 1540 | 24.70 |
| **10** | **3/8“** | 22 | 35 | 15 | 1541 | 24.70 |
| **16** | **½“** | 22 | 35 | 15 | 1542 | 25.00 |
| **25** | **¾“** | 30 | 35 | 15 | 1543 | 27.70 |
| **25** | **1“** | 36 | 35 | 15 | 1544 | 27.70 |
| **40** | **1“** | 50 | 35 | 15 | 1545 | 36.20 |
| **40** | **1 ¼“** | 50 | 35 | 15 | 15451 | 37.50 |
| **40** | **1 ½“** | 50 | 35 | 15 | 1546 | 37.50 |
| **50** | **2“** | 60 | 35 | 15 | 1547 | 53.30 |

# KF seal components



**Properties:**

- temperature range –196 °C to +200 °C
- suitable for high vacuum up to $1x10^{-9}$mbar
- combinable depending on application area

**Description:**

novotek seal components can be selected depending on the technical vacuum requirements, e.g. bake-out capacity, outgassing and corrosion resistance. The O-ring seals used differ with regard to their temperature stability and compatibility with different media. A series of combination options are described under “Materials” at the beginning of our catalogue.

If there are special requirements, e.g. no permeation of gases or long-term high temperature requirements, aluminium sealing rings are used.

**Area of application:**

The novotek seal components permit the installation of vacuum attachments for the pressure range from 2500 mbar to $10^{-7}$mbar for elastomer seals and up to $10^{-9}$ mbar for metal seals.





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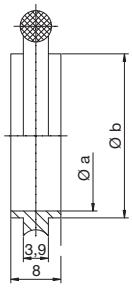
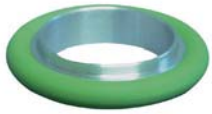
# Centring ring, aluminium (3.1645)

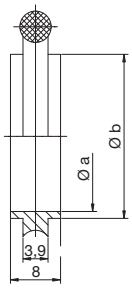


> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **10** | 10 | 12 | 1201 | 2.45 |
| **Perbunan® (NBR)** | **16** | 16 | 17 | 1202 | 2.55 |
| **Perbunan® (NBR)** | **20** | 20 | 22 | 1203 | 3.95 |
| **Perbunan® (NBR)** | **25** | 25 | 26 | 1204 | 2.95 |
| **Perbunan® (NBR)** | **32** | 32 | 34 | 1205 | 5.30 |
| **Perbunan® (NBR)** | **40** | 40 | 41 | 1206 | 3.95 |
| **Perbunan® (NBR)** | **50** | 50 | 52 | 1207 | 5.95 |
| **Viton® (FKM,FPM)** | **10** | 10 | 12 | 1091 | 2.90 |
| **Viton® (FKM,FPM)** | **16** | 16 | 17 | 1092 | 3.00 |
| **Viton® (FKM,FPM)** | **20** | 20 | 22 | 1093 | 5.70 |
| **Viton® (FKM,FPM)** | **25** | 25 | 26 | 1094 | 3.45 |
| **Viton® (FKM,FPM)** | **32** | 32 | 34 | 1095 | 5.40 |
| **Viton® (FKM,FPM)** | **40** | 40 | 41 | 1096 | 3.95 |
| **Viton® (FKM,FPM)** | **50** | 50 | 52 | 1097 | 5.95 |
| **EPDM** | **10** | 10 | 12 | 1201E | 2.75 |
| **EPDM** | **16** | 16 | 17 | 1202E | 2.85 |
| **EPDM** | **25** | 25 | 26 | 1204E | 3.75 |
| **EPDM** | **40** | 40 | 41 | 1206E | 4.75 |
| **EPDM** | **50** | 50 | 52 | 1207E | 6.70 |
| **Neoprene® (CR)** | **10** | 10 | 12 | 1201N | 2.75 |
| **Neoprene® (CR)** | **16** | 16 | 17 | 1202N | 2.85 |
| **Neoprene® (CR)** | **25** | 25 | 26 | 1204N | 3.75 |
| **Neoprene® (CR)** | **40** | 40 | 41 | 1206N | 4.75 |
| **Neoprene® (CR)** | **50** | 50 | 52 | 1207N | 6.70 |
| **Silicone (VMQ)** | **10** | 10 | 12 | 1201S | 2.75 |
| **Silicone (VMQ)** | **16** | 16 | 17 | 1202S | 2.85 |
| **Silicone (VMQ)** | **25** | 25 | 26 | 1204S | 3.75 |
| **Silicone (VMQ)** | **40** | 40 | 41 | 1206S | 4.75 |
| **Silicone (VMQ)** | **50** | 50 | 52 | 1207S | 6.70 |
| **FFKM** | **10** | 10 | 12 | 1201F | Upon request |
| **FFKM** | **16** | 16 | 17 | 1202F | 52.50 |
| **FFKM** | **25** | 25 | 26 | 1204F | 72.50 |
| **FFKM** | **40** | 40 | 41 | 1206F | 98.50 |
| **FFKM** | **50** | 50 | 52 | 1207F | 117.50 |

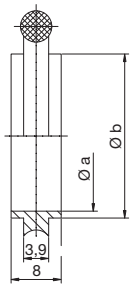
# Centring ring, high-grade steel (1.4301)

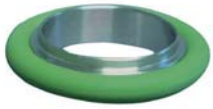



> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **10** | 10 | 12 | 1211 | 2.95 |
| **Perbunan® (NBR)** | **16** | 16 | 17 | 1212 | 3.45 |
| **Perbunan® (NBR)** | **20** | 20 | 22 | 1213 | 6.45 |
| **Perbunan® (NBR)** | **25** | 25 | 26 | 1214 | 4.45 |
| **Perbunan® (NBR)** | **32** | 32 | 34 | 1215 | 7.45 |
| **Perbunan® (NBR)** | **40** | 40 | 41 | 1216 | 5.45 |
| **Perbunan® (NBR)** | **50** | 50 | 52 | 1217 | 7.15 |
| **Viton® (FKM,FPM)** | **10** | 10 | 12 | 1221 | 2.95 |
| **Viton® (FKM,FPM)** | **16** | 16 | 17 | 1222 | 2.95 |
| **Viton® (FKM,FPM)** | **20** | 20 | 22 | 1223 | 6.45 |
| **Viton® (FKM,FPM)** | **25** | 25 | 26 | 1224 | 3.95 |
| **Viton® (FKM,FPM)** | **32** | 32 | 34 | 1225 | 7.05 |
| **Viton® (FKM,FPM)** | **40** | 40 | 41 | 1226 | 4.95 |
| **Viton® (FKM,FPM)** | **50** | 50 | 52 | 1227 | 5.95 |
| **EPDM** | **10** | 10 | 12 | 1211E | 4.20 |
| **EPDM** | **16** | 16 | 17 | 1212E | 4.20 |
| **EPDM** | **25** | 25 | 26 | 1214E | 5.20 |
| **EPDM** | **40** | 40 | 41 | 1216E | 5.40 |
| **EPDM** | **50** | 50 | 52 | 1217E | 7.40 |
| **O-ring, neoprene® (CR)** | **10** | 10 | 12 | 1211N | 3.40 |
| **O-ring, neoprene® (CR)** | **16** | 16 | 17 | 1212N | 3.90 |
| **O-ring, neoprene® (CR)** | **25** | 25 | 26 | 1214N | 4.90 |
| **O-ring, neoprene® (CR)** | **40** | 40 | 41 | 1216N | 6.45 |
| **O-ring, neoprene® (CR)** | **50** | 50 | 52 | 1217N | 8.90 |
| **Silicone (VMQ)** | **10** | 10 | 12 | 1211S | 4.25 |
| **Silicone (VMQ)** | **16** | 16 | 17 | 1212S | 4.25 |
| **Silicone (VMQ)** | **25** | 25 | 26 | 1214S | 5.20 |
| **Silicone (VMQ)** | **40** | 40 | 41 | 1216S | 5.70 |
| **Silicone (VMQ)** | **50** | 50 | 52 | 1217S | 7.40 |
| **FFKM** | **10** | 10 | 12 | 1211F | Upon request |
| **FFKM** | **16** | 16 | 17 | 1212F | 53.40 |
| **FFKM** | **25** | 25 | 26 | 1214F | 74.00 |
| **FFKM** | **40** | 40 | 41 | 1216F | 99.80 |
| **FFKM** | **50** | 50 | 52 | 1217F | 119.80 |

# Centring ring, high-grade steel (1.4404)

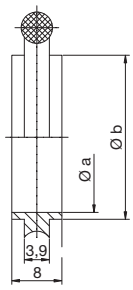


> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4404: –196 °C to 350 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **10** | 10 | 12 | 12114 | 2.95 |
| **Perbunan® (NBR)** | **16** | 16 | 17 | 12124 | 3.45 |
| **Perbunan® (NBR)** | **20** | 20 | 22 | 12134 | 6.40 |
| **Perbunan® (NBR)** | **25** | 25 | 26 | 12144 | 4.45 |
| **Perbunan® (NBR)** | **32** | 32 | 34 | 12154 | 7.40 |
| **Perbunan® (NBR)** | **40** | 40 | 41 | 12164 | 5.95 |
| **Perbunan® (NBR)** | **50** | 50 | 52 | 12174 | 8.45 |
| **Viton® (FKM,FPM)** | **10** | 10 | 12 | 12214 | 3.95 |
| **Viton® (FKM,FPM)** | **16** | 16 | 17 | 12224 | 3.95 |
| **Viton® (FKM,FPM)** | **20** | 20 | 22 | 12234 | 6.40 |
| **Viton® (FKM,FPM)** | **25** | 25 | 26 | 12244 | 4.45 |
| **Viton® (FKM,FPM)** | **32** | 32 | 34 | 12254 | 7.05 |
| **Viton® (FKM,FPM)** | **40** | 40 | 41 | 12264 | 5.45 |
| **Viton® (FKM,FPM)** | **50** | 50 | 52 | 12274 | 7.15 |
| **EPDM** | **10** | 10 | 12 | 1211E4 | 3.95 |
| **EPDM** | **16** | 16 | 17 | 1212E4 | 3.95 |
| **EPDM** | **25** | 25 | 26 | 1214E4 | 4.45 |
| **EPDM** | **40** | 40 | 41 | 1216E4 | 5.45 |
| **EPDM** | **50** | 50 | 52 | 1217E4 | 7.15 |
| **O-ring, neoprene® (CR)** | **10** | 10 | 12 | 1211N4 | 3.95 |
| **O-ring, neoprene® (CR)** | **16** | 16 | 17 | 1212N4 | 3.95 |
| **O-ring, neoprene® (CR)** | **25** | 25 | 26 | 1214N4 | 4.45 |
| **O-ring, neoprene® (CR)** | **40** | 40 | 41 | 1216N4 | 5.45 |
| **O-ring, neoprene® (CR)** | **50** | 50 | 52 | 1217N4 | 7.15 |
| **Silicone (VMQ)** | **10** | 10 | 12 | 1211S4 | 3.95 |
| **Silicone (VMQ)** | **16** | 16 | 17 | 1212S4 | 3.95 |
| **Silicone (VMQ)** | **25** | 25 | 26 | 1214S4 | 4.85 |
| **Silicone (VMQ)** | **40** | 40 | 41 | 1216S4 | 6.20 |
| **Silicone (VMQ)** | **50** | 50 | 52 | 1217S4 | 7.45 |
| **FFKM** | **10** | 10 | 12 | 1211F4 | Upon request |
| **FFKM** | **16** | 16 | 17 | 1212F4 | 53.90 |
| **FFKM** | **25** | 25 | 26 | 1214F4 | 74.50 |
| **FFKM** | **40** | 40 | 41 | 1216F4 | 100.30 |
| **FFKM** | **50** | 50 | 52 | 1217F4 | 120.50 |

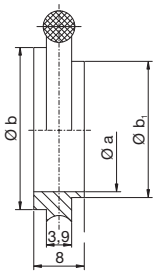
# Centring ring, polyoxymethylene (POM)




> Pressure range: $10^{-5}$ mbar to 2.5 bar*
> Temperature range for POM: –40 °C to 70 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **16** | 16 | 17 | 1202P | 3.60 |
| **Perbunan® (NBR)** | **25** | 25 | 26 | 1204P | 3.80 |
| **Perbunan® (NBR)** | **40** | 40 | 41 | 1206P | 5.30 |
| **Viton® (FKM,FPM)** | **16** | 16 | 17 | 1092P | 4.00 |
| **Viton® (FKM,FPM)** | **25** | 25 | 26 | 1094P | 4.80 |
| **Viton® (FKM,FPM)** | **40** | 40 | 41 | 1096P | 5.70 |
| **EPDM** | **16** | 16 | 17 | 1202PE | 3.70 |
| **EPDM** | **25** | 25 | 26 | 1204PE | 3.90 |
| **EPDM** | **40** | 40 | 41 | 1206PE | 5.40 |
| **Neoprene® (CR)** | **16** | 16 | 17 | 1202PN | 3.70 |
| **Neoprene® (CR)** | **25** | 25 | 26 | 1204PN | 3.90 |
| **Neoprene® (CR)** | **40** | 40 | 41 | 1206PN | 5.40 |
| **Silicone (VMQ)** | **16** | 16 | 17 | 1202PS | 3.70 |
| **Silicone (VMQ)** | **25** | 25 | 26 | 1204PS | 3.90 |
| **Silicone (VMQ)** | **40** | 40 | 41 | 1206PS | 5.40 |
| **FFKM** | **16** | 16 | 17 | 1202PF | 53.90 |
| **FFKM** | **25** | 25 | 26 | 1204PF | 74.50 |
| **FFKM** | **40** | 40 | 41 | 1206PF | 100.30 |

# Adapter centring ring, aluminium (3.1645)




> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | Nominal width DN1 | dia.a [mm] | dia.b [mm] | dia.b1 [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **16** | **10** | 10 | 17 | 12 | 1231 | 2.95 |
| **Perbunan® (NBR)** | **25** | **20** | 20 | 26 | 22 | 1232 | 3.45 |
| **Perbunan® (NBR)** | **40** | **32** | 32 | 41 | 34 | 1233 | 5.45 |
| **Viton (FKM,FPM)** | **16** | **10** | 10 | 17 | 12 | 1236 | 3.90 |
| **Viton (FKM,FPM)** | **25** | **20** | 20 | 26 | 22 | 1237 | 4.85 |
| **Viton (FKM,FPM)** | **40** | **32** | 32 | 41 | 34 | 1238 | 6.45 |
| **EPDM** | **16** | **10** | 10 | 17 | 12 | 1231E | 2.95 |
| **EPDM** | **25** | **20** | 20 | 26 | 22 | 1232E | 4.60 |
| **EPDM** | **40** | **32** | 32 | 41 | 34 | 1233E | 6.10 |
| **O-ring, neoprene® (CR)** | **16** | **10** | 10 | 17 | 12 | 1231N | 2.95 |
| **O-ring, neoprene® (CR)** | **25** | **20** | 20 | 26 | 22 | 1232N | 4.60 |
| **O-ring, neoprene® (CR)** | **40** | **32** | 32 | 41 | 34 | 1233N | 6.10 |
| **Silicone (VMQ)** | **16** | **10** | 10 | 17 | 12 | 1231S | 3.90 |
| **Silicone (VMQ)** | **25** | **20** | 20 | 26 | 22 | 1232S | 5.20 |
| **Silicone (VMQ)** | **40** | **32** | 32 | 41 | 34 | 1233S | 7.30 |

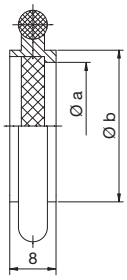
# Adapter centring ring, high-grade steel (1.4301)

> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C

| O-ring | Nominal width DN | Nominal width DN1 | dia.a [mm] | dia.b [mm] | dia.b1 [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **16** | **10** | 10 | 17 | 12 | 1241 | 4.45 |
| **Perbunan® (NBR)** | **25** | **20** | 20 | 26 | 22 | 1242 | 6.45 |
| **Perbunan® (NBR)** | **40** | **32** | 32 | 41 | 34 | 1243 | 8.45 |
| **Viton® (FKM,FPM)** | **16** | **10** | 10 | 17 | 12 | 1251 | 4.50 |
| **Viton® (FKM,FPM)** | **25** | **20** | 20 | 26 | 22 | 1252 | 5.90 |
| **Viton® (FKM,FPM)** | **40** | **32** | 32 | 41 | 34 | 1253 | 7.90 |
| **EPDM** | **16** | **10** | 10 | 17 | 12 | 1241E | 4.45 |
| **EPDM** | **25** | **20** | 20 | 26 | 22 | 1242E | 6.95 |
| **EPDM** | **40** | **32** | 32 | 41 | 34 | 1243E | 8.40 |
| **O-ring, neoprene® (CR)** | **16** | **10** | 10 | 17 | 12 | 1241N | 4.40 |
| **O-ring, neoprene® (CR)** | **25** | **20** | 20 | 26 | 22 | 1242N | 6.90 |
| **O-ring, neoprene® (CR)** | **40** | **32** | 32 | 41 | 34 | 1243N | 8.40 |
| **Silicone (VMQ)** | **16** | **10** | 10 | 17 | 12 | 1241S | 4.40 |
| **Silicone (VMQ)** | **25** | **20** | 20 | 26 | 22 | 1242S | 6.90 |
| **Silicone (VMQ)** | **40** | **32** | 32 | 41 | 34 | 1243S | 8.40 |

# Filter centring ring, 0.3 high-grade steel (1.4301)

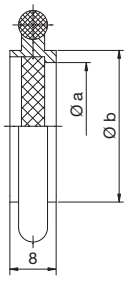
> High-grade steel wire netting, mesh width 0.315 mm
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C




| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **10** | 9 | 12 | 1181-3 | 19.00 |
| **Perbunan® (NBR)** | **16** | 14 | 17 | 1182-3 | 19.00 |
| **Perbunan® (NBR)** | **25** | 23 | 26 | 1184-3 | 23.00 |
| **Perbunan® (NBR)** | **40** | 38 | 41 | 1186-3 | 29.00 |
| **Perbunan® (NBR)** | **50** | 49 | 52 | 1187-3 | 36.00 |
| **Viton® (FKM,FPM)** | **10** | 9 | 12 | 1191-3 | 19.00 |
| **Viton® (FKM,FPM)** | **16** | 14 | 17 | 1192-3 | 19.00 |
| **Viton® (FKM,FPM)** | **25** | 23 | 26 | 1194-3 | 23.00 |
| **Viton® (FKM,FPM)** | **40** | 38 | 41 | 1196-3 | 26.00 |
| **Viton® (FKM,FPM)** | **50** | 49 | 52 | 1197-3 | 37.00 |
| **EPDM** | **10** | 9 | 12 | 1181-3E | 19.50 |
| **EPDM** | **16** | 14 | 17 | 1182-3E | 19.50 |
| **EPDM** | **25** | 23 | 26 | 1184-3E | 23.50 |
| **EPDM** | **40** | 38 | 41 | 1186-3E | 29.50 |
| **EPDM** | **50** | 49 | 52 | 1187-3E | 36.50 |
| **O-ring, neoprene® (CR)** | **10** | 9 | 12 | 1181-3N | 19.50 |
| **O-ring, neoprene® (CR)** | **16** | 14 | 17 | 1182-3N | 19.50 |
| **O-ring, neoprene® (CR)** | **25** | 23 | 26 | 1184-3N | 23.50 |
| **O-ring, neoprene® (CR)** | **40** | 38 | 41 | 1186-3N | 29.50 |
| **O-ring, neoprene® (CR)** | **50** | 49 | 52 | 1187-3N | 36.50 |
| **Silicone (VMQ)** | **10** | 9 | 12 | 1181-3S | 19.50 |
| **Silicone (VMQ)** | **16** | 14 | 17 | 1182-3S | 19.50 |
| **Silicone (VMQ)** | **25** | 23 | 26 | 1184-3S | 23.50 |
| **Silicone (VMQ)** | **40** | 38 | 41 | 1186-3S | 29.50 |
| **Silicone (VMQ)** | **50** | 49 | 52 | 1187-3S | 36.50 |
| **FFKM** | **10** | 9 | 12 | 1181-3F | Upon request |
| **FFKM** | **16** | 14 | 17 | 1182-3F | 69.00 |
| **FFKM** | **25** | 23 | 26 | 1184-3F | 93.00 |
| **FFKM** | **40** | 38 | 41 | 1186-3F | 123.50 |
| **FFKM** | **50** | 49 | 52 | 1187-3F | 147.50 |

# Filter centring ring, 25µ, high-grade steel (1.4301)

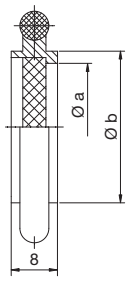
> High-grade steel wire netting, mesh width 0.025 mm
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C




| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **10** | 9 | 12 | 1181-25 | 19.00 |
| **Perbunan® (NBR)** | **16** | 14 | 17 | 1182-25 | 19.00 |
| **Perbunan® (NBR)** | **25** | 23 | 26 | 1184-25 | 23.00 |
| **Perbunan® (NBR)** | **40** | 38 | 41 | 1186-25 | 32.00 |
| **Perbunan® (NBR)** | **50** | 49 | 52 | 1187-25 | 40.00 |
| **Viton® (FKM,FPM)** | **10** | 9 | 12 | 1191-25 | 19.00 |
| **Viton® (FKM,FPM)** | **16** | 14 | 17 | 1192-25 | 19.00 |
| **Viton® (FKM,FPM)** | **25** | 23 | 26 | 1194-25 | 23.00 |
| **Viton® (FKM,FPM)** | **40** | 38 | 41 | 1196-25 | 32.00 |
| **Viton® (FKM,FPM)** | **50** | 49 | 52 | 1197-25 | 40.00 |
| **EPDM** | **10** | 9 | 12 | 1181-25E | 19.50 |
| **EPDM** | **16** | 14 | 17 | 1182-25E | 19.50 |
| **EPDM** | **25** | 23 | 26 | 1184-25E | 23.50 |
| **EPDM** | **40** | 38 | 41 | 1186-25E | 32.50 |
| **EPDM** | **50** | 49 | 52 | 1187-25E | 40.50 |
| **O-ring, neoprene® (CR)** | **10** | 9 | 12 | 1181-25N | 19.50 |
| **O-ring, neoprene® (CR)** | **16** | 14 | 17 | 1182-25N | 19.50 |
| **O-ring, neoprene® (CR)** | **25** | 23 | 26 | 1184-25N | 23.50 |
| **O-ring, neoprene® (CR)** | **40** | 38 | 41 | 1186-25N | 32.50 |
| **O-ring, neoprene® (CR)** | **50** | 49 | 52 | 1187-25N | 40.50 |
| **Silicone (VMQ)** | **10** | 9 | 12 | 1181-25S | 19.50 |
| **Silicone (VMQ)** | **16** | 14 | 17 | 1182-25S | 19.50 |
| **Silicone (VMQ)** | **25** | 23 | 26 | 1184-25S | 23.50 |
| **Silicone (VMQ)** | **40** | 38 | 41 | 1186-25S | 32.50 |
| **Silicone (VMQ)** | **50** | 49 | 52 | 1187-25S | 40.50 |
| **FFKM** | **10** | 9 | 12 | 1181-25F | Upon request |
| **FFKM** | **16** | 14 | 17 | 1182-25F | 69.00 |
| **FFKM** | **25** | 23 | 26 | 1184-25F | 93.00 |
| **FFKM** | **40** | 38 | 41 | 1186-25F | 126.50 |
| **FFKM** | **50** | 49 | 52 | 1187-25F | 151.50 |

# Filter centring ring, 40µ, high-grade steel (1.4301) sintered metal

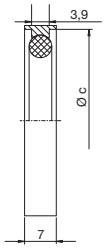
> Sintered metal element, pore width 0.04 mm
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C




| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **10** | 9 | 8 | 1181-40 | 23.00 |
| **Perbunan® (NBR)** | **16** | 14 | 17 | 1182-40 | 29.00 |
| **Perbunan® (NBR)** | **25** | 23 | 22 | 1184-40 | 38.00 |
| **Perbunan® (NBR)** | **40** | 38 | 36 | 1186-40 | 52.00 |
| **Viton® (FKM,FPM)** | **10** | 9 | 8 | 1191-40 | 23.00 |
| **Viton® (FKM,FPM)** | **16** | 14 | 17 | 1192-40 | 29.00 |
| **Viton® (FKM,FPM)** | **25** | 23 | 22 | 1194-40 | 38.00 |
| **Viton® (FKM,FPM)** | **40** | 38 | 36 | 1196-40 | 52.00 |
| **EPDM** | **10** | 9 | 8 | 1181-40E | 23.50 |
| **EPDM** | **16** | 14 | 17 | 1182-40E | 29.50 |
| **EPDM** | **25** | 23 | 22 | 1184-40E | 38.50 |
| **EPDM** | **40** | 38 | 36 | 1186-40E | 52.50 |
| **O-ring, neoprene® (CR)** | **10** | 9 | 8 | 1181-40N | 23.50 |
| **O-ring, neoprene® (CR)** | **16** | 14 | 17 | 1182-40N | 29.50 |
| **O-ring, neoprene® (CR)** | **25** | 23 | 22 | 1184-40N | 38.50 |
| **O-ring, neoprene® (CR)** | **40** | 38 | 36 | 1186-40N | 52.50 |
| **Silicone (VMQ)** | **10** | 9 | 8 | 1181-40S | 23.50 |
| **Silicone (VMQ)** | **16** | 14 | 17 | 1182-40S | 29.50 |
| **Silicone (VMQ)** | **25** | 23 | 22 | 1184-40S | 38.50 |
| **Silicone (VMQ)** | **40** | 38 | 36 | 1186-40S | 52.50 |
| **FFKM** | **10** | 9 | 8 | 1181-40F | Upon request |
| **FFKM** | **16** | 14 | 17 | 1182-40F | 79.00 |
| **FFKM** | **25** | 23 | 22 | 1184-40F | 108.00 |
| **FFKM** | **40** | 38 | 36 | 1186-40F | 146.50 |

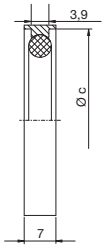
# Outer centring ring, aluminium (3.1645)

> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C




| O-ring | Nominal width DN | dia.c [mm] | Article no. | Price € |
|---|---|---|---|---|
| **Perbunan® (NBR)** | **10/16** | 30 | 1295-2 | 4.90 |
| **Perbunan® (NBR)** | **20/25** | 40 | 1295-4 | 5.60 |
| **Perbunan® (NBR)** | **32/40** | 55 | 1295-6 | 6.70 |
| **Perbunan® (NBR)** | **50** | 75 | 1295-8 | 12.90 |
| **Viton® (FKM,FPM)** | **10/16** | 30 | 1295-1 | 5.00 |
| **Viton® (FKM,FPM)** | **20/25** | 40 | 1295-3 | 5.80 |
| **Viton® (FKM,FPM)** | **32/40** | 55 | 1295-5 | 6.90 |
| **Viton® (FKM,FPM)** | **50** | 75 | 1295-7 | 13.20 |
| **EPDM** | **10/16** | 30 | 1295-2E | 5.00 |
| **EPDM** | **20/25** | 40 | 1295-4E | 5.80 |
| **EPDM** | **32/40** | 55 | 1295-6E | 6.90 |
| **EPDM** | **50** | 75 | 1295-8E | 13.00 |
| **O-ring, neoprene® (CR)** | **10/16** | 30 | 1295-2N | 5.00 |
| **O-ring, neoprene® (CR)** | **20/25** | 40 | 1295-4N | 5.80 |
| **O-ring, neoprene® (CR)** | **32/40** | 55 | 1295-6N | 6.90 |
| **O-ring, neoprene® (CR)** | **50** | 75 | 1295-8N | 13.00 |
| **Silicone (VMQ)** | **10/16** | 30 | 1295-2S | 5.00 |
| **Silicone (VMQ)** | **20/25** | 40 | 1295-4S | 5.80 |
| **Silicone (VMQ)** | **32/40** | 55 | 1295-6S | 6.90 |
| **Silicone (VMQ)** | **50** | 75 | 1295-8S | 13.00 |
| **FFKM** | **10/16** | 30 | 1295-2F | 54.90 |
| **FFKM** | **20/25** | 40 | 1295-4F | 75.60 |
| **FFKM** | **32/40** | 55 | 1295-6F | 99.90 |
| **FFKM** | **50** | 75 | 1295-8F | 124.40 |

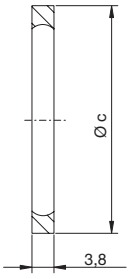
# Outer centring ring, polyoxymethylene (POM)




> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range for polyoxymethylene: –40 °C to 70 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.c [mm] | Article no. | Price € |
|---|---|---|---|---|
| **Perbunan® (NBR)** | **10/16** | 30 | 1235-2 | 5.80 |
| **Perbunan® (NBR)** | **20/25** | 40 | 1235-4 | 6.50 |
| **Perbunan® (NBR)** | **32/40** | 55 | 1235-6 | 7.50 |
| **Viton® (FKM,FPM)** | **10/16** | 30 | 1236-2 | 6.60 |
| **Viton® (FKM,FPM)** | **20/25** | 40 | 1236-4 | 7.60 |
| **Viton® (FKM,FPM)** | **32/40** | 55 | 1236-6 | 8.90 |
| **EPDM** | **10/16** | 30 | 1235-2E | 6.80 |
| **EPDM** | **20/25** | 40 | 1235-4E | 7.50 |
| **EPDM** | **32/40** | 55 | 1235-6E | 8.50 |
| **O-ring, neoprene® (CR)** | **10/16** | 30 | 1235-2N | 6.80 |
| **O-ring, neoprene® (CR)** | **20/25** | 40 | 1235-4N | 7.50 |
| **O-ring, neoprene® (CR)** | **32/40** | 55 | 1235-6N | 8.50 |
| **Silicone (VMQ)** | **10/16** | 30 | 1235-2S | 6.80 |
| **Silicone (VMQ)** | **20/25** | 40 | 1235-4S | 7.50 |
| **Silicone (VMQ)** | **32/40** | 55 | 1235-6S | 8.50 |
| **FFKM** | **10/16** | 30 | 1235-2F | 55.80 |
| **FFKM** | **20/25** | 40 | 1235-4F | 75.00 |
| **FFKM** | **32/40** | 55 | 1235-6F | 102.00 |

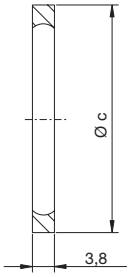
# Retaining ring, aluminium (3.1645)




For use with centring ring
> Pressure range: $10^{-7}$mbar to 4.0 bar*
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | dia.c [mm] | Article no. | Price € |
|---|---|---|---|
| **10** | 29 | 1261 | 2.90 |
| **16** | 32 | 1262 | 3.10 |
| **20** | 39 | 1263 | 4.50 |
| **25** | 42 | 1264 | 3.80 |
| **32** | 55 | 1265 | 4.90 |
| **40** | 56 | 1266 | 5.10 |
| **50** | 70 | 1267 | 6.20 |

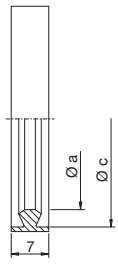
# Retaining ring, high-grade steel (1.4301)

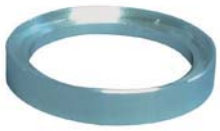



For use with centring ring
> Pressure range: $10^{-7}$mbar to 4.0 bar*
> Temperature range: –196 °C to 300 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | dia.c [mm] | Article no. | Price € |
|---|---|---|---|
| **10** | 29 | 1361 | 3.90 |
| **16** | 32 | 1362 | 4.30 |
| **20** | 39 | 1363 | 6.50 |
| **25** | 42 | 1364 | 5.50 |
| **32** | 55 | 1365 | 7.00 |
| **40** | 56 | 1366 | 6.50 |
| **50** | 70 | 1367 | 9.90 |

# Metal searing ring, aluminium (3.2315)

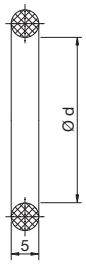


(cutting ring / sharp-edged sealing ring)
> Pressure range: $10^{-7}$mbar to 2.5 bar*
> Temperature range: –196 °C to 150 °C*
> No permeation of gases
> Only use with clamping ring for metal seals
> Only suitable for high-grade steel flanges
* Take sealing materials and connecting elements into consideration

| Nominal width DN | a [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10/16** | 23 | 30 | 1291 | 3.35 |
| **20/25** | 33 | 40 | 1292 | 3.95 |
| **32/40** | 48 | 55 | 1293 | 4.50 |
| **50** | 68 | 75 | 1294 | 11.00 |

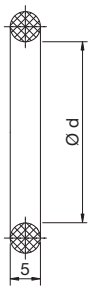
# Spare O-ring for centring ring




> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|
| **Perbunan® (NBR)** | **10** | 15 | 1271 | 0.50 |
| **Perbunan® (NBR)** | **16** | 18 | 1272 | 0.50 |
| **Perbunan® (NBR)** | **20** | 25 | 1273 | 1.00 |
| **Perbunan® (NBR)** | **25** | 28 | 1274 | 0.60 |
| **Perbunan® (NBR)** | **32** | 40 | 1275 | 1.30 |
| **Perbunan® (NBR)** | **40** | 42 | 1276 | 1.00 |
| **Perbunan® (NBR)** | **50** | 55 | 1277 | 1.20 |
| **Viton® (FKM,FPM)** | **10** | 15 | 1281 | 0.90 |
| **Viton® (FKM,FPM)** | **16** | 18 | 1282 | 1.00 |
| **Viton® (FKM,FPM)** | **20** | 25 | 1283 | 1.70 |
| **Viton® (FKM,FPM)** | **25** | 28 | 1284 | 1.30 |
| **Viton® (FKM,FPM)** | **32** | 40 | 1285 | 2.15 |
| **Viton® (FKM,FPM)** | **40** | 42 | 1286 | 1.50 |
| **Viton® (FKM,FPM)** | **50** | 55 | 1287 | 1.80 |
| **EPDM** | **10** | 15 | 1271E | 2.35 |
| **EPDM** | **16** | 18 | 1272E | 1.95 |
| **EPDM** | **25** | 28 | 1274E | 2.45 |
| **EPDM** | **40** | 42 | 1276E | 3.20 |
| **EPDM** | **50** | 55 | 1277E | 3.95 |
| **Neoprene® (CR)** | **10** | 15 | 1271N | 1.80 |
| **Neoprene® (CR)** | **16** | 18 | 1272N | 1.95 |
| **Neoprene® (CR)** | **25** | 28 | 1274N | 2.10 |
| **Neoprene® (CR)** | **40** | 42 | 1276N | 2.70 |
| **Neoprene® (CR)** | **50** | 55 | 1277N | 3.20 |
| **Silicone (VMQ)** | **10** | 15 | 1271S | 1.95 |
| **Silicone (VMQ)** | **16** | 18 | 1272S | 2.70 |
| **Silicone (VMQ)** | **25** | 28 | 1274S | 2.70 |
| **Silicone (VMQ)** | **40** | 42 | 1276S | 2.90 |
| **Silicone (VMQ)** | **50** | 55 | 1277S | 3.40 |
| **FFKM** | **10** | 15 | 1271F | Upon request |
| **FFKM** | **16** | 18 | 1272F | 49.55 |
| **FFKM** | **25** | 28 | 1274F | 69.95 |
| **FFKM** | **40** | 42 | 1276F | 94.50 |
| **FFKM** | **50** | 55 | 1277F | 111.50 |

# Spare O-ring for adapter centring ring



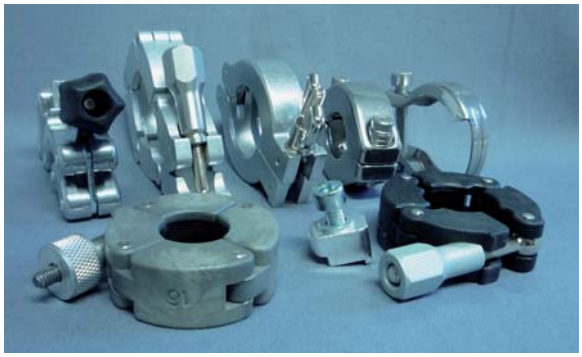

> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | Nominal width DN 1 | dia.d [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | **16** | **10** | 18 | 1272 | 0.50 |
| **Perbunan® (NBR)** | **25** | **20** | 28 | 1274 | 0.60 |
| **Perbunan® (NBR)** | **40** | **32** | 42 | 1276 | 1.00 |
| **Viton® (FKM,FPM)** | **16** | **10** | 18 | 1282 | 1.00 |
| **Viton® (FKM,FPM)** | **25** | **20** | 28 | 1284 | 1.30 |
| **Viton® (FKM,FPM)** | **40** | **32** | 42 | 1286 | 1.50 |
| **EPDM** | **16** | **10** | 18 | 1272E | 1.95 |
| **EPDM** | **25** | **20** | 28 | 1274E | 2.45 |
| **EPDM** | **40** | **32** | 42 | 1276E | 3.20 |
| **Neoprene® (CR)** | **16** | **10** | 18 | 1272N | 1.95 |
| **Neoprene® (CR)** | **25** | **20** | 28 | 1274N | 2.10 |
| **Neoprene® (CR)** | **40** | **32** | 42 | 1276N | 2.70 |
| **Silicone (VMQ)** | **16** | **10** | 18 | 1272S | 2.70 |
| **Silicone (VMQ)** | **25** | **20** | 28 | 1274S | 2.70 |
| **Silicone (VMQ)** | **40** | **32** | 42 | 1276S | 2.90 |

# Flange cap with novotek logo


| Nominal width DN | Nominal width DN 1 | Article no. | Price € |
|---|---|---|---|
| **10/16** | **10** | 1322 | 3.20 / 10 pcs. |
| **20/25** | **20** | 1324 | 4.30 / 10 pcs. |
| **32/40** | **32** | 1326 | 4.80 / 10 pcs. |
| **50** | | 1327 | 5.10 / 10 pcs. |

# Clamping rings, tension chains and claws



**Properties:**

- temperature range –196 °C to +300 °C
- suitable for high vacuum up to 1x10$^{-9}$mbar
- simple assembly and disassembly
- maximum pressure 4 bar

**Description:**

novotek offers five variants of clamping components, whereby specific installation conditions have to be met for each type. The most frequently used clamping component for elastomer seals is the KF clamping ring, consisting of two die-cast aluminium shells and special individual parts made of galvanised steel. A large wing screw is used to achieve the necessary contact force.
If certain installation conditions are met, e.g. small design size, the tension band-clamping ring can be inserted. With KF connections with metal seals, higher and more stable contact pressures much be generated. For this application case, the clamping ring “FL-Massiv” or the tension chain for metal seals must be used.
novotek aluminium claws are required in order to firmly screw flanges onto a component with tapped holes.

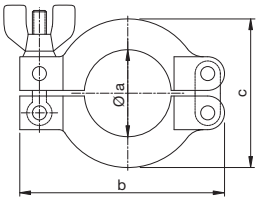
**Area of application:**

The novotek seal components allow the installation of vacuum attachments for the pressure range of 2500 mbar (4000 mbar in conjunction with an outer retaining ring and a solid tension clip) to 10$^{-9}$mbar.

# Clamping ring, aluminium (3.2982)

(suitable for elastomer seals)

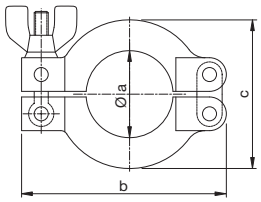
> Pressure range: 10$^{-7}$mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Tightening torque 2 Nm
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Width of clamping ring [mm] | dia.a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10/16** | 17 | 22 | 63 | 45 | 1301 | 3.40 |
| **20/25** | 17 | 32 | 73 | 52 | 1302 | 3.85 |
| **32/40** | 17 | 47 | 93 | 70 | 1303 | 4.05 |
| **50** | 22 | 62 | 114 | 95 | 1304 | 8.15 |

# Clamping ring, high-grade steel (1.4301)

(suitable for elastomer seals)

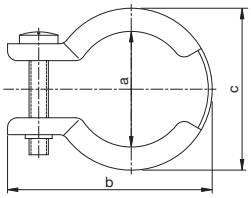



> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –196 °C to 300 °C*
> Tightening torque 2 Nm
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of clamping ring [mm] | dia.a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10/16** | 17 | 22 | 63 | 45 | 1301VA | 10.50 |
| **20/25** | 17 | 32 | 73 | 52 | 1302VA | 12.00 |
| **32/40** | 17 | 47 | 92 | 70 | 1303VA | 12.50 |
| **50** | 22 | 62 | 114 | 95 | 1304VA | 14.70 |

# Tension band-clamping ring, high-grade steel (1.4301)

(suitable for elastomer seals)

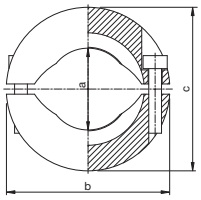



> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –196 °C to 300 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of clamping ring [mm] | dia.a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10/16** | 16 | 22 | 45 | 36 | 1311 | 8.00 |
| **20/25** | 16 | 32 | 57 | 46 | 1312 | 9.45 |
| **32/40** | 16 | 47 | 74 | 61 | 1313 | 11.00 |

# Clamping ring FL Massiv, high-grade steel (1.4301)

(suitable for metal seals and elastomer seals)

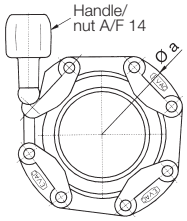



> Pressure range: $10^{-7}$mbar to 2.5 bar/4 bar (with outer retaining ring)
> Temperature range: –196 °C to 300 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of clamping ring [mm] | dia.a [mm] | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10/16** | 18 | 22 | 55 | 47 | 1341 | 27.90 |
| **20/25** | 18 | 32 | 67 | 57 | 1342 | 29.80 |
| **32/40** | 18 | 47 | 83 | 71 | 1343 | 32.80 |
| **50** | 21 | 64 | 112 | 95 | 1344 | 53.50 |

# Tension roller chain, aluminium/steel

(suitable for metal seals and elastomer seals)

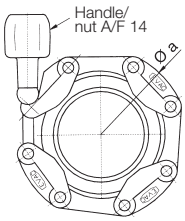



> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of clamping ring [mm] | dia.a [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10/16** | 20 | 60 | 1331 | 32.00 |
| **20/25** | 20 | 70 | 1332 | 39.00 |
| **32/40** | 20 | 85 | 1333 | 42.00 |
| **50** | 20 | 105 | 1334 | 59.00 |

# Tension roller chain, aluminium/steel

(suitable for elastomer seals)

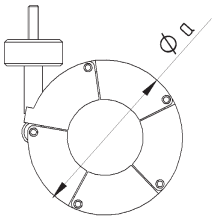



> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –20 °C to 100 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of clamping ring [mm] | dia.a [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10/16** | 20 | 60 | 1336 | 14.80 |
| **20/25** | 20 | 70 | 1337 | 17.90 |
| **32/40** | 20 | 85 | 1338 | 19.80 |
| **50** | 20 | 105 | 1339 | 35.00 |

# Tension chain, plastic, max. 60 °C

(suitable for elastomer seals)

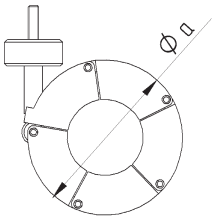



> Dielectric strength 26 kV/mm
> Spec. dielectric resistance 1.0 E12 Ohm x cm
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –20 °C to 60 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of clamping ring [mm] | dia.a [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10/16** | 18 | 60 | 1351 | 15.60 |
| **20/25** | 18 | 70 | 1352 | 18.00 |
| **32/40** | 18 | 85 | 1353 | 19.60 |
| **50** | 18 | 105 | 1354 | 26.50 |

# Tension chain, plastic, max. 100 °C

(suitable for elastomer seals)



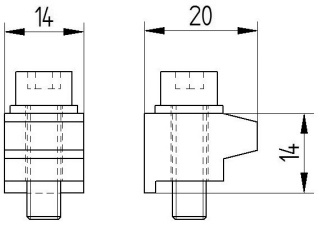

> Dielectric strength 27.5 kV/mm
> Spec. dielectric resistance 1.0 E15 Ohm x cm
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –20 °C to 100 °C*

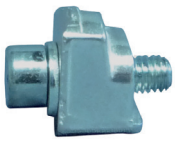
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of clamping ring [mm] | dia.a [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10/16** | 18 | 60 | 1356 | 18.50 |
| **20/25** | 18 | 70 | 1357 | 21.00 |
| **32/40** | 18 | 85 | 1358 | 22.20 |
| **50** | 18 | 105 | 1359 | 28.00 |

# Claw, aluminium (3.3214)

(suitable for elastomer seals)



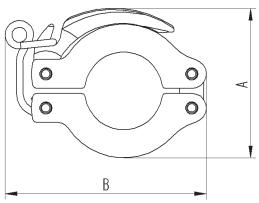
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –196 °C to 150 °C*

* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of claw [mm] | Length [mm] | Height [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10/16** | – | 20 | 14 | 1371 | 2.95 |
| **20/25** | 14 | 20 | 14 | 1371 | 2.95 |
| **32/40** | 14 | 20 | 14 | 1371 | 2.95 |
| **50** | 14 | 20 | 14 | 1371 | 2.95 |

# Quick-release clamping ring, all-metal

(suitable for elastomer seals)

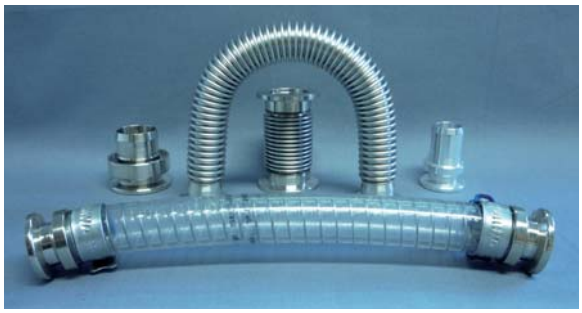



> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C*

* Take sealing materials and connecting elements into consideration

| Nominal width DN | Width of clamping ring [mm] | dia.A [mm] | dia.B [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10/16** | 16 | 53 | 71 | 1305AL | 11.70 |
| **20/25** | 16 | 61 | 82 | 1306AL | 12.80 |
| **32/40** | 18 | 78 | 99 | 1307AL | 14.30 |

# Metal and PVC hoses, metal spring bellows



**Properties:**

- temperature range –196 °C to +350 °C
- suitable for high vacuum up to $1x10^{-9}$mbar
- metal hose lengths of 5 m and longer are possible

**Description:**

The novotek metal hoses are circular corrugated all-metal hoses. The profiling on the corrugation determines the elastic pliability and compressive resistance. The typical KF connections are welded onto the metal hoses. To eliminate temper colours and clean the weld seam, in a special vacuum annealing procedure the hoses are baked-out at approx. 1040 °C under forming gas. In this process, the metal hose is simultaneously soft-annealed and thus receives its extremely flexibility property.

The novotek metal spring bellows are corrugated metal bellows. The corrugated sections that run concentrically and parallel to one another give the metal spring bellows axial, angular and lateral mobility, whereby combinations of this are also possible. Metal spring bellows are not annealed.

**Area of application:**

The novotek metal hose connections and metal spring bellows can be used as a mobile vacuum line. If they are used, ensure that the metal hoses can only execute bending movements in a lateral direction. Dynamic axial movements, i.e. buckling or pulling apart both in axial direction as well as torsional movements can only be executed by metal spring bellows.





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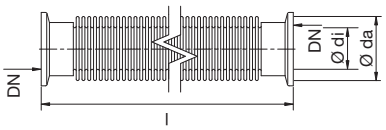
novotek
VAKUUMTECHNIK

# High-grade steel hose, extremely flexible with KF 1.4301

(Flange 1.4301 / Bellows 1.4404)
> Extremely flexible thanks to soft annealing
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 300 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length [mm] | dia.di [mm] | dia.da [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **10** | 250 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1901 | 52.00 |
| **16** | 250 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1902 | 44.40 |
| **20** | 250 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1903 | 69.00 |
| **25** | 250 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1904 | 49.40 |
| **32** | 250 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1905 | 79.00 |
| **40** | 250 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1906 | 64.40 |
| **50** | 250 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1907 | 92.40 |
| **10** | 500 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1911 | 54.90 |
| **16** | 500 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1912 | 49.40 |
| **20** | 500 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1913 | 74.00 |
| **25** | 500 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1914 | 56.45 |
| **32** | 500 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1915 | 94.00 |
| **40** | 500 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1916 | 72.40 |
| **50** | 500 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1917 | 104.40 |
| **10** | 750 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1931 | 59.90 |
| **16** | 750 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1932 | 59.90 |
| **20** | 750 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1933 | 91.00 |
| **25** | 750 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1934 | 67.90 |
| **32** | 750 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1935 | 107.00 |
| **40** | 750 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1936 | 79.45 |
| **50** | 750 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1937 | 114.25 |
| **10** | 1000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1921 | 69.00 |
| **16** | 1000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1922 | 64.80 |
| **20** | 1000 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1923 | 99.50 |
| **25** | 1000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1924 | 73.90 |
| **32** | 1000 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1925 | 111.00 |
| **40** | 1000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1926 | 90.00 |
| **50** | 1000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1927 | 124.40 |
| **10** | 1500 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1941 | 75.00 |
| **16** | 1500 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1942 | 76.00 |
| **20** | 1500 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1943 | 115.50 |
| **25** | 1500 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1944 | 95.50 |
| **32** | 1500 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1945 | 132.00 |
| **40** | 1500 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1946 | 114.00 |
| **50** | 1500 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1947 | 157.00 |
| **10** | 2000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1951 | 90.00 |
| **16** | 2000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1952 | 96.80 |
| **20** | 2000 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1953 | 134.50 |
| **25** | 2000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1954 | 112.00 |
| **32** | 2000 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1955 | 155.00 |
| **40** | 2000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1956 | 138.00 |
| **50** | 2000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1957 | 184.00 |



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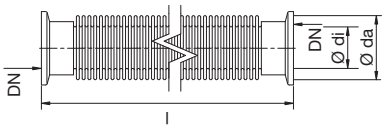
# High-grade steel hose, extremely flexible with KF 1.4404

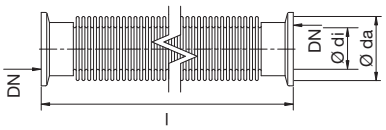
(Flange 1.4404 / Bellows 1.4404)
> Extremely flexible thanks to soft annealing
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length [mm] | dia.di [mm] | dia.da [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **10** | 250 | 10.2 | 16.2 | 17 | 90 | 2.5 | 19014 | 55.00 |
| **16** | 250 | 16.2 | 22.8 | 26 | 140 | 2.5 | 19024 | 51.90 |
| **25** | 250 | 25.5 | 33.0 | 38 | 180 | 2.5 | 19044 | 57.40 |
| **40** | 250 | 40.1 | 52.0 | 59 | 240 | 1.8 | 19064 | 74.50 |
| **50** | 250 | 50.4 | 63.0 | 72 | 280 | 1.8 | 19074 | 99.70 |
| **10** | 500 | 10.2 | 16.2 | 17 | 90 | 2.5 | 19114 | 59.00 |
| **16** | 500 | 16.2 | 22.8 | 26 | 140 | 2.5 | 19124 | 56.40 |
| **25** | 500 | 25.5 | 33.0 | 38 | 180 | 2.5 | 19144 | 64.40 |
| **40** | 500 | 40.1 | 52.0 | 59 | 240 | 1.8 | 19164 | 81.70 |
| **50** | 500 | 50.4 | 63.0 | 72 | 280 | 1.8 | 19174 | 114.50 |
| **10** | 750 | 10.2 | 16.2 | 17 | 90 | 2.5 | 19314 | 66.50 |
| **16** | 750 | 16.2 | 22.8 | 26 | 140 | 2.5 | 19324 | 61.90 |
| **25** | 750 | 25.5 | 33.0 | 38 | 180 | 2.5 | 19344 | 70.95 |
| **40** | 750 | 40.1 | 52.0 | 59 | 240 | 1.8 | 19364 | 89.70 |
| **50** | 750 | 50.4 | 63.0 | 72 | 280 | 1.8 | 19374 | 124.00 |
| **10** | 1000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 19214 | 72.00 |
| **16** | 1000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 19224 | 67.90 |
| **25** | 1000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 19244 | 77.95 |
| **40** | 1000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 19264 | 97.60 |
| **50** | 1000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 19274 | 137.50 |
| **10** | 1500 | 10.2 | 16.2 | 17 | 90 | 2.5 | 19414 | 89.00 |
| **16** | 1500 | 16.2 | 22.8 | 26 | 140 | 2.5 | 19424 | 83.90 |
| **25** | 1500 | 25.5 | 33.0 | 38 | 180 | 2.5 | 19444 | 96.50 |
| **40** | 1500 | 40.1 | 52.0 | 59 | 240 | 1.8 | 19464 | 121.60 |
| **50** | 1500 | 50.4 | 63.0 | 72 | 280 | 1.8 | 19474 | 164.50 |
| **10** | 2000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 19514 | 97.00 |
| **16** | 2000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 19524 | 99.90 |
| **25** | 2000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 19544 | 113.00 |
| **40** | 2000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 19564 | 146.00 |
| **50** | 2000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 19574 | 191.50 |

# High-grade steel hose, flexible with KF 1.4301

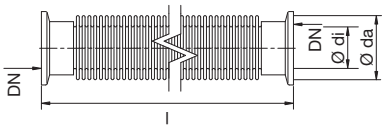
(Flange 1.4301 / Bellows 1.4404)
> Normal version, unannealed
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 300 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length [mm] | dia.di [mm] | dia.da [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **10** | 250 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1901U | 45.00 |
| **16** | 250 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1902U | 44.50 |
| **20** | 250 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1903U | 64.00 |
| **25** | 250 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1904U | 50.00 |
| **32** | 250 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1905U | 74.00 |
| **40** | 250 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1906U | 64.75 |
| **50** | 250 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1907U | 86.75 |
| **10** | 500 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1911U | 50.00 |
| **16** | 500 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1912U | 48.85 |
| **20** | 500 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1913U | 70.00 |
| **25** | 500 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1914U | 56.00 |
| **32** | 500 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1915U | 90.00 |
| **40** | 500 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1916U | 72.00 |
| **50** | 500 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1917U | 98.50 |
| **10** | 750 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1931U | 55.00 |
| **16** | 750 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1932U | 54.00 |
| **20** | 750 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1933U | 84.00 |
| **25** | 750 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1934U | 61.95 |
| **32** | 750 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1935U | 101.00 |
| **40** | 750 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1936U | 77.90 |
| **50** | 750 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1937U | 109.50 |
| **10** | 1000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1921U | 63.00 |
| **16** | 1000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1922U | 59.00 |
| **20** | 1000 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1923U | 92.00 |
| **25** | 1000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1924U | 68.00 |
| **32** | 1000 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1925U | 104.00 |
| **40** | 1000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1926U | 85.00 |
| **50** | 1000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1927U | 119.50 |
| **10** | 1500 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1941U | 72.00 |
| **16** | 1500 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1942U | 74.00 |
| **20** | 1500 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1943U | 110.00 |
| **25** | 1500 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1944U | 90.00 |
| **32** | 1500 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1945U | 127.00 |
| **40** | 1500 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1946U | 119.80 |
| **50** | 1500 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1947U | 148.00 |
| **10** | 2000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1951U | 87.00 |
| **16** | 2000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1952U | 90.00 |
| **20** | 2000 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1953U | 127.00 |
| **25** | 2000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1954U | 105.00 |
| **32** | 2000 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1955U | 146.00 |
| **40** | 2000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1956U | 129.00 |
| **50** | 2000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1957U | 169.00 |

# High-grade steel hose, flexible with KF 1.4404

(Flange 1.4404 / Bellows 1.4404)
> Normal version, unannealed
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration

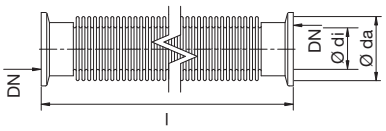



| Nominal width DN | Total length [mm] | dia.di [mm] | dia.da [mm] | One-time movement radius $R_{st}$ [mm] | HH frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **10** | 250 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1901U4 | 51.00 |
| **16** | 250 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1902U4 | 51.50 |
| **25** | 250 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1904U4 | 57.00 |
| **40** | 250 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1906U4 | 74.00 |
| **50** | 250 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1907U4 | 98.00 |
| **10** | 500 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1911U4 | 54.00 |
| **16** | 500 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1912U4 | 55.00 |
| **25** | 500 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1914U4 | 63.00 |
| **40** | 500 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1916U4 | 81.00 |
| **50** | 500 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1917U4 | 114.00 |
| **10** | 750 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1931U4 | 65.00 |
| **16** | 750 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1932U4 | 61.00 |
| **25** | 750 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1934U4 | 70.00 |
| **40** | 750 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1936U4 | 89.00 |
| **50** | 750 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1937U4 | 123.00 |
| **10** | 1000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1921U4 | 68.00 |
| **16** | 1000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1922U4 | 67.00 |
| **25** | 1000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1924U4 | 76.00 |
| **40** | 1000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1926U4 | 96.50 |
| **50** | 1000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1927U4 | 137.00 |
| **10** | 1500 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1941U4 | 87.00 |
| **16** | 1500 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1942U4 | 84.00 |
| **25** | 1500 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1944U4 | 98.00 |
| **40** | 1500 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1946U4 | 120.00 |
| **50** | 1500 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1947U4 | 164.00 |
| **10** | 2000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1951U4 | 91.00 |
| **16** | 2000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1952U4 | 101.00 |
| **25** | 2000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1954U4 | 112.00 |
| **40** | 2000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1956U4 | 146.00 |
| **50** | 2000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1957U4 | 189.00 |

# High-grade steel hose, extremely flexible with KF, special length

> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 300 °C (1.4301)/350 °C (1.4404)*

* Take sealing materials and connecting elements into consideration



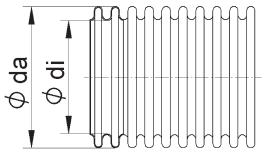

Price example:

| High-grade steel hose, extremely flexible 1.4301 NW25 l = 2700 mm contains: | Article no. | Price € |
|---|---|---|
| **High-grade steel hose, extremely flexible, 1.4301 NW25 l=1000 mm** | 1924 | 73.90 |
| **High-grade steel hose, extremely flexible, sold by the metre, 1.7 m** | 1974 x 1.7 | 38 x 1.7 = 64.60 |
| **High-grade steel hose, extremely flexible, 1.4301 NW25 l=2700 mm** | **1924 x 2.7** | **Total price = 138.50** |

# High-grade steel hose without flanges, extremely flexible (annealed), sold by the metre, 1.4404

> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 350 °C*

* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length l [mm] | dia.di [mm] | dia.da [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **7** | 1000 | 4.3 | 7.2 | 14 | 90 | 2.5 | 1970 | 33.00 |
| **10** | 1000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1971 | 33.00 |
| **12** | 1000 | 13 | 19.3 | 20 | 120 | 2.5 | 19715 | 35.00 |
| **16** | 1000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1972 | 35.00 |
| **20** | 1000 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1973 | 42.00 |
| **25** | 1000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1974 | 38.00 |
| **32** | 1000 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1975 | 50.00 |
| **40** | 1000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1976 | 52.00 |
| **50** | 1000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1977 | 59.50 |

# High-grade steel hose without flanges, flexible (unannealed), sold by the metre, 1.4404

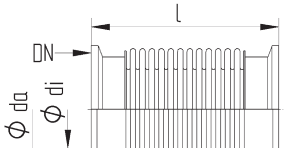
| Nominal width DN | Total length l [mm] | dia.di [mm] | dia.da [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **7** | 1000 | 4.3 | 7.2 | 14 | 90 | 2.5 | 1970U | 30.00 |
| **10** | 1000 | 10.2 | 16.2 | 17 | 90 | 2.5 | 1971U | 30.00 |
| **12** | 1000 | 13 | 19.3 | 20 | 120 | 2.5 | 19715U | 32.00 |
| **16** | 1000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 1972U | 32.00 |
| **20** | 1000 | 20.0 | 27.0 | 32 | 160 | 2.5 | 1973U | 38.00 |
| **25** | 1000 | 25.5 | 33.0 | 38 | 180 | 2.5 | 1974U | 35.00 |
| **32** | 1000 | 31.8 | 42.0 | 47 | 210 | 2.5 | 1975U | 46.00 |
| **40** | 1000 | 40.1 | 52.0 | 59 | 240 | 1.8 | 1976U | 48.00 |
| **50** | 1000 | 50.4 | 63.0 | 72 | 280 | 1.8 | 1977U | 54.00 |

# Metal spring bellows with KF 1.4301/1.4571

(Flange 1.4301 / Bellows 1.4571)

> Pressure range: $10^{-9}$mbar
> 10000 load alternation at 20 °C and 1013 mbar standard air pressure
> Temperature range: –196 °C to 300 °C 1.4301*
> Temperature range: –196 °C to 350 °C 1.4404/1.4571*

* Take sealing materials and connecting elements into consideration



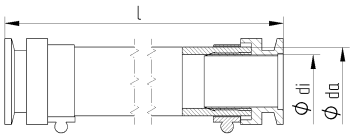

| Nominal width DN | Total length [mm] | dia.di [mm] | dia.da [mm] | Negative axial movement [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10** | 60 | 10 | 16 | 5 | 1991 | 55.80 |
| **16** | 60 | 15 | 21 | 5 | 1992 | 54.90 |
| **25** | 60 | 21 | 32 | 6 | 1994 | 64.90 |
| **40** | 120 | 40 | 60 | 15 | 1996 | 69.50 |
| **50** | 150 | 40 | 60 | 21 | 1997 | 94.50 |

# Metal spring bellows with KF 1.4404/1.4571

| Nominal width DN | Total length [mm] | dia.di [mm] | dia.da [mm] | Negative axial movement [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **10** | 60 | 10 | 16 | 5 | 19914 | 65.00 |
| **16** | 60 | 15 | 21 | 5 | 19924 | 65.00 |
| **25** | 60 | 21 | 32 | 6 | 19944 | 75.00 |
| **40** | 120 | 40 | 60 | 15 | 19964 | 79.00 |
| **50** | 150 | 40 | 60 | 21 | 19974 | 112.00 |

# PVC hose with KF brass nickel-plated

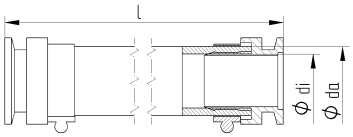
(Brass 2.0401 / MS58)
> PVC hose with inside spring steel spiral
> Pressure range: $10^{-3}$ mbar to 2.5 bar
> Temperature range: –15 °C to 65 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length [mm] | dia.di (inside dia. of hose) [mm] | dia.da (outside dia. of hose) [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16/16** | 500 | 16 | 22.2 | 2.5 | 2012 | 51.50 |
| **25/25** | 500 | 25 | 33 | 2.0 | 2014 | 56.10 |
| **40/40** | 500 | 40 | 49.6 | 1.5 | 2016 | 68.90 |
| **50/50** | 500 | 50 | 60.8 | 1.0 | 2017 | 99.00 |
| **16/16** | 1000 | 16 | 22.2 | 2.5 | 2022 | 56.50 |
| **25/25** | 1000 | 25 | 33 | 2.0 | 2024 | 62.00 |
| **40/40** | 1000 | 40 | 49.6 | 1.5 | 2026 | 77.00 |
| **50/50** | 1000 | 50 | 60.8 | 1.0 | 2027 | 109.70 |

# PVC hose with KF, aluminium

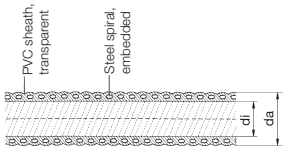
(Aluminium 3.1645)
> PVC hose with inside spring steel spiral
> Pressure range: $10^{-3}$ mbar to 2.5 bar
> Temperature range: –15 °C to 65 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length [mm] | dia.di (inside dia. of hose) [mm] | dia.da (outside dia. of hose) [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16/19** | 500 | 19 | 26 | 2.5 | 2032 | 50.50 |
| **25/25** | 500 | 25 | 33 | 2.0 | 2034 | 56.00 |
| **40/25** | 500 | 25 | 33 | 1.5 | 2036 | 69.00 |
| **40/40** | 500 | 40 | 49.6 | 1.0 | 2037 | 99.00 |
| **16/19** | 1000 | 19 | 26 | 2.5 | 2042 | 56.00 |
| **25/25** | 1000 | 25 | 33 | 2.0 | 2044 | 63.00 |
| **40/25** | 1000 | 25 | 33 | 1.5 | 2046 | 78.00 |
| **40/40** | 1000 | 40 | 49.6 | 1.0 | 2047 | 110.50 |

# PVC hose, sold by the metre

> PVC hose with inside spring steel spiral
> Pressure range: $10^{-3}$ mbar to 2.5 bar
> Temperature range: –15 °C to 65 °C*
* Take sealing materials and connecting elements into consideration

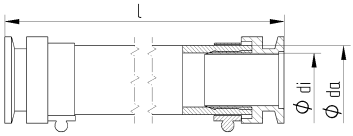



| Nominal width DN | Total length [mm] | dia.di (inside dia. of hose) [mm] | dia.da (outside dia. of hose) [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16** | 1000 | 19 | 26 | 2.5 | 2050 | 6.80 |
| **16** | 1000 | 16 | 22.2 | 2.5 | 2051 | 6.90 |
| **25** | 1000 | 25 | 33 | 2.0 | 2052 | 8.80 |
| **40** | 1000 | 40 | 49.6 | 1.5 | 2053 | 14.80 |
| **50** | 1000 | 50 | 60.8 | 1.0 | 2054 | 24.80 |

## Other nominal widths upon request!

# PVC hose with KF, special length

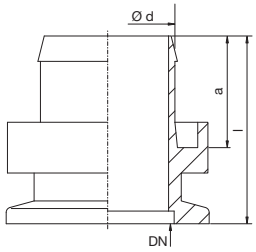
> Available in lengths of 100 mm to 50 000 mm
> PVC hose with inside spring steel spiral
> Pressure range: $10^{-3}$ mbar to 2.5 bar
> Temperature range: –15 °C to 65 °C*
* Take sealing materials and connecting elements into consideration




Price example:

| PVC hose, brass, nickel-plated NW 25 l = 2700 mm contains: | Article no. | Price € |
|---|---|---|
| **PVC hose, brass, nickel-plated NW 25 l = 1000 mm** | 2024 | 59.80 |
| **PVC hose, brass, nickel-plated, sold by the metre 1.7 m** | 2052 x 1.7 | 15.81 |
| **PVC hose, brass, nickel-plated NW 25 l = 2700 mm** | **2024 x 2.7** | **Total price = 75.61** |

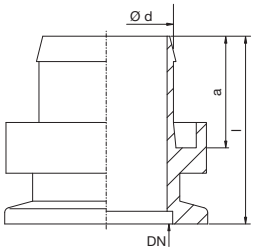
# KF joining socket, brass, nickel-plated




(Brass 2.0401 / MS58)
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –196 °C to 110 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Hose ID [mm] | d [mm] | l [mm] | a [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16/16** | 16 | 16.5 | 28 | 15 | 2061 | 16.50 |
| **25/25** | 25 | 26.5 | 37 | 22 | 2062 | 22.00 |
| **40/40** | 40 | 40.5 | 42 | 29 | 2063 | 31.50 |
| **50/50** | 50 | 51.5 | 63 | 38 | 2064 | 49.50 |

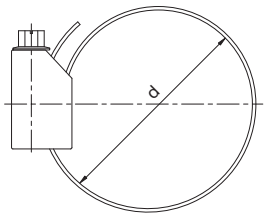
# KF joining socket, aluminium




(Aluminium 3.1645)
> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range: –196 °C to 150 °C*
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Hose ID [mm] | d [mm] | l [mm] | a [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16/19** | 19 | 20.5 | 40 | 24 | 2066 | 13.00 |
| **25/25** | 25 | 26.5 | 40 | 25 | 2067 | 17.00 |
| **40/25** | 40 | 25.5 | 42 | 29 | 2068 | 25.50 |
| **40/40** | 40 | 40.5 | 42 | 29 | 2069 | 42.50 |

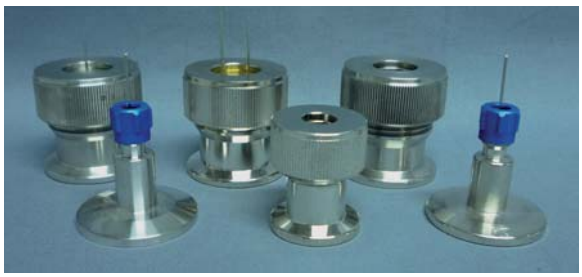
# Hose clamps, (steel 1.0037 galvanised)




(for PVC joining socket with KF)

| Nominal width DN | d [mm] | Article no. | Price € |
|---|---|---|---|
| **16** | 12-22 | 2071 | 1.65 |
| **25** | 20-32 | 2072 | 2.15 |
| **40** | 32-40 | 2073 | 3.00 |
| **50** | 50-70 | 2074 | 5.80 |

# KF feedthroughs



**Properties:**

- temperature range –20 °C to +180 °C
- suitable for high vacuum up to $1x10^{-9}$mbar
- complete sealing via Viton O-rings
- simple structure

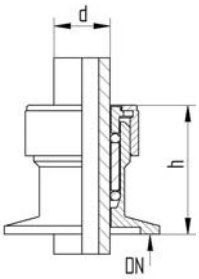
**Description:**

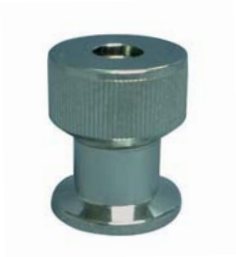
By pressing the O-rings together over the knurled nut or hex nut on the universal thermocouple feedthroughs, we seal off these components between the component and housing.

**Area of application:**

The novotek KF feedthroughs are used everywhere where cylindrical components with a corresponding surface quality have to be led through vacuum-tight.

# KF compression fitting



(High-grade steel 1.4301)

> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –20 °C to 180 °C
> Additional diameters upon request

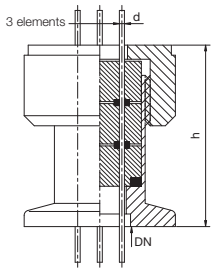
| Nominal width DN | dia.d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 10 | 37 | 1731 | 63.00 |
| **16** | 12 | 37 | 1732 | 63.00 |
| **25** | 16 | 39 | 1733 | 87.00 |
| **40** | 20 | 45 | 1734 | 97.00 |
| **40** | 25 | 45 | 1735 | 97.00 |
| **40** | 28 | 45 | 1736 | 97.00 |

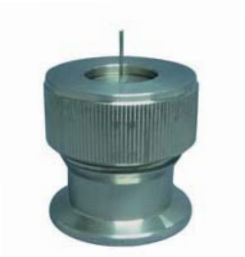
(Brass 2.0401 / MS58)

> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –20 °C to 110 °C
> Additional diameters upon request

| Nominal width DN | dia.d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|
| **10** | 10 | 37 | 1721 | 52.00 |
| **10** | 12 | 37 | 1722 | 52.00 |
| **40** | 20 | 45 | 1724 | 79.00 |
| **40** | 25 | 45 | 1725 | 84.00 |

# KF thermocouple feedthroughs 1-fold to 9-fold

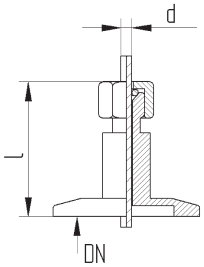


(High-grade steel 1.4301)
> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –20 °C to 180 °C
> Wire diameter 1.5 mm / **specify diameter in case of deviation**
> Sealing is completely by FKM seals
> Suitable for mantle thermocouples

| Nominal width DN | Number of wires | d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10/16** | 1 | 1.5 (optional dia.1-9) | 37 | 1751-1 | 71.00 |
| **10/16** | 2 | 1.5 (optional dia.1-9) | 37 | 1751-2 | 79.00 |
| **10/16** | 3 | 1.5 (optional dia.1-9) | 37 | 1751-3 | 89.00 |
| **25** | 1 | 1.5 (optional dia.1-9) | 39 | 1752-1 | 79.00 |
| **25** | 2 | 1.5 (optional dia.1-9) | 39 | 1752-2 | 89.00 |
| **25** | 3 | 1.5 (optional dia.1-9) | 39 | 1752-3 | 98.00 |
| **25** | 4 | 1.5 (optional dia.1-9) | 39 | 1752-4 | 107.00 |
| **25** | 5 | 1.5 (optional dia.1-9) | 39 | 1752-5 | 114.00 |
| **25** | 6 | 1.5 (optional dia.1-9) | 39 | 1752-6 | 124.00 |
| **25** | 7 | 1.5 (optional dia.1-9) | 39 | 1752-7 | 131.00 |
| **40** | 1 | 1.5 (optional dia.1-9) | 45 | 1753-1 | 135.00 |
| **40** | 2 | 1.5 (optional dia.1-9) | 45 | 1753-2 | 143.00 |
| **40** | 3 | 1.5 (optional dia.1-9) | 45 | 1753-3 | 151.00 |
| **40** | 4 | 1.5 (optional dia.1-9) | 45 | 1753-4 | 158.00 |
| **40** | 5 | 1.5 (optional dia.1-9) | 45 | 1753-5 | 166.00 |
| **40** | 6 | 1.5 (optional dia.1-9) | 45 | 1753-6 | 174.00 |
| **40** | 7 | 1.5 (optional dia.1-9) | 45 | 1753-7 | 181.00 |
| **40** | 8 | 1.5 (optional dia.1-9) | 45 | 1753-8 | 189.00 |
| **40** | 9 | 1.5 (optional dia.1-9) | 45 | 1753-9 | 197.00 |

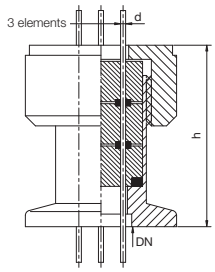
# Thermocouple feedthroughs 1-fold universal KF

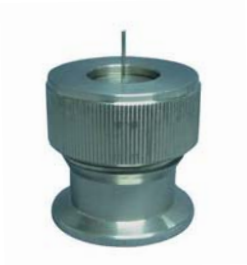



(High-grade steel 1.4301)
> Pressure range: $10^{-7}$mbar to 1.5 bar
> **Specify wire diameter when ordering! (Standard 1.5 mm)**
> Temperature range: –20 °C to 180 °C
> Wire diameter 1.0-3.2 mm / additional diameters upon request
> Sealing is completely by FKM seals
> Suitable for mantle thermocouples

| Nominal width DN | Number of wires | d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 1 | 1.0 / 1.5 / 2 / 2.5 / 3 / 3.2 | 37 | 1772 | 31.00 |
| **25** | 1 | 1.0 / 1.5 / 2 / 2.5 / 3 / 3.2 | 37 | 1774 | 36.00 |
| **40** | 1 | 1.0 / 1.5 / 2 / 2.5 / 3 / 3.2 | 37 | 1776 | 43.00 |

# Thermocouple feedthroughs 1-9-fold universal KF

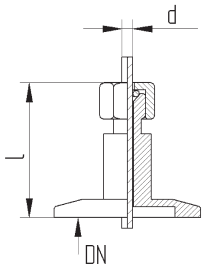


(Brass 2.0401 / MS58, housing nickel-plated)
> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –20 °C to 110 °C
> Wire diameter 1.5 mm / **specify diameter in case of deviation**
> Sealing is completely by FKM seals
> Suitable for mantle thermocouples

| Nominal width DN | Number of wires | d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **10** | 1 | 1.5 (optional dia.1-9) | 37 | 1741-1 | 63.00 |
| **10** | 2 | 1.5 (optional dia.1-9) | 37 | 1741-2 | 72.00 |
| **10** | 3 | 1.5 (optional dia.1-9) | 37 | 1741-3 | 82.00 |
| **25** | 1 | 1.5 (optional dia.1-9) | 39 | 1742-1 | 73.00 |
| **25** | 2 | 1.5 (optional dia.1-9) | 39 | 1742-2 | 82.00 |
| **25** | 3 | 1.5 (optional dia.1-9) | 39 | 1742-3 | 92.00 |
| **25** | 4 | 1.5 (optional dia.1-9) | 39 | 1742-4 | 99.00 |
| **25** | 5 | 1.5 (optional dia.1-9) | 39 | 1742-5 | 109.00 |
| **25** | 6 | 1.5 (optional dia.1-9) | 39 | 1742-6 | 118.00 |
| **25** | 7 | 1.5 (optional dia.1-9) | 39 | 1742-7 | 126.00 |
| **40** | 1 | 1.5 (optional dia.1-9) | 45 | 1743-1 | 120.00 |
| **40** | 2 | 1.5 (optional dia.1-9) | 45 | 1743-2 | 129.00 |
| **40** | 3 | 1.5 (optional dia.1-9) | 45 | 1743-3 | 138.00 |
| **40** | 4 | 1.5 (optional dia.1-9) | 45 | 1743-4 | 146.00 |
| **40** | 5 | 1.5 (optional dia.1-9) | 45 | 1743-5 | 154.00 |
| **40** | 6 | 1.5 (optional dia.1-9) | 45 | 1743-6 | 163.00 |
| **40** | 7 | 1.5 (optional dia.1-9) | 45 | 1743-7 | 171.00 |
| **40** | 8 | 1.5 (optional dia.1-9) | 45 | 1743-8 | 180.00 |
| **40** | 9 | 1.5 (optional dia.1-9) | 45 | 1743-9 | 188.00 |

# Thermocouple feedthroughs 1-fold universal KF




(Brass 2.0401 / MS58, nickel-plated)
> **Specify wire diameter when ordering! (Standard 1.5 mm)**
> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –20 °C to 110 °C
> Wire diameter 1.0-3.2 mm / additional diameters upon request
> Sealing is completely by FKM seals
> Suitable for mantle thermocouples

| Nominal width DN | Number of wires | d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 1 | 1.0 / 1.5 / 2 / 2.5 / 3 / 3.2 | 37 | 1762 | 32.00 |
| **25** | 1 | 1.0 / 1.5 / 2 / 2.5 / 3 / 3.2 | 37 | 1764 | 38.00 |
| **40** | 1 | 1.0 / 1.5 / 2 / 2.5 / 3 / 3.2 | 37 | 1766 | 46.00 |

# KF adapter

**Properties:**

- temperature range –196 °C to +350 °C
- suitable for high vacuum up to $1x10^{-9}$mbar

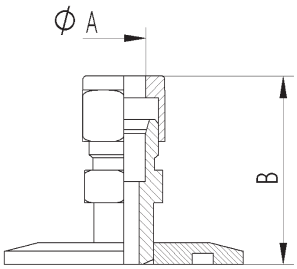
**Description:**

The novotek KF adapters serves as transitions from the KF to various other vacuum-compatible systems.

**Area of application:**

The novotek KF adapters allow the installation of vacuum attachments for the pressure range of 2500 mbar up to $10^{-9}$mbar.

# Metric adapter for KF double compression fitting




> Pressure range: $10^{-9}$ mbar to 2.5 bar
> Temperature range.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration

## 1.4301 (304) Swagelok®-compatible

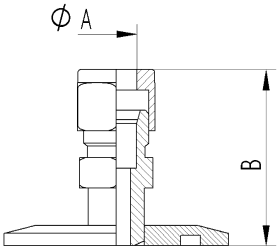
| Nominal width DN | A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 6 | 40 | 1821-6 | 34.15 |
| **16** | 8 | 41 | 1821-8 | 45.00 |
| **16** | 10 | 44 | 1821-10 | 44.95 |
| **16** | 12 | 46 | 1821-12 | 49.50 |
| **20/25** | 6 | 40 | 1824-6 | 36.90 |
| **20/25** | 8 | 41 | 1824-8 | 44.40 |
| **20/25** | 10 | 44 | 1824-10 | 48.40 |
| **20/25** | 12 | 46 | 1824-12 | 55.70 |
| **32/40** | 6 | 40 | 1826-6 | 38.40 |
| **32/40** | 8 | 41 | 1826-8 | 46.90 |
| **32/40** | 10 | 44 | 1826-10 | 48.90 |
| **32/40** | 12 | 46 | 1826-12 | 57.00 |
| **50** | 6 | 40 | 1827-6 | 48.90 |
| **50** | 8 | 41 | 1827-8 | 55.40 |
| **50** | 10 | 44 | 1827-10 | 54.95 |
| **50** | 12 | 46 | 1827-12 | 63.50 |

## 1.4404 (316) Swagelok®-compatible

| Nominal width DN | A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 6 | 40 | 1821-6-4 | 34.15 |
| **16** | 8 | 41 | 1821-8-4 | 45.00 |
| **16** | 10 | 44 | 1821-10-4 | 44.95 |
| **16** | 12 | 46 | 1821-12-4 | 53.90 |
| **20/25** | 6 | 40 | 1824-6-4 | 36.95 |
| **20/25** | 8 | 41 | 1824-8-4 | 44.45 |
| **20/25** | 10 | 44 | 1824-10-4 | 48.45 |
| **20/25** | 12 | 46 | 1824-12-4 | 57.50 |
| **32/40** | 6 | 40 | 1826-6-4 | 38.45 |
| **32/40** | 8 | 41 | 1826-8-4 | 48.90 |
| **32/40** | 10 | 44 | 1826-10-4 | 49.80 |
| **32/40** | 12 | 46 | 1826-12-4 | 62.00 |
| **50** | 6 | 40 | 1827-6-4 | 53.00 |
| **50** | 8 | 41 | 1827-8-4 | 55.00 |
| **50** | 10 | 44 | 1827-10-4 | 57.00 |
| **50** | 12 | 46 | 1827-12-4 | 65.00 |

# Imperial adapter for KF double compression fitting

> Pressure range: $10^{-9}$ mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration




## 1.4301 (304) Swagelok®-compatible

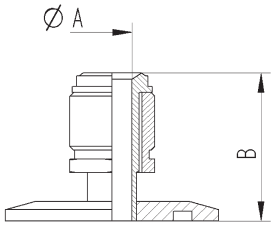
| Nominal width DN | A [inches] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 1/4 | 38 | 1831-14 | 34.45 |
| **16** | 3/8 | 42.5 | 1831-38 | 47.00 |
| **16** | 1/2 | 46 | 1831-12 | 58.95 |
| **20/25** | 1/4 | 38 | 1834-14 | 36.95 |
| **20/25** | 3/8 | 40 | 1834-38 | 47.45 |
| **20/25** | 1/2 | 44 | 1834-12 | 55.90 |
| **32/40** | 1/4 | 38 | 1836-14 | 41.70 |
| **32/40** | 3/8 | 40 | 1836-38 | 54.90 |
| **32/40** | 1/2 | 44 | 1836-12 | 54.90 |
| **50** | 1/4 | 38 | 1837-14 | 52.50 |
| **50** | 3/8 | 40 | 1837-38 | 59.20 |
| **50** | 1/2 | 45 | 1837-12 | 65.00 |

## 1.4404 (316) Swagelok®-compatible

| Nominal width DN | A [inches] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 1/4 | 38 | 1831-14-4 | 34.45 |
| **16** | 3/8 | 42.5 | 1831-38-4 | 47.00 |
| **16** | 1/2 | 46 | 1831-12-4 | 58.95 |
| **20/25** | 1/4 | 38 | 1834-14-4 | 38.50 |
| **20/25** | 3/8 | 40 | 1834-38-4 | 47.45 |
| **20/25** | 1/2 | 44 | 1834-12-4 | 59.20 |
| **32/40** | 1/4 | 38 | 1836-14-4 | 43.70 |
| **32/40** | 3/8 | 40 | 1836-38-4 | 59.00 |
| **32/40** | 1/2 | 44 | 1836-12-4 | 54.95 |
| **50** | 1/4 | 38 | 1837-14-4 | 57.00 |
| **50** | 3/8 | 40 | 1837-38-4 | 62.00 |
| **50** | 1/2 | 45 | 1837-12-4 | 67.00 |

# Imperial HTC® adapter, male, KF

> Pressure range: $10^{-9}$ mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration




## 1.4301 (304) VCR®-compatible

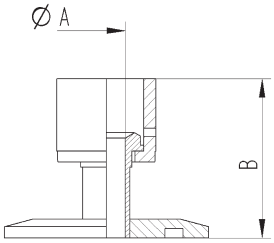
| Nominal width DN | A [inches] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 1/4 | 34 | 1851-14 | 45.90 |
| **16** | 1/2 | 39 | 1851-12 | 62.90 |
| **20/25** | 1/4 | 34 | 1854-14 | 49.40 |
| **20/25** | 1/2 | 39 | 1854-12 | 63.80 |
| **32/40** | 1/4 | 34 | 1856-14 | 52.60 |
| **32/40** | 1/2 | 39 | 1856-12 | 65.90 |
| **50** | 1/4 | 34 | 1857-14 | 62.00 |
| **50** | 1/2 | 39 | 1857-12 | 72.00 |

## 1.4404 (316L) VCR®-compatible

| Nominal width DN | A [inches] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 1/4 | 34 | 1851-14-4 | 45.90 |
| **16** | 1/2 | 39 | 1851-12-4 | 62.90 |
| **20/25** | 1/4 | 34 | 1854-14-4 | 49.40 |
| **20/25** | 1/2 | 39 | 1854-12-4 | 63.90 |
| **32/40** | 1/4 | 34 | 1856-14-4 | 52.90 |
| **32/40** | 1/2 | 39 | 1856-12-4 | 65.90 |
| **50** | 1/4 | 34 | 1857-14-4 | 62.00 |
| **50** | 1/2 | 39 | 1857-12-4 | 72.00 |

# Imperial HTC® adapter, female, KF

> Pressure range: $10^{-9}$ mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
* Take sealing materials and connecting elements into consideration



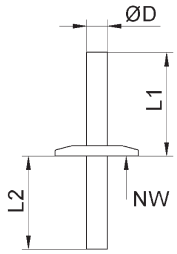

## 1.4301 (304) VCR®-compatible

| Nominal width DN | A [inches] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 1/4 | 41 | 1841-14 | 45.90 |
| **16** | 1/2 | 45 | 1841-12 | 64.90 |
| **20/25** | 1/4 | 41 | 1844-14 | 51.70 |
| **20/25** | 1/2 | 42.5 | 1844-12 | 65.90 |
| **32/40** | 1/4 | 41 | 1846-14 | 54.90 |
| **32/40** | 1/2 | 42.5 | 1846-12 | 67.90 |
| **50** | 1/4 | 41 | 1847-14 | 62.00 |
| **50** | 1/2 | 42.5 | 1847-12 | 77.00 |

## 1.4404 (316L) VCR®-compatible

| Nominal width DN | A [inches] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 1/4 | 41 | 1841-14-4 | 45.90 |
| **16** | 1/2 | 45 | 1841-12-4 | 64.70 |
| **20/25** | 1/4 | 41 | 1844-14-4 | 51.90 |
| **20/25** | 1/2 | 42.5 | 1844-12-4 | 65.70 |
| **32/40** | 1/4 | 41 | 1846-14-4 | 54.90 |
| **32/40** | 1/2 | 42.5 | 1846-12-4 | 67.95 |
| **50** | 1/4 | 41 | 1847-14-4 | 65.00 |
| **50** | 1/2 | 42.5 | 1847-12-4 | 83.00 |

# Liquid feedthrough, single, KF




> Pressure range: $10^{-9}$ mbar to 2.5 bar
> Temperature range: –196 °C to 300 °C 1.4301*
> Temperature range: –196 °C to 350 °C 1.4404*
* Take sealing materials and connecting elements into consideration

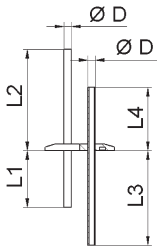
## High-grade steel 1.4301

| Nominal width DN | dia.D [mm] | L1 [mm] | L2 [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 6 | 50 | 45 | 1862-6 | 47.00 |
| **16** | 10 | 50 | 45 | 1862-10 | 49.00 |
| **16** | 12 | 50 | 45 | 1862-12 | 52.00 |
| **20/25** | 6 | 50 | 45 | 1864-6 | 52.00 |
| **20/25** | 10 | 50 | 45 | 1864-10 | 57.00 |
| **20/25** | 12 | 50 | 45 | 1864-12 | 59.00 |
| **32/40** | 6 | 50 | 45 | 1866-6 | 57.00 |
| **32/40** | 10 | 50 | 45 | 1866-10 | 63.00 |
| **32/40** | 12 | 50 | 45 | 1866-12 | 65.00 |

## High-grade steel 1.4404

| Nominal width DN | dia.D [mm] | L1 [mm] | L2 [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 6 | 50 | 45 | 1862-6-4 | 52.00 |
| **16** | 10 | 50 | 45 | 1862-10-4 | 57.00 |
| **16** | 12 | 50 | 45 | 1862-12-4 | 59.00 |
| **20/25** | 6 | 50 | 45 | 1864-6-4 | 55.00 |
| **20/25** | 10 | 50 | 45 | 1864-10-4 | 61.00 |
| **20/25** | 12 | 50 | 45 | 1864-12-4 | 65.00 |
| **32/40** | 6 | 50 | 45 | 1866-6-4 | 63.00 |
| **32/40** | 10 | 50 | 45 | 1866-10-4 | 68.00 |
| **32/40** | 12 | 50 | 45 | 1866-12-4 | 73.00 |

# Liquid feedthrough, double, KF




> Pressure range: $10^{-9}$ mbar to 2.5 bar
> Temperature range: –196 °C to 300 °C 1.4301*
> Temperature range: –196 °C to 350 °C 1.4404*
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301

| Nominal width | dia.D [mm] | L1 [mm] | L2 [mm] | L3 [mm] | L4 [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **32/40** | 6 | 50 | 75 | 80 | 45 | 1876-6 | 77.00 |

## High-grade steel 1.4404

| Nominal width | dia.D [mm] | L1 [mm] | L2 [mm] | L3 [mm] | L4 [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **32/40** | 6 | 50 | 75 | 80 | 45 | 1876-6-4 | 87.00 |

# ISO-K clamping flange components

# ISO-K clamping flange components and connecting elements

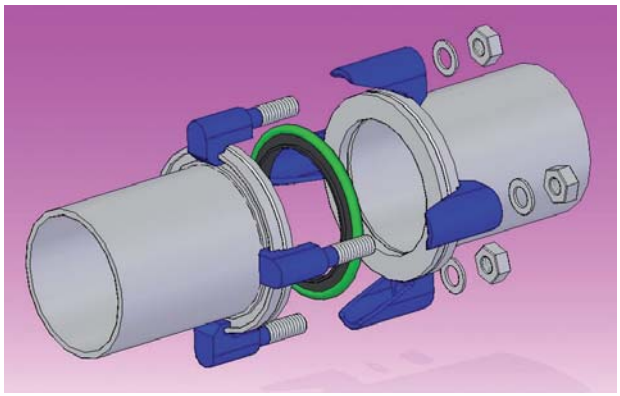
## In accordance with DIN 28404 and ISO 1609

**Description:**

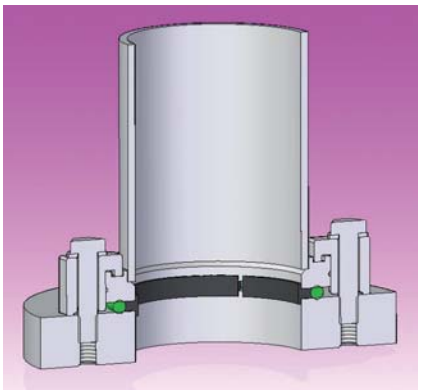
novotek clamping flange components are manufactured in accordance with DIN 28404 and ISO 1609. All components manufactured by novotek are 100% leak-tested and have leak rates better than $10^{-9}$mbarl/s. Standard sizes are NW 63 to 320. Nominal widths of up to 630 can be manufactured upon request. ISO-K clamping flange connections are suitable for establishing high-vacuum connection from $10^{-9}$mbar to 1.5 bar. Assembly is via screw clamps, claws or a collar flange with snap ring and screws. The clamps, claws or screws must be tightened such that the flanges butt against the centring ring. This requires a considerable increase in torque. Sealing takes place according to the respective requirements via elastomer seals or an aluminium sealing ring. In the case of metal seals, the increased contact forces mean that correspondingly more screw clamps are required (see following table). A collar flange provides a problem-free transition to ISO-F. The transition to KF connections and also CF connections is easily possible using ISO-K/KF or ISO-K/CF adapter pieces.

Please refer to the Materials chapter for operation temperatures, sealing materials and information on the different metals.

**Installation variants:**



ISO-K flange connection “with screw clamps”



ISO-K flange connection “with claws”

## Design features and main dimensions of ISO-K components

| Nominal width DN | NW 63 | NW 80 | NW 100 | NW 160 | NW 200 | NW 250 | NW 320 | NW 400 | NW 500 | NW 630 |
|---|---|---|---|---|---|---|---|---|---|---|
| Outside diameter dia.a [mm] | 95 | 110 | 130 | 180 | 240 | 290 | 370 | 450 | 550 | 690 |
| Centring ring shoulder dia.b [mm] | 70 | 83 | 102 | 153 | 213 | 261 | 318 | 400 | 501 | 651 |
| Flange thickness h [mm] | 12 | 12 | 12 | 12 | 12 | 12 | 17 | 17 | 17 | 22 |
| Matching pipe dimension | 76x3 | 88.9x3 | 108x3 | 159x3 | 219x3 | 273x3 | 323x3 | 406x3 | 508x4 | 660x5 |
| Free diameter dia.d [mm] | 70 | 83 | 102 | 153 | 213 | 267 | 317 | 400 | 500 | 650 |
| Number of screw clamps with elastomer seals | 4 | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 12 | 12 |
| Number of screw clamps with metal seals (aluminium) | 4 | 6 | 8 | 10 | 12 | 14 | – | – | – | – |
| Number of claws or through bolts | 4 | 8 | 8 | 8 | 12 | 12 | 12 | 16 | 16 | 20 |

## Design features and main dimensions of collar flanges

| Nominal width DN | NW 63 | NW 80 | NW 100 | NW 160 | NW 200 | NW 250 | NW 320 | NW 400 | NW 500 | NW 630 |
|---|---|---|---|---|---|---|---|---|---|---|
| Outside diameter dia.a [mm] | 130 | 145 | 165 | 225 | 285 | 335 | 425 | 510 | 610 | 750 |
| Inside diameter dia.b [mm] | 95.5 | 110.5 | 130.5 | 180.7 | 240.7 | 290.7 | 370.7 | 450.7 | 550.7 | 690.8 |
| Flange thickness h [mm] | 12 | 12 | 12 | 16 | 16 | 16 | 20 | 20 | 20 | 24 |
| Pitch circle dia.c [mm] | 110 | 125 | 145 | 200 | 260 | 310 | 395 | 480 | 580 | 720 |
| Number and bore dia. [mm] | 9x4 | 8x9 | 9x8 | 11x8 | 11x8 | 12x11 | 12x13.5 | 16x13.5 | 16x13.5 | 20x13.5 |
| Diameter of snap ring [mm] | 3 | 3 | 3 | 5 | 5 | 5 | – | – | – | – |

# ISO-K junctions

**Properties of high-grade steel 1.4301 /1.4404:**

- high leak rate (<$10^{-9}$mbarl/s)
- high conductance
- gap-free welded
- can be baked out up to 300 °C/350 °C

**Description:**

The novotek ISO-K junctions made of high-grade steel are designed as welded constructions. The welds are made on the inside, which guarantees an absolutely gap-free finish. The flanges that guarantee compatibility are manufactured in accordance with DIN 28404 Form B. This makes a trouble-free connection of all components possible. For the flange dimensions, please refer to the design features at the start of this chapter.

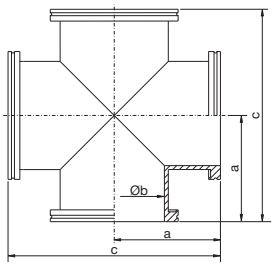
**Area of application:**

The novotek junctions made of high-grade steel allow the installation of vacuum attachments for the pressure range of 1.5 mbar up to $10^{-9}$mbar. They can be used in low, medium and high vacuum technology. The components have a bake-out capacity, are corrosion-resistant and their installation location is as desired.

# ISO-K crosspiece

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

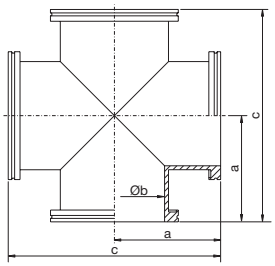
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | a [mm] | dia.b (pipe dimension) [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 88 | 66 (70x2) | 176 | 6111 | 235.00 |
| **100** | 108 | 100 (104x2) | 216 | 6112 | 314.00 |
| **160** | 138 | 153 (159x3) | 276 | 6113 | 589.00 |
| **200** | 178 | 213 (219x3) | 356 | 6114 | 989.00 |
| **250** | 208 | 267 (273x3) | 416 | 6115 | 1,249.00 |

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.
* Take sealing materials and connecting elements into consideration

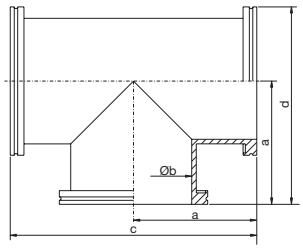



## High-grade steel 1.4404

| Nominal width DN | a [mm] | dia.b (pipe dimension) [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 88 | 66 (70x2) | 176 | 61114 | 248.50 |
| **100** | 108 | 100 (104x2) | 216 | 61124 | 389.50 |
| **160** | 138 | 153 (159x3) | 276 | 61134 | 679.50 |
| **200** | 178 | 213 (219x3) | 356 | 61144 | 1,115.00 |
| **250** | 208 | 267 (273x3) | 416 | 61154 | 1,425.00 |

# T piece ISO-K

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | a [mm] | dia.b (pipe dimension) [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 88 | 66 (70x2) | 176 | 135.5 | 6121 | 163.00 |
| **100** | 108 | 100 (104x2) | 216 | 173 | 6122 | 220.00 |
| **160** | 138 | 153 (159x3) | 276 | 228 | 6123 | 481.00 |
| **200** | 178 | 213 (219x3) | 356 | 298 | 6124 | 664.00 |
| **250** | 208 | 267 (273x3) | 416 | 353 | 6125 | 934.00 |

## High-grade steel 1.4404

| Nominal width DN | a [mm] | dia.b (pipe dimension) [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 88 | 66 (70x2) | 176 | 135.5 | 61214 | 187.50 |
| **100** | 108 | 100 (104x2) | 216 | 173 | 61224 | 230.00 |
| **160** | 138 | 153 (159x3) | 276 | 228 | 61234 | 490.00 |
| **200** | 178 | 213 (219x3) | 356 | 298 | 61244 | 790.00 |
| **250** | 208 | 267 (273x3) | 416 | 353 | 61254 | 1,090.00 |

> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration

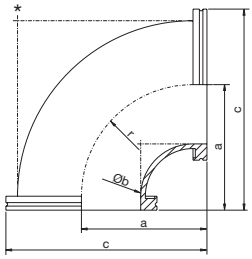
## Aluminium 3.2315

| Nominal width DN | A [mm] | dia.b (pipe dimension) [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 83 | 70 (76x3) | 166 | 130.5 | 6121A | 199.00 |
| **100** | 111.5 | 100 (108x4) | 225.5 | 176.5 | 6122A | 238.00 |

# Pipe bend/pipe elbow ISO-K

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | a [mm] | dia.b (pipe dimension) [mm] | c [mm] | r [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 88 | 66 (70x2) | 133.5 | 80 | 6131 | 88.50 |
| **100** | 108 | 100 (104x2) | 173 | 100 | 6132 | 134.50 |
| **160** | 233 | 150 (154x2) | 323 | 225 | 6133 | 286.50 |
| **160** | 138 | 153 (159x3) | 228 | - | 6133w | 287.00 |
| **200** | 178 | 213 (219x3) | 298 | - | 6134w | 489.00 |
| **250** | 208 | 267 (273x3) | 353 | - | 6135w | 589.00 |

## High-grade steel 1.4404

| Nominal width DN | a [mm] | dia. b (pipe dimension) [mm] | c [mm] | r [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 88 | 66 (70x2) | 133.5 | 80 | 61314 | 109.00 |
| **100** | 108 | 100 (104x2) | 173 | 100 | 61324 | 160.00 |
| **160** | 233 | 150 (154x2) | 323 | 225 | 61334 | 327.00 |
| **160** | 138 | 153 (159x3) | 228 | - | 6133w4 | 317.00 |
| **200** | 178 | 213 (219x3) | 298 | - | 6134w4 | 526.00 |
| **250** | 208 | 267 (273x3) | 353 | - | 6135w4 | 637.00 |

> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

* Take sealing materials and connecting elements into consideration

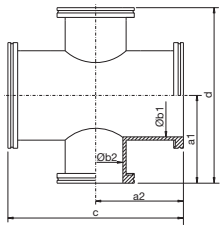
## Aluminium 3.2315

| Nominal width DN | a [mm] | dia. b (pipe dimension) [mm] | c [mm] | r [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 71 | 70 (76x3) | 118.5 | 64 | 6131A | 135.00 |
| **100** | 108 | 103 (108x2.5) | 173 | 100.5 | 6132A | 165.00 |
| **160** | 158 | 150 (160x5) | 248 | 150.5 | 6133A | 275.00 |

# ISO-K reducing crosspiece

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration



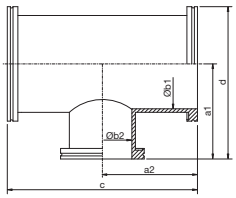

## High-grade steel 1.4301

| DN | a1 [mm] | b1 [mm] | a2 [mm] | b2 [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **100/63** | 107 | 102 | 108 | 70 | 216 | 214 | 6141 | 452.00 |
| **160/63** | 130 | 153 | 138 | 70 | 276 | 260 | 6142 | 477.00 |
| **160/100** | 131 | 153 | 138 | 102 | 276 | 262 | 6143 | 574.00 |
| **200/160** | 168 | 213 | 178 | 153 | 356 | 336 | 6144 | 893.00 |
| **250/200** | 195 | 261 | 208 | 213 | 416 | 390 | 6145 | 1,330.00 |
| **200/100** | 168 | 213 | 178 | 102 | 356 | 336 | 6146 | 798.00 |

# Reducing T piece ISO-K

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C bis 300 °C
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration



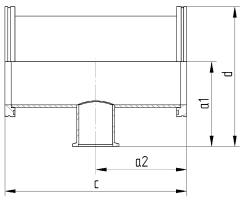

## High-grade steel 1.4301

| DN | a1 [mm] | b1 [mm] | a2 [mm] | b2 [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **100/63** | 107 | 102 | 108 | 70 | 216 | 172 | 6151 | 279.00 |
| **160/63** | 130 | 153 | 138 | 70 | 276 | 220 | 6152 | 374.00 |
| **160/100** | 131 | 153 | 138 | 102 | 276 | 221 | 6153 | 399.00 |
| **200/160** | 168 | 213 | 178 | 153 | 356 | 288 | 6154 | 754.00 |
| **250/200** | 195 | 261 | 208 | 213 | 416 | 340 | 6155 | 1,158.00 |
| **250/160** | 192 | 261 | 208 | 153 | 416 | 282 | 6156 | 1,062.00 |
| **200/100** | 161 | 213 | 178 | 102 | 356 | 281 | 6157 | 689.00 |

# Reducing T piece ISO-K/KF

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C

* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

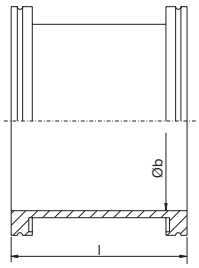
| DN | a1 [mm] | b1 [mm] | a2 [mm] | b2 [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63/16** | 75 | 70 | 88 | 15 | 176 | 122.5 | 6310 | 191.00 |
| **63/25** | 75 | 70 | 88 | 25 | 176 | 122.5 | 6311 | 193.00 |
| **63/40** | 75 | 70 | 88 | 37 | 176 | 122.5 | 6312 | 196.00 |
| **63/50** | 75 | 70 | 88 | 49 | 176 | 122.5 | 6313 | 199.00 |
| **100/16** | 100 | 102 | 108 | 15 | 216 | 165 | 6314 | 241.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **100/25** | 100 | 102 | 108 | 25 | 216 | 165 | 6315 | 243.00 |
| **100/40** | 100 | 102 | 108 | 37 | 216 | 165 | 6316 | 246.00 |
| **100/50** | 100 | 102 | 108 | 49 | 216 | 165 | 6317 | 249.00 |
| **160/16** | 125 | 153 | 138 | 15 | 276 | 215 | 6318 | 321.00 |
| **160/25** | 125 | 153 | 138 | 25 | 276 | 215 | 6319 | 323.00 |
| **160/40** | 125 | 153 | 138 | 37 | 276 | 215 | 6320 | 326.00 |
| **160/50** | 125 | 153 | 138 | 49 | 276 | 215 | 6321 | 329.00 |

# ISO-K connecting piece

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | dia.b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| **63** | 70 | According to customer request (standard 100 mm) | 6171 | 99.00 |
| **100** | 102 | According to customer request (standard 100 mm) | 6172 | 129.00 |
| **160** | 153 | According to customer request (standard 100 mm) | 6173 | 169.00 |
| **200** | 213 | According to customer request (standard 100 mm) | 6174 | 324.00 |
| **250** | 267 | According to customer request (standard 100 mm) | 6175 | 479.00 |

## High-grade steel 1.4404

| Nominal width DN | dia.b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|
| **63** | 70 | According to customer request (standard 100 mm) | 61714 | 115.00 |
| **100** | 102 | According to customer request (standard 100 mm) | 61724 | 133.00 |
| **160** | 153 | According to customer request (standard 100 mm) | 61734 | 209.00 |
| **200** | 213 | According to customer request (standard 100 mm) | 61744 | 348.00 |
| **250** | 267 | According to customer request (standard 100 mm) | 61754 | 537.00 |

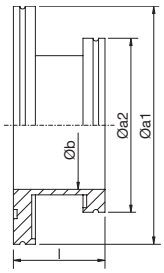
> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

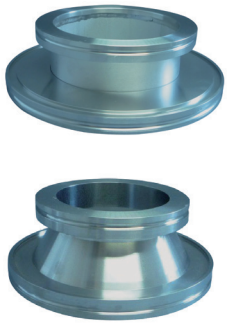
* Take sealing materials and connecting elements into consideration

## Aluminium 3.2315

| Nominal width DN | dia.b [mm] | l [mm] | Article number. | Price € |
|---|---|---|---|---|
| **63** | 70 (76x3) | According to customer request (standard 100 mm) | 6171A | 127.00 |
| **100** | 102 (108x3) | According to customer request (standard 100 mm) | 6172A | 137.00 |
| **160** | 152 (160x4) | According to customer request (standard 100 mm) | 6173A | 155.00 |

# Reducing fitting straight/conical ISO-K



> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4301

| Nominal width DN | a1 [mm] | a2 [mm] | dia.b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **100/63** | 130 | 95 | 70 | 50 | 6161 | 99.00 |
| **160/63** | 180 | 95 | 70 | 50 | 6162 | 121.70 |
| **160/100** | 180 | 130 | 102 | 50 | 6163 | 138.00 |
| **200/63** | 240 | 95 | 70 | 50 | 6166 | 325.00 |
| **200/100** | 240 | 130 | 102 | 50 | 6165 | 263.00 |
| **200/160** | 240 | 180 | 153 | 50 | 6164 | 375.00 |
| **250/63** | 290 | 95 | 70 | 50 | 6170 | 395.00 |
| **250/100** | 290 | 130 | 102 | 50 | 6169 | 445.00 |
| **250/160** | 290 | 180 | 153 | 50 | 6168 | 482.00 |
| **250/200** | 290 | 240 | 213 | 50 | 6167 | 535.00 |
| **100/63** | 130 | 95 | conical | 50 | 6161k | 165.00 |
| **160/63** | 180 | 95 | conical | 50 | 6162k | 237.00 |
| **160/100** | 180 | 130 | conical | 70 | 6163k | 259.00 |

## High-grade steel 1.4404

| Nominal width DN | a1 [mm] | a2 [mm] | dia.b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **100/63** | 130 | 95 | 70 | 50 | 61614 | 127.00 |
| **160/63** | 180 | 95 | 70 | 50 | 61624 | 173.00 |
| **160/100** | 180 | 130 | 102 | 50 | 61634 | 188.00 |
| **200/63** | 240 | 95 | 70 | 50 | 61664 | 335.00 |
| **200/100** | 240 | 130 | 102 | 50 | 61654 | 354.00 |
| **200/160** | 240 | 180 | 153 | 50 | 61644 | 410.00 |
| **250/63** | 290 | 95 | 70 | 50 | 61704 | 410.00 |
| **250/100** | 290 | 130 | 102 | 50 | 61694 | 415.00 |
| **250/160** | 290 | 180 | 153 | 50 | 61684 | 585.00 |
| **250/200** | 290 | 240 | 213 | 50 | 61674 | 695.00 |
| **100/63** | 130 | 95 | conical | 50 | 6161k4 | 249.00 |
| **160/63** | 180 | 95 | conical | 50 | 6162k4 | 299.00 |
| **160/100** | 180 | 130 | conical | 70 | 6163k4 | 299.00 |

> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

* Take sealing materials and connecting elements into consideration

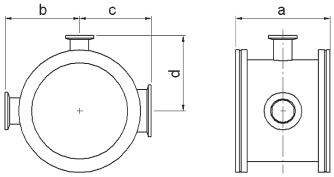
## Aluminium 3.2315

| Nominal width DN | a1 [mm] | a2 [mm] | dia.b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **100/63** | 130 | 95 | 70 | 50 | 6161A | 127.00 |
| **160/63** | 180 | 95 | 70 | 50 | 6162A | 137.00 |
| **160/100** | 180 | 130 | 102 | 50 | 6163A | 152.00 |

# Measuring cross ISO-K

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Outlets respectively 1x KF16, KF25, KF40
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 100 | 64 | 57 | 62 | 6391 | 269.00 |
| **100** | 100 | 79 | 76 | 80 | 6392 | 339.00 |
| **160** | 100 | 106 | 104 | 105 | 6393 | 382.00 |
| **200** | 120 | 136 | 135 | 136 | 6394 | 535.00 |
| **250** | 120 | 160 | 159 | 160 | 6395 | 750.00 |

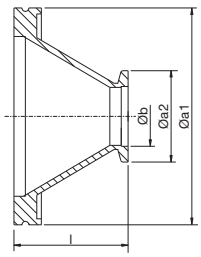
## High-grade steel 1.4404

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 100 | 64 | 57 | 62 | 63914 | 291.00 |
| **100** | 100 | 79 | 76 | 80 | 63924 | 367.00 |
| **160** | 100 | 106 | 104 | 105 | 63934 | 397.00 |
| **200** | 120 | 136 | 135 | 136 | 63944 | 642.00 |
| **250** | 120 | 160 | 159 | 160 | 63954 | 772.00 |

# ISO-K/KF conical adapter piece

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 150 °C (3.2315)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | a [mm] | a2 [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63/25** | 95 | 40 | 25 | 50 | 6181k | 92.00 |
| **63/40** | 95 | 55 | 40 | 50 | 6182k | 81.90 |
| **63/50** | 95 | 75 | 50 | 50 | 6183k | 104.00 |

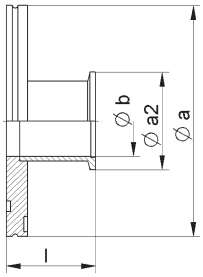
## Aluminium 3.2315

| Nominal width DN | a [mm] | a2 [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63/25** | 95 | 40 | 25 | 50 | 6181kA | 69.50 |
| **63/40** | 95 | 55 | 40 | 50 | 6182kA | 53.90 |
| **63/50** | 95 | 75 | 50 | 50 | 6183kA | 63.90 |

# ISO-K/KF adapter piece

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C bis 350 °C (1.4404)
> Clean metallic surfaces on inside and outside.
Polished or glass bead blasted upon request.

* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | a [mm] | a2 [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63/16** | 95 | 30 | 16 | 50 | 6180 | 54.90 |
| **63/25** | 95 | 40 | 25 | 50 | 6181 | 55.90 |
| **63/40** | 95 | 55 | 40 | 50 | 6182 | 57.90 |
| **63/50** | 95 | 75 | 50 | 50 | 6183 | 69.00 |
| **100/16** | 130 | 30 | 16 | 50 | 6184 | 64.90 |
| **100/25** | 130 | 40 | 25 | 50 | 6185 | 69.90 |
| **100/40** | 130 | 55 | 40 | 50 | 6186 | 77.00 |
| **100/50** | 130 | 75 | 50 | 50 | 6187 | 81.90 |
| **160/25** | 180 | 40 | 25 | 50 | 6188 | 95.50 |
| **160/40** | 180 | 55 | 40 | 50 | 6189 | 99.00 |
| **160/50** | 180 | 75 | 50 | 50 | 6190 | 109.00 |
| **200/25** | 240 | 40 | 25 | 50 | 6191 | 272.00 |
| **200/40** | 240 | 55 | 40 | 50 | 6192 | 292.00 |
| **200/50** | 240 | 75 | 50 | 50 | 6193 | 307.00 |
| **250/40** | 290 | 55 | 40 | 50 | 6194 | 340.00 |
| **250/50** | 290 | 75 | 50 | 50 | 6195 | 365.00 |

## High-grade steel 1.4404

| Nominal width DN | a [mm] | a2 [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63/16** | 95 | 30 | 16 | 50 | 61804 | 73.00 |
| **63/25** | 95 | 40 | 25 | 50 | 61814 | 76.80 |
| **63/40** | 95 | 55 | 40 | 50 | 61824 | 78.50 |
| **63/50** | 95 | 75 | 50 | 50 | 61834 | 99.00 |
| **100/16** | 130 | 30 | 16 | 50 | 61844 | 98.50 |
| **100/25** | 130 | 40 | 25 | 50 | 61854 | 102.00 |
| **100/40** | 130 | 55 | 40 | 50 | 61864 | 107.00 |
| **100/50** | 130 | 75 | 50 | 50 | 61874 | 117.00 |
| **160/25** | 180 | 40 | 25 | 50 | 61884 | 132.00 |
| **160/40** | 180 | 55 | 40 | 50 | 61894 | 142.00 |
| **160/50** | 180 | 75 | 50 | 50 | 61904 | 152.00 |
| **200/25** | 240 | 40 | 25 | 50 | 61914 | 325.00 |
| **200/40** | 240 | 55 | 40 | 50 | 61924 | 325.00 |
| **200/50** | 240 | 75 | 50 | 50 | 61934 | 375.00 |
| **250/40** | 290 | 55 | 40 | 50 | 61944 | 425.00 |
| **250/50** | 290 | 75 | 50 | 50 | 61954 | 455.00 |

# ISO-K components

**Properties of high-grade steel 1.4301 /1.4404:**

- high leak rate (<$10^{-9}$mbarl/s)
- high conductance
- gap-free welded
- can be baked out up to 300 °C/350 °C

**Description:**

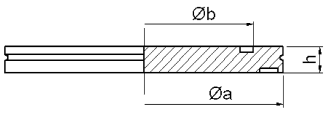
Apart from the ISO-K flanges with a long flanged socket all novotek components in the high-grade steel area are turned from solid material or steel tubing. This guarantees maximum precision and an absolute gap-free finish. The flanges that guarantee compatibility are manufactured in accordance with DIN 28404 Form B. This makes a trouble-free connection of all components possible. For the flange dimensions, please refer to the design features at the start of this chapter.

**Area of application:**

The novotek clamping flange components made of high-grade steel allow the installation of vacuum attachments for the pressure range of 1500 mbar up to $10^{-9}$mbar. For aluminium attachments, the pressure range from 1500 mbar to $10^{-7}$mbar can be set up. They can be used in low, medium and high vacuum technology. The components have a bake-out capacity, are corrosion-resistant and their installation location is as desired. Compatibility with pipe system in accordance with DIN 11850 is guaranteed.

# Blind flange ISO-K

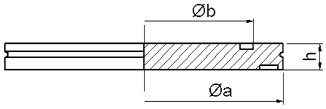
> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration

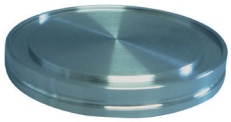



## High-grade steel 1.4301

| Nominal width DN | a [mm] | b [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 95 | 70 | 12 | 6421 | 25.50 |
| **80** | 110 | 83 | 12 | 64215 | 31.60 |
| **100** | 130 | 102 | 12 | 6422 | 33.80 |
| **160** | 180 | 153 | 12 | 6423 | 61.00 |
| **200** | 240 | 213 | 12 | 6424 | 139.50 |
| **250** | 290 | 261 | 12 | 6425 | 183.00 |
| **320** | 370 | 318 | 17 | 6426 | 389.00 |

# Blind flange ISO-K



## High-grade steel 1.4404

| Nominal width DN | a [mm] | b [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 95 | 70 | 12 | 64214 | 29.30 |
| **80** | 110 | 83 | 12 | 642154 | 36.90 |
| **100** | 130 | 102 | 12 | 64224 | 39.00 |
| **160** | 180 | 153 | 12 | 64234 | 68.50 |
| **200** | 240 | 213 | 12 | 64244 | 149.50 |
| **250** | 290 | 261 | 12 | 64254 | 189.70 |
| **320** | 370 | 318 | 17 | 64264 | 395.00 |

> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C

* Take sealing materials and connecting elements into consideration

## Aluminium 3.2315

| Nominal width DN | a [mm] | b [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 95 | 70 | 12 | 6421A | 24.90 |
| **100** | 130 | 102 | 12 | 6422A | 32.90 |
| **160** | 180 | 153 | 12 | 6423A | 59.20 |

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C

* Take sealing materials and connecting elements into consideration

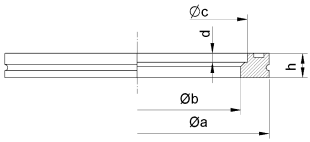
## Steel 1.0037

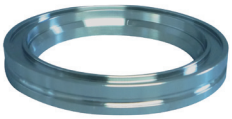
| Nominal width DN | a [mm] | b [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 95 | 70 | 12 | 6421St | 26.90 |
| **100** | 130 | 102 | 12 | 6422St | 35.50 |
| **160** | 180 | 153 | 12 | 6423St | 42.90 |

# Welding flange ISO-K

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)

* Take sealing materials and connecting elements into consideration



## High-grade steel 1.4301

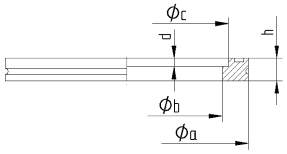
| Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c (pipe dimensions) [mm] | d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **63** | 95 | 70 | 76.6 (76x3) | 4.5 | 12 | 6511 | 23.50 |
| **63** | 95 | 70 | 70.3 (70x2) | 4.5 | 12 | 65115 | 23.50 |
| **80** | 110 | 83 | 89.3 (88.9x3) | 4.5 | 12 | 6511-80 | 31.70 |
| **100** | 130 | 102 | 108.6 (108x3) | 4.5 | 12 | 6512 | 30.50 |
| **100** | 130 | 102 | 104.6 (104x2) | 4.5 | 12 | 65125 | 30.50 |
| **160** | 180 | 153 | 159.8 (159x3) | 4.5 | 12 | 6513 | 43.00 |
| **160** | 180 | 153 | 154.8 (154x2) | 4.5 | 12 | 65135 | 43.00 |
| **200** | 240 | 213 | 219.8 (219x3) | 4.5 | 12 | 6514 | 131.80 |
| **250** | 290 | 261 | 273.8 (273x3) | 4.5 | 12 | 6515 | 174.00 |
| **320** | 370 | 318 | 324.6 (323.9x3) | 7 | 17 | 6516 | 314.00 |

### High-grade steel 1.4404

| Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c (pipe dimensions) [mm] | d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **63** | 95 | 70 | 76.6 (76x3) | 4.5 | 12 | 65114 | 24.95 |
| **63** | 95 | 70 | 70.3 (70x2) | 4.5 | 12 | 651154 | 24.95 |
| **63** | 95 | 70 | 63.8 (63.5x1.65) | 4.5 | 12 | 65114-IM | 24.95 |
| **80** | 110 | 83 | 89.3 (88.9x3) | 4.5 | 12 | 65114-80 | 31.70 |
| **100** | 130 | 102 | 108.6 (108x3) | 4.5 | 12 | 65124 | 33.90 |
| **100** | 130 | 100 | 104.6 (104x2) | 4.5 | 12 | 651254 | 33.90 |
| **100** | 130 | 102 | 102 (101.6x2.11) | 4.5 | 12 | 65124-IM | 33.90 |
| **160** | 180 | 153 | 159.8 (159x3) | 4.5 | 12 | 65134 | 53.90 |
| **160** | 180 | 153 | 154.8 (154x2) | 4.5 | 12 | 651354 | 53.90 |
| **160** | 180 | 153 | 153 (152.4x2.77) | 4.5 | 12 | 65134-IM | 53.90 |
| **200** | 240 | 213 | 219.8 (219x3) | 4.5 | 12 | 65144 | 137.90 |
| **250** | 290 | 261 | 273.8 (273x3) | 4.5 | 12 | 65154 | 177.00 |
| **320** | 370 | 318 | 324.6 (323.9x3) | 7 | 17 | 65164 | 415.00 |

# Welding flange ISO-K

> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration




### Aluminium 3.2315

| Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c (pipe dimensions) [mm] | d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **63** | 95 | 70 | 76.6 (76x3) | 4.5 | 12 | 6511A | 26.00 |
| **100** | 130 | 102 | 108.6 (108x3) | 4.5 | 12 | 6512A | 32.00 |
| **160** | 180 | 153 | 160.8 (160x4) | 4.5 | 12 | 6513A | 46.00 |

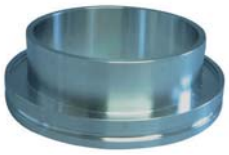
> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

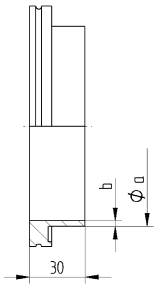
### Steel 1.0037

| Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c (pipe dimensions) [mm] | d [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **63** | 95 | 70 | 76.6 (76x3) | 4.5 | 12 | 6511St | 23.90 |
| **100** | 130 | 102 | 108.6 (108x3) | 4.5 | 12 | 6512St | 27.90 |
| **160** | 180 | 153 | 159.8 (159x3) | 4.5 | 12 | 6513St | 34.90 |
| **200** | 240 | 213 | 219.8 (219x3) | 4.5 | 12 | 6514St | Upon request |
| **250** | 290 | 261 | 273.8 (273x3) | 4.5 | 12 | 6515St | Upon request |

# ISO-K flange with short flanged socket

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration






### High-grade steel 1.4301

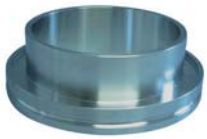
| Nominal width DN | dia.a (pipe dimension) [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 76 (76x3) | 3 | 30 | 6521 | 47.00 |
| **100** | 108 (108x3) | 3 | 30 | 6522 | 57.00 |
| **160** | 159 (159x3) | 3 | 30 | 6523 | 87.00 |
| **200** | 219 (219x3) | 3 | 30 | 6524 | Upon request |
| **250** | 273 (273x3) | 3 | 30 | 6525 | Upon request |

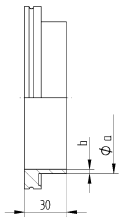
### High-grade steel 1.4404

| Nominal width DN | dia.a (pipe dimension) [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 76 (76x3) | 3 | 30 | 65214 | 57.00 |
| **100** | 108 (108x3) | 3 | 30 | 65224 | 77.00 |
| **160** | 159 (159x3) | 3 | 30 | 65234 | 107.00 |
| **200** | 219 (219x3) | 3 | 30 | 65244 | Upon request |
| **250** | 273 (273x3) | 3 | 30 | 65254 | Upon request |

# ISO-K flange with short flanged socket

> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration






### Aluminium 3.2315

| Nominal width DN | dia.a (pipe dimension) [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 76 (76x3) | 3 | 30 | 6521A | 52.00 |
| **100** | 108 (108x3) | 3 | 30 | 6522A | 67.00 |
| **160** | 160 (160x4) | 3 | 30 | 6523A | 97.00 |

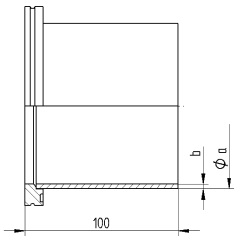
> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals > Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C * Take sealing materials and connecting elements into consideration

### Steel 1.0037

| Nominal width DN | dia.a (pipe dimension) [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 76 (76x3) | 3 | 30 | 6521St | 38.00 |
| **100** | 108 (108x3) | 3 | 30 | 6522St | 48.00 |
| **160** | 159 (159x3) | 3 | 30 | 6523St | 73.00 |
| **200** | 219 (219x3) | 3 | 30 | 6524St | Upon request |
| **250** | 273 (273x3) | 3 | 30 | 6525St | Upon request |

# ISO-K flange with long flanged socket

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C (1.4301)
> Temperature range: –196 °C to 350 °C (1.4404)
* Take sealing materials and connecting elements into consideration



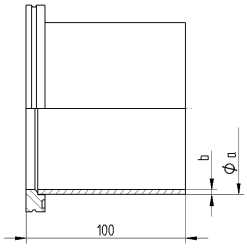

### High-grade steel 1.4301

| Nominal width DN | dia.a (pipe dimension) [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 76 (76x3) | 3 | 100 | 6571 | 49.50 |
| **100** | 108 (108x3) | 3 | 100 | 6572 | 69.00 |
| **160** | 159 (159x3) | 3 | 100 | 6573 | 93.50 |
| **200** | 219 (219x3) | 3 | 100 | 6574 | 149.00 |
| **250** | 273 (273x3) | 3 | 100 | 6575 | 272.00 |

### High-grade steel 1.4404

| Nominal width DN | dia.a (pipe dimension) [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 76 (76x3) | 3 | 100 | 65714 | 58.90 |
| **63** | 63.5 (63.5x1.65) | 3 | 100 | 65714-IM | 49.50 |
| **100** | 108 (108x3) | 3 | 100 | 65724 | 78.00 |
| **100** | 101.6 (101.6x2.11) | 3 | 100 | 65724-IM | 69.00 |
| **160** | 159 (159x3) | 3 | 100 | 65734 | 112.00 |
| **200** | 219 (219x3) | 3 | 100 | 65744 | 199.00 |
| **250** | 273 (273x3) | 3 | 100 | 65754 | 297.00 |

# ISO-K flange with long flanged socket




> Pressure range: $10^{-7}$mbar to 1.5 bar
> Temperature range: –196 °C to 150 °C
* Take sealing materials and connecting elements into consideration

## Aluminium 3.2315

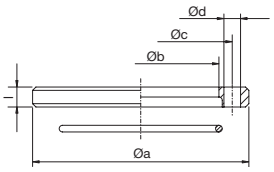
| Nominal width DN | dia.a (pipe dimension) [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 76 (76x3) | 3 | 100 | 6571A | 49.00 |
| **100** | 108 (108x3) | 3 | 100 | 6572A | 67.00 |
| **160** | 160 (160x4) | 3 | 100 | 6573A | 89.00 |

> Pressure range: $10^{-7}$mbar to 1.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 1.5 bar with metal seals
> Temperature range: –196 °C to 300 °C
* Take sealing materials and connecting elements into consideration

## Steel 1.0037

| Nominal width DN | dia.a (pipe dimension) [mm] | b [mm] | l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 76 (76x3) | 3 | 100 | 6571St | 49.00 |
| **100** | 108 (108x3) | 3 | 100 | 6572St | 66.00 |
| **160** | 159 (159x3) | 3 | 100 | 6573St | 89.00 |
| **200** | 219 (219x3) | 3 | 100 | 6574St | Upon request |
| **250** | 273 (273x3) | 3 | 100 | 6575St | Upon request |

# ISO collar flange with snap ring




> Temperature range: –10 °C to 150 °C 1.0037
> Temperature range: –196 °C to 300 °C 1.4301
* Take sealing materials and connecting elements into consideration

## Steel 1.0037 nickel-plated

| Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c [mm] | dia.d [mm] | l [mm] | Bores | dia. ring [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **63** | 130 | 95.5 | 110 | 9 | 12 | 4x90° | 3 | 6581 | 47.00 |
| **100** | 165 | 130.5 | 145 | 9 | 12 | 8x45° | 3 | 6582 | 63.00 |
| **160** | 225 | 180.7 | 200 | 11 | 16 | 8x45° | 5 | 6583 | 92.00 |
| **200** | 285 | 240.7 | 260 | 11 | 16 | 12x30° | 5 | 6584 | 172.00 |
| **250** | 335 | 290.7 | 310 | 11 | 16 | 12x30° | 5 | 6585 | 212.00 |

## High-grade steel 1.4301

| Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c [mm] | dia.d [mm] | l [mm] | Bores | dia. ring [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **63** | 130 | 95.5 | 110 | 9 | 12 | 4x90° | 3 | 6591 | 59.90 |
| **100** | 165 | 130.5 | 145 | 9 | 12 | 8x45° | 3 | 6592 | 84.70 |
| **160** | 225 | 180.7 | 200 | 11 | 16 | 8x45° | 5 | 6593 | 144.00 |
| **200** | 285 | 240.7 | 260 | 11 | 16 | 12x30° | 5 | 6594 | Upon request |
| **250** | 335 | 290.7 | 310 | 11 | 16 | 12x30° | 5 | 6595 | Upon request |

# ISO-K hoses and metal spring bellows

**Properties of high-grade steel 1.4301 / 1.4404:**

- temperature range –196 °C to +350 °C
- suitable for high vacuum up to $1x10^{-9}$mbar
- metal hose lengths of up to 5 m are possible

**Description:**

The novotek metal hoses are circular corrugated all-metal hoses. The profiling on the corrugation determines the elastic pliability and compressive resistance. The typical clip flange connections are welded onto the metal hoses. To eliminate temper colours and clean the weld seam, in a special vacuum annealing procedure the hoses are baked-out at approx. 1040 °C under forming gas. In this process, the metal hose is simultaneously soft-annealed and thus receives its extremely flexibility property. The flexibility makes smaller bending radii possible.

The novotek metal spring bellows are corrugated metal bellows. The corrugated sections that run concentrically and parallel to one another give the metal spring bellows axial, angular and lateral mobility, whereby combinations of this are also possible. Metal spring bellows are not annealed.

**Area of application:**

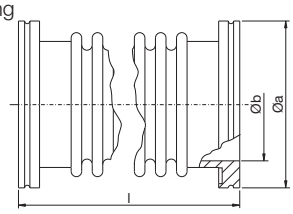
The novotek metal hose connections and metal spring bellows can be used as a mobile vacuum line. If they are used, ensure that the metal hoses can only execute bending movements in a lateral direction. Dynamic axial movements, i.e. buckling or pulling apart both in axial direction as well as torsional movement can only be executed by metal spring bellows.

**Important note:**

During evacuation of metal hoses as well as metal spring bellows, the air pressure applied from the outside results in a considerable force acting on the flanges, which causes compression. Only the spring power of the hose and bellows counteracts this. It may be necessary to compensate for the forces that develop.

# ISO-K corrugated hose with flange, annealed

(**Flange 1.4301. 1.4404 / hose 1.4404**)
> Flexible without annealing / extremely flexible through soft annealing
> Pressure range: $10^{-9}$mbar
> Temperature range 1.4301: –196 °C to 300 °C*
> Temperature range 1.4404: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

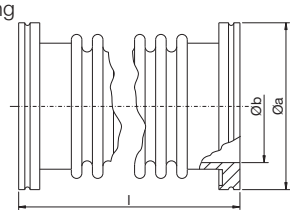
| Nominal width DN | Total length l [mm] | dia.a [mm] | dia.b [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63** | 250 | 80 | 65 | 90 | 330 | 1.7 | 6901 | 150.50 |
| **100** | 250 | 120 | 100 | 131 | 530 | 1.3 | 6902 | 192.00 |
| **160** | 250 | 180 | 153 | 216 | 1050 | 1.1 | 6903 | 332.00 |
| **63** | 500 | 95 | 70 | 90 | 330 | 1.7 | 6911 | 167.50 |
| **100** | 500 | 130 | 102 | 131 | 530 | 1.3 | 6912 | 238.00 |
| **160** | 500 | 180 | 153 | 216 | 1050 | 1.1 | 6913 | 398.00 |
| **63** | 750 | 95 | 70 | 90 | 330 | 1.7 | 6931 | 192.00 |
| **100** | 750 | 130 | 102 | 131 | 530 | 1.3 | 6932 | 267.00 |
| **160** | 750 | 180 | 153 | 216 | 1050 | 1.1 | 6933 | 452.00 |
| **63** | 1000 | 95 | 70 | 90 | 330 | 1.7 | 6921 | 235.00 |
| **100** | 1000 | 130 | 102 | 131 | 530 | 1.3 | 6922 | 297.00 |
| **160** | 1000 | 180 | 153 | 216 | 1050 | 1.1 | 6923 | 498.00 |

## High-grade steel 1.4404

| Nominal width DN | Total length l [mm] | dia.a [mm] | dia.b [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63** | 250 | 80 | 65 | 90 | 330 | 1.7 | 69014 | 160.00 |
| **100** | 250 | 120 | 100 | 131 | 530 | 1.3 | 69024 | 202.00 |
| **160** | 250 | 180 | 153 | 216 | 1050 | 1.1 | 69034 | 352.00 |
| **63** | 500 | 95 | 70 | 90 | 330 | 1.7 | 69114 | 182.00 |
| **100** | 500 | 130 | 102 | 131 | 530 | 1.3 | 69124 | 242.00 |
| **160** | 500 | 180 | 153 | 216 | 1050 | 1.1 | 69134 | 412.00 |
| **63** | 750 | 95 | 70 | 90 | 330 | 1.7 | 69314 | 210.00 |
| **100** | 750 | 130 | 102 | 131 | 530 | 1.3 | 69324 | 287.00 |
| **160** | 750 | 180 | 153 | 216 | 1050 | 1.1 | 69334 | 477.00 |
| **63** | 1000 | 95 | 70 | 90 | 330 | 1.7 | 69214 | 238.00 |
| **100** | 1000 | 130 | 102 | 131 | 530 | 1.3 | 69224 | 332.00 |
| **160** | 1000 | 180 | 153 | 216 | 1050 | 1.1 | 69234 | 547.00 |

# ISO-K corrugated hose with flange, unannealed

(**Flange 1.4301. 1.4404 / hose 1.4404**)
> Flexible without annealing / extremely flexible through soft annealing
> Pressure range: $10^{-9}$mbar
> Temperature range 1.4301: –196 °C to 300 °C*
> Temperature range 1.4404: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

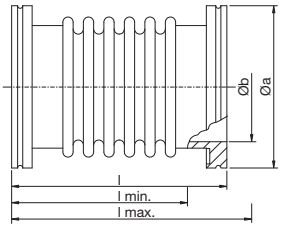
| Nominal width DN | Total length l [mm] | dia.a [mm] | dia.b [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63** | 250 | 80 | 65 | 90 | 330 | 1.7 | 6901U | 146.50 |
| **100** | 250 | 120 | 100 | 131 | 530 | 1.3 | 6902U | 187.00 |
| **160** | 250 | 180 | 153 | 216 | 1050 | 1.1 | 6903U | 326.00 |
| **63** | 500 | 95 | 70 | 90 | 330 | 1.7 | 6911U | 162.50 |
| **100** | 500 | 130 | 102 | 131 | 530 | 1.3 | 6912U | 232.00 |
| **160** | 500 | 180 | 153 | 216 | 1050 | 1.1 | 6913U | 392.00 |
| **63** | 750 | 95 | 70 | 90 | 330 | 1.7 | 6931U | 181.50 |
| **100** | 750 | 130 | 102 | 131 | 530 | 1.3 | 6932U | 255.00 |
| **160** | 750 | 180 | 153 | 216 | 1050 | 1.1 | 6933U | 444.00 |
| **63** | 1000 | 95 | 70 | 90 | 330 | 1.7 | 6921U | 198.50 |
| **100** | 1000 | 130 | 102 | 131 | 530 | 1.3 | 6922U | 284.00 |
| **160** | 1000 | 180 | 153 | 216 | 1050 | 1.1 | 6923U | 489.00 |

## High-grade steel 1.4404

| Nominal width DN | Total length l [mm] | dia.a [mm] | dia.b [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63** | 250 | 80 | 65 | 90 | 330 | 1.7 | 69014U | 156.00 |
| **100** | 250 | 120 | 100 | 131 | 530 | 1.3 | 69024U | 197.00 |
| **160** | 250 | 180 | 153 | 216 | 1050 | 1.1 | 69034U | 346.00 |
| **63** | 500 | 95 | 70 | 90 | 330 | 1.7 | 69114U | 177.00 |
| **100** | 500 | 130 | 102 | 131 | 530 | 1.3 | 69124U | 236.00 |
| **160** | 500 | 180 | 153 | 216 | 1050 | 1.1 | 69134U | 405.00 |
| **63** | 750 | 95 | 70 | 90 | 330 | 1.7 | 69314U | 204.00 |
| **100** | 750 | 130 | 102 | 131 | 530 | 1.3 | 69324U | 280.00 |
| **160** | 750 | 180 | 153 | 216 | 1050 | 1.1 | 69334U | 469.00 |
| **63** | 1000 | 95 | 70 | 90 | 330 | 1.7 | 69214U | 231.00 |
| **100** | 1000 | 130 | 102 | 131 | 530 | 1.3 | 69224U | 324.00 |
| **160** | 1000 | 180 | 153 | 216 | 1050 | 1.1 | 69234U | 538.00 |

# ISO-K metal spring bellows 304L / 316L

> Pressure range: $10^{-9}$mbar
> 10000 load alternation at 20 °C and 1013 mbar standard air pressure
> Temperature range: –196 °C to 300 °C* 1.4301
> Temperature range: –196 °C to 350 °C* 1.4404
* Take sealing materials and connecting elements into consideration




## Flange and connection pipe 1.4301 / bellows 1.4571

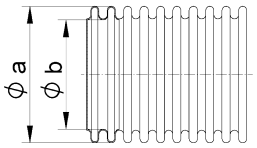
| Nominal width DN | dia.a [mm] | dia.b [mm] | Total length l [mm] | Llmin [mm] | Lmax [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63** | 95 | 70 | 130 | 116 | 140 | 1.7 | 6991 | 141.90 |
| **100** | 130 | 102 | 130 | 116 | 140 | 1.3 | 6992 | 184.00 |
| **160** | 180 | 153 | 220 | 170 | 230 | 1.1 | 6993 | 324.50 |
| **200** | 240 | 213 | 220 | 185 | 230 | 1.0 | 6994 | 690.00 |
| **250** | 290 | 261 | 220 | 185 | 230 | 1.0 | 6995 | 990.00 |

## Flange and connection pipe 1.4404 / bellows 1.4571

| Nominal width DN | dia.a [mm] | dia.b [mm] | Total length l [mm] | Llmin [mm] | Lmax [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63** | 95 | 70 | 130 | 116 | 140 | 1.7 | 69914 | 171.00 |
| **100** | 130 | 102 | 130 | 116 | 140 | 1.3 | 69924 | 210.00 |
| **160** | 180 | 153 | 220 | 170 | 230 | 1.1 | 69934 | 352.00 |
| **200** | 240 | 213 | 220 | 185 | 230 | 1.0 | 69944 | 795.00 |
| **250** | 290 | 261 | 220 | 185 | 230 | 1.0 | 69954 | 1,190.00 |

# ISO-K corrugated hose, annealed, sold by the metre 1.4404

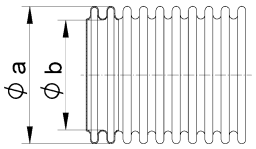
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length l [mm] | dia.a [mm] | dia.b [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63** | 1000 | 80 | 65 | 90 | 330 | 1.7 | 6971 | 131.00 |
| **100** | 1000 | 120 | 100 | 131 | 530 | 1.3 | 6972 | 172.00 |
| **160** | 1000 | 180 | 153 | 216 | 1050 | 1.1 | 6973 | 213.00 |

# ISO-K corrugated hose, unannealed, sold by the metre 1.4404

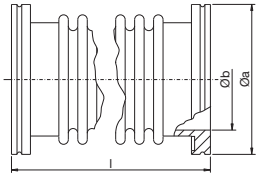
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length l [mm] | dia.a [mm] | dia.b [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **63** | 1000 | 80 | 65 | 90 | 330 | 1.7 | 6971U | 124.00 |
| **100** | 1000 | 120 | 100 | 131 | 530 | 1.3 | 6972U | 164.00 |
| **160** | 1000 | 180 | 153 | 216 | 1050 | 1.1 | 6973U | 204.00 |

# Special length ISO-K corrugated hose, annealed with ISO-K flange

> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 300 °C(1.4301)/350 °C(1.4404)*
* Take sealing materials and connecting elements into consideration

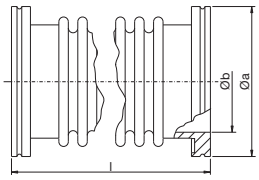



Price example:

| High-grade steel hose, extremely flexible 1.4301 NW100 l = 2700 mm contains: | Article no. | Price € |
|---|---|---|
| **High-grade steel hose, extremely flexible 1.4301 ISO-K NW100 l = 1000 mm** | 6922 | 297.00 |
| **High-grade steel hose, extremely flexible ISO-K NW100 sold by the metre 1.7 m** | 6972 x 1.7 | 172 x 1.7 = 292.40 |
| **High-grade steel hose, extremely flexible 1.4301 ISO-K NW100 l = 2700 mm** | **6922 x 2.7** | **Total price = 589.40** |

# Special length ISO-K corrugated hose, unannealed with ISO-K flange

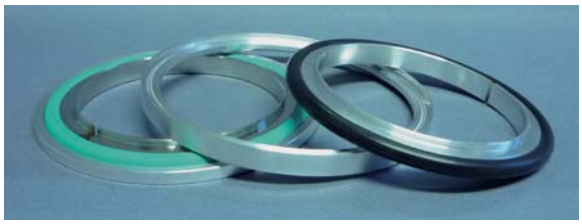
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 300 °C(1.4301)/350 °C(1.4404)*
* Take sealing materials and connecting elements into consideration




Price example:

| High-grade steel hose, flexible 1.4301 NW100 l = 2700 mm contains: | Article no. | Price € |
|---|---|---|
| **High-grade steel hose, flexible 1.4301 ISO-K NW100 l = 1000 mm** | 6922U | 284.00 |
| **High-grade steel hose, flexible ISO-K NW100 sold by the metre 1.7 m** | 6972U x 1.7 | 164 x 1.7 = 278.80 |
| **High-grade steel hose, flexible 1.4301 ISO-K NW100 l = 2700 mm** | **6922U x 2.7** | **Total price = 562.80** |

# ISO-K seal components



**Properties:**

- temperature range –60 °C to +200 °C
- suitable for high vacuum up to $1x10^{-7}$ mbar
- combinable depending on application area

**Description:**

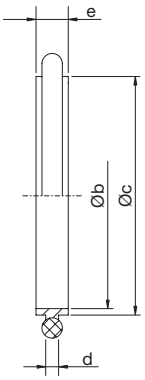
novotek seal components can be selected depending on the technical vacuum requirements, e.g. bake-out capacity, outgassing and corrosion resistance. The O-ring seals used differ with regard to their temperature stability and compatibility with different media. A series of combination options are described under “Materials” at the beginning of our catalogue.

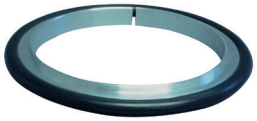
If there are special requirements, e.g. no permeation of gases or long-term high temperature requirements, aluminium sealing rings are used.

**Area of application:**

The novotek seal components allow the installation of vacuum attachments for the pressure range of 1500 mbar up to $10^{-7}$ mbar.

# ISO-K centring ring, aluminium, without outer ring

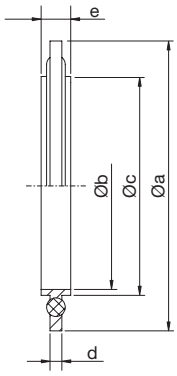


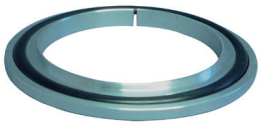



> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.b [mm] | dia.c [mm] | d [mm] | e [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **Perbunan® (NBR)** | 63 | 67.5 | 70 | 3.9 | 8 | 6201 | 13.20 |
| **Perbunan® (NBR)** | 80 | 80.2 | 83.2 | 3.9 | 8 | 62015 | 18.10 |
| **Perbunan® (NBR)** | 100 | 99.5 | 102 | 3.9 | 8 | 6202 | 18.10 |
| **Perbunan® (NBR)** | 160 | 150 | 153 | 3.9 | 8 | 6203 | 19.70 |
| **Viton® (FKM,FPM)** | 63 | 67.5 | 70 | 3.9 | 8 | 6211 | 12.20 |
| **Viton® (FKM,FPM)** | 80 | 80.2 | 83.2 | 3.9 | 8 | 62115 | 18.70 |
| **Viton® (FKM,FPM)** | 100 | 99.5 | 102 | 3.9 | 8 | 6212 | 16.00 |
| **Viton® (FKM,FPM)** | 160 | 150 | 153 | 3.9 | 8 | 6213 | 23.90 |
| **EPDM** | 63 | 67.5 | 70 | 3.9 | 8 | 6201E | 14.20 |
| **EPDM** | 100 | 99.5 | 102 | 3.9 | 8 | 6202E | 18.50 |
| **EPDM** | 160 | 150 | 153 | 3.9 | 8 | 6203E | 22.10 |
| **Neoprene® (CR)** | 63 | 67.5 | 70 | 3.9 | 8 | 6201N | 14.20 |
| **Neoprene® (CR)** | 100 | 99.5 | 102 | 3.9 | 8 | 6202N | 18.50 |
| **Neoprene® (CR)** | 160 | 150 | 153 | 3.9 | 8 | 6203N | 22.10 |
| **Silicone (VMQ)** | 63 | 67.5 | 70 | 3.9 | 8 | 6201S | 15.60 |
| **Silicone (VMQ)** | 100 | 99.5 | 102 | 3.9 | 8 | 6202S | 19.30 |
| **Silicone (VMQ)** | 160 | 150 | 153 | 3.9 | 8 | 6203S | 23.80 |
| **FFKM** | 63 | 67.5 | 70 | 3.9 | 8 | 6201F | Upon request |
| **FFKM** | 100 | 99.5 | 102 | 3.9 | 8 | 6202F | Upon request |
| **FFKM** | 160 | 150 | 153 | 3.9 | 8 | 6203F | Upon request |

# ISO-K centring ring, aluminium, with outer ring

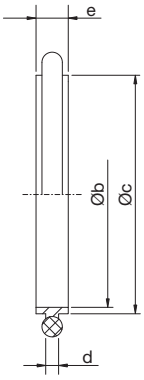


> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range for aluminium: –196 °C to 150 °C*
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c [mm] | d [mm] | e [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **Perbunan® (NBR)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6241 | 13.80 |
| **Perbunan® (NBR)** | 80 | 110 | 80.2 | 83.2 | 3.9 | 8 | 62415 | 18.70 |
| **Perbunan® (NBR)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6242 | 18.70 |
| **Perbunan® (NBR)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6243 | 21.50 |
| **Perbunan® (NBR)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6244 | 30.50 |
| **Perbunan® (NBR)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6245 | 41.00 |
| **Perbunan® (NBR)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6246 | 89.70 |
| **Viton® (FKM,FPM)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6251 | 16.40 |
| **Viton® (FKM,FPM)** | 80 | 110 | 80.2 | 83.2 | 3.9 | 8 | 62515 | 22.40 |
| **Viton® (FKM,FPM)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6252 | 22.40 |
| **Viton® (FKM,FPM)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6253 | 27.90 |
| **Viton® (FKM,FPM)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6254 | 39.30 |
| **Viton® (FKM,FPM)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6255 | 46.35 |
| **Viton® (FKM,FPM)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6256 | 99.50 |
| **EPDM** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6241E | 14.40 |
| **EPDM** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6242E | 18.70 |
| **EPDM** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6243E | 22.30 |
| **EPDM** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6244E | Upon request |
| **EPDM** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6245E | Upon request |
| **EPDM** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6246E | Upon request |
| **Neoprene® (CR)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6241N | 14.40 |
| **Neoprene® (CR)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6242N | 18.70 |
| **Neoprene® (CR)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6243N | 22.30 |
| **Neoprene® (CR)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6244N | Upon request |
| **Neoprene® (CR)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6245N | Upon request |
| **Neoprene® (CR)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6246N | Upon request |
| **Silicone (VMQ)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6241S | 15.80 |
| **Silicone (VMQ)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6242S | 19.50 |
| **Silicone (VMQ)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6243S | 24.00 |
| **Silicone (VMQ)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6244S | Upon request |
| **Silicone (VMQ)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6245S | Upon request |
| **Silicone (VMQ)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6246S | Upon request |
| **FFKM** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6241F | Upon request |
| **FFKM** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6242F | Upon request |
| **FFKM** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6243F | Upon request |

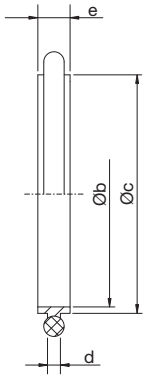
# ISO-K centring ring, high-grade steel 1.4301 without outer ring




> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.b [mm] | dia.c [mm] | d [mm] | e [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **Perbunan® (NBR)** | 63 | 67.5 | 70 | 3.9 | 8 | 6221 | 19.80 |
| **Perbunan® (NBR)** | 80 | 80.2 | 83.2 | 3.9 | 8 | 62215 | 22.60 |
| **Perbunan® (NBR)** | 100 | 99.5 | 102 | 3.9 | 8 | 6222 | 22.60 |
| **Perbunan® (NBR)** | 160 | 150 | 153 | 3.9 | 8 | 6223 | 38.30 |
| **Viton® (FKM,FPM)** | 63 | 67.5 | 70 | 3.9 | 8 | 6231 | 19.80 |
| **Viton® (FKM,FPM)** | 80 | 80.2 | 83.2 | 3.9 | 8 | 62315 | 25.80 |
| **Viton® (FKM,FPM)** | 100 | 99.5 | 102 | 3.9 | 8 | 6232 | 25.80 |
| **Viton® (FKM,FPM)** | 160 | 150 | 153 | 3.9 | 8 | 6233 | 39.90 |
| **EPDM** | 63 | 67.5 | 70 | 3.9 | 8 | 6221E | 19.90 |
| **EPDM** | 100 | 99.5 | 102 | 3.9 | 8 | 6222E | 22.70 |
| **EPDM** | 160 | 150 | 153 | 3.9 | 8 | 6223E | 38.30 |
| **Neoprene® (CR)** | 63 | 67.5 | 70 | 3.9 | 8 | 6221N | 19.90 |
| **Neoprene® (CR)** | 100 | 99.5 | 102 | 3.9 | 8 | 6222N | 22.70 |
| **Neoprene® (CR)** | 160 | 150 | 153 | 3.9 | 8 | 6223N | 38.30 |
| **Silicone (VMQ)** | 63 | 67.5 | 70 | 3.9 | 8 | 6221S | 19.90 |
| **Silicone (VMQ)** | 100 | 99.5 | 102 | 3.9 | 8 | 6222S | 24.30 |
| **Silicone (VMQ)** | 160 | 150 | 153 | 3.9 | 8 | 6223S | 38.30 |
| **FFKM** | 63 | 67.5 | 70 | 3.9 | 8 | 6221F | Upon request |
| **FFKM** | 100 | 99.5 | 102 | 3.9 | 8 | 6222F | Upon request |
| **FFKM** | 160 | 150 | 153 | 3.9 | 8 | 6223F | Upon request |

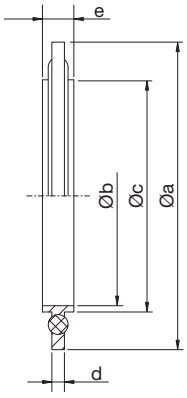
# ISO-K centring ring, high-grade steel 1.4404 without outer ring




> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4404: –196 °C to 350 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.b [mm] | dia.c [mm] | d [mm] | e [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **Perbunan® (NBR)** | 63 | 67.5 | 70 | 3.9 | 8 | 62214 | 20.80 |
| **Perbunan® (NBR)** | 80 | 80.2 | 83.2 | 3.9 | 8 | 622145 | 23.80 |
| **Perbunan® (NBR)** | 100 | 99.5 | 102 | 3.9 | 8 | 62224 | 23.80 |
| **Perbunan® (NBR)** | 160 | 150 | 153 | 3.9 | 8 | 62234 | 39.90 |
| **Viton® (FKM,FPM)** | 63 | 67.5 | 70 | 3.9 | 8 | 62314 | 20.80 |
| **Viton® (FKM,FPM)** | 80 | 80.2 | 83.2 | 3.9 | 8 | 623145 | 27.00 |
| **Viton® (FKM,FPM)** | 100 | 99.5 | 102 | 3.9 | 8 | 62324 | 27.00 |
| **Viton® (FKM,FPM)** | 160 | 150 | 153 | 3.9 | 8 | 62334 | 41.50 |
| **EPDM** | 63 | 67.5 | 70 | 3.9 | 8 | 62214E | 20.90 |
| **EPDM** | 100 | 99.5 | 102 | 3.9 | 8 | 62224E | 23.90 |
| **EPDM** | 160 | 150 | 153 | 3.9 | 8 | 62234E | 39.90 |
| **Neoprene® (CR)** | 63 | 67.5 | 70 | 3.9 | 8 | 62214N | 20.90 |
| **Neoprene® (CR)** | 100 | 99.5 | 102 | 3.9 | 8 | 62224N | 23.90 |
| **Neoprene® (CR)** | 160 | 150 | 153 | 3.9 | 8 | 62234N | 39.90 |
| **Silicone (VMQ)** | 63 | 67.5 | 70 | 3.9 | 8 | 62214S | 20.90 |
| **Silicone (VMQ)** | 100 | 99.5 | 102 | 3.9 | 8 | 62224S | 25.50 |
| **Silicone (VMQ)** | 160 | 150 | 153 | 3.9 | 8 | 62234S | 39.90 |
| **FFKM** | 63 | 67.5 | 70 | 3.9 | 8 | 62214F | Upon request |
| **FFKM** | 100 | 99.5 | 102 | 3.9 | 8 | 62224F | Upon request |
| **FFKM** | 160 | 150 | 153 | 3.9 | 8 | 62234F | Upon request |

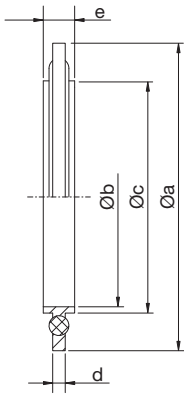
# ISO-K centring ring, high-grade steel 1.4301 with outer ring Al




> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range for aluminium 3.1645 –196 °C to 150 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c [mm] | d [mm] | e [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **Perbunan® (NBR)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6261 | 21.70 |
| **Perbunan® (NBR)** | 80 | 110 | 80.2 | 83.2 | 3.9 | 8 | 62615 | 24.30 |
| **Perbunan® (NBR)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6262 | 24.30 |
| **Perbunan® (NBR)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6263 | 42.40 |
| **Perbunan® (NBR)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6264 | 63.00 |
| **Perbunan® (NBR)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6265 | 70.50 |
| **Perbunan® (NBR)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6266 | Upon request |
| **Viton® (FKM,FPM)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6271 | 23.50 |
| **Viton® (FKM,FPM)** | 80 | 110 | 80.2 | 83.2 | 3.9 | 8 | 62715 | 26.30 |
| **Viton® (FKM,FPM)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6272 | 26.30 |
| **Viton® (FKM,FPM)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6273 | 42.90 |
| **Viton® (FKM,FPM)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6274 | 67.00 |
| **Viton® (FKM,FPM)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6275 | 76.50 |
| **Viton® (FKM,FPM)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6276 | Upon request |
| **EPDM** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6261E | 21.70 |
| **EPDM** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6262E | 24.30 |
| **EPDM** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6263E | 42.90 |
| **EPDM** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6264E | Upon request |
| **EPDM** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6265E | Upon request |
| **EPDM** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6266E | Upon request |
| **Neoprene® (CR)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6261N | 21.70 |
| **Neoprene® (CR)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6262N | 24.30 |
| **Neoprene® (CR)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6263N | 42.90 |
| **Neoprene® (CR)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6264N | Upon request |
| **Neoprene® (CR)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6265N | Upon request |
| **Neoprene® (CR)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6266N | Upon request |
| **Silicone (VMQ)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6261S | 21.70 |
| **Silicone (VMQ)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6262S | 24.30 |
| **Silicone (VMQ)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6263S | 42.90 |
| **Silicone (VMQ)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 6264S | Upon request |
| **Silicone (VMQ)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 6265S | Upon request |
| **Silicone (VMQ)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 6266S | Upon request |
| **FFKM** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 6261F | Upon request |
| **FFKM** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 6262F | Upon request |
| **FFKM** | 160 | 179 | 150 | 153 | 3.9 | 8 | 6263F | Upon request |

# ISO-K centring ring, high-grade steel 1.4404 with outer ring Al

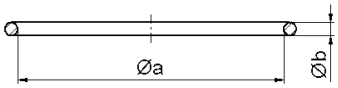



> Pressure range: $10^{-7}$mbar to 2.5 bar
> Temperature range 1.4404: –196 °C to 350 °C
> Temperature range for aluminium 3.1645 –196 °C to 150 °C
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C

| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | dia.c [mm] | d [mm] | e [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **Perbunan® (NBR)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 62614 | 22.70 |
| **Perbunan® (NBR)** | 80 | 110 | 80.2 | 83.2 | 3.9 | 8 | 626145 | 25.50 |
| **Perbunan® (NBR)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 62624 | 25.50 |
| **Perbunan® (NBR)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 62634 | 44.00 |
| **Perbunan® (NBR)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 62644 | 65.00 |
| **Perbunan® (NBR)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 62654 | 73.00 |
| **Perbunan® (NBR)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 62664 | Upon request |
| **Viton® (FKM,FPM)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 62714 | 24.50 |
| **Viton® (FKM,FPM)** | 80 | 110 | 80.2 | 83.2 | 3.9 | 8 | 627145 | 27.50 |
| **Viton® (FKM,FPM)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 62724 | 27.50 |
| **Viton® (FKM,FPM)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 62734 | 45.50 |
| **Viton® (FKM,FPM)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 62744 | 69.00 |
| **Viton® (FKM,FPM)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 62754 | 79.00 |
| **Viton® (FKM,FPM)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 62764 | Upon request |
| **EPDM** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 62614E | 22.70 |
| **EPDM** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 62624E | 25.50 |
| **EPDM** | 160 | 179 | 150 | 153 | 3.9 | 8 | 62634E | 44.50 |
| **EPDM** | 200 | 236 | 210 | 213 | 3.9 | 8 | 62644E | Upon request |
| **EPDM** | 250 | 287 | 258 | 261 | 3.9 | 8 | 62654E | Upon request |
| **EPDM** | 320 | 358 | 313 | 318 | 5.6 | 14 | 62664E | Upon request |
| **Neoprene® (CR)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 62614N | 22.70 |
| **Neoprene® (CR)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 62624N | 25.50 |
| **Neoprene® (CR)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 62634N | 44.50 |
| **Neoprene® (CR)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 62644N | Upon request |
| **Neoprene® (CR)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 62654N | Upon request |
| **Neoprene® (CR)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 62664N | Upon request |
| **Silicone (VMQ)** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 62614S | 22.70 |
| **Silicone (VMQ)** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 62624S | 25.50 |
| **Silicone (VMQ)** | 160 | 179 | 150 | 153 | 3.9 | 8 | 62634S | 44.50 |
| **Silicone (VMQ)** | 200 | 236 | 210 | 213 | 3.9 | 8 | 62644S | Upon request |
| **Silicone (VMQ)** | 250 | 287 | 258 | 261 | 3.9 | 8 | 62654S | Upon request |
| **Silicone (VMQ)** | 320 | 358 | 313 | 318 | 5.6 | 14 | 62664S | Upon request |
| **FFKM** | 63 | 94 | 67.5 | 70 | 3.9 | 8 | 62614F | Upon request |
| **FFKM** | 100 | 128 | 99.5 | 102 | 3.9 | 8 | 62624F | Upon request |
| **FFKM** | 160 | 179 | 150 | 153 | 3.9 | 8 | 62634F | Upon request |

# ISO-K spare O-ring for centring ring

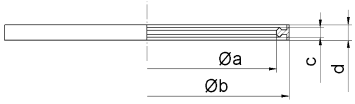
> Temperature range for NBR: –30 °C to 110 °C
> Temperature range for FKM/FPM: –20 °C to 200 °C
> Temperature range for EPDM: –60 °C to 150 °C
> Temperature range for CR: –40 °C to 110 °C
> Temperature range for VMQ: –60 °C to 200 °C




| O-ring | Nominal width DN | dia.a [mm] | dia.b [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **Perbunan® (NBR)** | 63 | 75.6 | 5.3 | 6281 | 1.40 |
| **Perbunan® (NBR)** | 80 | 88.3 | 5.3 | 62815 | 1.80 |
| **Perbunan® (NBR)** | 100 | 107.3 | 5.3 | 6282 | 1.80 |
| **Perbunan® (NBR)** | 160 | 158.3 | 5.3 | 6283 | 2.80 |
| **Perbunan® (NBR)** | 200 | 209.1 | 5.3 | 6284 | 4.10 |
| **Perbunan® (NBR)** | 250 | 253.4 | 5.3 | 6285 | 4.70 |
| **Viton® (FKM,FPM)** | 63 | 75.6 | 5.3 | 6286 | 3.30 |
| **Viton® (FKM,FPM)** | 80 | 88.3 | 5.3 | 62865 | 4.30 |
| **Viton® (FKM,FPM)** | 100 | 107.3 | 5.3 | 6287 | 4.30 |
| **Viton® (FKM,FPM)** | 160 | 158.3 | 5.3 | 6288 | 9.00 |
| **Viton® (FKM,FPM)** | 200 | 209.1 | 5.3 | 6289 | 13.80 |
| **Viton® (FKM,FPM)** | 250 | 253.4 | 5.3 | 6290 | 16.00 |
| **EPDM** | 63 | 75.6 | 5.3 | 6281E | 1.75 |
| **EPDM** | 100 | 107.3 | 5.3 | 6282E | 3.50 |
| **EPDM** | 160 | 158.3 | 5.3 | 6283E | 5.50 |
| **EPDM** | 200 | 209.1 | 5.3 | 6284E | Upon request |
| **EPDM** | 250 | 253.4 | 5.3 | 6285E | Upon request |
| **Neoprene® (CR)** | 63 | 75.6 | 5.3 | 6281N | 1.75 |
| **Neoprene® (CR)** | 100 | 107.3 | 5.3 | 6282N | 5.50 |
| **Neoprene® (CR)** | 160 | 158.3 | 5.3 | 6283N | 6.90 |
| **Neoprene® (CR)** | 200 | 209.1 | 5.3 | 6284N | Upon request |
| **Neoprene® (CR)** | 250 | 253.4 | 5.3 | 6285N | Upon request |
| **Silicone (VMQ)** | 63 | 75.6 | 5.3 | 6281S | 1.75 |
| **Silicone (VMQ)** | 100 | 107.3 | 5.3 | 6282S | 3.50 |
| **Silicone (VMQ)** | 160 | 158.3 | 5.3 | 6283S | 5.50 |
| **Silicone (VMQ)** | 200 | 209.1 | 5.3 | 6284S | Upon request |
| **Silicone (VMQ)** | 250 | 253.4 | 5.3 | 6285S | Upon request |
| **FFKM** | 63 | 75.6 | 5.3 | 6281F | Upon request |
| **FFKM** | 100 | 107.3 | 5.3 | 6282F | Upon request |
| **FFKM** | 160 | 158.3 | 5.3 | 6283F | Upon request |

# ISO-K metal sealing ring, aluminium 3.2315 (AlMgSi1)

(Cutting ring / sharp-edged sealing ring / centred on outside)
> Pressure range: $10^{-7}$mbar to 1.5 bar*
> Temperature range: –196 °C to 150 °C*
> No permeation of gases
> Only suitable for high-grade steel flanges
> Can only be used once
> Tightening torque approx. 30 – 35 Nm
* Take sealing materials and connecting elements into consideratio




| Nominal width DN | dia.a [mm] | dia.b [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63** | 85 | 97 | 4.6 | 7 | 6291 | 27.90 |
| **100** | 120.5 | 132 | 4.6 | 7 | 6292 | 39.70 |
| **160** | 170.5 | 180.5 | 4.6 | 7 | 6293 | 63.20 |
| **200** | 233 | 240 | 4.6 | 7 | 6294 | Upon request |
| **250** | 283 | 290 | 4.6 | 7 | 6295 | Upon request |

# ISO-K connecting components and accessories

**Properties:**

- temperature range –196 °C to +300 °C
- suitable for high vacuum up to 1x10$^{-9}$mbar
- simple assembly and disassembly
- maximum pressure 1.5 bar

**Description:**

novotek offers various version of connecting elements in nominal widths DN63 to DN500. They are all compatible with high-vacuum components in accordance with DIN 28404.

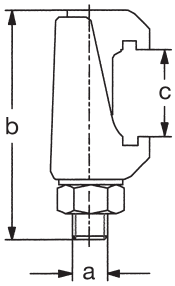
**Area of application:**

The novotek connecting components allow the installation of vacuum attachments for the pressure range of 1500 mbar up to 10$^{-9}$ mbar.

# ISO-K screw clamp

> Pressure range: 10$^{-9}$ mbar to 1.5 bar*
> Temperature range: high-grade steel –196 °C to 300 °C*, steel, galvanized, 0°C to 150 °C
> High-grade steel screw clamps should only be used with thread lubricant.
> Suitable for elastomer seals and metal seals

* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

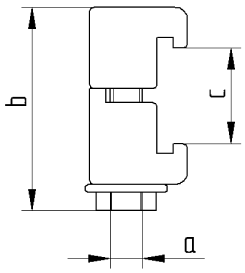
| Nominal width DN | Required number | a | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63/160** | 4 | M10 | 61 | 18-30 | 6005 | 6.95 |
| **200/250** | 6 | M10 | 61 | 18-30 | 6005 | 6.95 |
| **320/400** | 8 | M12 | 83 | 27-37 | 6006 | 14.25 |
| **500** | 12 | M12 | 83 | 27-37 | 6006 | 14.25 |

## Steel, galvanised

| Nominal width DN | Required number | a | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63/160** | 4 | M10 | 61 | 18-30 | 6003 | 3.95 |
| **200/250** | 6 | M10 | 61 | 18-30 | 6003 | 3.95 |
| **63-160** | 4 | M10 | 68 | 26-36 | 6003L | 4.25 |
| **200/250** | 6 | M10 | 68 | 26-36 | 6003L | 4.25 |
| **320/400** | 8 | M12 | 87 | 30-37 | 6007 | 9.40 |
| **500** | 12 | M12 | 87 | 30-37 | 6007 | 9.40 |
| **630** | 14 | M12 | 86 | 38-47 | 6009 | 11.00 |

# ISO-K screw clamp

> Pressure range: $10^{-9}$ mbar to 1.5 bar*
> Temperature range: –196 °C to 200 °C
> Suitable for elastomer seals
* Take sealing materials and connecting elements into consideration

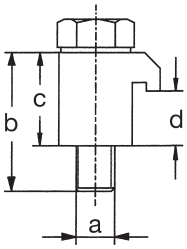



## Aluminium 3.3214

| Nominal width DN | Required number | a | b [mm] | c [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **63/100** | 4 | M8 | 50 | 23-34 | 6002 | 2.95 |
| **160** | 4 | M10 | 50 | 23-34 | 6004 | 3.95 |
| **200/250** | 6 | M10 | 50 | 23-34 | 6004 | 3.95 |
| **320/400** | 8 | M12 | 66 | 34-52 | 6008 | 8.45 |
| **500** | 12 | M12 | 66 | 34-52 | 6008 | 8.45 |

# ISO-K claw

> Pressure range: $10^{-9}$ mbar to 1.5 bar*
> Temperature range: high-grade steel –196 °C to 300 °C*, steel, galvanized, 0 °C – 150 °C
> Temperature range for aluminium: –196 °C to 200 °C
> High-grade steel screw clamps should only be used with thread lubricant.
> Suitable for elastomer seals and metal seals
> Pitch circle dia., see ISO collar flanges
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4301

| Nominal width DN | Required number | a | b [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **63** | 4 | M8 | 35 | 22.5 | 13.9 | 6015 | 4.85 |
| **100** | 8 | M8 | 35 | 22.5 | 13.9 | 6015 | 4.85 |
| **160** | 8 | M10 | 35 | 23 | 13.9 | 6016 | 5.65 |
| **200/250** | 12 | M10 | 35 | 23 | 13.9 | 6016 | 5.65 |
| **320/500** | 12 | M12 | 50 | 30 | 20.6 | 6018 | Upon request |

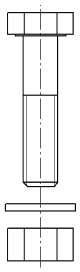
## Steel, galvanised

| Nominal width DN | Required number | a | b [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **63** | 4 | M8 | 35 | 23 | 13.9 | 6011 | 3.20 |
| **100** | 8 | M8 | 35 | 23 | 13.9 | 6011 | 3.20 |
| **160** | 8 | M10 | 35 | 23 | 13.9 | 6012 | 4.15 |
| **200/250** | 12 | M10 | 35 | 23 | 13.9 | 6012 | 4.15 |
| **320/500** | 12 | M12 | 50 | 30 | 20.6 | 6017 | 8.85 |

### Aluminium 3.3214

| Nominal width DN | Required number | a | b [mm] | c [mm] | d [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **63** | 4 | M8 | 35 | 23.5 | 13.5 | 6013 | 2.95 |
| **100** | 8 | M8 | 35 | 23.5 | 13.5 | 6013 | 2.95 |
| **160** | 8 | M10 | 35 | 23.5 | 13.5 | 6014 | 4.65 |
| **200/250** | 12 | M10 | 35 | 23.5 | 13.5 | 6014 | 4.65 |
| **320/500** | 12 | M12 | 50 | 30 | 20.6 | 6019 | Upon request |

# ISO-F screw set 1.4301



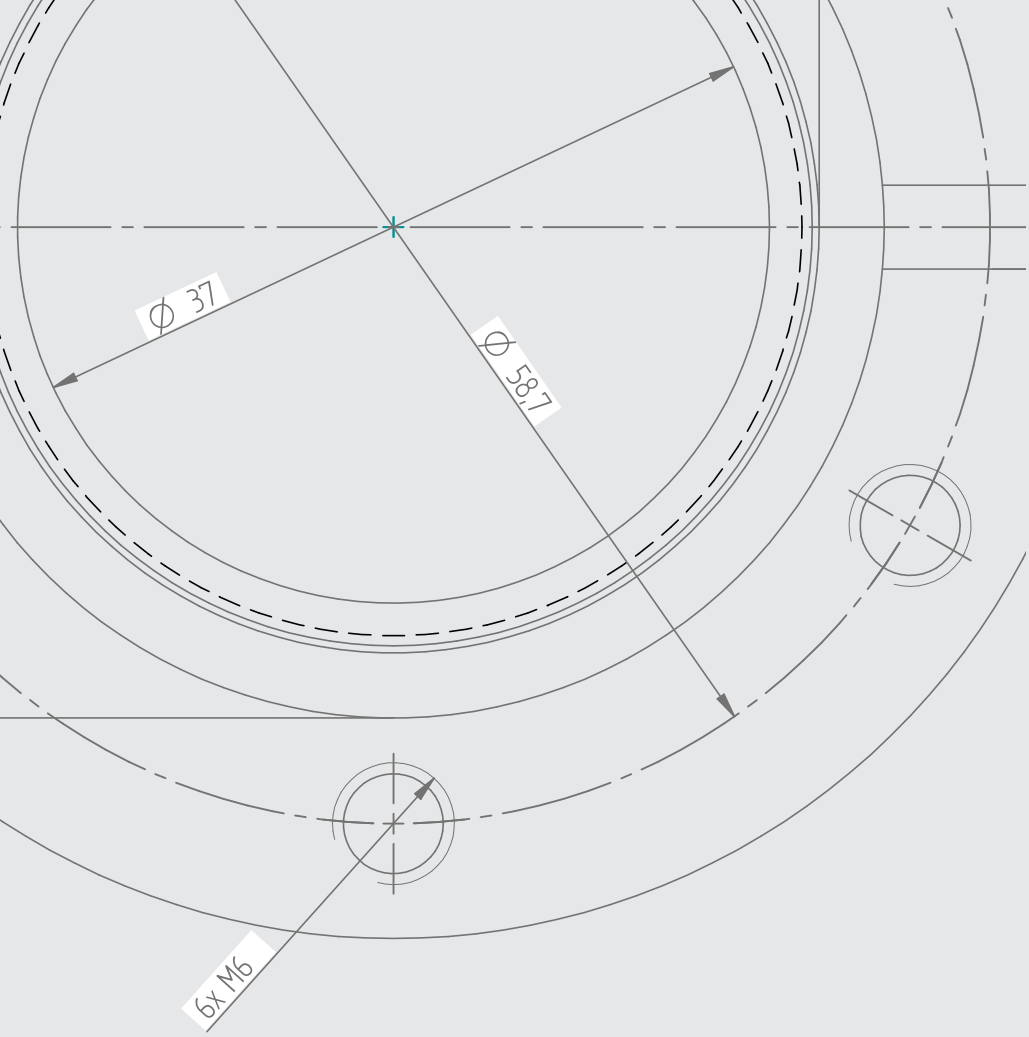
> Pressure range: $10^{-9}$ mbar to 1.5 bar*
> Temperature range: high-grade steel –196 °C to 300 °C*
> High-grade steel screw clamps should only be used with thread lubricant.
> Suitable for elastomer seals and metal seals

* Take sealing materials and connecting elements into consideration

| Nominal width DN | Required number | Screw connection | Screw length l [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 4 | M8 | 40 | 6021 | 2.95 |
| **100** | 8 | M8 | 40 | 6022 | 5.65 |
| **160** | 8 | M10 | 50 | 6023 | 12.20 |
| **200/250** | 12 | M10 | 50 | 6024 | 17.00 |
| **320/500** | 16 | M12 | 65 | 6025 | 34.00 |

# Flange cap, plastic

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **63** | 6041 | 0.70 |
| **80** | 60415 | 1.05 |
| **100** | 6042 | 0.95 |
| **160** | 6043 | 1.05 |
| **200** | 6044 | 5.60 |
| **250** | 6045 | 10.40 |
| **320** | 6046 | 19.80 |

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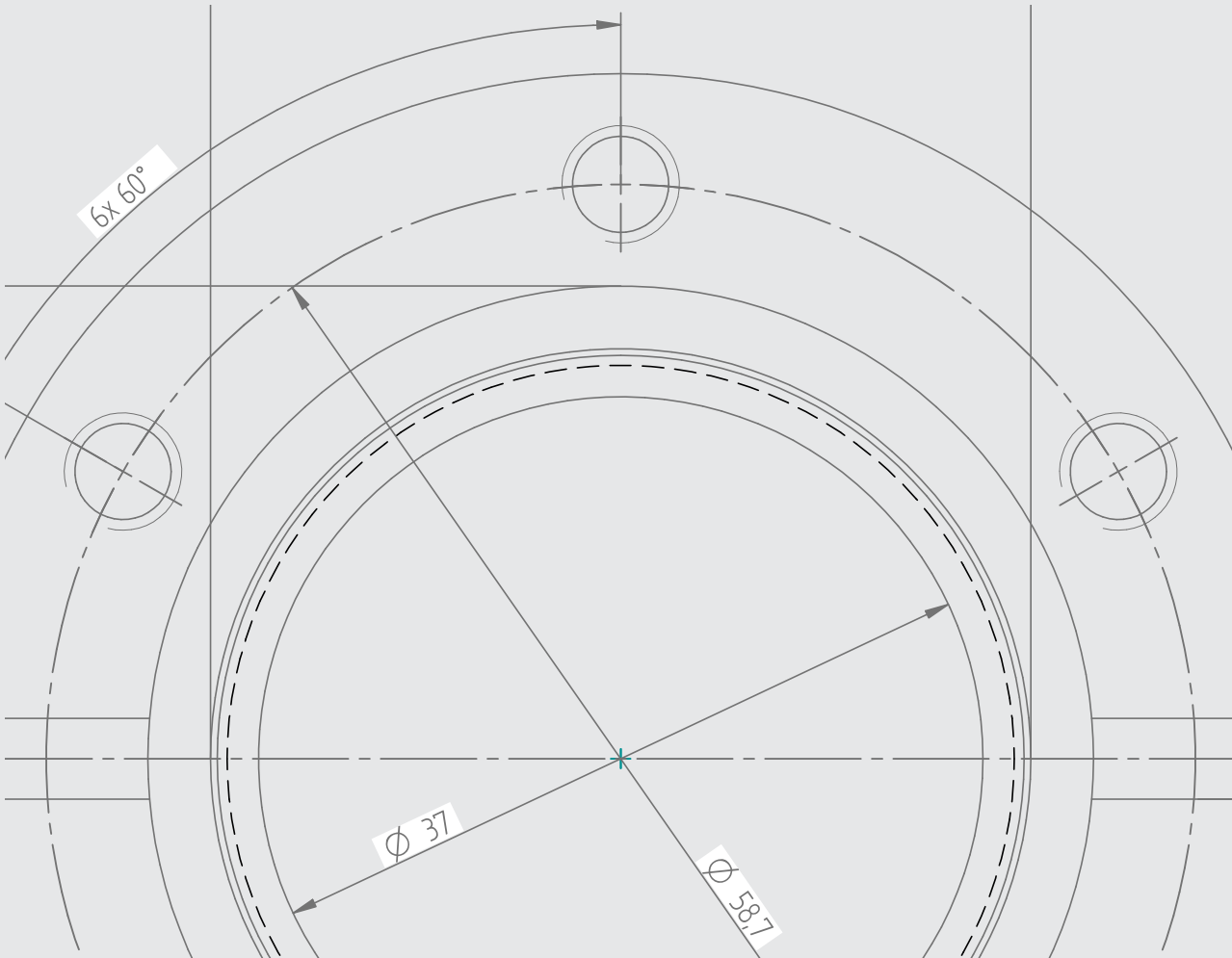
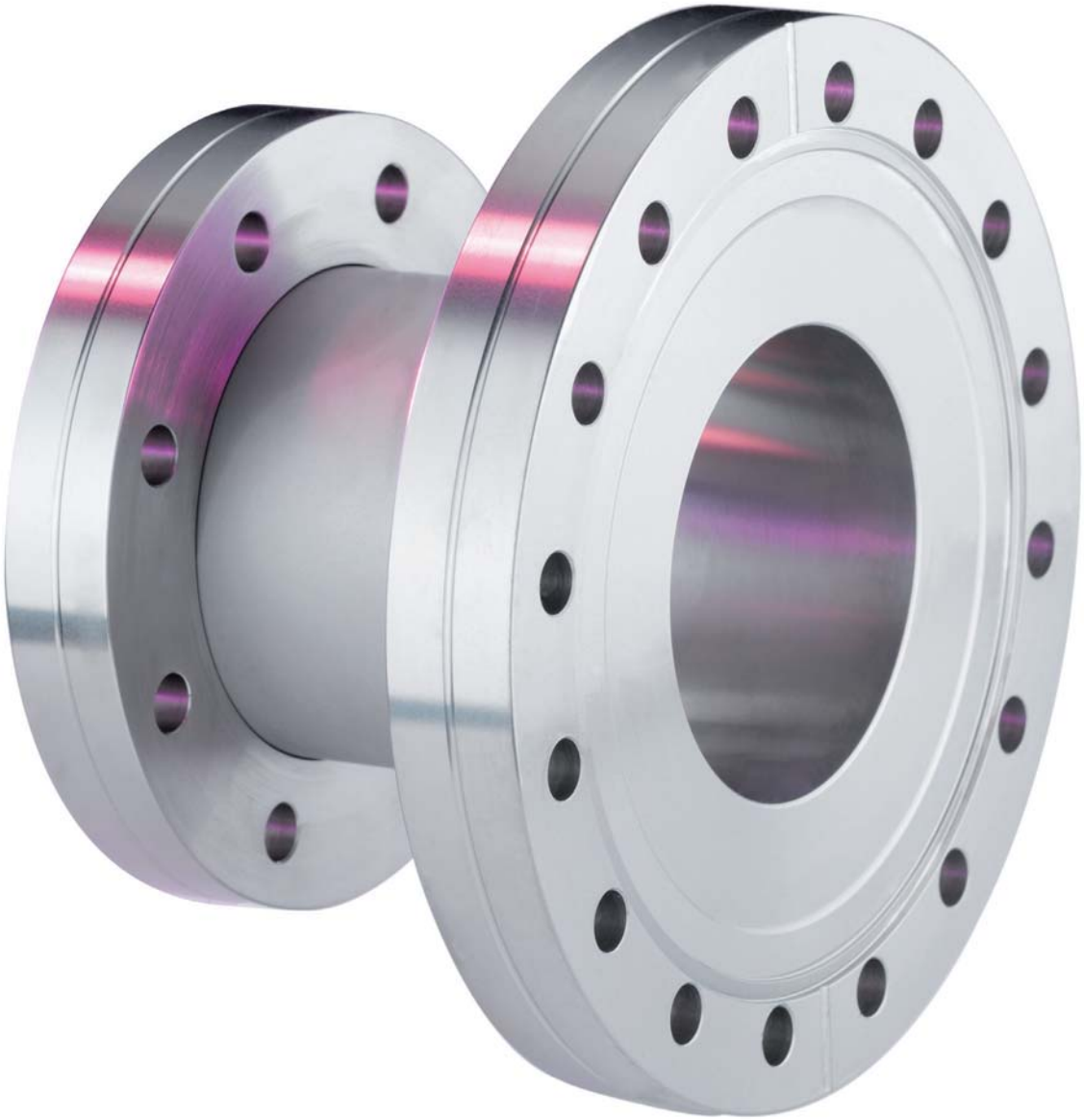


# CF components and connections



# CF flange components and connecting elements As per ISO 3669 (corresponds to ConFlat® flange)

**Description:**

novotek CF components are manufactured according to ISO 3669. All components manufactured by novotek are 100% leak-tested and have leak rates better than $10^{-10}$ mbarl/s. Standard sizes are NW 16 to 250. Nominal widths of up to 400 can be manufactured upon request. The ultra high vacuum range (UHV) designates the pressure range $<10^{-8}$mbar. To reach and maintain this low pressure range, a very low outgassing rate is required in the vacuum system. This is achieved by using material with as low a desorption, diffusion and permeation rate as possible and by preventing unventilated cavities and gaps and by using vacuum-compatible cleaning systems. Please refer to the Materials chapter for operation temperatures, sealing materials and information on the different metals.

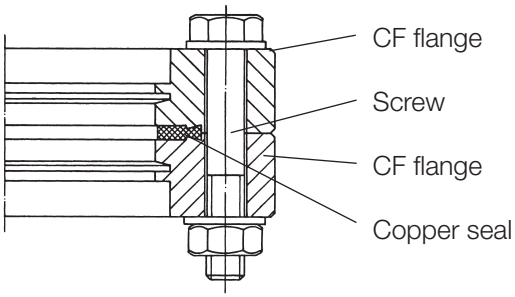
**Sealing principle:**

The CF connection is sealed off by the cutting edge profile in the flange and a copper sealing washer. The copper sealing washer is inserted in the flange groove and, at the same time, centres the flange pair. When bolting the flanges, the cutting edges of the flanges for sealing are pressed deeply into the soft sealing washer, whereby the metal “flows away” radially and is pressed on the outside against the flange groove and limited. Even in the case of material creeping, this guarantees leak-tightness.

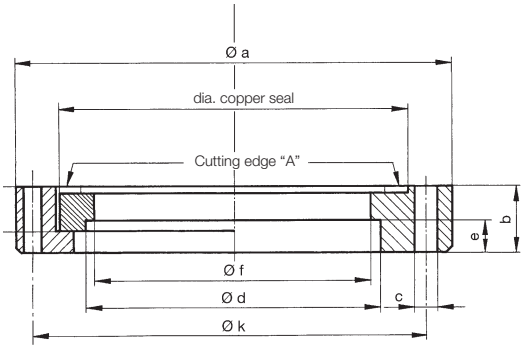
**Design features:**

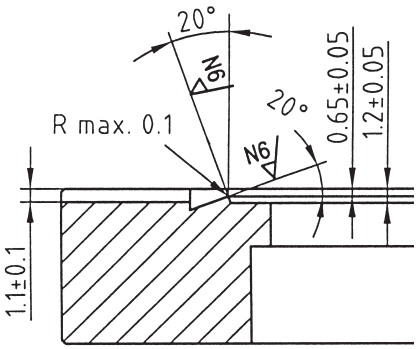
The flanges of the CF components are designed according to ISO 3669. They are compatible with the ConFlat® flanges of other leading manufacturers. Retrofitting in novotek CF systems or systems from other manufacturers is possible. The standard material used is low-carbon high-grade steel with material number 1.4306 (304L). For the most common flanges and components, higher quality high-grade steels 1.4404 (316L) can also be used. The material number for the component can be found in the respective catalogue sections. Due to the bake-out capacity required in UHV technology, sealing of the CF flanges is by means of a flat seal made of oxygen-free (OFHC) copper. The contact pressure is generated by diametrical tightening of the screws. The copper seal can only be used once. When baking out CF connections, ensure that heating up and cooling is carried out uniformly and relatively slowly.

**Installation variant, CF flange connection**



# CF main dimensions + tightening torque




| Nominal width DN | dia.a [mm] | dia.f [mm] | Height b [mm] | Flanged socket d [mm] | Pitch circle dia.k [mm] | Bore dia.c [mm] | Number of screws [n] | Immersion depth of flanged socket e [mm] | Tighten-ing torque [Nm] |
|---|---|---|---|---|---|---|---|---|---|
| 16 | 34 | 16.5 | 7.6 | 18.1 | 27 | 4.3 | 6xM4 | 2.80 | 4 |
| 38 | 70 | 35 | 12.7 | 38.2 | 58.7 | 6.6 | 6xM6 | 7.90 | 10 |
| 40 | 70 | 37 | 12.7 | 40.2 | 58.7 | 6.6 | 6xM6 | 7.90 | 10 |
| 63 | 113.5 | 66 | 17.5 | 70.3 | 92.1 | 8.4 | 8xM8 | 9.40 | 20 |
| 100 | 152 | 100.5 | 19.9 | 104.3 | 130.3 | 8.4 | 16xM8 | 10.40 | 20 |
| 160 (150) | 203 | 150.5 | 22.3 | 154.5 | 181 | 8.4 | 20xM8 | 12.80 | 20 |
| 200 | 254 | 200.5 | 24.6 | 204.5 | 231.8 | 8.4 | 24xM8 | 15.10 | 20 |
| 250 | 305 | 250 | 25 | 254.5 | 284 | 8.4 | 32xM8 | 12.30 | 20 |

# CF junctions

**Properties of high-grade steel 1.4306/1.4404:**

- high leak rate (<$10^{-10}$ mbarl/s)
- high conductance
- gap-free welded
- bake-out capacity up to 450 °C
- cleaned in UHV-compatible manner
- special dimensions upon request

**Description:**

The novotek CF junctions made of high-grade steel are designed as welded constructions. The CF flange are always welded using WIG welding technology gap-free on the inside and vacuum-tight. The surface of NW16 to NW63 is polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.

Upon special request, the components can also be electropolished prior to delivery.

**Area of application:**

The novotek CF junctions can be used in systems with pre-, high- and UHV-vacuum.

**Materials:**

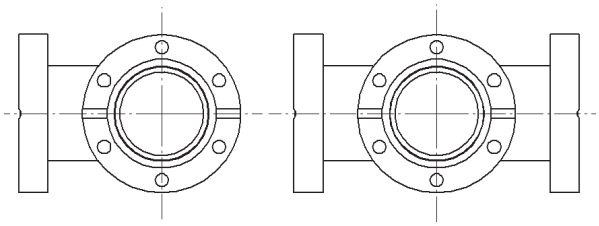
CF welding flanges made of 1.4306 (304L), 1.4404(316L) and pipe components made of 1.4404 (316L) / 1.4571 (316Ti)

Special material such as 1.4429 ESR is available upon request.

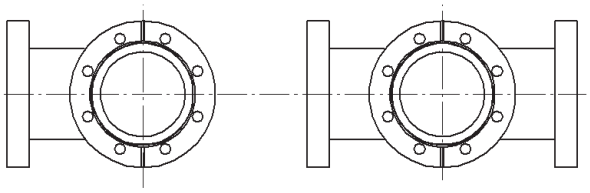
## Basic design of pipe components

**Hole pitch of components on component axis**

CF 16 and CF 40

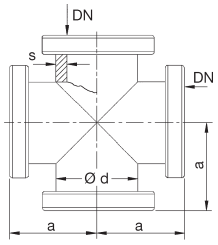


as of CF 63



# CF crosspiece flanges, fixed

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Bake-out capacity up component to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration




## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7111F | 120.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7112F | 153.00 |
| **63** | 105 | 66 (70x2) | 2 | 7113F | 340.00 |
| **100** | 135 | 100 (104x2) | 2 | 7114F | 530.00 |
| **160** | 167 | 150 (154x2) | 2 | 7115F | 980.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7116F | 1,420.00 |
| **250** | 229 | 250 (254x2) | 2 | 7117F | 2,620.00 |

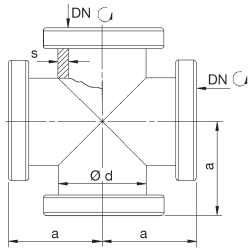
## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7111F4 | 134.50 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7112F4 | 172.00 |
| **63** | 105 | 66 (70x2) | 2 | 7113F4 | 360.00 |
| **100** | 135 | 100 (104x2) | 2 | 7114F4 | 592.00 |
| **160** | 167 | 150 (154x2) | 2 | 7115F4 | 937.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7116F4 | Upon request |
| **250** | 229 | 250 (254x2) | 2 | 7117F4 | Upon request |

**Component with flanges made of 316LNS upon request.**

# CF crosspiece, 2 flanges, rotatable

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Bake-out capacity up component to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration




## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. (F=flange, fixed) (R=flange, rotatable) | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7111R | 124.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7112R | 169.50 |
| **63** | 105 | 66 (70x2) | 2 | 7113R | 347.00 |
| **100** | 135 | 100 (104x2) | 2 | 7114R | 539.00 |
| **160** | 167 | 150 (154x2) | 2 | 7115R | 989.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7116R | 1,485.00 |
| **250** | 229 | 250 (254x2) | 2 | 7117R | 2,920.00 |

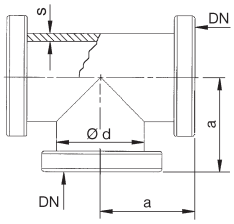
## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. (F=flange, fixed) (R=flange, rotatable) | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7111R4 | 154.50 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7112R4 | 192.00 |
| **63** | 105 | 66 (70x2) | 2 | 7113R4 | 395.00 |
| **100** | 135 | 100 (104x2) | 2 | 7114R4 | 654.00 |
| **160** | 167 | 150 (154x2) | 2 | 7115R4 | 997.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7116R4 | Upon request |
| **250** | 229 | 250 (254x2) | 2 | 7117R4 | Upon request |

**Component with flanges made of 316LNS upon request.**

# CF-T piece flanges, fixed

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration




## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7121F | 95.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7122F | 115.00 |
| **63** | 105 | 66 (70x2) | 2 | 7123F | 225.00 |
| **100** | 135 | 100 (104x2) | 2 | 7124F | 319.00 |
| **160** | 167 | 150 (154x2) | 2 | 7125F | 602.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7126F | 1,020.00 |
| **250** | 229 | 250 (254x2) | 2 | 7127F | 1,910.00 |

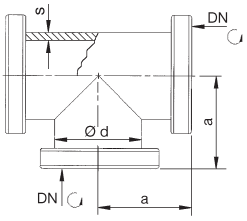
## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7121F4 | 99.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7122F4 | 137.00 |
| **63** | 105 | 66 (70x2) | 2 | 7123F4 | 245.00 |
| **100** | 135 | 100 (104x2) | 2 | 7124F4 | 319.00 |
| **160** | 167 | 150 (154x2) | 2 | 7125F4 | 670.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7126F4 | Upon request |
| **250** | 229 | 250 (254x2) | 2 | 7127F4 | Upon request |

**Component with flanges made of 316LNS upon request.**

# CF-T piece, 2 flanges, rotatable

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration




## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7121R | 98.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7122R | 124.00 |
| **63** | 105 | 66 (70x2) | 2 | 7123R | 257.00 |
| **100** | 135 | 100 (104x2) | 2 | 7124R | 339.00 |
| **160** | 167 | 150 (154x2) | 2 | 7125R | 629.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7126R | 1,089.00 |
| **250** | 229 | 250 (254x2) | 2 | 7127R | 2,340.00 |

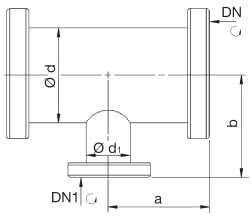
## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7121R4 | 104.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7122R4 | 158.00 |
| **63** | 105 | 66 (70x2) | 2 | 7123R4 | 332.00 |
| **100** | 135 | 100 (104x2) | 2 | 7124R4 | 476.00 |
| **160** | 167 | 150 (154x2) | 2 | 7125R4 | 995.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7126R4 | Upon request |
| **250** | 229 | 250 (254x2) | 2 | 7127R4 | Upon request |

**Component with flanges made of 316LNS upon request.**

# CF reducer T piece, 2 flanges, rotatable

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration



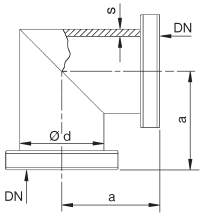

## Flanges made of 1.4306 (304L), pipe component 1.4571 (316Ti) or 1.4404 (316L)

| DN | a [mm] | b [mm] | Inside diameter dia.d [mm] (pipe dimension) | Inside diameter dia.d1 [mm] (pipe dimension) | Article no. | Price € |
|---|---|---|---|---|---|---|
| **40/16** | 63 | 60 | 38.4 (42.4x2) | 16 (19x1.5) | 7152R | 129.50 |
| **63/40** | 105 | 75 | 66 (70x2) | 38.4 (42.4x2) | 7153R | 229.00 |
| **100/63** | 135 | 95 | 100 (104x2) | 66 (70x2) | 7154R | 324.00 |
| **160/63** | 167 | 120 | 150 (154x2) | 66 (70x2) | 7155R | 529.00 |
| **160/100** | 167 | 120 | 150 (154x2) | 100 (104x2) | 7156R | 569.00 |

**Component with flanges made of 316LNS upon request.**

# CF angles, flanges, fixed

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration




## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7131F | 70.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7132F | 85.00 |
| **63** | 105 | 66 (70x2) | 2 | 7133F | 188.00 |
| **100** | 135 | 100 (104x2) | 2 | 7134F | 280.00 |
| **160** | 167 | 150 (154x2) | 2 | 7135F | 442.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7136F | 825.00 |
| **250** | 229 | 250 (254x2) | 2 | 7137F | 1,390.00 |

## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

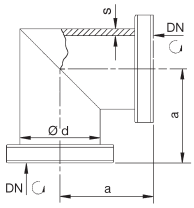
| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7131F4 | 76.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7132F4 | 102.00 |
| **63** | 105 | 66 (70x2) | 2 | 7133F4 | 186.00 |
| **100** | 135 | 100 (104x2) | 2 | 7134F4 | 292.00 |
| **160** | 167 | 150 (154x2) | 2 | 7135F4 | 556.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7136F4 | Upon request |
| **250** | 229 | 250 (254x2) | 2 | 7137F4 | Upon request |

**Component with flanges made of 316LNS upon request.**

# CF angles, 2 flanges, rotatable

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration




## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7131R | 74.50 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7132R | 89.00 |
| **63** | 105 | 66 (70x2) | 2 | 7133R | 194.00 |
| **100** | 135 | 100 (104x2) | 2 | 7134R | 290.00 |
| **160** | 167 | 150 (154x2) | 2 | 7135R | 482.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7136R | 859.00 |
| **250** | 229 | 250 (254x2) | 2 | 7137R | 1,835.00 |

## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

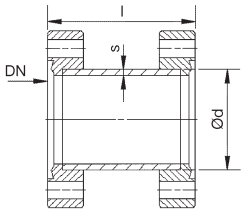
| Nominal width DN | a [mm] | Inside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 16 (19x1.5) | 1.5 | 7131R4 | 84.00 |
| **40** | 63 | 38.4 (42.4x2) | 2 | 7132R4 | 109.00 |
| **63** | 105 | 66 (70x2) | 2 | 7133R4 | 239.00 |
| **100** | 135 | 100 (104x2) | 2 | 7134R4 | 455.00 |
| **160** | 167 | 150 (154x2) | 2 | 7135R4 | 682.00 |
| **200** | 187.5 | 200 (204x2) | 2 | 7136R4 | Upon request |
| **250** | 229 | 250 (254x2) | 2 | 7137R4 | Upon request |

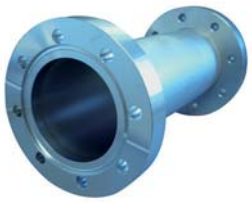
**Component with flanges made of 316LNS upon request.**

# CF connecting piece, flanges, fixed

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | According to customer request (standard 76 mm) | 19 (19x1.5) | 1.5 | 7171F | 45.00 |
| **40** | According to customer request (standard 126 mm) | 42.4 (42.4x2) | 2 | 7172F | 52.00 |
| **63** | According to customer request (standard 210 mm) | 70 (70x2) | 2 | 7173F | 142.00 |
| **100** | According to customer request (standard 270 mm) | 104 (104x2) | 2 | 7174F | 192.00 |
| **160** | According to customer request (standard 334 mm) | 154 (154x2) | 2 | 7175F | 385.00 |
| **200** | According to customer request (standard 375 mm) | 204 (204x2) | 2 | 7176F | 725.00 |
| **250** | According to customer request (standard 458 mm) | 254 (254x2) | 2 | 7177F | 1,210.00 |

## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

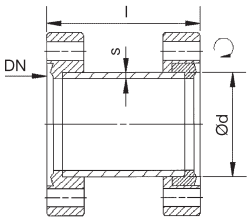
| Nominal width DN | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | According to customer request (standard 76 mm) | 19 (19x1.5) | 1.5 | 7171F4 | 45.00 |
| **40** | According to customer request (standard 126 mm) | 42.4 (42.4x2) | 2 | 7172F4 | 56.00 |
| **63** | According to customer request (standard 210 mm) | 70 (70x2) | 2 | 7173F4 | 146.00 |
| **100** | According to customer request (standard 270 mm) | 104 (104x2) | 2 | 7174F4 | 205.50 |
| **160** | According to customer request (standard 334 mm) | 154 (154x2) | 2 | 7175F4 | 372.00 |
| **200** | According to customer request (standard 375 mm) | 204 (204x2) | 2 | 7176F4 | Upon request |
| **250** | According to customer request (standard 458 mm) | 254 (254x2) | 2 | 7177F4 | Upon request |

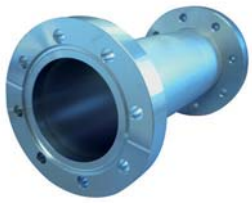
**Component with flanges made of 316LNS upon request.**

# CF connecting piece, 1 flange, rotatable

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| 16 | According to customer request (standard 76 mm) | 19 (19x1.5) | 1.5 | 7171R | 46.00 |
| 40 | According to customer request (standard 126 mm) | 42.4 (42.4x2) | 2 | 7172R | 56.00 |
| 63 | According to customer request (standard 210 mm) | 70 (70x2) | 2 | 7173R | 152.00 |
| 100 | According to customer request (standard 270 mm) | 104 (104x2) | 2 | 7174R | 199.00 |
| 160 | According to customer request (standard 334 mm) | 154 (154x2) | 2 | 7175R | 404.50 |
| 200 | According to customer request (standard 375 mm) | 204 (204x2) | 2 | 7176R | 744.50 |
| 250 | According to customer request (standard 458 mm) | 254 (254x2) | 2 | 7177R | 1,392.00 |

## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

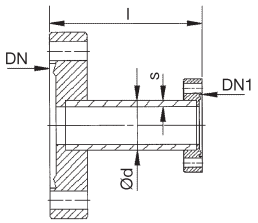
| Nominal width DN | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| 16 | According to customer request (standard 76 mm) | 19 (19x1.5) | 1.5 | 7171R4 | 47.80 |
| 40 | According to customer request (standard 126 mm) | 42.4 (42.4x2) | 2 | 7172R4 | 58.60 |
| 63 | According to customer request (standard 210 mm) | 70 (70x2) | 2 | 7173R4 | 156.00 |
| 100 | According to customer request (standard 270 mm) | 104 (104x2) | 2 | 7174R4 | 244.00 |
| 160 | According to customer request (standard 334 mm) | 154 (154x2) | 2 | 7175R4 | 409.00 |
| 200 | According to customer request (standard 375 mm) | 204 (204x2) | 2 | 7176R4 | Upon request |
| 250 | According to customer request (standard 458 mm) | 254 (254x2) | 2 | 7177R4 | Upon request |

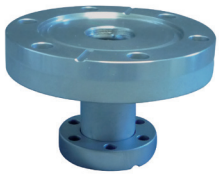
**Component with flanges made of 316LNS upon request.**

# CF reducing fitting, flanges, fixed

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| DN / DN1 | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **40 / 16** | 45 | 19 (19x1.5) | 1.5 | 7161F | 59.00 |
| **63 / 16** | 75 | 19 (19x1.5) | 1.5 | 7162F | 84.50 |
| **63 / 40** | 75 | 42.4 (42.4x2) | 2 | 7163F | 100.00 |
| **100 / 40** | 95 | 42.4 (42.4x2) | 2 | 7164F | 114.00 |
| **100 / 63** | 95 | 70 (70x2) | 2 | 7165F | 134.00 |
| **160 / 40** | 105 | 42.4 (42.4x2) | 2 | 7166F | 179.50 |
| **160 / 63** | 105 | 70 (70x2) | 2 | 7167F | 235.00 |
| **160 / 100** | 105 | 104 (104x2) | 2 | 7168F | 245.00 |

## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

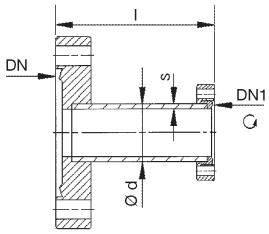
| DN / DN1 | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **40 / 16** | 45 | 19 (19x1.5) | 1.5 | 7161F4 | 65.00 |
| **63 / 16** | 75 | 19 (19x1.5) | 1.5 | 7162F4 | 90.00 |
| **63 / 40** | 75 | 42.4 (42.4x2) | 2 | 7163F4 | 105.00 |
| **100 / 40** | 95 | 42.4 (42.4x2) | 2 | 7164F4 | 124.00 |
| **100 / 63** | 95 | 70 (70x2) | 2 | 7165F4 | 155.00 |
| **160 / 40** | 105 | 42.4 (42.4x2) | 2 | 7166F4 | 212.00 |
| **160 / 63** | 105 | 70 (70x2) | 2 | 7167F4 | 275.00 |
| **160 / 100** | 105 | 104 (104x2) | 2 | 7168F4 | 325.00 |

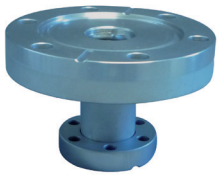
**Component with flanges made of 316LNS upon request.**

# CF reducing fitting, 1 flange, rotatable

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



## Flanges made of 1.4306 (304L), pipe component 1.4404 (316L)

| Nominal width DN | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **40 / 16** | 45 | 19 (19x1.5) | 1.5 | 7161R | 59.00 |
| **63 / 16** | 75 | 19 (19x1.5) | 1.5 | 7162R | 89.50 |
| **63 / 40** | 75 | 42.4 (42.4x2) | 2 | 7163R | 104.50 |
| **100 / 40** | 95 | 42.4 (42.4x2) | 2 | 7164R | 119.50 |
| **100 / 63** | 95 | 70 (70x2) | 2 | 7165R | 164.00 |
| **160 / 40** | 105 | 42.4 (42.4x2) | 2 | 7166R | 189.50 |
| **160 / 63** | 105 | 70 (70x2) | 2 | 7167R | 249.00 |
| **160 / 100** | 105 | 104 (104x2) | 2 | 7168R | 265.00 |

## Flanges made of 1.4404 (316L), pipe component 1.4404 (316L)

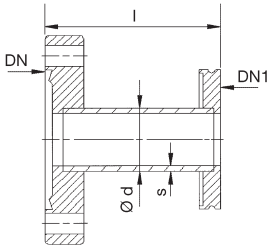
| Nominal width DN | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **40 / 16** | 45 | 19 (19x1.5) | 1.5 | 7161R4 | 72.00 |
| **63 / 16** | 75 | 19 (19x1.5) | 1.5 | 7162R4 | 95.50 |
| **63 / 40** | 75 | 42.4 (42.4x2) | 2 | 7163R4 | 112.00 |
| **100 / 40** | 95 | 42.4 (42.4x2) | 2 | 7164R4 | 135.00 |
| **100 / 63** | 95 | 70 (70x2) | 2 | 7165R4 | 194.00 |
| **160 / 40** | 105 | 42.4 (42.4x2) | 2 | 7166R4 | 265.00 |
| **160 / 63** | 105 | 70 (70x2) | 2 | 7167R4 | 315.00 |
| **160 / 100** | 105 | 104 (104x2) | 2 | 7168R4 | 399.00 |

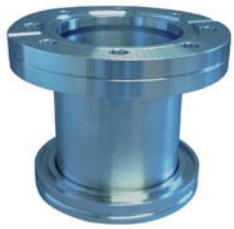
**Component with flanges made of 316LNS upon request.**

# CF-ISO-K adapter piece, flange fixed

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration



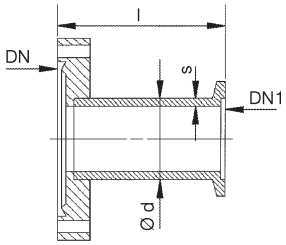
## CF flange 1.4306 (304L), IOS-K flange made of 1.4301 (304), pipe component 1.4404

| DN / DN1 | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| CF63 / ISO-K 63 | 90 | 70 (70x2) | 2 | 7191 | 133.00 |
| CF100 / ISO-K 63 | 90 | 70 (70x2) | 2 | 7192 | 178.50 |
| CF100 / ISO-K 100 | 90 | 104 (104x2) | 2 | 7193 | 204.50 |
| CF100 / ISO-K 160 | 90 | 104 (104x2) | 2 | 7194 | 262.00 |
| CF160 / ISO-K 63 | 90 | 70 (70x2) | 2 | 7195 | 236.00 |
| CF160 / ISO-K 100 | 90 | 104 (104x2) | 2 | 7196 | 238.00 |
| CF160 / ISO-K 160 | 90 | 154 (154x2) | 2 | 7197 | 256.00 |

# CF-KF adapter piece, flange fixed

> Pressure range: $10^{-7}$mbar to 2.5 bar with elastomer seals
> Pressure range: $10^{-9}$mbar to 2.5 bar with metal seals
> Temperature range: –196 °C to 300 °C 1.4306
> Temperature range: –196 °C to 350 °C 1.4404
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request

* Take sealing materials and connecting elements into consideration

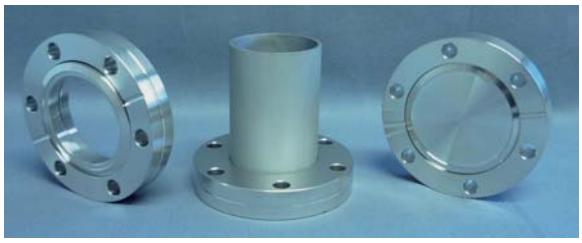



## CF flange 1.4306 (304L), KF flange made of 1.4301 (304)

| DN / DN1 | l [mm] | Outside diameter dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| CF16 / KF16 | 36 | 20 (20x2) | 2.0 | 7181 | 36.40 |
| CF16 / KF25 | 36 | 18 (18x1.5) | 1.5 | 7182 | 48.00 |
| CF40 / KF16 | 36 | 20 (20x2) | 2.0 | 7183 | 49.00 |
| CF40 / KF25 | 36 | 29 (29x2) | 2.0 | 7184 | 55.70 |
| CF40 / KF40 | 50 | 45 (45x2.5) | 2.5 | 7185 | 58.70 |
| CF63 / KF25 | 50 | 29 (29x2) | 2.0 | 7186 | 109.80 |
| CF63 / KF40 | 50 | 45 (45x2.5) | 2.5 | 7187 | 119.00 |
| CF100 / KF25 | 50 | 29 (29x2) | 2.0 | 7188 | 144.00 |
| CF100 / KF40 | 50 | 45 (45x2.5) | 2.5 | 7189 | 153.00 |

**Component with flanges made of 316L or 316LNS upon request.**

# CF components



**Properties of high-grade steel 1.4306/1.4404:**

- high leak rate (<$10^{-10}$ mbarl/s)
- high conductance
- gap-free welded
- bake-out capacity up to 450 °C
- cleaned in UHV-compatible manner
- special dimensions upon request

**Description:**

The novotek CF components are turned from high-grade steel. Particular emphasis is placed on exact profile production during this process. The cutting edge, the decisive element of the CF components, is protected by a flange cap. Any damage to the cutting edge renders the component unusable. On the cutting edge side, the flanges have a radial leak detection groove so that, during the leak test, a check directly at the seal is possible.

**Area of application:**

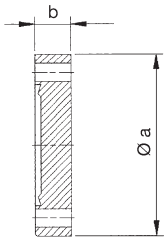
The novotek CF junctions can be used in systems with pre-, high- and UHV-vacuum.

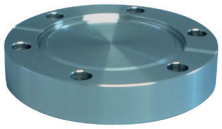
**Materials:**

CF welding flanges made of 1.4306 (304L), 1.4404(316L) and pipe components made of 1.4404 (316L) / 1.4571 (316Ti) Special material such as 1.4429 ESR is available upon request.

# CF blind flange, fixed

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L), 1.4404 (316L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



## High-grade steel 1.4306 (304L)

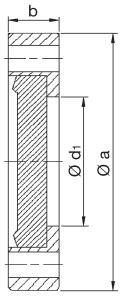
| Nominal width DN | dia.a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 34 | 7.6 | 7421F | 10.80 |
| **40** | 70 | 12.7 | 7422F | 12.70 |
| **63** | 113.5 | 17.5 | 7423F | 46.00 |
| **100** | 152 | 19.9 | 7424F | 65.90 |
| **160** | 203 | 22.3 | 7425F | 106.00 |
| **200** | 254 | 24.6 | 7426F | 229.00 |
| **250** | 305 | 25 | 7427F | 392.00 |

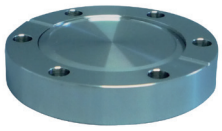
## High-grade steel 1.4404 (316L)

| Nominal width DN | dia.a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 34 | 7.6 | 7421F4 | 10.80 |
| **40** | 70 | 12.7 | 7422F4 | 18.90 |
| **63** | 113.5 | 17.5 | 7423F4 | 56.00 |
| **100** | 152 | 19.9 | 7424F4 | 107.50 |
| **160** | 203 | 22.3 | 7425F4 | 199.00 |
| **200** | 254 | 24.6 | 7426F4 | Upon request |
| **250** | 305 | 25 | 7427F4 | Upon request |

# CF blind flange, rotatable 1.4306 (304L)

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

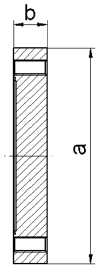


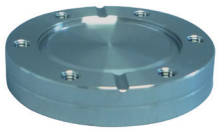



| Nominal width DN | dia.a [mm] | b [mm] | dia.d1 [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 19 | 7421R | 16.90 |
| **40** | 70 | 12.7 | 42.5 | 7422R | 19.50 |
| **63** | 113.5 | 17.5 | 72 | 7423R | 65.00 |
| **100** | 152 | 19.9 | 109 | 7424R | 88.90 |
| **160** | 203 | 22.3 | 161 | 7425R | 209.50 |
| **200** | 254 | 24.6 | 207 | 7426R | 335.00 |
| **250** | 305 | 25 | 260 | 7427R | Upon request |

# CF blind flange, fixed, with thread

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range 1.4301: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L), 1.4404 (316L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



## High-grade steel 1.4306 (304L)

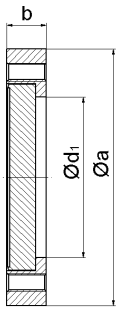
| Nominal width DN | dia.a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 34 | 7.6 | 7421FG | 14.40 |
| **40** | 70 | 12.7 | 7422FG | 19.90 |
| **63** | 113.5 | 17.5 | 7423FG | 64.00 |
| **100** | 152 | 19.9 | 7424FG | 97.00 |
| **160** | 203 | 22.3 | 7425FG | 139.50 |
| **200** | 254 | 24.6 | 7426FG | 239.00 |
| **250** | 305 | 25 | 7427FG | 432.00 |

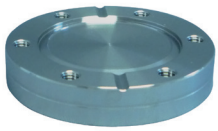
## High-grade steel 1.4404 (316L)

| Nominal width DN | dia.a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 34 | 7.6 | 7421FG4 | 16.20 |
| **40** | 70 | 12.7 | 7422FG4 | 21.00 |
| **63** | 113.5 | 17.5 | 7423FG4 | 74.00 |
| **100** | 152 | 19.9 | 7424FG4 | 125.00 |
| **160** | 203 | 22.3 | 7425FG4 | Upon request |
| **200** | 254 | 24.6 | 7426FG4 | Upon request |
| **250** | 305 | 25 | 7427FG4 | Upon request |

# CF blind flange, rotatable with thread 1.4306 (304L)

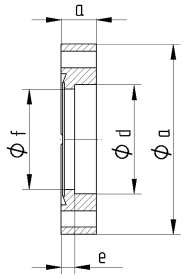
> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Flanges made of 1.4306 (304L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



| Nominal width DN | dia.a [mm] | b [mm] | dia.d1 [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 19 | 7421RG | 23.00 |
| **40** | 70 | 12.7 | 42.5 | 7422RG | 30.90 |
| **63** | 113.5 | 17.5 | 72 | 7423RG | 73.00 |
| **100** | 152 | 19.9 | 109 | 7424RG | 139,00 |
| **160** | 203 | 22.3 | 161 | 7425RG | Upon request |
| **200** | 254 | 24.6 | 207 | 7426RG | Upon request |
| **250** | 305 | 25 | 260 | 7427RG | Upon request |

# CF welding flange, fixed




> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

## High-grade steel 1.4306 (304L)

| Nominal width DN | dia.a [mm] | b [mm] | dia.d [mm] | e [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 18 | 4.8 | 16.5 | 7511F | 10.70 |
| **38** | 70 | 12.7 | 38.2 | 4.8 | 35 | 7512F3 | 13.10 |
| **40** | 70 | 12.7 | 40.2 | 4.8 | 37 | 7512F4 | 13.10 |
| **63** | 113.5 | 17.5 | 70.3 | 7.9 | 66 | 7513F | 46.00 |
| **100** | 152 | 19.9 | 104.3 | 9.5 | 100.5 | 7514F | 62.00 |
| **160** | 203 | 22.3 | 154.3 | 9.5 | 150.5 | 7515F | 105.00 |
| **200** | 254 | 24.6 | 204.5 | 9.5 | 200.5 | 7516F | 192.00 |
| **250** | 305 | 25 | 254.7 | 12.7 | 250 | 7517F | Upon request |

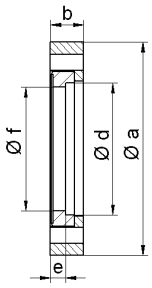
## High-grade steel 1.4404 (316L)

| Nominal width DN | dia.a [mm] | b [mm] | dia.d [mm] | e [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 18 | 4.8 | 16.5 | 7511F4 | 10.70 |
| **38** | 70 | 12.7 | 38.2 | 4.8 | 35 | 7512F34 | 18.20 |
| **40** | 70 | 12.7 | 40.2 | 4.8 | 37 | 7512F44 | 18.20 |
| **63** | 113.5 | 17.5 | 70.3 | 7.9 | 66 | 7513F4 | 56.00 |
| **100** | 152 | 19.9 | 104.3 | 9.5 | 100.5 | 7514F4 | 97.00 |
| **160** | 203 | 22.3 | 154.3 | 9.5 | 150.5 | 7515F4 | 139.00 |
| **200** | 254 | 24.6 | 204.5 | 9.5 | 200.5 | 7516F4 | Upon request |
| **250** | 305 | 25 | 254.7 | 12.7 | 250 | 7517F4 | Upon request |

**Flange made of 316LNS upon request!**

# CF welding flange, rotatable

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4306 (304L)

| Nominal width DN | dia.a [mm] | b [mm] | dia.d [mm] | e [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 18 | 4.8 | 16.5 | 7511R | 17.40 |
| **38** | 70 | 12.7 | 38.2 | 4.8 | 35 | 7512R3 | 18.40 |
| **40** | 70 | 12.7 | 40.2 | 4.8 | 37 | 7512R4 | 18.40 |
| **63** | 113.5 | 17.5 | 70.3 | 7.9 | 66 | 7513R | 62.00 |
| **100** | 152 | 19.9 | 104.3 | 9.5 | 100.5 | 7514R | 90.90 |
| **160** | 203 | 22.3 | 154.3 | 9.5 | 150.5 | 7515R | 185.00 |
| **200** | 254 | 24.6 | 204.5 | 9.5 | 200.5 | 7516R | 255.00 |
| **250** | 305 | 25 | 254.7 | 12.7 | 250 | 7517R | Upon request |

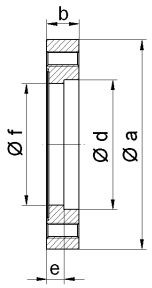
## High-grade steel 1.4404 (316L)

| Nominal width DN | dia.a [mm] | b [mm] | dia.d [mm] | e [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 18 | 4.8 | 16.5 | 7511R4 | 17.30 |
| **38** | 70 | 12.7 | 38.2 | 4.8 | 35 | 7512R34 | 28.80 |
| **40** | 70 | 12.7 | 40.2 | 4.8 | 37 | 7512R44 | 28.80 |
| **63** | 113.5 | 17.5 | 70.3 | 7.9 | 66 | 7513R4 | 83.90 |
| **100** | 152 | 19.9 | 104.3 | 9.5 | 100.5 | 7514R4 | 142.00 |
| **160** | 203 | 22.3 | 154.3 | 9.5 | 150.5 | 7515R4 | 227.00 |
| **200** | 254 | 24.6 | 204.5 | 9.5 | 200.5 | 7516R4 | Upon request |
| **250** | 305 | 25 | 254.7 | 12.7 | 250 | 7517R4 | Upon request |

**Flange made of 316LNS upon request!**

# CF welding flange, fixed, with thread

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4306 (304L)

| Nominal width DN | dia.a [mm] | b [mm] | dia.d [mm] | e [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 18 | 4.8 | 16.5 | 7511FG | 14.90 |
| **38** | 70 | 12.7 | 38.2 | 4.8 | 35 | 7512FG3 | 22.00 |
| **40** | 70 | 12.7 | 40.2 | 4.8 | 37 | 7512FG4 | 22.00 |
| **63** | 113.5 | 17.5 | 70.3 | 7.9 | 66 | 7513FG | 65.00 |
| **100** | 152 | 19.9 | 104.3 | 9.5 | 100.5 | 7514FG | 102.00 |
| **160** | 203 | 22.3 | 154.3 | 9.5 | 150.5 | 7515FG | 149.00 |
| **200** | 254 | 24.6 | 204.5 | 9.5 | 200.5 | 7516FG | 272.00 |
| **250** | 305 | 25 | 254.7 | 12.7 | 250 | 7517FG | Upon request |

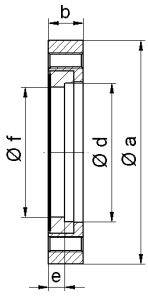
## High-grade steel 1.4404 (316L)

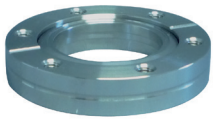
| Nominal width DN | dia.a [mm] | b [mm] | dia.d [mm] | e [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 18 | 4.8 | 16.5 | 7511FG4 | 15.00 |
| **25** | 54 | 12 | 28.2 | 7.2 | 25 | 75115FG4 | 16.70 |
| **38** | 70 | 12.7 | 38.2 | 4.8 | 35 | 7512FG34 | 25.00 |
| **40** | 70 | 12.7 | 40.2 | 4.8 | 37 | 7512FG44 | 25.00 |
| **63** | 113.5 | 17.5 | 70.3 | 7.9 | 66 | 7513FG4 | Upon request |
| **100** | 152 | 19.9 | 104.3 | 9.5 | 100.5 | 7514FG4 | 112.00 |
| **160** | 203 | 22.3 | 154.3 | 9.5 | 150.5 | 7515FG4 | 165.00 |
| **200** | 254 | 24.6 | 204.5 | 9.5 | 200.5 | 7516FG4 | Upon request |
| **250** | 305 | 25 | 254.7 | 12.7 | 250 | 7517FG4 | Upon request |

**Flange made of 316LNS upon request!**

# CF welding flange, rotatable, with thread

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



## High-grade steel 1.4306 (304L)

| Nominal width DN | dia.a [mm] | b [mm] | dia.d [mm] | e [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 18 | 4.8 | 16.5 | 7511RG | 23.00 |
| **38** | 70 | 12.7 | 38.2 | 4.8 | 35 | 7512R3G | 30.90 |
| **40** | 70 | 12.7 | 40.2 | 4.8 | 37 | 7512R4G | 30.90 |
| **63** | 113.5 | 17.5 | 70.3 | 7.9 | 66 | 7513RG | 97.00 |
| **100** | 152 | 19.9 | 104.3 | 9.5 | 100.5 | 7514RG | 145.00 |
| **160** | 203 | 22.3 | 154.3 | 9.5 | 150.5 | 7515RG | 214.00 |
| **200** | 254 | 24.6 | 204.5 | 9.5 | 200.5 | 7516RG | Upon request |
| **250** | 305 | 25 | 254.7 | 12.7 | 250 | 7517RG | Upon request |

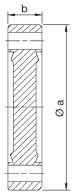
## High-grade steel 1.4404 (316L)

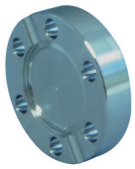
| Nominal width DN | dia.a [mm] | b [mm] | dia.d [mm] | e [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 18 | 4.8 | 16.5 | 7511RG4 | 21.00 |
| **38** | 70 | 12.7 | 38.2 | 4.8 | 35 | 7512R3G4 | 36.00 |
| **40** | 70 | 12.7 | 40.2 | 4.8 | 37 | 7512R4G4 | 36.00 |
| **63** | 113.5 | 17.5 | 70.3 | 7.9 | 66 | 7513RG4 | 105.00 |
| **100** | 152 | 19.9 | 104.3 | 9.5 | 100.5 | 7514RG4 | 165.00 |
| **160** | 203 | 22.3 | 154.3 | 9.5 | 150.5 | 7515RG4 | 248.00 |
| **200** | 254 | 24.6 | 204.5 | 9.5 | 200.5 | 7516RG4 | Upon request |
| **250** | 305 | 25 | 254.7 | 12.7 | 250 | 7517RG4 | Upon request |

**Flange made of 316LNS upon request!**

# CF double-sided blind flange 1.4306 (304L)

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Flanges made of 1.4306 (304L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

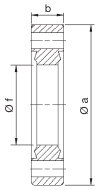


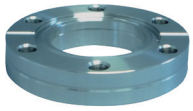



| Nominal width DN | dia.a [mm] | b [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 34 | 7.6 | 7431F | 32.50 |
| **40** | 70 | 12.7 | 7432F | 46.00 |
| **63** | 113.5 | 17.5 | 7433F | 136.00 |
| **100** | 152 | 19.9 | 7434F | 196.00 |
| **160** | 203 | 22.3 | 7435F | 250.00 |

# CF double-sided feedthrough flange 1.4306 (304L)

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Flanges made of 1.4306 (304L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

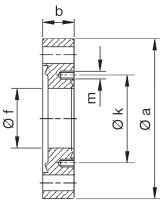


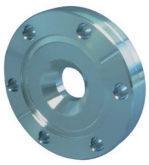



| Nominal width DN | dia.a [mm] | b [mm] | dia.f [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 34 | 7.6 | 16.5 | 7531 | 29.20 |
| **40** | 70 | 12.7 | 38.5 | 7532 | 39.20 |
| **63** | 113.5 | 17.5 | 66 | 7533 | 119.20 |
| **100** | 152 | 19.9 | 100.5 | 7534 | 234.00 |
| **160** | 203 | 22.3 | 150.5 | 7535 | 250.00 |

# CF reducing flange 1.4306 (304L)

> Pressure range: $10^{-12}$ mbar to 1.0 bar
> Temperature range: –196 °C to 300 °C
> Flanges made of 1.4306 (304L)
> Bake-out capacity up to 450 °C
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

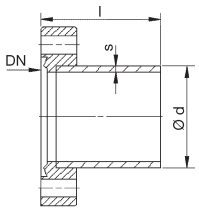


| Nominal width DN / DN1 | dia.a [mm] | b [mm] | dia.f [mm] | dia.k [mm] | m [thread] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **40 / 16** | 70 | 12.7 | 16 | 27 | M4 | 7541 | 53.00 |
| **63 / 16** | 113.5 | 17.5 | 16 | 27 | M4 | 7542 | 99.00 |
| **63 / 40** | 113.5 | 17.5 | 37 | 58.7 | M6 | 7543 | 81.00 |
| **100 / 40** | 152 | 19.9 | 37 | 58.7 | M6 | 7544 | 137.00 |
| **100 / 63** | 152 | 19.9 | 66 | 92.1 | M8 | 7545 | 147.00 |
| **160 / 40** | 203 | 22.3 | 37 | 58.7 | M6 | 7546 | 242.00 |
| **160 / 63** | 203 | 22.3 | 66 | 92.1 | M8 | 7547 | 242.00 |
| **160 / 100** | 203 | 22.3 | 100.5 | 130.3 | M8 | 7548 | 265.00 |

# CF flange with flanged socket, fixed

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L), 1.4404 (316L) and pipes made of 1.4404 (316L)
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4306 (304L)

| Nominal width DN | l [mm] | dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 18 (18x1) | 1.0 | 7571F | 25.50 |
| **38** | 63 | 38 (38x1.5) | 1.5 | 7572F3 | 33.90 |
| **40** | 63 | 40 (40x1.5) | 2.0 | 7572F4 | 33.90 |
| **63** | 105 | 70 (70x2) | 2.0 | 7573F | 85.50 |
| **100** | 135 | 104 (104x2) | 2.0 | 7574F | 124.00 |
| **160** | 167 | 154 (154x2) | 2.0 | 7575F | 194.00 |
| **200** | 167 | 204 (204x2) | 2.0 | 7576F | 373.00 |
| **250** | 167 | 254 (254x2) | 2.0 | 7577F | 489.00 |

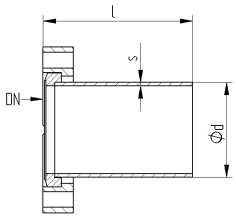
## High-grade steel 1.4404 (316L)

| Nominal width DN | l [mm] | dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 18 (18x1) | 1.0 | 7571F4 | 29.00 |
| **38** | 63 | 38 (38x1.5) | 1.5 | 7572F34 | 36.00 |
| **40** | 63 | 40 (40x1.5) | 2.0 | 7572F44 | 37.00 |
| **63** | 105 | 70 (70x2) | 2.0 | 7573F4 | 95.00 |
| **100** | 135 | 104 (104x2) | 2.0 | 7574F4 | 137.00 |
| **160** | 167 | 154 (154x2) | 2.0 | 7575F4 | 196.00 |
| **200** | 167 | 204 (204x2) | 2.0 | 7576F4 | Upon request |
| **250** | 167 | 254 (254x2) | 2.0 | 7577F4 | Upon request |

**Flange made of 316LNS upon request!**

# CF flange with flanged socket, rotatable

> Pressure range: $10^{-12}$ mbar to 1.0 bar
(with a leak rate under helium of $1x10^{-10}$mbarl/s)
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L), 1.4404 (316L) and pipes made of 1.4404 (316L)
> Component bake-out capacity up to 450 °C
> Surface NW16 to NW63 polished on outside and inside, NW100 to NW250 polished on inside, outside matted or glass bead blasted.
> Special dimensions upon request
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4306 (304L)

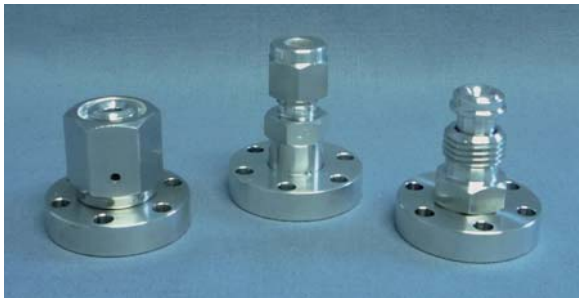
| Nominal width DN | l [mm] | dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 18 (18x1) | 1.0 | 7571R | 29.00 |
| **38** | 63 | 38 (38x1.5) | 1.5 | 7572R3 | 42.00 |
| **40** | 63 | 40 (40x1.5) | 2.0 | 7572R4 | 42.00 |
| **63** | 105 | 70 (70x2) | 2.0 | 7573R | 102.00 |
| **100** | 135 | 104 (104x2) | 2.0 | 7574R | 143.00 |
| **160** | 167 | 154 (154x2) | 2.0 | 7575R | 248.00 |
| **200** | 167 | 204 (204x2) | 2.0 | 7576R | 395.00 |
| **250** | 167 | 254 (254x2) | 2.0 | 7577R | 692.00 |

## High-grade steel 1.4404 (316L)

| Nominal width DN | l [mm] | dia.d [mm] (pipe dimension) | s [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 38 | 18 (18x1) | 1.0 | 7571R4 | 37.00 |
| **38** | 63 | 38 (38x1.5) | 1.5 | 7572R34 | 46.00 |
| **40** | 63 | 40 (40x1.5) | 2.0 | 7572R44 | 48.00 |
| **63** | 105 | 70 (70x2) | 2.0 | 7573R4 | 107.00 |
| **100** | 135 | 104 (104x2) | 2.0 | 7574R4 | 164.00 |
| **160** | 167 | 154 (154x2) | 2.0 | 7575R4 | 255.00 |
| **200** | 167 | 204 (204x2) | 2.0 | 7576R4 | Upon request |
| **250** | 167 | 254 (254x2) | 2.0 | 7577R4 | Upon request |

**Flange made of 316LNS upon request!**

# CF adapter



**Properties of high-grade steel 1.4306/1.4404:**

- high leak rate (<$10^{-9}$mbarl/s)
- high conductance
- gap-free welded
- cleaned in UHV-compatible manner
- special dimensions upon request

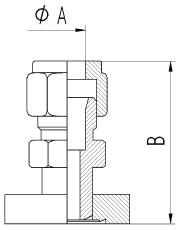
**Description:**

The novotek CF adapters serve as transitions from the CF flange to a very wide variety of vacuum-compatible systems.

**Area of application:**

The novotek CF adapters allow the installation of vacuum attachments for the pressure range of 1000 mbar up to $10^{-9}$ mbar.

# CF adapter for double compression fitting, metric



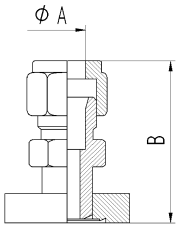

> Pressure range: $10^{-9}$mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Flanges made of 1.4306 (304L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

## 1.4306 (304L) Swagelok®-compatible

| Nominal width DN | dia.A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 6 | 39 | 7551-6 | 44.40 |
| **16** | 8 | 40 | 7551-8 | 53.00 |
| **16** | 10 | 42 | 7551-10 | 54.60 |
| **16** | 12 | 45 | 7551-12 | 60.00 |
| **40** | 6 | 39 | 7552-6 | 50.00 |
| **40** | 8 | 40 | 7552-8 | 55.40 |
| **40** | 10 | 42 | 7552-10 | 58.50 |
| **40** | 12 | 45 | 7552-12 | 68.50 |

# CF adapter for double compression fitting, metric

> Pressure range: $10^{-9}$mbar to 1.0 bar
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4404 (316L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

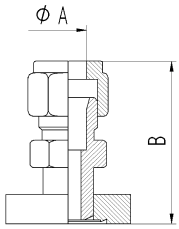



## 1.4404 (316L) Swagelok®-compatible

| Nominal width DN | dia.A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | 6 | 39 | 7551-6-4 | 44.40 |
| **16** | 8 | 40 | 7551-8-4 | 52.50 |
| **16** | 10 | 42 | 7551-10-4 | 54.50 |
| **16** | 12 | 45 | 7551-12-4 | 66.00 |
| **40** | 6 | 39 | 7552-6-4 | 56.00 |
| **40** | 8 | 40 | 7552-8-4 | 58.00 |
| **40** | 10 | 42 | 7552-10-4 | 59.00 |
| **40** | 12 | 45 | 7552-12-4 | 67.00 |

# CF adapter for double compression fitting, imperial

> Pressure range: $10^{-9}$mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L) 1.4404 (316L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration



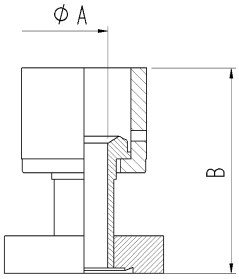

## 1.4306 (304L) Swagelok®-compatible

| Nominal width DN | dia.A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | ¼“ | 39 | 7556-14 | 54.00 |
| **16** | 3/8“ | 41 | 7556-38 | 57.00 |
| **16** | ½“ | 45 | 7556-12 | 66.00 |
| **40** | ¼“ | 39 | 7557-14 | 57.00 |
| **40** | 3/8“ | 41 | 7557-38 | 63.00 |
| **40** | ½“ | 45 | 7557-12 | 68.00 |

## 1.4404 (316L) Swagelok®-compatible

| Nominal width DN | dia.A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| **16** | ¼“ | 39 | 7556-14-4 | 54.00 |
| **16** | 3/8“ | 41 | 7556-38-4 | 59.00 |
| **16** | ½“ | 45 | 7556-12-4 | 68.00 |
| **40** | ¼“ | 39 | 7557-14-4 | 57.00 |
| **40** | 3/8“ | 41 | 7557-38-4 | 63.50 |
| **40** | ½“ | 45 | 7557-12-4 | 69.00 |

# CF-HTC adapter, female




> Pressure range: $10^{-9}$mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L) 1.4404 (316L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

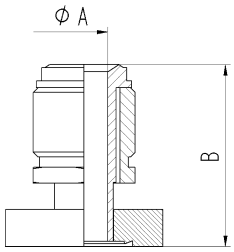
## 1.4306 (304L) VCR®-compatible

| Nominal width DN | dia.A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| 16 | ¼“ | 42 | 7561-14 | 61.50 |
| 16 | ½“ | 44 | 7561-12 | 72.50 |
| 40 | ¼“ | 42 | 7562-14 | 64.50 |
| 40 | ½“ | 44 | 7562-12 | 78.00 |

## 1.4404 (316L) VCR®-compatible

| Nominal width DN | dia.A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| 16 | ¼“ | 42 | 7561-14-4 | 62.00 |
| 16 | ½“ | 44 | 7561-12-4 | 72.80 |
| 40 | ¼“ | 42 | 7562-14-4 | 65.00 |
| 40 | ½“ | 44 | 7562-12-4 | 82.00 |

# CF-HTC adapter, male




> Pressure range: $10^{-9}$mbar to 1.0 bar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Flanges made of 1.4306 (304L) 1.4404 (316L), adapter 1.4404 (316L)
> Other materials and sizes upon request
* Take sealing materials and connecting elements into consideration

## 1.4306 (304L) VCR®-compatible

| Nominal width DN | dia.A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| 16 | ¼“ | 34 | 7566-14 | 55.50 |
| 16 | ½“ | 39 | 7566-12 | 72.50 |
| 40 | ¼“ | 37 | 7567-14 | 62.50 |
| 40 | ½“ | 39 | 7567-12 | 75.00 |

## 1.4404 (316L) VCR®-compatible

| Nominal width DN | dia.A [mm] | B [mm] | Article no. | Price € |
|---|---|---|---|---|
| 16 | ¼“ | 34 | 7566-14-4 | 56.00 |
| 16 | ½“ | 39 | 7566-12-4 | 72.80 |
| 40 | ¼“ | 37 | 7567-14-4 | 63.00 |
| 40 | ½“ | 39 | 7567-12-4 | 77.00 |

# CF hoses and metal spring bellows

**Properties of high-grade steel 1.4306/1.4404:**

- temperature range –196 °C to +350 °C
- suitable for high vacuum up to $1x10^{-9}$mbar
- metal hose lengths of 5 m and longer are possible

**Description:**
The novotek metal hoses are circular corrugated all-metal hoses. The profiling on the corrugation determines the elastic pliability and compressive resistance. The typical CF flanges are welded onto the metal hoses. To eliminate temper colours and clean the weld seam, in a special vacuum annealing procedure the hoses are baked-out at approx. 1040 °C under forming gas. In this process, the metal hose is simultaneously soft-annealed and thus receives its extremely flexibility property. The flexibility makes complicated line runs with small bending radii possible.

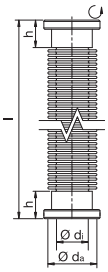
The novotek metal spring bellows are corrugated metal bellows. The corrugated sections that run concentrically and parallel to one another give the metal spring bellows axial, angular and lateral mobility, whereby combinations of this are also possible. Metal spring bellows are not annealed.

**Area of application:**
The novotek metal hose connections and metal spring bellows can be used as a mobile vacuum line. If they are used, ensure that the metal hoses can only execute bending movements in a lateral direction. Dynamic axial movements, i.e. buckling or pulling apart both in axial direction as well as torsional movement can only be executed by metal spring bellows.

**Important comment:** During evacuation of metal hoses as well as metal spring bellows, the air pressure applied from the outside results in a considerable force acting on the flanges, which causes compression. Only the spring power of the hose and bellows counteracts this. It may be necessary to compensate for the forces that develop.

# CF corrugated hose, extremely flexible, 1 flange, rotatable

> All technical data and properties apply at normal air pressure of 1013 mbar and a temperature of 20 °C
> **Extremely flexible thanks to soft annealing**
> Pressure range: $10^{-9}$mbar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Special lengths upon request
* Take sealing materials and connecting elements into consideration




## Flange 1.4306 (304L) / hose 1.4404

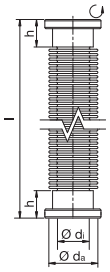
| Nominal width DN | Total length [mm] | Corrugated hose dia.da [mm] | Corrugated hose dia.di [mm] | h [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **16** | 250 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7901R | 93.00 |
| **40** | 250 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7902R | 119.00 |
| **63** | 250 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7903R | 247.00 |
| **100** | 250 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7904R | 343.00 |
| **16** | 500 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7911R | 99.00 |
| **40** | 500 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7912R | 127.00 |
| **63** | 500 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7913R | 272.00 |
| **100** | 500 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7914R | 389.00 |
| **16** | 750 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7931R | 105.00 |
| **40** | 750 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7932R | 137.00 |
| **63** | 750 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7933R | 302.00 |
| **100** | 750 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7934R | 499.00 |
| **16** | 1000 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7921R | 116.00 |
| **40** | 1000 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7922R | 144.00 |
| **63** | 1000 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7923R | 325.00 |
| **100** | 1000 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7924R | 530.00 |

## Flange 1.4404 (316L) / hose 1.4404

| Nominal width DN | Total length [mm] | Corrugated hose dia.da [mm] | Corrugated hose dia.di [mm] | h [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **16** | 250 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7901R4 | 99.00 |
| **40** | 250 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7902R4 | 127.00 |
| **63** | 250 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7903R4 | 259.00 |
| **100** | 250 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7904R4 | 368.00 |
| **16** | 500 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7911R4 | 107.00 |
| **40** | 500 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7912R4 | 136.00 |
| **63** | 500 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7913R4 | 284.50 |
| **100** | 500 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7914R4 | 414.00 |
| **16** | 750 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7931R4 | 115.00 |
| **40** | 750 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7932R4 | 148.00 |
| **63** | 750 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7933R4 | 317.00 |
| **100** | 750 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7934R4 | 516.00 |
| **16** | 1000 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7921R4 | 126.00 |
| **40** | 1000 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7922R4 | 155.00 |
| **63** | 1000 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7923R4 | 339.00 |
| **100** | 1000 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7924R4 | 547.50 |

# CF corrugated hose, flexible, 1 flange, rotatable

> All technical data and properties apply at normal air pressure of 1013 mbar and a temperature of 20 °C
> **Flexible without annealing**
> Pressure range: $10^{-9}$mbar
> Temperature range 1.4306: –196 °C to 300 °C
> Temperature range 1.4404: –196 °C to 350 °C
> Special lengths upon request
* Take sealing materials and connecting elements into consideration




## Flange 1.4306 (304L) / hose 1.4404

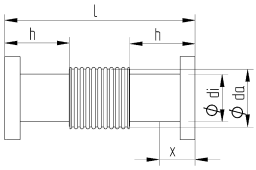
| Nominal width DN | Total length [mm] | Corrugated hose dia.da [mm] | Corrugated hose dia.di [mm] | h [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **16** | 250 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7901RU | 89.50 |
| **40** | 250 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7902RU | 115.00 |
| **63** | 250 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7903RU | 243.00 |
| **100** | 250 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7904RU | 347.00 |
| **16** | 500 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7911RU | 95.00 |
| **40** | 500 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7912RU | 122.50 |
| **63** | 500 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7913RU | 267.00 |
| **100** | 500 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7914RU | 394.00 |
| **16** | 1000 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7921RU | 110.00 |
| **40** | 1000 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7922RU | 137.50 |
| **63** | 1000 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7923RU | 318.00 |
| **100** | 1000 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7924RU | 522.00 |
| **16** | 750 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7931RU | 100.00 |
| **40** | 750 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7932RU | 131.50 |
| **63** | 750 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7933RU | 296.00 |
| **100** | 750 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7934RU | 492.00 |

## Flange 1.4404 (316L) / hose 1.4404

| Nominal width DN | Total length [mm] | Corrugated hose dia.da [mm] | Corrugated hose dia.di [mm] | h [mm] | One-time movement radius $R_{st}$ [mm] | Frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **16** | 250 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7901RU4 | 96.50 |
| **40** | 250 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7902RU4 | 123.00 |
| **63** | 250 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7903RU4 | 255.00 |
| **100** | 250 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7904RU4 | 362.00 |
| **16** | 500 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7911RU4 | 103.00 |
| **40** | 500 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7912RU4 | 131.50 |
| **63** | 500 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7913RU4 | 279.50 |
| **100** | 500 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7914RU4 | 409.00 |
| **16** | 750 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7931RU4 | 110.00 |
| **40** | 750 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7932RU4 | 138.50 |
| **63** | 750 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7933RU4 | 311.00 |
| **100** | 750 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7934RU4 | 509.00 |
| **16** | 1000 | 22.8 | 16.2 | 35 | 26 | 140 | 1.0 | 7921RU4 | 120.00 |
| **40** | 1000 | 52 | 40.1 | 55 | 59 | 240 | 1.0 | 7922RU4 | 148.50 |
| **63** | 1000 | 80 | 65 | 75 | 90 | 330 | 1.0 | 7923RU4 | 332.00 |
| **100** | 1000 | 120 | 100 | 80 | 131 | 530 | 1.0 | 7924RU4 | 539.50 |

# CF metal spring bellows 1.4306 / 1.4404 / 1.4571

> Pressure range: $10^{-9}$mbar
> 10000 load alternation at 20 °C and 1013 mbar standard air pressure
> Temperature range: –196 °C to 300 °C 1.4306*
> Temperature range: –196 °C to 350 °C 1.4404 / 1.4571*
* Take sealing materials and connecting elements into consideration




## Flange 1.4306 / connection pipe 1.4404 / bellows 1.4571

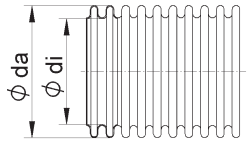
| Nominal width DN | Bellows inside diameter dia.di [mm] | Bellows outside diameter dia.da [mm] | Neutral length l [mm] | Axial stroke x [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 15 | 21 | 110 | ± 6 | 35 | 7991R | 122.00 |
| **40** | 40 | 60 | 160 | ± 12 | 55 | 7992R | 128.50 |
| **63** | 65.5 | 90 | 220 | ± 18 | 75 | 7993R | 314.00 |
| **100** | 105 | 132 | 230 | ± 18 | 80 | 7994R | 430.00 |
| **160** | 153 | 180 | 270 | ± 14 | 85 | 7995R | 685.00 |
| **200** | - | - | 285 | ± 12 | 85 | 7996R | 998.00 |
| **250** | 250 | 286 | 300 | ± 12 | 85 | 7997R | 1,850.00 |

## Flange 1.4404 / connection pipe 1.4404 / bellows 1.4571

| Nominal width DN | Bellows inside diameter dia.di [mm] | Bellows outside diameter dia.da [mm] | Neutral length l [mm] | Axial stroke x [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 15 | 21 | 110 | ± 6 | 35 | 7991R4 | 132.00 |
| **40** | 40 | 60 | 160 | ± 12 | 55 | 7992R4 | 165.00 |
| **63** | 65.5 | 90 | 220 | ± 18 | 75 | 7993R4 | 355.00 |
| **100** | 105 | 132 | 230 | ± 18 | 80 | 7994R4 | 540.00 |
| **160** | 153 | 180 | 270 | ± 14 | 85 | 7995R4 | 785.00 |
| **200** | - | - | 285 | ± 12 | 85 | 7996R4 | Upon request |
| **250** | 250 | 286 | 300 | ± 12 | 85 | 7997R4 | Upon request |

# CF corrugated hose, extremely flexible, sold by the metre 1.4404

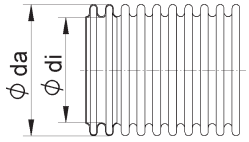
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length l [mm] | dia.di [mm] | dia.da [mm] | One-time movement radius $R_{st}$ [mm] | HH frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **16** | 1000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 7971 | 40.00 |
| **40** | 1000 | 40.1 | 52 | 59 | 240 | 1.8 | 7972 | 64.00 |
| **63** | 1000 | 65 | 80 | 90 | 330 | 1.7 | 7973 | 130.00 |
| **100** | 1000 | 100 | 120 | 131 | 530 | 1.3 | 7974 | 170.00 |

# CF corrugated hose, extremely flexible, sold by the metre 1.4404

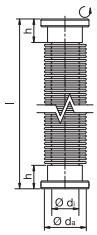
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 350 °C*
* Take sealing materials and connecting elements into consideration




| Nominal width DN | Total length l [mm] | dia.di [mm] | dia.da [mm] | One-time movement radius $R_{st}$ [mm] | HH frequent movement radius $R_b$ [mm] | Maximum pressure [bar] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **16** | 1000 | 16.2 | 22.8 | 26 | 140 | 2.5 | 7971U | 35.00 |
| **40** | 1000 | 40.1 | 52 | 59 | 240 | 1.8 | 7972U | 58.00 |
| **63** | 1000 | 65 | 80 | 90 | 330 | 1.7 | 7973U | 124.00 |
| **100** | 1000 | 100 | 120 | 131 | 530 | 1.3 | 7974U | 164.00 |

# Price example, special length CF corrugated hose with flange

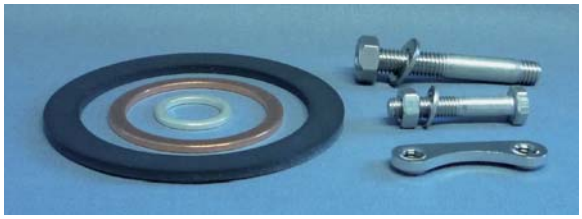
> Available in lengths of 100 mm to 5000 mm
> When ordering, specify desired length additionally in text form
> Pressure range: $10^{-9}$mbar
> Temperature range: –196 °C to 300 °C(1.4301)/350 °C(1.4404)*
* Take sealing materials and connecting elements into consideration




Price example:

| High-grade steel hose, extremely flexible with flange connection, one side rotatable, NW100 l = 2700 mm contains: | Article no. | Price € |
|---|---|---|
| **High-grade steel hose with CF flange connection, one side rotatable, extremely flexible, NW100 l = 1000 mm in 1.4306 (304L)** | 7924R | 530.00 |
| **High-grade steel hose, extremely flexible, NW 100, sold by the metre, 1.7 m** | 7974 x 1.7 | 170 x 1.7 = 289.00 |
| **High-grade steel hose with CF flange connection, one side rotatable, extremely flexible CF NW100 l = 2700 mm in 1.4306 (304L)** | **7924 x 2.7** | **Total price = 819.00** |

# CF seal components



**Properties:**

- metallic joint
- bake-out capacity up to 450 °C
- combinable depending on application area
- use thread lubricant for screw connections
- when baking out, use silver plated seals

**Description:**

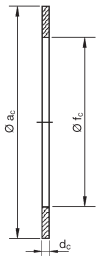
The CF seal components are required to establish a metallic UHV-tight connection. The standard sealing material used is oxygen-free OFHC copper. The Cu sealing washer can only be used once and for temperatures up to 200 °C. To prevent oxidation and for temperatures up to 450 °C, silver-plated copper seals are used. For test purposes and pressures up to $1x10^{-7}$mbar, CF Viton seals, which can be used several times, are often used. The CF connecting components are suitable for establishing up a reliable flange connection. The screws are compiled in various sets corresponding to the usage and handling. To guarantee fast and easy assembly of flanges with smaller nominal widths, DUO nuts are often used.

**Important note:**

When baking out CF connections and components, ensure that heating up and cooling and is carried out uniformly and slowly. Leaks and stress occur at the flanges due to high temperature differences.

**High temperature gradients must be avoided in all circumstances!**

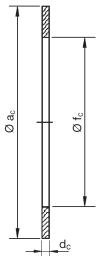
# CF copper seal made of OFHC copper, unannealed




> Pressure range: $10^{-13}$ mbar to 1.0 bar
> Temperature range: –196 °C to 200 °C
> Can only be used once

| Nominal width DN | dia.ac [mm] | dia.fc [mm] | dc [mm] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16** | 21 | 16 | 2 | 10 | 7201 | 10.20 |
| **16** | 21 | 16 | 2 | 1 | 7201-S | 1.20 |
| **40** | 48 | 39 | 2 | 10 | 7202 | 13.20 |
| **40** | 48 | 39 | 2 | 1 | 7202-S | 1.60 |
| **63** | 82 | 63 | 2 | 10 | 7203 | 25.70 |
| **63** | 82 | 63 | 2 | 1 | 7203-S | 3.50 |
| **100** | 120 | 101 | 2 | 10 | 7204 | 35.20 |
| **100** | 120 | 101 | 2 | 1 | 7204-S | 4.70 |
| **160** | 171 | 152 | 2 | 5 | 7205 | 29.20 |
| **160** | 171 | 152 | 2 | 1 | 7205-S | 7.00 |
| **200** | 222 | 203 | 2 | 5 | 7206 | 37.20 |
| **200** | 222 | 203 | 2 | 1 | 7206-S | 9.00 |
| **250** | 273 | 254 | 2 | 5 | 7207 | 129.00 |
| **250** | 273 | 254 | 2 | 1 | 7207-S | 29.90 |

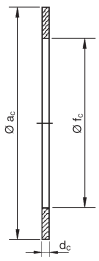
# CF copper seal made of OFHC copper, soft-annealed




> Pressure range: $10^{-13}$ mbar to 1.0 bar
> Temperature range: –196 °C to 200 °C
> Soft-annealed, therefore suitable for aluminium flanges, inspection glasses and window flanges
> Can only be used once

| Nominal width DN | dia.ac [mm] | dia.fc [mm] | dc [mm] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16** | 21 | 16 | 2 | 5 | 7201W | 9.90 |
| **16** | 21 | 16 | 2 | 1 | 7201W-S | 2.40 |
| **40** | 48 | 39 | 2 | 5 | 7202W | 13.50 |
| **40** | 48 | 39 | 2 | 1 | 7202W-S | 3.10 |
| **63** | 82 | 63 | 2 | 5 | 7203W | 26.00 |
| **63** | 82 | 63 | 2 | 1 | 7203W-S | 6.20 |
| **100** | 120 | 101 | 2 | 5 | 7204W | 35.10 |
| **100** | 120 | 101 | 2 | 1 | 7204W-S | 8.50 |
| **160** | 171 | 152 | 2 | 5 | 7205W | 47.00 |
| **160** | 171 | 152 | 2 | 1 | 7205W-S | 10.70 |
| **200** | 222 | 203 | 2 | 5 | 7206W | 61.00 |
| **200** | 222 | 203 | 2 | 1 | 7206W-S | 13.70 |
| **250** | 273 | 254 | 2 | 5 | 7207W | 179.00 |
| **250** | 273 | 254 | 2 | 1 | 7207W-S | 37.00 |

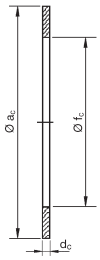
# CF copper seal made of OFHC copper, silver-plated




> Pressure range: $10^{-13}$ mbar to 1.0 bar
> Temperature range: –196 °C to 450 °C
> Can only be used once

| Nominal width DN | dia.ac [mm] | dia.fc [mm] | dc [mm] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16** | 21 | 16 | 2 | 5 | 7211 | 9.70 |
| **16** | 21 | 16 | 2 | 1 | 7211-S | 2.40 |
| **40** | 48 | 39 | 2 | 5 | 7212 | 15.20 |
| **40** | 48 | 39 | 2 | 1 | 7212-S | 3.50 |
| **63** | 82 | 63 | 2 | 5 | 7213 | 24.20 |
| **63** | 82 | 63 | 2 | 1 | 7213-S | 5.70 |
| **100** | 120 | 101 | 2 | 5 | 7214 | 29.70 |
| **100** | 120 | 101 | 2 | 1 | 7214-S | 7.70 |
| **160** | 171 | 152 | 2 | 5 | 7215 | 42.50 |
| **160** | 171 | 152 | 2 | 1 | 7215-S | 10.50 |
| **200** | 222 | 203 | 2 | 5 | 7216 | 69.70 |
| **200** | 222 | 203 | 2 | 1 | 7216-S | 16.50 |
| **250** | 273 | 254 | 2 | 5 | 7217 | 197.00 |
| **250** | 273 | 254 | 2 | 1 | 7217-S | 43.00 |

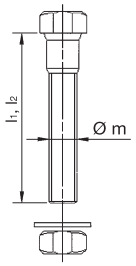
# CF seal made of FKM/FPM




> Pressure range: $10^{-7}$ mbar to 1.0 bar
> Temperature range: –20 °C to 160 °C
> Can be used several times

| Nominal width DN | dia.ac [mm] | dia.fc [mm] | dc [mm] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|---|
| **16** | 21 | 16 | 3 | 3 | 7251 | 5.85 |
| **16** | 21 | 16 | 2 | 1 | 7251-S | 2.20 |
| **40** | 48 | 37 | 3 | 3 | 7252 | 9.30 |
| **40** | 48 | 37 | 2 | 1 | 7252-S | 3.55 |
| **63** | 82 | 63 | 3 | 3 | 7253 | 14.70 |
| **63** | 82 | 63 | 2 | 1 | 7253-S | 5.15 |
| **100** | 120 | 101 | 3 | 3 | 7254 | 21.50 |
| **100** | 120 | 101 | 2 | 1 | 7254-S | 7.40 |
| **160** | 171 | 152 | 3 | 3 | 7255 | 32.00 |
| **160** | 171 | 152 | 2 | 1 | 7255-S | 10.90 |
| **200** | 222 | 203 | 3 | 3 | 7256 | 69.00 |
| **200** | 222 | 203 | 2 | 1 | 7256-S | 23.50 |
| **250** | 273 | 254 | 3 | 3 | 7257 | 95.00 |
| **250** | 273 | 254 | 2 | 1 | 7257-S | 32.50 |

# CF hexagon screw set A2

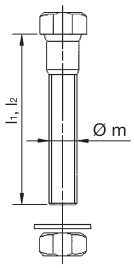



> Screw set as shown with screw, nut and washer
> Suitable for the assembly of 2 flanges with through-holes
> Can be used several times

## For flanges with through-holes

| Nominal width DN | $L_1$ [mm] | m [thread] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 20 | M4 | 6 | 7001 | 2.90 |
| **40** | 35 | M6 | 6 | 7002 | 3.70 |
| **63** | 50 | M8 | 8 | 7003 | 6.30 |
| **100** | 55 | M8 | 16 | 7004 | 12.60 |
| **160** | 55 | M8 | 20 | 7005 | 16.80 |
| **200** | 60 | M8 | 24 | 7006 | 21.50 |
| **250** | 60 | M8 | 32 | 7007 | 31.90 |

# CF hexagon screw set A2

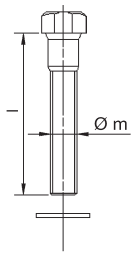



> Screw set as shown with screw, nut and washer
> Suitable for the assembly of 1 flange with through-holes and 1 double-side flange
> Can be used several times

## For double-sided CF flanges

| Nominal width DN | $L_2$ [mm] | m [thread] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 35 | M4 | 6 | 7011 | 3.20 |
| **40** | 50 | M6 | 6 | 7012 | 4.10 |
| **63** | 60 | M8 | 8 | 7013 | 7.90 |
| **100** | 70 | M8 | 16 | 7014 | 16.40 |
| **160** | 80 | M8 | 20 | 7015 | 24.30 |
| **200** | 90 | M8 | 24 | 7016 | 34.70 |
| **250** | 90 | M8 | 32 | 7017 | 46.80 |

# CF hexagon screw set A2

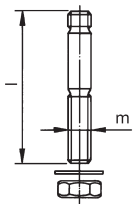



> Screw set as shown with screw, and washer
> Suitable for assembly of 2 flanges with 1x through-hole and one thread.
> Can be used several times

## For CF flanges with threaded holes

| Nominal width DN | $L_2$ [mm] | m [thread] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 16 | M4 | 6 | 7021 | 2.80 |
| **40** | 25 | M6 | 6 | 7022 | 3.60 |
| **63** | 30 | M8 | 8 | 7023 | 6.10 |
| **100** | 35 | M8 | 16 | 7024 | 12.80 |
| **160** | 35 | M8 | 20 | 7025 | 16.20 |
| **200** | 45 | M8 | 24 | 7026 | 20.20 |
| **250** | 50 | M8 | 32 | 7027 | 31.00 |

# CF stud screw set A2



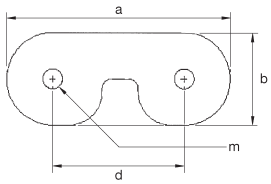

> Screw set as shown with stud screw, nut and washer
> Suitable for assembly of 2 flanges with 1x through-hole and one thread.
> Can be used several times

## For CF flanges with threaded holes

| Nominal width DN | l [mm] | m [thread] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 25 | M4x20 | 6 | 8031 | Upon request |
| **40** | 36 | M6x30 | 6 | 8032 | 11.50 |
| **63** | 48 | M8x40 | 8 | 8033 | 16.00 |
| **100** | 53 | M8x45 | 16 | 8034 | 32.00 |
| **160** | 53 | M8x45 | 20 | 8035 | 39.00 |
| **200** | 53 | M8x45 | 24 | 8036 | 43.00 |
| **250** | 53 | M8x45 | 32 | 8037 | 55.00 |

# CF Duo nut

> Duo nut as shown
> Suitable for the assembly of 2 flanges with through-holes
> Suitable for fast assembly and with space problems




## For CF flanges with threaded holes

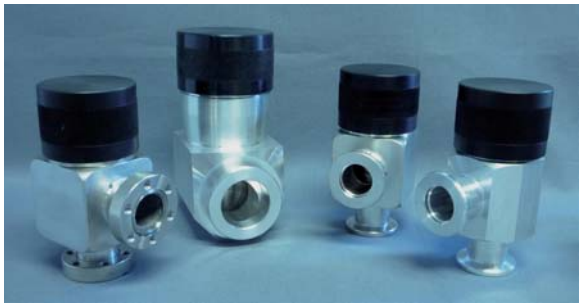
| Nominal width DN | a [mm] | b [mm] | m [thread] | d [mm] | Packaging unit [pcs.] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 20.5 | 7 | M4 | 13 | 25 | 7051 | 47.50 |
| **40** | 40 | 11 | M6 | 29 | 25 | 7052 | 63.50 |
| **63** | 48 | 13 | M8 | 35 | 25 | 7053 | 75.00 |
| **100** | 44 | 12 | M8 | 25 | 25 | 7054 | 96.00 |
| **160** | 44 | 12 | M8 | 28 | 25 | 7055 | 96.00 |

# CF flange cap, plastic

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 7081 | 0.80 |
| **40** | 7082 | 1.00 |
| **63** | 7083 | 2.00 |
| **100** | 7084 | 2.20 |
| **160** | 7085 | 3.20 |
| **200** | 7086 | 10.20 |
| **250** | 7087 | 14.50 |

# Valves

# Corner and full-way valves, manually actuated and electro-pneumatic



**Properties**

- high leak rate (<$10^{-8}$mbarl/s)
- single-acting pneumatic unit
- high conductance
- spring bellows and internal components made of high-grade steel
- valve face and housing are FKM-sealed
- reliable function in all installation positions
- long service life and low-maintenance

**Description:**

The novotek corner and full-way valves made of aluminium and high-grade steel meet special leak-tightness requirements of high-vacuum valves. To achieve this leak-tightness, novotek uses spring bellows seals in conjunction with FKM-sealed connecting components. The valve housing is manufactured from a drawn aluminium profile or from high-grade steel solid material. The connection between valve plate, spring bellows and sealing plate is laser-welded and guarantees high-vacuum sealing at all times.

**Pneumatic valves:**

The pneumatic unit is single-acting. This means that the valve is de-energized and closed unpressurised. The valve is opened either directly via compressed air or controlled via an optionally integrated pilot valve that forwards the compressed air to the valve. For special applications, which are usually safety-relevant, the valves can also be supplied in the version open when de-energised and depressurised. The position indicator (optional) signals the open or closed position. Valves supplied without position indicator and control valve signal the open and closed position by means of a pin on the valve cover.

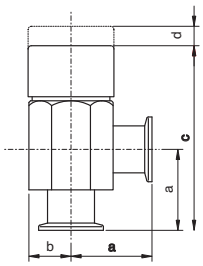
**Area of application:**

They are used as shut-off valves, vent valves and high-vacuum valves, have a light weight, a small overall height and a high conductivity value. They can be installed as required and fail-safe in compact systems. The electro-pneumatically actuated valves are suitable for an automated vacuum system (usually controlled via PLC).

**Materials:**

The different materials are compiled as follows:
Aluminium housing 3.1645, high-grade steel housing and high-grade steel internal parts 1.4301 or 1.4305. Metal bellows made of high-grade steel 1.4571 and seals made of FKM/FPM.

# Corner valves KF / ISO-K, manually actuated, aluminium (3.1645)




> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

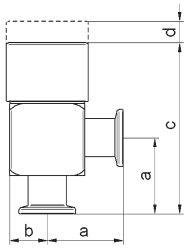
| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Conductivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out temperature [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 40 | 20 | 91 | 8 | 5.2 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 140 | 0.3 | 3002 | 159.50 |
| **25** | 50 | 25 | 114 | 12 | 12.4 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 140 | 0.5 | 3004 | 189.50 |
| **40** | 65 | 35 | 139 | 16 | 33.5 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 140 | 1.1 | 3006 | 239.50 |
| **50** | 70 | 40 | 144 | 16 | 62.7 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 140 | 1.4 | 3007 | 329.50 |
| **63*** | 88 | 53 | 242 | 19 | 160 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 140 | 3.2 | 8002 | 620.00 |

> The nominal widths marked with * are VAT valves

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993002 | 15.80 |
| **25** | 31993004 | 15.80 |
| **40** | 31993006 | 17.80 |
| **50** | 31993007 | 19.80 |
| **63** | 31998002 | Upon request |

# Corner valves KF / ISO-K manually actuated, high-grade steel (1.4301)




> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

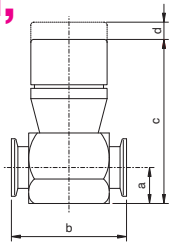
| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Conductivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out temperature [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 40 | 20 | 90 | 8 | 5.4 | $1*10^{-8}$ | $1 \times 10^{-8}$ | 300000 | 160 | 0.5 | 3012 | 219.50 |
| **25** | 50 | 25 | 112 | 12 | 12.8 | $1*10^{-8}$ | $1 \times 10^{-8}$ | 300000 | 160 | 0.9 | 3014 | 234.00 |
| **40** | 65 | 32 | 140 | 16 | 34.2 | $1*10^{-8}$ | $1 \times 10^{-8}$ | 300000 | 160 | 1.9 | 3016 | 324.50 |
| **50** | 70 | 53 | 150 | 16 | 64 | $1*10^{-8}$ | $1 \times 10^{-8}$ | 300000 | 160 | 2.2 | 3017 | 469.50 |
| **63*** | 88 | 53 | 170 | 19 | 163 | $1*10^{-8}$ | $1 \times 10^{-8}$ | 300000 | 160 | 3.2 | 8012 | 790.00 |

> The nominal widths marked with * are VAT valves

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993012 | 15.80 |
| **25** | 31993014 | 15.80 |
| **40** | 31993016 | 17.80 |
| **50** | 31993017 | 19.80 |
| **63** | 31998012 | 23.80 |

# KF full-way valves, manually actuated, aluminium (3.1645)



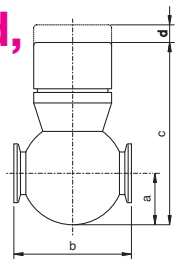

> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out tempera-ture [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 20 | 70 | 86 | 8 | 2 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 140 | 0.32 | 3022 | 229.50 |
| **25** | 25 | 80 | 108.5 | 12 | 8 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 140 | 0.69 | 3024 | 269.50 |
| **40** | 35 | 110 | 150 | 16 | 16.5 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 140 | 1.05 | 3026 | 329.50 |

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993022 | 15.80 |
| **25** | 31993024 | 15.80 |
| **40** | 31993026 | 17.80 |

# KF full-way valves, manually actuated, high-grade steel (1.4301)



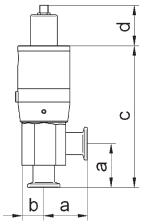

> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out tempera-ture [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 30 | 70 | 105 | 8 | 2.5 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 160 | 0.65 | 3032 | 294.00 |
| **25** | 35 | 80 | 124 | 12 | 9.5 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 160 | 0.71 | 3034 | 309.00 |
| **40** | 35 | 80 | 129 | 12 | 18 | $<5*10^{-9}$ | $1 \times 10^{-8}$ | 300000 | 160 | 1.2 | 3036 | 379.00 |

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993032 | 15.80 |
| **25** | 31993034 | 15.80 |
| **40** | 31993036 | 17.80 |

# Corner valves KF / ISO-K, electro-pneumatic, aluminium (3.1645)



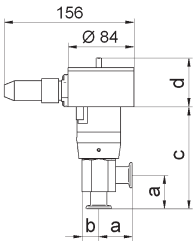

**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration

| NW DN | a [mm] | b [mm] | c [mm] | d [mm] | Weight [kg] | Compr. air [bar] | Closing time [ms] | With position indicator | With control valve | Version closed | Version open | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 40 | 20 | 133 | – | 0.5 | 6-8 | 150 | | | X (top) | | 310212 | 227.00 |
| **16** | 40 | 20 | 133 | 40 | 0.5 | 6-8 | 150 | X | | X (top) | | 310222 | 273.00 |
| **16** | 40 | 20 | 120 | 58 | 0.9 | 6-8 | 150 | | X | X | | 310232 | 282.00 |
| **16** | 40 | 20 | 120 | 58 | 0.9 | 6-8 | 150 | X | X | X | | 310242 | 307.00 |
| **16** | 40 | 20 | 133 | – | 0.5 | 6-8 | 150 | | | | X (top) | 310211 | 227.00 |
| **16** | 40 | 20 | 133 | 40 | 0.5 | 6-8 | 150 | X | | | X (top) | 310221 | 273.00 |
| **16** | 40 | 20 | 120 | 58 | 0.9 | 6-8 | 150 | | X | | X | 310231 | 282.00 |
| **16** | 40 | 20 | 120 | 58 | 0.9 | 6-8 | 150 | X | X | | X | 310241 | 307.00 |
| **25** | 50 | 25 | 154 | – | 0.63 | 6-8 | 200 | | | X (top) | | 310412 | 268.00 |
| **25** | 50 | 25 | 154 | 40 | 0.7 | 6-8 | 200 | X | | X (top) | | 310422 | 303.00 |
| **25** | 50 | 25 | 145 | 58 | 1.2 | 6-8 | 200 | | X | X | | 310432 | 313.00 |
| **25** | 50 | 25 | 145 | 58 | 1.2 | 6-8 | 200 | X | X | X | | 310442 | 348.00 |
| **25** | 50 | 25 | 154 | – | 0.63 | 6-8 | 200 | | | | X (top) | 310411 | 268.00 |
| **25** | 50 | 25 | 154 | 40 | 0.7 | 6-8 | 200 | X | | | X (top) | 310421 | 303.00 |
| **25** | 50 | 25 | 145 | 58 | 1.2 | 6-8 | 200 | | X | | X | 310431 | 313.00 |
| **25** | 50 | 25 | 145 | 58 | 1.2 | 6-8 | 200 | X | X | | X | 310441 | 348.00 |
| **40** | 65 | 35 | 182 | – | 1.37 | 6-8 | 300 | | | X (top) | | 310612 | 289.00 |
| **40** | 65 | 35 | 182 | 40 | 1.37 | 6-8 | 300 | X | | X (top) | | 310622 | 324.00 |
| **40** | 65 | 35 | 170 | 58 | 1.6 | 6-8 | 300 | | X | X | | 310632 | 334.00 |
| **40** | 65 | 35 | 170 | 58 | 1.6 | 6-8 | 300 | X | X | X | | 310642 | 369.00 |
| **40** | 65 | 35 | 182 | – | 1.37 | 6-8 | 300 | | | | X (top) | 310611 | 289.00 |
| **40** | 65 | 35 | 182 | 40 | 1.37 | 6-8 | 300 | X | | | X (top) | 310621 | 324.00 |
| **40** | 65 | 35 | 170 | 58 | 1.6 | 6-8 | 300 | | X | | X | 310631 | 334.00 |
| **40** | 65 | 35 | 170 | 58 | 1.6 | 6-8 | 300 | X | X | | X | 310641 | 369.00 |
| **50 *** | 70 | - | 169 | 10.5 | 1.45 | 4-8 | 650 | | | X | | 310712 | 350.00 |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | X | | X | | 310722 | 385.00 |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | | X | X | | 310732 | 395.00 |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | X | X | X | | 310742 | 430.00 |
| **50 *** | 70 | - | 169 | 10.5 | 1.45 | 4-8 | 650 | | | | X | 310711 | Upon req. |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | X | | | X | 310721 | Upon req. |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | | X | | X | 310731 | Upon req. |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | X | X | | X | 310741 | Upon req. |
| **63 *** | 88 | - | 197 | 32.6 | 2.9 | 4-8 | 700 | | | X | | 810212 | 650.00 |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | X | | X | | 810222 | 685.00 |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | | X | X | | 810232 | 695.00 |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | X | X | X | | 810242 | 730.00 |
| **63 *** | 88 | - | 197 | 32.6 | 2.9 | 4-8 | 700 | | | | X | 810211 | Upon req. |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | X | | | X | 810221 | Upon req. |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | | X | | X | 810231 | Upon req. |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | X | X | | X | 810241 | Upon req. |

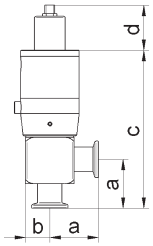
**> The nominal widths marked with * are VAT valves!**

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993102 | 22.30 |
| **25** | 31993104 | 22.30 |
| **40** | 31993106 | 25.40 |
| **50** | 31993107 | Upon request |
| **63** | 31998102 | Upon request |




# Corner valves KF / ISO-K electro-pneumatically actuated, high-grade steel (1.4301)



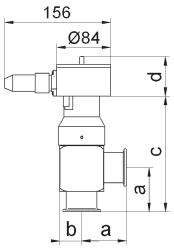

**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration

| NW DN | a [mm] | b [mm] | c [mm] | d [mm] | Weight [kg] | Compr. air [bar] | Closing time [ms] | With position indicator | With control valve | Version closed | Version open | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 40 | 20 | 130 | – | 0.8 | 6-8 | 150 | | | X (top) | | 311212 | 288.00 |
| **16** | 40 | 20 | 130 | 40 | 0.8 | 6-8 | 150 | X | | X (top) | | 311222 | 323.00 |
| **16** | 40 | 20 | 122 | 58 | 1.4 | 6-8 | 150 | | X | X | | 311232 | 343.00 |
| **16** | 40 | 20 | 122 | 58 | 1.4 | 6-8 | 150 | X | X | X | | 311242 | 368.00 |
| **16** | 40 | 20 | 130 | – | 0.8 | 6-8 | 150 | | | | X (top) | 311211 | 288.00 |
| **16** | 40 | 20 | 130 | 40 | 0.8 | 6-8 | 150 | X | | | X (top) | 311221 | 323.00 |
| **16** | 40 | 20 | 122 | 58 | 1.4 | 6-8 | 150 | | X | | X | 311231 | 343.00 |
| **16** | 40 | 20 | 122 | 58 | 1.4 | 6-8 | 150 | X | X | | X | 311241 | 368.00 |
| **25** | 50 | 25 | 154 | – | 1.28 | 6-8 | 200 | | | X (top) | | 311412 | 337.00 |
| **25** | 50 | 25 | 154 | 40 | 1.28 | 6-8 | 200 | X | | X (top) | | 311422 | 372.00 |
| **25** | 50 | 25 | 145 | 58 | 1.8 | 6-8 | 200 | | X | X | | 311432 | 382.00 |
| **25** | 50 | 25 | 145 | 58 | 1.8 | 6-8 | 200 | X | X | X | | 311442 | 418.00 |
| **25** | 50 | 25 | 154 | – | 1.28 | 6-8 | 200 | | | | X (top) | 311411 | 337.00 |
| **25** | 50 | 25 | 154 | 40 | 1.28 | 6-8 | 200 | X | | | X (top) | 311421 | 372.00 |
| **25** | 50 | 25 | 145 | 58 | 1.8 | 6-8 | 200 | | X | | X | 311431 | 382.00 |
| **25** | 50 | 25 | 145 | 58 | 1.8 | 6-8 | 200 | X | X | | X | 311441 | 418.00 |
| **40** | 65 | 35 | 180 | – | 1.50 | 6-8 | 300 | | | X (top) | | 311612 | 389.00 |
| **40** | 65 | 35 | 180 | 40 | 2.0 | 6-8 | 300 | X | | X (top) | | 311622 | 424.00 |
| **40** | 65 | 35 | 170 | 58 | 2.6 | 6-8 | 300 | | X | X | | 311632 | 434.00 |
| **40** | 65 | 35 | 170 | 58 | 2.6 | 6-8 | 300 | X | X | X | | 311642 | 469.00 |
| **40** | 65 | 35 | 180 | – | 1.50 | 6-8 | 300 | | | | X (top) | 311611 | 389.00 |
| **40** | 65 | 35 | 180 | 40 | 2.0 | 6-8 | 300 | X | | | X (top) | 311621 | 424.00 |
| **40** | 65 | 35 | 170 | 58 | 2.6 | 6-8 | 300 | | X | | X | 311631 | 434.00 |
| **40** | 65 | 35 | 170 | 58 | 2.6 | 6-8 | 300 | X | X | | X | 311641 | 469.00 |
| **50 *** | 70 | - | 169 | 10.5 | 1.61 | 4-8 | 650 | | | X | | 311712 | 490.00 |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | X | | X | | 311722 | 535.00 |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | | X | X | | 311732 | 545.00 |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | X | X | X | | 311742 | 570.00 |
| **50 *** | 70 | - | 169 | 10.5 | 1.61 | 4-8 | 650 | | | | X | 311711 | Upon req. |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | X | | | X | 311721 | Upon req. |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | | X | | X | 311731 | Upon req. |
| **50 *** | 70 | - | 169 | 10.5 | | 4-8 | 650 | X | X | | X | 311741 | Upon req. |
| **63 *** | 88 | - | 197 | 32.6 | 3.8 | 4-8 | 700 | | | X | | 811212 | 850.00 |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | X | | X | | 811222 | 885.00 |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | | X | X | | 811232 | 895.00 |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | X | X | X | | 811242 | 930.00 |
| **63 *** | 88 | - | 197 | 32.6 | 3.8 | 4-8 | 700 | | | | X | 811211 | Upon req. |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | X | | | X | 811221 | Upon req. |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | | X | | X | 811231 | Upon req. |
| **63 *** | 88 | - | 197 | 32.6 | | 4-8 | 700 | X | X | | X | 811241 | Upon req. |

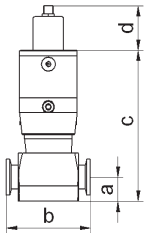
**> The nominal widths marked with * are VAT valves.**

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993112 | 22.30 |
| **25** | 31993114 | 22.30 |
| **40** | 31993116 | 25.40 |
| **50** | 31993117 | Upon request |
| **63** | 31998112 | Upon request |




# KF full-way valves, electro-pneumatically actuated, aluminium (3.1645)

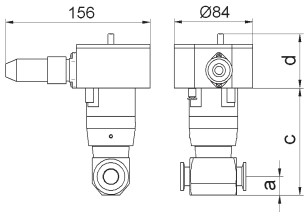



**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration

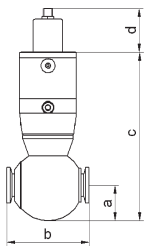
| NW DN | a [mm] | b [mm] | c [mm] | d [mm] | Weight [kg] | Compr. air [bar] | Closing time [ms] | With position indicator | With control valve | Version closed | Version open | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 20 | 70 | 126 | – | 0.47 | 6-8 | 150 | | | X (top) | | 312212 | 315.00 |
| **16** | 20 | 70 | 126 | 40 | 0.47 | 6-8 | 150 | X | | X (top) | | 312222 | 350.00 |
| **16** | 20 | 70 | 118 | 58 | 1.1 | 6-8 | 150 | | X | X | | 312232 | 360.00 |
| **16** | 20 | 70 | 118 | 58 | 1.1 | 6-8 | 150 | X | X | X | | 312242 | 395.00 |
| **16** | 20 | 70 | 126 | – | 0.47 | 6-8 | 150 | | | | X (top) | 312211 | 315.00 |
| **16** | 20 | 70 | 126 | 40 | 0.47 | 6-8 | 150 | X | | | X (top) | 312221 | 350.00 |
| **16** | 20 | 70 | 118 | 58 | 1.1 | 6-8 | 150 | | X | | X | 312231 | 360.00 |
| **16** | 20 | 70 | 118 | 58 | 1.1 | 6-8 | 150 | X | X | | X | 312241 | 395.00 |
| **25** | 25 | 80 | 152 | – | 0.76 | 6-8 | 200 | | | X (top) | | 312412 | 355.00 |
| **25** | 25 | 80 | 152 | 40 | 0.76 | 6-8 | 200 | X | | X (top) | | 312422 | 390.00 |
| **25** | 25 | 80 | 142 | 58 | 1.3 | 6-8 | 200 | | X | X | | 312432 | 400.00 |
| **25** | 25 | 80 | 142 | 58 | 1.3 | 6-8 | 200 | X | X | X | | 312442 | 435.00 |
| **25** | 25 | 80 | 152 | – | 0.76 | 6-8 | 200 | | | | X (top) | 312411 | 355.00 |
| **25** | 25 | 80 | 152 | 40 | 0.76 | 6-8 | 200 | X | | | X (top) | 312421 | 390.00 |
| **25** | 25 | 80 | 142 | 58 | 1.3 | 6-8 | 200 | | X | | X | 312431 | 400.00 |
| **25** | 25 | 80 | 142 | 58 | 1.3 | 6-8 | 200 | X | X | | X | 312441 | 435.00 |
| **40** | 35 | 110 | 185 | – | 1.5 | 6-8 | 300 | | | X (top) | | 312612 | 379.00 |
| **40** | 35 | 110 | 185 | 40 | 1.5 | 6-8 | 300 | X | | X (top) | | 312622 | 414.00 |
| **40** | 35 | 110 | 146 | 58 | 2 | 6-8 | 300 | | X | X | | 312632 | 424.00 |
| **40** | 35 | 110 | 146 | 58 | 2 | 6-8 | 300 | X | X | X | | 312642 | 459.00 |
| **40** | 35 | 110 | 185 | – | 1.5 | 6-8 | 300 | | | | X (top) | 312611 | 379.00 |
| **40** | 35 | 110 | 185 | 40 | 1.5 | 6-8 | 300 | X | | | X (top) | 312621 | 414.00 |
| **40** | 35 | 110 | 146 | 58 | 2 | 6-8 | 300 | | X | | X | 312631 | 424.00 |
| **40** | 35 | 110 | 146 | 58 | 2 | 6-8 | 300 | X | X | | X | 312641 | 459.00 |

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993122 | 22.30 |
| **25** | 31993124 | 22.30 |
| **40** | 31993126 | 25.40 |




# KF full-way valves, electro-pneumatically actuated, high-grade steel (1.4301)

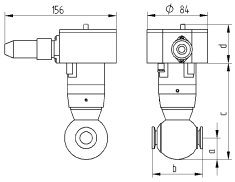



**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration

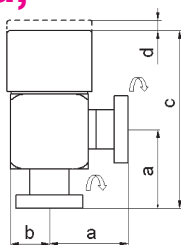
| NW DN | a [mm] | b [mm] | c [mm] | d [mm] | Weight [kg] | Compr. air [bar] | Closing time [ms] | With position indicator | With control valve | Version closed | Version open | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 30 | 70 | 145 | – | 1.0 | 6-8 | 150 | | | X (top) | | 313212 | 365.00 |
| **16** | 30 | 70 | 145 | 40 | 1.0 | 6-8 | 150 | X | | X (top) | | 313222 | 400.00 |
| **16** | 30 | 70 | 135 | 58 | 1.5 | 6-8 | 150 | | X | X | | 313232 | 410.00 |
| **16** | 30 | 70 | 135 | 58 | 1.5 | 6-8 | 150 | X | X | X | | 313242 | 445.00 |
| **16** | 30 | 70 | 145 | – | 1.0 | 6-8 | 150 | | | | X (top) | 313211 | 365.00 |
| **16** | 30 | 70 | 145 | 40 | 1.0 | 6-8 | 150 | X | | | X (top) | 313221 | 400.00 |
| **16** | 30 | 70 | 135 | 58 | 1.5 | 6-8 | 150 | | X | | X | 313231 | 410.00 |
| **16** | 30 | 70 | 135 | 58 | 1.5 | 6-8 | 150 | X | X | | X | 313241 | 445.00 |
| **25** | 35 | 80 | 166 | – | 1.28 | 6-8 | 200 | | | X (top) | | 313412 | 425.00 |
| **25** | 35 | 80 | 166 | 40 | 1.28 | 6-8 | 200 | X | | X (top) | | 313422 | 460.00 |
| **25** | 35 | 80 | 157 | 58 | 1.8 | 6-8 | 200 | | X | X | | 313432 | 470.00 |
| **25** | 35 | 80 | 157 | 58 | 1.8 | 6-8 | 200 | X | X | X | | 313442 | 505.00 |
| **25** | 35 | 80 | 166 | – | 1.28 | 6-8 | 200 | | | | X (top) | 313411 | 425.00 |
| **25** | 35 | 80 | 166 | 40 | 1.28 | 6-8 | 200 | X | | | X (top) | 313421 | 460.00 |
| **25** | 35 | 80 | 157 | 58 | 1.8 | 6-8 | 200 | | X | | X | 313431 | 470.00 |
| **25** | 35 | 80 | 157 | 58 | 1.8 | 6-8 | 200 | X | X | | X | 313441 | 505.00 |
| **40** | 35 | 80 | 170 | – | 1.5 | 6-8 | 300 | | | X (top) | | 313612 | 555.00 |
| **40** | 35 | 80 | 170 | 40 | 1.5 | 6-8 | 300 | X | | X (top) | | 313622 | 590.00 |
| **40** | 35 | 80 | 163 | 58 | 1.9 | 6-8 | 300 | | X | X | | 313632 | 600.00 |
| **40** | 35 | 80 | 163 | 58 | 1.9 | 6-8 | 300 | X | X | X | | 313642 | 635.00 |
| **40** | 35 | 80 | 170 | – | 1.5 | 6-8 | 300 | | | | X (top) | 313611 | 555.00 |
| **40** | 35 | 80 | 170 | 40 | 1.5 | 6-8 | 300 | X | | | X (top) | 313621 | 590.00 |
| **40** | 35 | 80 | 163 | 58 | 1.9 | 6-8 | 300 | | X | | X | 313631 | 600.00 |
| **40** | 35 | 80 | 163 | 58 | 1.9 | 6-8 | 300 | X | X | | X | 313641 | 635.00 |

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993132 | 22.30 |
| **25** | 31993134 | 22.30 |
| **40** | 31993136 | 25.40 |




# CF corner valves, manually actuated, high-grade steel (1.4301)



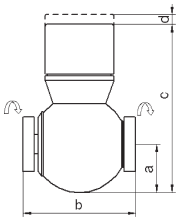

**> Flanges with thread**
> Bellows sealed 1.4571
> Internal parts made of 1.4301
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Con-ductivi-ty value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out tempera-ture [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 40 | 20 | 96 | 8 | 5.7 | $<5*10^{-9}$ | $1*10^{-8}$ mbar to 1 bar | 300000 | 160 | 0.5 | 7031 | 325.00 |
| **40** | 63 | 35 | 145 | 16 | 37.7 | $<5*10^{-9}$ | $1*10^{-8}$ mbar to 1 bar | 300000 | 160 | 2.3 | 7032 | 445.00 |
| **63** | 105 | 53 | 187 | 19 | 90 | $<5*10^{-9}$ | $1*10^{-8}$ mbar to 1 bar | 300000 | 160 | 4.4 | 7033 | 645.00 |

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31997031 | 15.80 |
| **40** | 31997032 | 17.80 |
| **63** | 31997033 | 23.80 |

# CF full-way valves, manually actuated high-grade steel (1.4301)



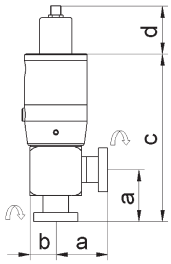

**> Flanges with thread**
> Bellows sealed 1.4571
> Internal parts made of 1.4301 / 1.4305
> Rotary knob aluminium-anodized
* Take sealing materials and connecting elements into consideration

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Con-ductivi-ty value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out tempera-ture [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 30 | 70 | 105 | 8 | 5.7 | $<5*10^{-9}$ | $1*10^{-8}$ mbar to 1 bar | 300000 | 160 | 0.5 | 7332 | 289.00 |
| **40** | 35 | 84 | 130 | 16 | 37.7 | $<5*10^{-9}$ | $1*10^{-8}$ mbar to 1 bar | 300000 | 160 | 2.3 | 7336 | 475.00 |

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31997332 | 15.80 |
| **40** | 31997336 | 17.80 |

# CF corner valves, electro-pneumatically actuated, high-grade steel (1.4301)

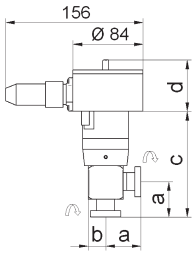



**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Housing made of 1.4301 / internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
**> Flanges with thread**
* Take sealing materials and connecting elements into consideration

| NW DN | a [mm] | b [mm] | c [mm] | d [mm] | Weight [kg] | Compr. air [bar] | Closing time [ms] | With position indicator | With control valve | Version closed | Version open | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 40 | 20 | 130 | 40 | 0.8 | 6-8 | 150 | | | X (top) | | 706112 | 349.00 |
| **16** | 40 | 20 | 130 | 40 | 0.8 | 6-8 | 150 | X | | X (top) | | 706122 | 384.00 |
| **16** | 40 | 20 | 120 | 58 | 1.3 | 6-8 | 150 | | X | X | | 706132 | 394.00 |
| **16** | 40 | 20 | 120 | 58 | 1.3 | 6-8 | 150 | X | X | X | | 706142 | 429.00 |
| **16** | 40 | 20 | 130 | 40 | 0.8 | 6-8 | 150 | | | | X (top) | 706111 | 349.00 |
| **16** | 40 | 20 | 130 | 40 | 0.8 | 6-8 | 150 | X | | | X (top) | 706121 | 384.00 |
| **16** | 40 | 20 | 172 | 58 | 1.3 | 6-8 | 150 | | X | | X | 706131 | 394.00 |
| **16** | 40 | 20 | 172 | 58 | 1.3 | 6-8 | 150 | X | X | | X | 706141 | 429.00 |
| **40** | 63 | 35 | 176 | 40 | 2.3 | 6-8 | 300 | | | X (top) | | 706212 | 475.00 |
| **40** | 63 | 35 | 176 | 40 | 2.3 | 6-8 | 300 | X | | X (top) | | 706222 | 510.00 |
| **40** | 63 | 35 | 168 | 58 | 2.5 | 6-8 | 300 | | X | X | | 706232 | 520.00 |
| **40** | 63 | 35 | 168 | 58 | 2.5 | 6-8 | 300 | X | X | X | | 706242 | 555.00 |
| **40** | 63 | 35 | 176 | 40 | 2.3 | 6-8 | 300 | | | | X (top) | 706211 | 475.00 |
| **40** | 63 | 35 | 176 | 40 | 2.3 | 6-8 | 300 | X | | | X (top) | 706221 | 510.00 |
| **40** | 63 | 35 | 220 | 58 | 2.5 | 6-8 | 300 | | X | | X | 706231 | 520.00 |
| **40** | 63 | 35 | 168 | 58 | 2.5 | 6-8 | 300 | X | X | | X | 706241 | 555.00 |

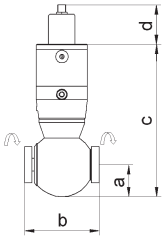
## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31997061 | 22.30 |
| **40** | 31997062 | 25.40 |




# CF full-way valves, electro-pneumatic high-grade steel

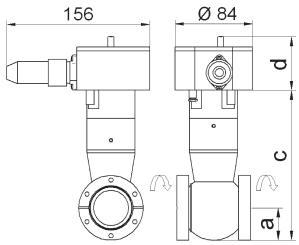
**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Bellows sealed 1.4571
> Housing made of 1.4301 / internal parts made of 1.4301
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
**> Flanges with thread**
* Take sealing materials and connecting elements into consideration




| NW DN | a [mm] | b [mm] | c [mm] | d [mm] | Weight [kg] | Compr. air [bar] | Closing time [ms] | With position indicator | With control valve | Version closed | Ver-sion open | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 30 | 70 | 145 | – | 1 | 6-8 | 150 | | | X (top) | | 773212 | 431.00 |
| **16** | 30 | 70 | 145 | 40 | 1 | 6-8 | 150 | X | | X (top) | | 773222 | 466.00 |
| **16** | 30 | 70 | 135 | 58 | 1.4 | 6-8 | 150 | | X | X | | 773232 | 476.00 |
| **16** | 30 | 70 | 135 | 58 | 1.4 | 6-8 | 150 | X | X | X | | 773242 | 511.00 |
| **16** | 30 | 70 | 145 | – | 1 | 6-8 | 150 | | | | X (top) | 773211 | 431.00 |
| **16** | 30 | 70 | 145 | 40 | 1 | 6-8 | 150 | X | | | X (top) | 773221 | 466.00 |
| **16** | 30 | 70 | 135 | 58 | 1.4 | 6-8 | 150 | | X | | X | 773231 | 476.00 |
| **16** | 30 | 70 | 135 | 58 | 1.4 | 6-8 | 150 | X | X | | X | 773241 | 511.00 |
| **40** | 35 | 84 | 170 | – | 1.8 | 6-8 | 300 | | | X (top) | | 773612 | 598.00 |
| **40** | 35 | 84 | 170 | 40 | 1.8 | 6-8 | 300 | X | | X (top) | | 773622 | 633.00 |
| **40** | 35 | 84 | 163 | 58 | 2.2 | 6-8 | 300 | | X | X | | 773632 | 643.00 |
| **40** | 35 | 84 | 163 | 58 | 2.2 | 6-8 | 300 | X | X | X | | 773642 | 678.00 |
| **40** | 35 | 84 | 170 | – | 1.8 | 6-8 | 300 | | | | X (top) | 773611 | 598.00 |
| **40** | 35 | 84 | 170 | 40 | 1.8 | 6-8 | 300 | X | | | X (top) | 773621 | 633.00 |
| **40** | 35 | 84 | 163 | 58 | 2.2 | 6-8 | 300 | | X | | X | 773631 | 643.00 |
| **40** | 35 | 84 | 163 | 58 | 2.2 | 6-8 | 300 | X | X | | X | 773641 | 678.00 |

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31997732 | 22.30 |
| **40** | 31997736 | 25.40 |




# Butterfly valves KF / ISO-K, manually actuated and electro-pneumatic

**Properties:**

- high leak rate (<$10^{-8}$mbarl/s)
- single-acting pneumatic unit
- high conductance
- internal parts made of high-grade steel
- FKM O-ring sealed
- optical position display (manual)
- long service life and low-maintenance
- compact design and light weight

**Description:**

The novotek butterfly valves made of aluminium and high-grade steel meet special leak-tightness requirements of high-vacuum valves. To achieve this leak-tightness, novotek uses O-ring connections with FKM-sealed connecting components. The valve housings are manufactured from aluminium or high-grade steel solid material. Thanks to their compact design, they are also used in areas that are otherwise reserved for gate valves. Closing is carried out by swivelling the viton-sealed valve plate into the housing sealing surface. The T handle, which permits simple actuation even for inaccessible attachments, also serves as an easily visible position display.

**Pneumatic valves:**

The pneumatic unit is single-acting. Upon request, it can also be supplied with a double-acting swivel drive. This means that the valve is de-energized and depressurised when closed. The valve is opened either directly via compressed air or controlled via a pilot valve that forwards the compressed air to the valve. The position indicator (optional) signals the open or closed position.

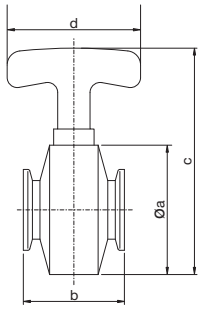
**Area of application:**

They are used as shut-off valves, vent valves and high-vacuum valves, have a light weight, a small overall height and a high conductivity value. They can be installed as required fail-safe in compact systems. The electro-pneumatically actuated valves are suitable for an automated vacuum system (usually controlled via PLC). They are also often used as a cost-effective alternative to gate valves if an optically free passage is not required.

**Materials:**

The different materials are compiled as follows: aluminium housing 3.1645, high-grade steel housing and high-grade steel internal parts 1.4301, 1.4404 and seals made of FKM/FPM.

# Butterfly valves KF manual, aluminium (3.1645)



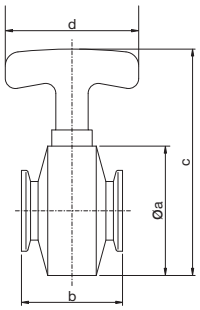

> Internal parts made of 1.4301, body made of aluminium 3.1645
> T handle made of plastic
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Valve position display via T handle
> Almost completely free passage in open position.
* Take sealing materials and connecting elements into consideration

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Con-ductivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out tempera-ture [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 65 | 50 | 112 | 68 | 11 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 140 | 0.4 | 4002 | 134.50 |
| **40** | 80 | 50 | 129 | 80 | 31 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 140 | 0.5 | 4004 | 149.50 |
| **50** | 88 | 60 | 137 | 80 | 60 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 140 | 0.6 | 4005 | 239.50 |

## Gasket kit for drive shaft and valve plate

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **25** | 31994002 | 3.90 |
| **40** | 31994004 | 4.70 |
| **50** | 31994005 | 6.20 |

# Butterfly valves KF manual, high-grade steel (1.4301)



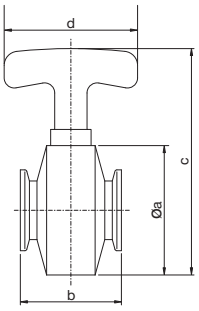

> Internal parts made of 1.4301, body made of high-grade steel 1.4301
> T handle made of plastic
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Valve position display via T handle
> Almost completely free passage in open position.
* Take sealing materials and connecting elements into consideration

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Con-ductivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out tempera-ture [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 65 | 50 | 112 | 68 | 11 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | 0.7 | 4012 | 214.50 |
| **40** | 80 | 50 | 129 | 80 | 31 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | 1.0 | 4014 | 234.00 |
| **50** | 88 | 60 | 137 | 80 | 60 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | 1.4 | 4015 | 327.00 |
| **63** | 88 | 115 | 143 | 80 | 60 | <5*10-9 | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | 1.9 | 4016 | Upon request |

## Gasket kit for drive shaft and valve plate

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **25** | 31994012 | 3.90 |
| **40** | 31994014 | 4.70 |
| **50** | 31994015 | 6.20 |
| **63** | 31994016 | 6.80 |

# Butterfly valves KF manual, high-grade steel (1.4404)



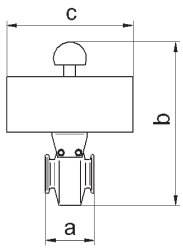

> Internal parts and body made of high-grade steel 1.4404
> T handle made of plastic
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Valve position display via T handle
> Almost completely free passage in open position.
* Take sealing materials and connecting elements into consideration

| Nominal width DN | a [mm] | b [mm] | c [mm] | d [mm] | Con-ductivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out tempera-ture [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 65 | 50 | 112 | 68 | 11 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | 0.7 | 40124 | 224.50 |
| **40** | 80 | 50 | 129 | 80 | 31 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | 1.0 | 40144 | 244.50 |
| **50** | 88 | 60 | 137 | 80 | 60 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | 1.4 | 40154 | 342.00 |

## Gasket kit for drive shaft and valve plate

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **25** | 319940124 | 3.90 |
| **40** | 319940144 | 4.70 |
| **50** | 319940154 | 6.20 |

# Butterfly valves KF electro-pneum., high-grade steel (1.4404)




**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Single-acting, with spring reset (double-acting upon request)
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Almost completely free passage in open position.
> Electro-pneumatic drive unit, aluminium housing 3.1645
> All data that is not specified can be obtained from Manual valves
* Take sealing materials and connecting elements into consideration

| NW DN | a [mm] | b [mm] | c [mm] | Weight [kg] | Compr. air [bar] | Closing time [ms] | With position indicator | With control valve | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 50 | 170 | 132 | 1.5 | 4-8 | 2.7 | | | 411212 | 397.00 |
| **25** | 50 | 170 | 132 | 1.5 | 4-8 | 2.7 | X | | 411222 | 517.00 |
| **25** | 50 | 170 | 132 | 1.7 | 4-8 | 2.7 | | X | 411232 | 492.00 |
| **25** | 50 | 170 | 132 | 1.7 | 4-8 | 2.7 | X | X | 411242 | 612.00 |
| **40** | 50 | 185 | 132 | 1.8 | 4-8 | 2.7 | | | 411412 | 415.00 |
| **40** | 50 | 185 | 132 | 1.8 | 4-8 | 2.7 | X | | 411422 | 535.00 |
| **40** | 50 | 185 | 132 | 2.0 | 4-8 | 2.7 | | X | 411432 | 510.00 |
| **40** | 50 | 185 | 132 | 2.0 | 4-8 | 2.7 | X | X | 411442 | 620.00 |

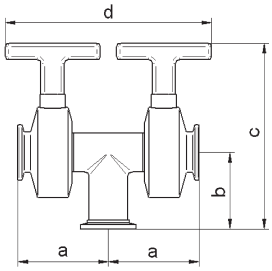
## Gasket kit for drive shaft and valve plate

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **25** | 31994112 | 3.90 |
| **40** | 31994114 | 4.70 |
| **50** | 31994115 | 6.20 |

# 3-way butterfly valve KF manual, high-grade steel 1.4404

> Body and internal parts 1.4404
> T handle made of plastic
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Valve position display via T handle
> Almost completely free passage in open position.
> The valve is suitable as a vacuum manifold
> Special nominal widths of the side connections available upon request
> The valve permits four switching statuses and can be used as a T and L variant

* Take sealing materials and connecting elements into consideration




| NW DN | a [mm] | b [mm] | c [mm] | d [mm] | Conductivity value [l/s] / single valve | Leak-tightness [mbarl/s] | Pressure range | Ser-vice life | Bake-out tempera-ture [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 65 | 55 | 134 | 150 | 11 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | | 4074 | 334.00 |
| **40** | 75 | 65 | 155 | 180 | 31 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | | 4076 | 353.00 |
| **50** | 90 | 75 | 170 | 200 | 60 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 1 bar | 20000 | 160 | | 4077 | 450.00 |

**dia. special nominal widths of the side connections available upon request**

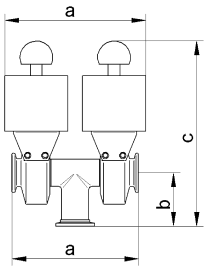
## Gasket kit for drive shaft and valve plate

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **25** | 31994074 | 7.80 |
| **40** | 31994076 | 9.40 |
| **50** | 31994077 | 12.40 |

# 3-way butterfly valves KF electro-pneum., high-grade steel (1.4404)

**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V **(special voltage upon request)**
> Body and internal parts 1.4404
> Single-acting, with spring reset (double-acting upon request)
> Can be used in high-vacuum area but not in the pressure range above 1 bar.
> Almost completely free passage in open position.
> Drive unit housing, aluminium
> All data that is not specified can be obtained from Manual valves
> The valve is suitable as a vacuum manifold
> Special nominal widths of the side connections available upon request
> The valve permits four switching statuses and can be used as a T and L variant

* Take sealing materials and connecting elements into consideration




| NW DN | a [mm] | b [mm] | c [mm] | d [mm] | Weight [kg] | Com-pressed air [bar] | Closing time [ms] | With position indicator | With control valve | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 130 | 55 | 190 | 145 | 2.2 | 4-8 | 2.7 | | | 417412 | 655.00 |
| **25** | 130 | 55 | 190 | 145 | 2.2 | 4-8 | 2.7 | X | | 417422 | 875.00 |
| **25** | 130 | 55 | 190 | 145 | 2.4 | 4-8 | 2.7 | | X | 417432 | 835.00 |
| **25** | 130 | 55 | 190 | 145 | 2.4 | 4-8 | 2.7 | X | X | 417442 | 1,055.00 |
| **40** | 150 | 65 | 210 | 165 | 3.58 | 4-8 | 2.7 | | | 417612 | 697.00 |
| **40** | 150 | 65 | 210 | 165 | 3.8 | 4-8 | 2.7 | X | | 417622 | 917.00 |
| **40** | 150 | 65 | 210 | 165 | 4.0 | 4-8 | 2.7 | | X | 417632 | 877.00 |
| **40** | 150 | 65 | 210 | 165 | 4.0 | 4-8 | 2.7 | X | X | 417642 | 1,097.00 |

**dia. special nominal widths of the side connections available upon request**

## Gasket kit for drive shaft and valve plate

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **25** | 31994174 | 7.80 |
| **40** | 31994176 | 9.40 |
| **50** | 31994177 | 12.40 |

# KF ball valve, actuated manually and electro-pneumatically

**Properties:**

- single-acting pneumatic unit
- high conductance
- PTFE-sealed
- reliable function in all installation positions
- long service life and low-maintenance
- optical position display (with manual actuation)

**Description:**

The ball valves are shut-off valves with a ball as an active shut-off element, which is surrounded by two PTFE-sealed ball seats. The shifting shaft is sealed off by a Viton- or PTFE-sealed compression gland. The manually actuated ball valves are actuated by rotating the switching handle 180°. At the same time, the switching handle serves as a position display. The three-way ball valve has an L design with a 180° stop. The supply line 1 can be connected either with outlet 2 or 3. During switch-over, all outlets are separated from one another.

**Pneumatic valves:**

The pneumatic unit is single-acting. Upon request, it can also be supplied with a double-acting swivel drive. This means that the ball valve is de-energized and depressurised when closed. The ball valve is opened either directly via compressed air or controlled via a pilot valve that forwards the compressed air to the ball valve. The position indicator (optional) signals the open or closed position.

**Area of application:**

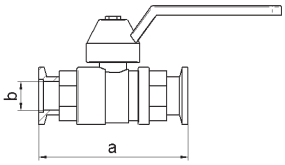
The ball valves can be used as shut-off valves with full bore in vacuum and low-pressure systems. They can be used in a pressure range from $10^{-6}$mbar to 2.5 bar and can be installed fail-safe as required in compact systems. The electro-pneumatically actuated valves are suitable for automated vacuum systems (usually controlled via PLC).

**Materials:**

Housing: hot-pressed brass, nickel-plated 2.0401 (MS 58) or high-grade steel 1.4408
Ball: brass 2.0401 (MS 58) hard-chrome plated or high-grade steel 1.4408 / 1.4401
Ball sealer: PTFE
Stem seal: FKM or PTFE

# 2-way ball valve KF manual

> Handle used for position display open / closed
> Pressure range: $10^{-6}$mbar to 2.5 bar
> Free passage in open position
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
* Take sealing materials and connecting elements into consideration




## Brass 2.0401

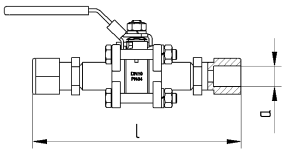
| Nominal width DN | a [mm] | b [mm] | Leak-tightness [mbarl/s] | Pressure range | Service life | Medium temperature [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **10** | 63 | 10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 0.18 | 4021 | 68.00 |
| **16** | 78 | 15 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 0.26 | 4022 | 54.30 |
| **25** | 97 | 25 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 0.58 | 4024 | 69.00 |
| **40** | 126 | 40 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 1.22 | 4026 | 99.40 |
| **50** | 140 | 50 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 2.0 | 4027 | 148.35 |

## High-grade steel 1.4408

| Nominal width DN | a [mm] | b [mm] | Leak-tightness [mbarl/s] | Pressure range | Service life | Medium temperature [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **10** | 102 | 10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 0.28 | 4031 | 74.80 |
| **16** | 107 | 15 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 0.38 | 4032 | 76.90 |
| **25** | 140 | 25 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 1.04 | 4034 | 108.90 |
| **40** | 174 | 40 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 2.3 | 4036 | 164.90 |
| **50** | 200 | 50 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 3.8 | 4037 | 224.90 |

# 2-way ball valve with double compression fitting

> Handle used for position display open / closed
> Pressure range: $10^{-6}$mbar to 2.5 bar
> Free passage in open position
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
* Take sealing materials and connecting elements into consideration

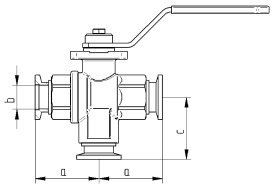



## High-grade steel 1.4408 / 1.4404 Swagelok®-compatible

| Nominal width DN | a [mm] | b [mm] | Leak-tightness [mbarl/s] | Pressure range | Service life | Medium temperature [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **6** | 82 | 6/10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 260 | 4081 | 89.50 |
| **8** | 84 | 8/10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 270 | 4082 | 99.50 |
| **10** | 88 | 10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 300 | 4083 | 99.50 |
| **12** | 94 | 12/10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 320 | 4084 | 114.50 |
| **1/4″** | 82 | 1/4″/10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 260 | 4085 | 89.50 |
| **3/8″** | 87 | 3/8″/10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 300 | 4086 | 99.50 |
| **1/2″** | 94 | 1/2″/10 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 320 | 4087 | 119.50 |

# 3-way ball valve KF manual

> Handle used for position display open / closed
> Pressure range: $10^{-6}$mbar to 2.5 bar
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
> Brass without overlaps / high-grade steel with overlaps
* Take sealing materials and connecting elements into consideration

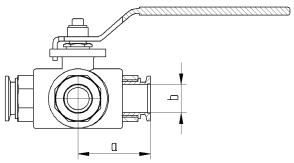



## Brass 2.0401

| NW DN | a [mm] | b [mm] | c [mm] | Leak-tightness [mbarl/s] | Pressure range | Service life | Medium temperature [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|
| **10** | 35 | 10 | 35 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 0.4 | 4041 | 147.00 |
| **16** | 43 | 15 | 42 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 0.52 | 4042 | 155.00 |
| **25** | 56 | 25 | 58 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 1.14 | 4044 | 214.50 |
| **40** | 70 | 40 | 76 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 1.9 | 4046 | 368.00 |
| **50** | 80 | 50 | 82 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -20 °C to 120 °C | 2.6 | 4047 | 498.00 |

# 3-way ball valve KF manual

> Handle used for position display open / closed
> Pressure range: $10^{-6}$mbar to 2.5 bar
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
> Brass without overlaps / high-grade steel with overlaps
* Take sealing materials and connecting elements into consideration

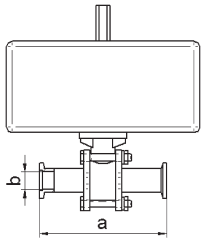



## High-grade steel 1.4408

| Nominal width DN | a [mm] | b [mm] | Leak-tightness [mbarl/s] | Pressure range | Service life | Medium temperature [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|
| **16** | 50.5 | 15 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 0.4 | 4062 | 185.00 |
| **25** | 65 | 24 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 0.52 | 4064 | 260.00 |
| **40** | 81 | 40 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 1.14 | 4066 | 385.00 |
| **50** | 97 | 50 | $<1*10^{-6}$ | $1*10^{-6}$ mbar to 2.5 bar | 20000 | -30 °C to 180 °C | 1.9 | 4067 | 582.00 |

# 2-way ball valve KF electro-pneumatic

**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V
**(special voltage upon request)**
> Pressure range: $10^{-4}$ mbar to 2.5 bar
> Free passage in open position.
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
* Take sealing materials and connecting elements into consideration

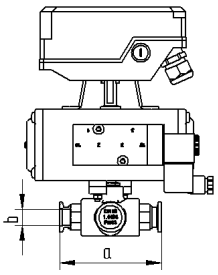



## High-grade steel 1.4408

| NW DN | a [mm] | b [mm] | Leak-tightness [mbarl/s] | Pressure range | Compr. air [bar] | Weight [kg] | With position indica-tor | With control valve | Version closed | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 107 | 15 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | | X | 413212 | 269.00 |
| **16** | 107 | 15 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | | X | 413222 | 385.00 |
| **16** | 107 | 15 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | X | X | 413232 | 361.00 |
| **16** | 107 | 15 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | X | X | 413242 | 477.00 |
| **25** | 140 | 25 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | | X | 413412 | 299.00 |
| **25** | 140 | 25 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | | X | 413422 | 415.00 |
| **25** | 140 | 25 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | X | X | 413432 | 391.00 |
| **25** | 140 | 25 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | X | X | 413442 | 507.00 |
| **40** | 174 | 40 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | | X | 413612 | 494.00 |
| **40** | 174 | 40 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | | X | 413622 | 610.00 |
| **40** | 174 | 40 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | X | X | 413632 | 586.00 |
| **40** | 174 | 40 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | X | X | 413642 | 702.00 |
| **50** | 200 | 50 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | | X | 413712 | 550.00 |
| **50** | 200 | 50 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | | X | 413722 | 666.00 |
| **50** | 200 | 50 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | X | X | 413732 | 642.00 |
| **50** | 200 | 50 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | X | X | 413742 | 758.00 |

# 3-way ball valve KF electro-pneumatic

**> Please specify control voltage when ordering!**
> Possible control voltage is **24V** and 230V
**(special voltage upon request)**
> Pressure range: $10^{-4}$mbar to 2.5 bar
> Sealing material FKM, PTFE
> Brass maintenance-free / high-grade steel 20000 cycles
* Take sealing materials and connecting elements into consideration




## High-grade steel 1.4408

| NW DN | a [mm] | b [mm] | Leak-tightness [mbarl/s] | Pressure range | Compr. air [bar] | Weight [kg] | With position indica-tor | With control valve | Version closed | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 50.5 | 15 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | | X | 416212 | 378.00 |
| **16** | 50.5 | 15 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | | X | 416222 | 494.00 |
| **16** | 50.5 | 15 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | X | X | 416232 | 470.00 |
| **16** | 50.5 | 15 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | X | X | 416242 | 586.00 |
| **25** | 65 | 25 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | | X | 416412 | 498.00 |
| **25** | 65 | 25 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | | X | 416422 | 614.00 |
| **25** | 65 | 25 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | X | X | 416432 | 590.00 |
| **25** | 65 | 25 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | X | X | 416442 | 706.00 |
| **40** | 81 | 40 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | | X | 416612 | 755.00 |
| **40** | 81 | 40 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | | X | 416622 | 871.00 |
| **40** | 81 | 40 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | X | X | 416632 | 847.00 |
| **40** | 81 | 40 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | X | X | 416642 | 963.00 |
| **50** | 97 | 50 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | | X | 416712 | 1,075.00 |
| **50** | 97 | 50 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | | X | 416722 | 1,191.00 |
| **50** | 97 | 50 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | | X | X | 416732 | 1,167.00 |
| **50** | 97 | 50 | $<1*10^{-4}$ | $1*10^{-4}$ mbar to 2.5 bar | 6-8 | - | X | X | X | 416742 | 1,283.00 |

# KF vent valve

**Properties:**

- FKM/FPM-sealed
- reliable function in all installation positions
- long service life and low-maintenance
- connection KF NW10

**Actuation:**

The valve is actuated by tightening or releasing the knurled cap.

**Area of application:**

Venting of vacuum chambers and receivers

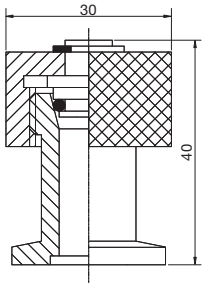
**Materials:**

Housing: brass, nickel-plated 2.0401 (MS 58) or high-grade steel 1.4301

Seal: FKM

> Actuation of knurled cap
> Temperature range: –30 °C to 110 °C brass
> Temperature range –30 °C to 160 °C high-grade steel
> Sealing material FKM/PTFE

* Take sealing materials and connecting elements into consideration




## Brass 2.0401 (nickel-plated)

| Nominal width DN | Height [mm] | Width [mm] | Leak-tightness [mbarl/s] | Pressure range | Venting medium | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **10** | 40 | 30 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 2.5 bar | Ambient air | 0.12 | 5021 | 57.00 |

## High-grade steel 1.4301

| Nominal width DN | Height [mm] | Width [mm] | Leak-tightness [mbarl/s] | Pressure range | Venting medium | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **10** | 40 | 30 | $<5*10^{-9}$ | $5*10^{-9}$ mbar to 2.5 bar | Ambient air | 0.13 | 5031 | 69.70 |

# 3-way valve KF, aluminium 3.1645

**Properties:**

- FKM-sealed
- reliable function in all installation positions
- long service life and low-maintenance
- optical position display (manual)
- freely selectable KF connections
- high leak rate

**Description:**

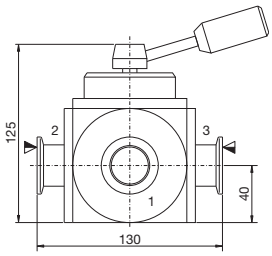
The novotek 3/3-way valves consist of an aluminium housing with three freely available KF connections. The 3/3-way valve has an L-design. The supply line 1 can be connected either with outlet 2 or 3. Outlet 2 cannot be connected with output 3. In neutral position, all connection are separated from one another. The valve position is displayed using the actuation lever.

**Area of application:**

The 3/3-way valve replaces two corner valves and its usage is therefore cost-saving. It is also suitable as a pre-vacuum bypass valve.

**Materials:**

Housing: aluminium 3.1645
Internal parts: brass 2.0401 (MS 58) hard-chrome plated
Seals: FKM




> Handle used for position display open / closed
> Sealing material FKM
* Take sealing materials and connecting elements into consideration

| Nominal width DN | Conductivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Operating temperature [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|
| **16** | 4 | $<1*10^{-8}$ | $1*10^{-8}$ mbar to 2.5 bar | 10000 | -30 °C to 120 °C | 1.95 | 4052 | 470.00 |
| **25** | 8 | $<1*10^{-8}$ | $1*10^{-8}$ mbar to 2.5 bar | 10000 | -30 °C to 120 °C | 1.95 | 4054 | 460.00 |
| **40** | 25 | $<1*10^{-8}$ | $1*10^{-8}$ mbar to 2.5 bar | 10000 | -30 °C to 120 °C | 1.95 | 4056 | 460.00 |

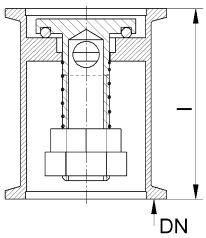
# Pressure relief valve, spring preloaded KF / ISO-K, high-grade steel 1.4301

The spring-loaded pressure relief valve uses a spring to pull a plunger with an O-ring seal made of Viton against a sealing face. If an overpressure exists vis-à-vis the ambient pressure of the valve, this acts against the spring. The opening pressure can be adjusted via the spring preload. For this purpose, the nut on the plunger is turned in the direction of the spring or in the opposite direction. Note that the transition between vacuum-tight and a clear decrease of pressure is not abrupt. The specified leak rate < 1. $10^{-7}$mbar•l/s is based on the case internal vacuum, external atmosphere. If the spring preload is too low, there is a risk of a permanent leakage because the contact force on the sealing ring is too low. In normal cases, the opening and closing pressure are not identical because the O-ring, depending on application conditions, adheres more or less to the sealing face and this additional force has to be applied by the overpressure. The flow rate depends on the pressure differential between the internal and external pressure. Following high flow volumes, which have led to considerable lifting of the plunger, the valve has to be checked and possibly cleaned with alcohol.

> Opens in case of overpressure
> Works in all installation positions
> Sealing material FKM
> The valve is not suitable for safety-critical applications.
> An exhaust gas hose can be connected on the exhaust gas side

* Take sealing materials and connecting elements into consideration

Art. no. 5046




Art. no. 5042

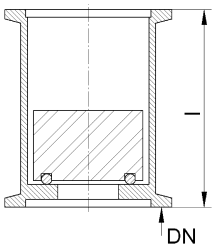
Art. no. 6051

| Nominal width DN | l [mm] | Max. free cross-section in case of overpressure [mm²] | Leak-tightness [mbarl/s] | Adjustable opening pressure | Operating temperature [°C] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 35 | 12.6 | $<1*10^{-7}$ | 100 mbar to 270 mbar | -0 °C to 120 °C | 5042 | 125.00 |
| **40** | 65 | 113.1 | $<1*10^{-7}$ | 70 mbar to 270 mbar | -0 °C to 120 °C | 5046 | 147.00 |
| **63** | 100 | 491 | $<1*10^{-7}$ | 70 mbar to 250 mbar | -0 °C to 120 °C | 6051 | 287.00 |

# KF overflow valve, high-grade steel 1.4301

The overflow valve works according to the suspended-body principle. If an overpressure exists vis-à-vis the ambient pressure of the valve, it will raise the suspended body. The opening pressure is set according to the size of the suspended body. Note that the transition between vacuum-tight and a clear decrease of pressure is not abrupt. The specified leak rate < 1. $10^{-5}$ mbar•l/s is based on the case internal vacuum and external atmosphere. If the pressure differential is too low, there is a risk of a permanent leakage because the contact force on the sealing ring is too low. In normal cases, the opening and closing pressure are not identical because the O-ring, depending on application conditions, adheres more or less to the sealing face and this additional force has to be applied by the overpressure.

> Opens in case of overpressure
> Can only be installed vertically **"installation position-dependent"**
> Sealing material FKM
> The valve is not suitable for safety-critical applications.
> An exhaust gas hose can be connected on the exhaust gas side
* Take sealing materials and connecting elements into consideration




| Nominal width DN | l [mm] | Max. free cross-section in case of overpressure [mm²] | Leak-tightness [mbarl/s] | Opening pressure for suspended body [mbar] | Operating temperature [°C] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **40** | 65 | 113.1 | $<1*10^{-5}$ | 20 mbar | -0 °C to 120 °C | 5056-20 | 110.00 |
| **40** | 65 | 113.1 | $<1*10^{-5}$ | 40 mbar | -0 °C to 120 °C | 5056-40 | 120.00 |

# Gate valves, manually and electro-pneumatically actuated

**Properties**

- high conductance
- very good leak rate
- slideway
- FKM-sealed valve seat
- reliable function in all installation positions
- long service life and low-maintenance

**Description:**

The gate valves marketed by novotek are products from the Swiss company VAT Vakuumventile. The closure mechanism is implemented with the patented VATLOCK system, which guarantees maximum reliability and minimal abrasion. In this case, we offer only a selection of the standard version with aluminium housing and high-grade steel housing. Upon request, we can also supply larger nominal widths as well as other values that are not listed here. The great advantage of gate valves is their relatively low weight and the flat design.

**Pneumatic valves:**

The pneumatic drive is double-acting. The valve is opened either directly via compressed air or controlled via an optionally integrated pilot valve that forwards the compressed air to the valve. The position indicator (optional) signals the open or closed position.

**Area of application:**

Gate valves are used when a very high conductance value or an optically free passage is required. The flat design permits further advantageous applications.

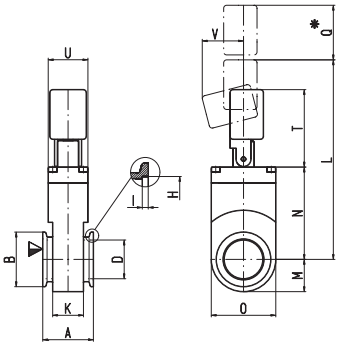
**Materials:**

Aluminium housing 3.3206 and 3.3547, high-grade steel housing 1.4301, mechanical system for aluminium gate valve: 1.4301. 1.4310. 1.4034, high-grade steel gate valve in addition 1.4404, FKM seals.

# Mini vacuum gate valve KF, manually actuated, VAT® series 01.2, aluminium

> VAT gate valve with VATLOCK system, slideway and vulcanised plate seal
> Valve plate 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Temperature resistance of handle 80 °C

* Take sealing materials and connecting elements into consideration




| Nominal width DN | A [mm] | O [mm] | M+N+T [mm] | M+L+Q [mm] | Conductivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out temperature, housing [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 40 | 30 | 91 | 140 | 10 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | 100 | 0.4 | 3042 | 530.00 |
| **25** | 50 | 44 | 131 | 196 | 34 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | 100 | 0.4 | 3044 | 580.00 |
| **40** | 51 | 65 | 210.5 | 295.5 | 140 | $<1*10^{-9}$ | $1*10^{7}$ mbar to 1 bar | 50000 | 100 | 0.7 | 3046 | 650.00 |
| **50** | 55 | 75 | 238.5 | 342.5 | 260 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | 100 | 0.7 | 3047 | 680.00 |

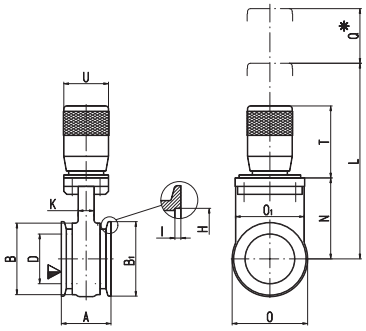
## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993042 | 120.00 |
| **25** | 31993044 | 130.00 |
| **40** | 31993046 | 130.00 |
| **50** | 31993047 | 140.00 |

# Mini UHV gate valve KF/CF, manually actuated VAT® series 01.0, high-grade steel

> VAT gate valves with Monovat system, lubricant-free and bellows sealed
> Valve housing and valve plate 1.4301. Flanges and bellows 1.4435
> Head seal, metal, plate seal FKM
> Valve position visually detectable
> Temperature resistance of handle 80 °C

* Take sealing materials and connecting elements into consideration




| Nominal width DN | A [mm] | O [mm] | B/2+N +T [mm] | B/2+L +Q | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Ser-vice life | Bake-out tempera-ture, housing [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KF 25** | 50 | 76 | 191 | 289 | 38 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | 250 | 1.5 | 3054 | 1,410.00 |
| **KF 40** | 50 | 76 | 191 | 289 | 160 | $<1*10^{-9}$ | $1*10^{10}$ mbar to 2 bar | 50000 | 250 | 1.5 | 3056 | 1,410.00 |
| **KF 50** | 50 | 76 | 193 | 289 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | 250 | 1.5 | 3057 | 1,410.00 |
| **CF 40** | 35 | 76 | 191 | 289 | 220 | <1*10-9 | $1*10^{-10}$ mbar to 2 bar | 50000 | 250 | 1.5 | 7042 | 1,410.00 |

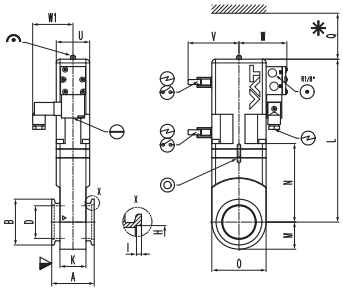
## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **KF 25** | 31993054 | 160.00 |
| **KF 40** | 31993056 | 160.00 |
| **KF 50** | 31993057 | 160.00 |
| **CF 40** | 31997042 | 160.00 |

# Mini vacuum gate valve KF, electro-pneumatic VAT® series 01.2, aluminium

> VAT gate valves with VATLOCK system
> Slideway and vulcanised plate seal
> Valve plate 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Control valve 24 VDC, 5.4W
> Position indicator ≤ 50V, 0.5A, (10W)
> Bake-out temperature, housing 100 °C
> Heating up and cooling speed ≤ 50 °C

* Take sealing materials and connecting elements into consideration



| NW DN | A [mm] | O [mm] | M+L [mm] | M+L+ Q [mm] | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Weight [kg] | With posi-tion indica-tor | With con-trol valve | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **16** | 40 | 30 | 120 | 145 | 10 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | 0.8 | | | 314214 | 670.00 |
| **16** | 40 | 30 | 120 | 145 | 10 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | | X | | 314224 | 735.00 |
| **16** | 40 | 30 | 120 | 145 | 10 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | | X | X | 314244 | 810.00 |
| **25** | 50 | 44 | 158 | 193 | 34 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | 1.1 | | | 314414 | 720.00 |
| **25** | 50 | 44 | 158 | 193 | 34 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | | X | | 314424 | 785.00 |
| **25** | 50 | 44 | 158 | 193 | 34 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | | X | X | 314444 | 860.00 |
| **40** | 51 | 65 | 228.5 | 283.5 | 140 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | 1.2 | | | 314614 | 810.00 |
| **40** | 51 | 65 | 228.5 | 283.5 | 140 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | | X | | 314624 | 875.00 |
| **40** | 51 | 65 | 228.5 | 283.5 | 140 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | | X | X | 314644 | 950.00 |
| **50** | 55 | 75 | 257.5 | 322.5 | 260 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | 1.3 | | | 314714 | 860.00 |
| **50** | 55 | 75 | 257.5 | 322.5 | 260 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | | X | | 314724 | 925.00 |
| **50** | 55 | 75 | 257.5 | 322.5 | 260 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 50000 | | X | X | 314744 | 1,000.00 |

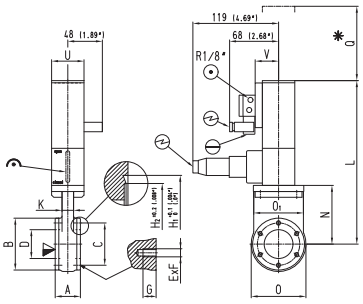
## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993142 | 120.00 |
| **25** | 31993144 | 130.00 |
| **40** | 31993146 | 130.00 |
| **50** | 31993147 | 140.00 |

# Mini UHV gate valve KF/CF, electro-pneumatic VAT® series 01.0, high-grade steel

> VAT gate valves with VATLOCK system
> Slideway and vulcanised plate seal
> Flanges and bellows 1.4435, plate 1.4301
> Head seal, metal, plate seal FKM
> Valve position visually detectable
> Control valve 24 VDC, 5.4W (with spring reset 9W)
> Position indicator ≤ 50V ≤3A, ≤ 250V ≤5A
> Bake-out temperature, housing 250 °C
> Heating up and cooling speed ≤ 50 °C

* Take sealing materials and connecting elements into consideration




| NW DN | A [mm] | O [mm] | B/2+ L [mm] | B/2+ L+Q [mm] | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Ser-vice life | Weight [kg] | With posi-tion indica-tor | With control valve | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25** | 50 | 76 | 266 | 321 | 38 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | 1.8 | | | 315414 | 1,660.00 |
| **25** | 50 | 76 | 266 | 321 | 38 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | | X | | 315424 | 1,800.00 |
| **25** | 50 | 76 | 266 | 321 | 38 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | | X | X | 315444 | 1,870.00 |
| **40** | 50 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | 1.8 | | | 315614 | 1,660.00 |
| **40** | 50 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | | X | | 315624 | 1,800.00 |
| **40** | 50 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | | X | X | 315644 | 1,870.00 |
| **50** | 50 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | 1.8 | | | 315714 | 1,660.00 |
| **50** | 50 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | | X | | 315724 | 1,800.00 |
| **50** | 50 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | | X | X | 315744 | 1,870.00 |
| **CF 40** | 35 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | 1.8 | | | 714214 | 1,660.00 |
| **CF 40** | 35 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | | X | | 714224 | 1,800.00 |
| **CF 40** | 35 | 76 | 266 | 321 | 160 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 2 bar | 50000 | | X | X | 714244 | 1,870.00 |

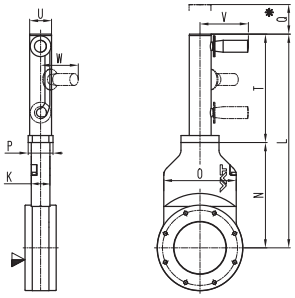
## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **16** | 31993154 | 160.00 |
| **25** | 31993156 | 160.00 |
| **40** | 31993157 | 160.00 |
| **50** | 31997142 | 160.00 |

# HV gate valve ISO-F, manually actuated VAT® series 12, aluminium

> VAT gate valve with VATLOCK system, **with slideway**
> Valve housing and valve plate made of 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Temperature resistance of handle 80 °C

* Take sealing materials and connecting elements into consideration




| Nominal width DN | A [mm] | O1 [mm] | O1/2 +L [mm] | O1/2 +L+Q [mm] | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Ser-vice life | Bake-out tempera-ture, housing [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **63** | 60 | 131 | 395 | 420 | 550 | $<1*10^{-9}$ | $1*10^{-7}$ mbar bis 1.6 bar | 200000 | 120 | 3.0 | 8042 | 1,100.00 |
| **100** | 60 | 166 | 496 | 521 | 2000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1 bar | 200000 | 120 | 4.5 | 8044 | 1,430.00 |
| **160** | 70 | 237 | 665.5 | 725.5 | 6000 | $<1*10^{-9}$ | $1*10^{7}$ mbar to 1 bar | 100000 | 120 | 9.0 | 8046 | 1,740.00 |

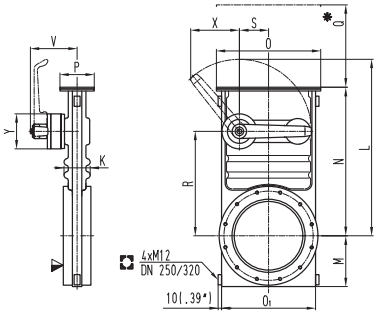
## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **63** | 31998042 | 55.00 |
| **100** | 31998044 | 70.00 |
| **160** | 31998046 | 140.00 |

# HV gate valve ISO-F, manually actuated VAT® series 14, high-quality steel

> **With hand lever**
> VAT gate valves with VATLOCK system
> Valve housing and valve plate made of 1.4301
> Head seal and plate seal FKM
> Valve position visually detectable
> Temperature resistance of handle 80 °C
> *Q=required removal height

* Take sealing materials and connecting elements into consideration




| Nominal width DN | A [mm] | B [mm] | M +L [mm] | M+N +Q* [mm] | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out tempera-ture, housing [°C] | Weight [kg] | Arti-cle no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **63** | 70 | 136 | 349 | 464 | 440 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2 bar | 200000 | 150 | 8 | 8072 | 1,780.00 |
| **100** | 70 | 176 | 408 | 583 | 1700 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2 bar | 200000 | 150 | 13 | 8074 | 2,100.00 |
| **160** | 80 | 225 | 578 | 785 | 5000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2 bar | 200000 | 150 | 24 | 8076 | 2,610.00 |
| **200** | 80 | 288 | 663 | 939 | 12000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2 bar | 200000 | 150 | 30 | 8078 | 3,940.00 |
| **250** | 100 | 350 | 994 | 1197 | 22000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 1.2 bar | 200000 | 150 | 58 | 8079 | 6,240.00 |

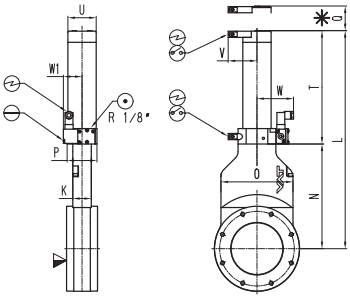
## Gasket kit (plate seal)

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **63** | 31998072 | 60.00 |
| **100** | 31998074 | 80.00 |
| **160** | 31998076 | 110.00 |
| **200** | 31998078 | 150.00 |
| **250** | 31998079 | 250.00 |

# HV gate valve ISO-F, electro-pneumatic VAT® series 12, aluminium 3.3547

> VAT gate valves with VATLOCK system, slideway
> Valve plate 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Control valve 24 VDC, 5.4W
> Position indicator ≤ 50V ≤1.2A, ≤ 250V ≤2A
> Bake-out temperature, housing 120 °C
> Heating up and cooling speed ≤ 50 °C
> *Q=required removal height

* Take sealing materials and connecting elements into consideration




| NW DN | A [mm] | O1 [mm] | O1/2 +L [mm] | O1/2 +L+Q [mm] | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Ser-vice life | Weight [kg] | With posi-tion indica-tor | With con-trol valve | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **63** | 60 | 131 | 407 | 432 | 550 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 200000 | 3.0 | | | 814214 | 1,100.00 |
| **63** | 60 | 131 | 407 | 432 | 550 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 200000 | | X | | 814224 | 1,165.00 |
| **63** | 60 | 131 | 407 | 432 | 550 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 200000 | | X | X | 814244 | 1,230.00 |
| **100** | 60 | 166 | 508 | 533 | 2000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 200000 | 4.5 | | | 814414 | 1,430.00 |
| **100** | 60 | 166 | 508 | 533 | 2000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 200000 | | X | | 814424 | 1,495.00 |
| **100** | 60 | 166 | 508 | 533 | 2000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 200000 | | X | X | 814444 | 1,560.00 |
| **160** | 70 | 237 | 665.5 | 725.5 | 6000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 100000 | 9.0 | | | 814614 | 2,000.00 |
| **160** | 70 | 237 | 665.5 | 725.5 | 6000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 100000 | | X | | 814624 | 2,065.00 |
| **160** | 70 | 237 | 665.5 | 725.5 | 6000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 100000 | | X | X | 814644 | 2,130.00 |
| **200** | 80 | 290 | 833 | 913 | 12000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 100000 | 18.0 | | | 814814 | 2,860.00 |
| **200** | 80 | 290 | 833 | 913 | 12000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 100000 | | X | | 814824 | 2,925.00 |
| **200** | 80 | 290 | 833 | 913 | 12000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.6 bar | 100000 | | X | X | 814844 | 2,990.00 |
| **250** | 70 | 352 | 1019 | 1119 | 22000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.2 bar | 100000 | 25.0 | | | 814914 | 4,000.00 |
| **250** | 55 | 352 | 1019 | 1119 | 22000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.2 bar | 100000 | | X | | 814924 | 4,065.00 |
| **250** | 55 | 352 | 1019 | 1119 | 22000 | $<1*10^{-9}$ | $1*10^{-7}$ mbar to 1.2 bar | 100000 | | X | X | 814944 | 4,130.00 |

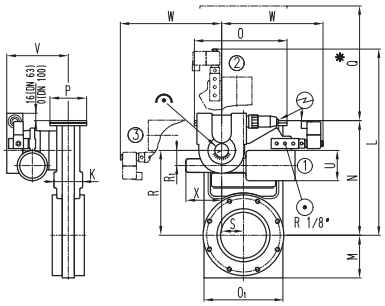
## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **63** | 31998142 | 55.00 |
| **100** | 31998144 | 70.00 |
| **160** | 31998146 | 140.00 |
| **200** | 31998148 | 210.00 |
| **250** | 31998149 | 330.00 |

# HV gate valve ISO-F, electro-pneumatic VAT® series 14, high-quality steel

> VAT gate valves with VATLOCK system
> Valve plate and housing 1.4301
> Head and plate seal FKM
> Valve position visually detectable
> Control valve 24 VDC, 5.4W
> Position indicator ≤ 50V ≤1.2A, ≤ 250V ≤2A
> Bake-out temperature, housing 120 °C
> Heating up and cooling speed ≤ 50 °C
> *Q=required removal height

* Take sealing materials and connecting elements into consideration

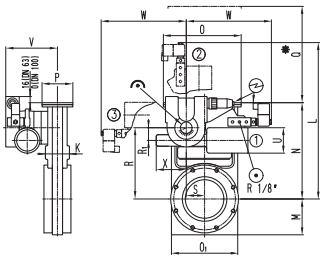



| NW DN | A [mm] | O1 [mm] | O1/2 +L [mm] | O1/2 +L+Q [mm] | Con-duc-tivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Ser-vice life | Weight [kg] | With posi-tion indi-cator | With con-trol valve | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **63** | 70 | 134 | 407 | 432 | 550 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | 10.0 | | | 817214 | 2,070.00 |
| **63** | 70 | 134 | 407 | 432 | 550 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | X | | 817224 | 2,190.00 |
| **63** | 70 | 134 | 407 | 432 | 550 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | | X | 817234 | 2,140.00 |
| **63** | 70 | 134 | 407 | 432 | 550 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | 15.0 | X | X | 817244 | 2,260.00 |
| **100** | 70 | 172 | 508 | 533 | 2000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | | | 817414 | 2,500.00 |
| **100** | 70 | 172 | 508 | 533 | 2000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | X | | 817424 | 2,620.00 |
| **100** | 70 | 172 | 508 | 533 | 2000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | 27.0 | | X | 817434 | 2,570.00 |
| **100** | 70 | 172 | 508 | 533 | 2000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | X | X | 817444 | 2,690.00 |
| **160** | 70 | 222 | 665.5 | 725.5 | 6000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | | | 817614 | 3,000.00 |
| **160** | 70 | 222 | 665.5 | 725.5 | 6000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | 33.0 | X | | 817624 | 3,120.00 |
| **160** | 70 | 222 | 665.5 | 725.5 | 6000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | | X | 817634 | 3,070.00 |
| **160** | 70 | 222 | 665.5 | 725.5 | 6000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | X | X | 817644 | 3,190.00 |
| **200** | 80 | 274 | 833 | 913 | 12000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | 33.00 | | | 817814 | 4,350.00 |
| **200** | 80 | 274 | 833 | 913 | 12000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | X | | 817824 | 4,470.00 |
| **200** | 80 | 274 | 833 | 913 | 12000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | | X | 817834 | 4,420.00 |
| **200** | 80 | 274 | 833 | 913 | 12000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 200000 | | X | X | 817844 | 4,540.00 |
| **250** | 100 | 356 | 1019 | 1119 | 22000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 1.2 bar | 200000 | 62.0 | | | 817914 | 7,020.00 |
| **250** | 100 | 356 | 1019 | 1119 | 22000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 1.2 bar | 200000 | | X | | 817924 | 7,140.00 |
| **250** | 100 | 356 | 1019 | 1119 | 22000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 1.2 bar | 200000 | | | X | 817934 | 7,090.00 |
| **250** | 100 | 356 | 1019 | 1119 | 22000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 1.2 bar | 200000 | | X | X | 817944 | 7,210.00 |

## Gasket kit (plate seal)

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **63** | 31998172 | 60.00 |
| **100** | 31998174 | 80.00 |
| **160** | 31998176 | 110.00 |
| **200** | 31998178 | 150.00 |
| **250** | 31998179 | 250.00 |

# UHV gate valve CF with manual drive VAT® series 10, high-grade steel 1.4301



> VAT gate valves with VATLOCK system
> Valve housing and valve plate made of 1.4301
> Head seal, metal, plate seal FKM, vulcanised
> *Q=required removal height

* Take sealing materials and connecting elements into consideration

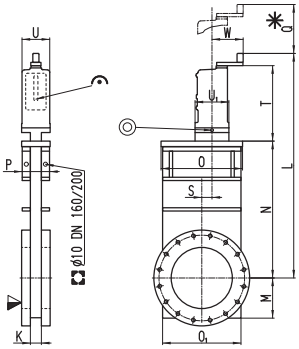
| Nominal width DN | A [mm] | B [mm] | B/2+ L [mm] | B/2+ L+Q* [mm] | Conductivity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Bake-out temperature, housing [°C] | Weight [kg] | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **63** | 70 | 113.5 | 465 | 645 | 600 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | 250 | 9 | 7043 | 2,330.00 |
| **100** | 70 | 151.6 | 538 | 758 | 1700 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | 250 | 12 | 7044 | 2,950.00 |
| **160** | 70 | 202.4 | 653 | 943 | 6000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | 250 | 18 | 7045 | 3,910.00 |
| **200** | 80 | 253.2 | 787 | 1137 | 12000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | 250 | 25 | 7046 | 5,370.00 |
| **250** | 100 | 350 | 1016 | 1456 | 26000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.2 bar | 50000 | 250 | 52 | 7047 | 8,540.00 |

## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **63** | 31997043 | 180.00 |
| **100** | 31997044 | 190.00 |
| **160** | 31997045 | 210.00 |
| **200** | 31997046 | 280.00 |
| **250** | 31997047 | 310.00 |

# UHV gate valve CF electro-pneumatic VAT® series 10, high-grade steel 1.4301

> VAT gate valves with VATLOCK system via handwheel
> Valve plate and housing 1.4301
> Head, metal, and plate seal FKM vulcanised
> Control valve 24 VDC, 5.4W
> Position indicator ≤ 50V ≤1.2A, ≤ 250V ≤2A
> Bake-out temperature, housing 250 °C
> Heating up and cooling speed ≤ 50 °C
> *Q=required removal height
* Take sealing materials and connecting elements into consideration




| NW DN | A [mm] | O1 [mm] | O1/2 +L [mm] | O1/2 +L+Q [mm] | Con-ductiv-ity value [l/s] | Leak-tightness [mbarl/s] | Pressure range | Service life | Weight [kg] | With position indicator | With control valve | Article no. | Price € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **63** | 70 | 113.5 | 402.5 | 582.5 | 600 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | 9.0 | | | 707314 | 2,370.00 |
| **63** | 70 | 113.5 | 402.5 | 582.5 | 600 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | | X | | 707324 | 2,590.00 |
| **63** | 70 | 113.5 | 402.5 | 582.5 | 600 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | | X | X | 707344 | 2,650.00 |
| **100** | 70 | 151.6 | 494 | 714 | 1700 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 50000 | 12.0 | | | 707414 | 2,960.00 |
| **100** | 70 | 151.6 | 494 | 714 | 1700 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 50000 | | X | | 707424 | 3,180.00 |
| **100** | 70 | 151.6 | 494 | 714 | 1700 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 50000 | | X | X | 707444 | 3,240.00 |
| **160** | 70 | 202.4 | 624 | 914 | 6000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 50000 | 18.0 | | | 707514 | 4,070.00 |
| **160** | 70 | 202.4 | 624 | 914 | 6000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 50000 | | X | | 707524 | 4,290.00 |
| **160** | 70 | 202.4 | 624 | 914 | 6000 | $<1*10^{-9}$ | $1*10^{-8}$ mbar to 2.0 bar | 50000 | | X | X | 707544 | 4,350.00 |
| **200** | 80 | 253.2 | 756.5 | 1106 | 12000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | 24.0 | | | 707614 | 5,400.00 |
| **200** | 80 | 253.2 | 756.5 | 1106 | 12000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | | X | | 707624 | 5,620.00 |
| **200** | 80 | 253.2 | 756.5 | 1106 | 12000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.6 bar | 50000 | | X | X | 707644 | 5,680.00 |
| **250** | 100 | 350 | 975 | 1425 | 26000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.2 bar | 50000 | 42.0 | | | 707714 | 8,540.00 |
| **250** | 100 | 350 | 975 | 1425 | 26000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.2 bar | 50000 | | X | | 707724 | 8,760.00 |
| **250** | 100 | 350 | 975 | 1425 | 26000 | $<1*10^{-9}$ | $1*10^{-10}$ mbar to 1.2 bar | 50000 | | X | X | 707744 | 8,820.00 |

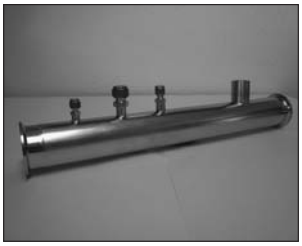
## Gasket kit

| Nominal width DN | Article no. | Price € |
|---|---|---|
| **63** | 31997073 | 180.00 |
| **100** | 31997074 | 190.00 |
| **160** | 31997075 | 210.00 |
| **200** | 31997076 | 280.00 |
| **250** | 31997077 | 310.00 |

# Special components / special products

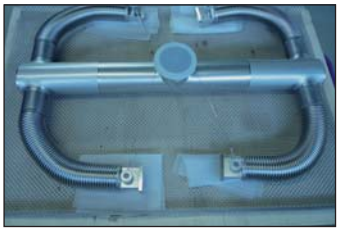
# Special components made from standard components

The novotek special component made from KF – ISO-K and CF standard components are produced mainly according to drawings, diagrams or descriptions. In accordance with high-vacuum technology requirements, they are manufactured using WIG manual welding technology, if necessary, using a microscope, laser welding or orbital welding. Our customers decide on the surface characteristics, such as unplated, glass bead blasted, electropolished or vacuum-annealed and on the leak rate requirements. In this case, we are able to produce standard components up to $1x10^{-9}$mbarl/s and special components up to $1x10^{-10}$mbarl/s. Furthermore, we have a very wide range of extremely varied materials and have the option of cleaning the components in a special ultrasonic cleaning procedure suitable for high vacuum.



# Special components according to customer drawing

A small selection of special components according to customer requirements serves to demonstrate our options for a very wide variety of production processes. Since the start of 2011 we have been using our own CNC-controlled lathe and mill cutters, which allow us to offer the shortest possible delivery times of a few days and hours.



# Chambers and receivers for high-vacuum applications

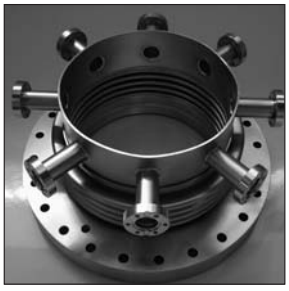
The novotek chambers are used in the partial pressure and high-vacuum areas. They are manufactured from a very wide variety of materials according to customer requirements and are installed in research and industrial plants. Our Production department works to very high quality standards at all times. A final leak test record documents the leak-tightness of our chambers.

# Metal hoses, metal bellows and diaphragm bellows as special components

The novotek hoses and bellows are manufactured in different designs. We shall be glad to help you in the design phase of the bellows. The associated bellows request for quotation follows directly.









novotek
VAKUUMTECHNIK

# Checklist for bellows requests for quotation

**Fax: 07159/80569-11**
**E-mail: info@novotek.de**

Customer: _____
Address: _____
_____
_____
Contact person: _____
_____
_____

Telephone: _____
Fax: _____
E-mail: _____
Internet: _____
Date: _____
Project: _____
_____

Underlined features are mandatory for all bellows designs.

## Diaphragm bellows data ( ) = standard

| | | | |
|---|---|---|---|
| Material | ❏ AISI 316L | ❏ AM 350 | ❏ Others |
| Inside diameter | ID mm | ❏ exact or | ❏ min. |
| Outside diameter | OD mm | ❏ exact or | ❏ max. |
| Operating stroke | axial mm | lateral mm | angular ° |
| or stroke position | from Lc mm<br>With a combined or angular stroke, a diagram is very helpful | to Le mm | frequency Hz |
| Permissible forces | axial N | lateral N | angular ° |
| Service life | ❏ Nz (10'000) cycles | ❏ Nz > cycles | |
| Temperature | Operation °C (20 °C) | Baking out °C (80 °C) | |
| Operating pressure | inside bar (0) | outside bar (l) | |
| Installation pos. | ❏ any | ❏ vertical | ❏ horizontal |
| Max. installation dimensions (length, diameter) if known and/or required | | length mm | dia. mm |

## End pieces

❏ Provided by customer

Please note: connection to bellows in acc. with our seal-weld lip standard
Material for bellows end pieces: 1.4435 ESR or forged.

❏ No end pieces
❏ With end pieces

Standard: ❏ End piece with pipe ❏ End piece from DN 63 without pipe
❏ CF flange ❏ x fixed ❏ x rotating
❏ ISO-KF
❏ ISO-K

Special: ❏ End piece according to drawing
❏ CF flange: ❏ with thread ❏ in 1.4429/316 LN ❏ according to drawing
❏ ISO-F
❏ ISO-KF L = _____ ❏ according to drawing

❏ Align end pieces to one another: ❏ ± 5° (by eye) ❏ ± _____°

## Certificates

❏ Helium Leak Test ❏ Material Certificate for Strip Material ❏ Material Certificate for End Piece Pipe Material
❏ Measurement records (only with drawing)

## Unit count / quantity units _____

## Comment / drawing (insert)

# Inspection glasses and glass elements

# Components made of borosilicate

**Properties:**

- transmission range 0.4 – 2.0 µm
- vacuum-tight > $1x10^{-11}$ mbarl/s
- light weight
- max. temperature 350 °C

**Area of application:**

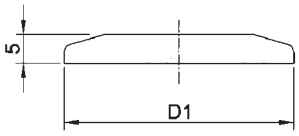
Many technical vacuum applications require that the process room within the vacuum plant is optically observed. Depending on the process, the requirements range from simple visual observation for position tasks to high-precision optical measurements.

Following selection criteria may be helpful:

- Wave length, surface characteristics (scratches, flatness, parallelism, heat treatment, coating, anti-reflection coating), pressure range, radiation level, media characteristics, e.g. aggressive gases, temperature range.

# KF glass flange (blind flange)

> Pressure range: $10^{-7}$ mbar to 1.5 bar*
> Temperature range: –15 °C to 150 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 300 °C/hour
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
* Take sealing materials and connecting elements into consideration

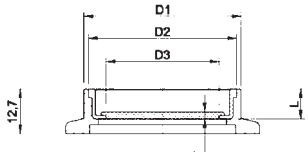



## Borosilicate

| Nominal width DN | D1 | Article no. | Price € |
|---|---|---|---|
| **16** | 30 | 2112 | 29.20 |
| **25** | 40 | 2114 | 33.70 |
| **40** | 55 | 2116 | 37.90 |
| **50** | 75 | 2117 | 49.70 |

# KF inspection glass

> Pressure range: $10^{-9}$ mbar to 1.5 bar*
> Temperature range: –100 °C to 300 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 300 °C/hour
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
> Flange made of high-grade steel with integrated FPM O-ring
* Take sealing materials and connecting elements into consideration

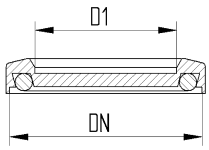


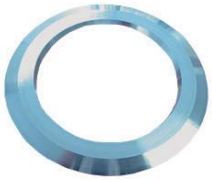

## Borosilicate / high-grade steel 1.4301

| Nominal width DN | D1 [mm] | D2 [mm] | D3 [mm] | T [mm] | L [mm] | Article no. | Price € |
|---|---|---|---|---|---|---|---|
| **16** | 22 | 19 | 16 | 1.6 | 8.5 | 2122 | 89.00 |
| **25** | 25.4 | 19 | 16 | 1.6 | 8.5 | 2124 | 104.50 |
| **40** | 44.5 | 42 | 32 | 3 | 8.5 | 2126 | 109.50 |
| **50** | 50.5 | 42 | 32 | 3 | 7 | 2127 | 123.50 |

# KF inspection glass, aluminium

> Pressure range: $10^{-9}$ mbar to 3 bar*
> Temperature range: –15 °C to 150 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 300 °C/hour
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
> Flange made of aluminium with integrated FPM O-ring
* Take sealing materials and connecting elements into consideration



## Borosilicate / aluminium (3.2315)

| Nominal width DN | D [mm] | D1 [mm] | h [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **25** | 40 | 26 | 10 | 2134 | 95.00 |
| **40** | 57 | 41 | 10 | 2136 | 97.50 |
| **50** | 77 | 52 | 10 | 2137 | 107.50 |





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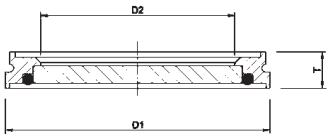
# ISO-K inspection glass

> Pressure range: $10^{-9}$mbar to 1.5 bar*
> Temperature range: –15 °C to 150 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 300 °C/hour
(from NW200 max. 100 °C/h)
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
> Flange made of high-grade steel 1.4301 with integrated FPM O-ring
> Assembly without additional seal.
(claw are not suitable)

* Take sealing materials and connecting elements into consideration



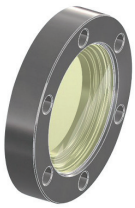

## Borosilicate / high-grade steel 1.4301

| Nominal width DN | D1 [mm] | D2 [mm] | T [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 98 | 72 | 13.5 | 6531 | 124.70 |
| **100** | 133 | 104 | 15.5 | 6532 | 177.20 |
| **160** | 183 | 153 | 17.2 | 6533 | 288.50 |
| **200** | - | - | - | 6534 | Upon request |
| **250** | - | - | - | 6535 | Upon request |

## Borosilicate / aluminium (3.2315)

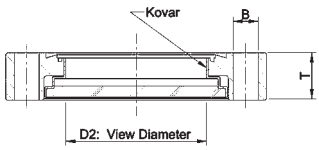
| Nominal width DN | D1 [mm] | D2 [mm] | T [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **63** | 98 | 72 | 13.5 | 6531A | 129.50 |
| **100** | 133 | 104 | 15.5 | 6532A | 195.00 |
| **160** | 183 | 153 | 17.2 | 6533A | 279.00 |
| **200** | - | - | - | 6534A | Upon request |
| **250** | - | - | - | 6535A | Upon request |

# CF inspection glass



> Pressure range: $10^{-11}$mbar to 1.0 bar*
> Temperature range: –15 °C to 350 °C*
> Chemically resistant
> Low thermal expansion and temperature-resistant
> Heating up and cooling with max. 180 °C/hour
> Standard inspection glass for visible area
> Limited transmission in UV range (0.4 µm – 2.0 µm)
> Flange made of high-grade steel 1.4301
> Assembly only with annealed copper seals or FKM seals

* Take sealing materials and connecting elements into consideration




## Borosilicate / high-grade steel 1.4301

| Nominal width DN | D2 [mm] | B [mm] | T [mm] | Article no. | Price € |
|---|---|---|---|---|---|
| **16** | 16 | 4.4 | 12 | 7411 | 96.90 |
| **40** | 38 | 6.7 | 12.7 | 7412 | 89.70 |
| **63** | 63 | 8.4 | 17.5 | 7413 | 135.20 |
| **100** | 90 | 8.4 | 19.9 | 7414 | 273.00 |
| **160** | 135 | 8.4 | 22.3 | 7415 | 437.00 |
| **200** | 136.7 | 8.4 | 24.6 | 7416 | 599.00 |

# Accessories

## High-vacuum grease Dow Corning®


> Temperature range: –40 °C to 150 °C*
> Vapour pressure: at 60 °C = $1.3 \times 10^{-7}$mbar, at 110 °C = $2 \times 10^{-5}$mbar, at 150 °C = $1 \times 10^{-3}$mbar
> Colour: transparent
> Good lubrication and sealing behaviour, tends to creep
> Not suitable for coating plants because even an extremely small amount of grease is sufficient to prevent paint from adhering.

| | Article no. | Price € |
|---|---|---|
| **High vacuum grease 50g** | 7009 | 18.00 |

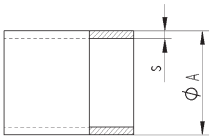
## Thread lubricant Molykote®

> Suitable for high-grade steel screw connections, in particular, with heated flanges
> Prevents seizing of screws during release and when creating a screw connection
> Very favourable friction coefficient
> Operation temperature –30 °C to 650 °C

| | Article no. | Price € |
|---|---|---|
| **Thread lubricant for screw sets 100g** | 7010 | 17.80 |

# Stock list, pipes

> Pressure range: $10^{-9}$mbar to 2.5 bar
> Temperature range 1.4301: –196 °C to 300 °C*
> Surface unplated
> Price quotation per metre, maximum length 6 m
> Tolerances according to EN ISO 1127 for high-grade steel

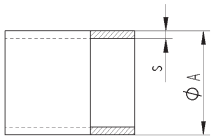


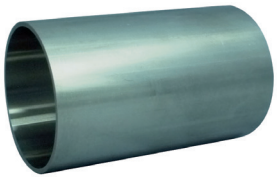

## High-grade steel 1.4301

| Material | dia.A [mm] | Wall thickness s [mm] | Article no. | Price € |
|---|---|---|---|---|
| 1.4301 | 6 | 1 | 9001 | 16.00 |
| 1.4301 | 8 | 1 | 9002 | 22.00 |
| 1.4301 | 10 | 1 | 9003 | 22.00 |
| 1.4301 | 12 | 1 | 9004 | 25.00 |
| 1.4301 | 12 | 2 | 9005 | 29.00 |
| 1.4301 | 18 | 1 | 9006 | 26.00 |
| 1.4301 | 18 | 1.5 | 9007 | 26.00 |
| 1.4301 | 19 | 1.5 | 9008 | 26.00 |
| 1.4301 | 20 | 2 | 90081 | 36.50 |
| 1.4301 | 25.4 | 1.63 | 9009 | 47.50 |
| 1.4301 | 28 | 1.5 | 9010 | 35.00 |
| 1.4301 | 38 | 1.5 | 9011 | 39.00 |
| 1.4301 | 40 | 1.5 | 9012 | 39.00 |
| 1.4301 | 42.4 | 2 | 9013 | 45.00 |
| 1.4301 | 44.5 | 2 | 9014 | 41.00 |
| 1.4301 | 48.3 | 2 | 9015 | 44.00 |
| 1.4301 | 52 | 1.5 | 9016 | 47.00 |
| 1.4301 | 60.3 | 2 | 90161 | 59.00 |
| 1.4301 | 70 | 2 | 9017 | 69.00 |
| 1.4301 | 76 | 3 | 9018 | 77.00 |
| 1.4301 | 88.9 | 3 | 9019 | 87.00 |
| 1.4301 | 104 | 2 | 9020 | 92.50 |
| 1.4301 | 108 | 3 | 9021 | 99.50 |
| 1.4301 | 154 | 2 | 9022 | 137.00 |
| 1.4301 | 159 | 3 | 9023 | 147.00 |
| 1.4301 | 219 | 3 | 9025 | 185.00 |
| 1.4301 | 273 | 3 | 9027 | Upon request |

# Stock list, pipes

> Pressure range: $10^{-9}$mbar to 2.5 bar
> Temperature range 3.2315. 1.0037: –196 °C to 300 °C*
> Temperature range 1.4404. 1.4541: –196 °C to 350 °C*
> Surface unplated
> Price quotation per metre, maximum length 6 m
> Tolerances according to EN ISO 1127 for high-grade steel
> Tolerances according to DIN EN 755-1/-2/-9 for aluminium
> Tolerances according to EN 10217-1 and EN 10219-1 for steel



## High-grade steel 1.4404/1.4541

| Material | dia.A [mm] | Wall thickness s [mm] | Article no. | Price € |
|---|---|---|---|---|
| 1.4404 | 6 | 1 | 90014 | 17.50 |
| 1.4404 | 6.35 | 0.89 | 900114 | 22.50 |
| 1.4404 | 8 | 1 | 90024 | 23.50 |
| 1.4404 | 10 | 1 | 90034 | 23.50 |
| 1.4404 | 12 | 1 | 90044 | 25.00 |
| 1.4404 | 18 | 1 | 90064 | 28.00 |
| 1.4404 | 18 | 1.5 | 90074 | 28.00 |
| 1.4404 | 19 | 1.5 | 90084 | 28.00 |
| 1.4404 | 20 | 2 | 900814 | 32.00 |
| 1.4404 | 25.4 | 1.65 | 900824 | 37.50 |
| 1.4404 | 28 | 1.5 | 90104 | 37.50 |
| 1.4404 | 38 | 1.5 | 90114 | 41.50 |
| 1.4404 | 40 | 1.5 | 90124 | 41.50 |
| 1.4404 | 42.4 | 2 | 90134 | 48.00 |
| 1.4404 | 44.5 | 2 | 90144 | 44.50 |
| 1.4404 | 48.3 | 2 | 90154 | 47.50 |
| 1.4404 | 52 | 1.5 | 90164 | 51.00 |
| 1.4404 | 54 | 2 | 901614 | 55.00 |
| 1.4404 | 70 | 2 | 90174 | 74.00 |
| 1.4404 | 76 | 3 | 90184 | 82.00 |
| 1.4404 | 88.9 | 3 | 90194 | 92.00 |
| 1.4404 | 101.6 | 2.11 | 901914 | 98.50 |
| 1.4404 | 104 | 2 | 90204 | 97.50 |
| 1.4404 | 108 | 3 | 90214 | 105.00 |
| 1.4404 | 154 | 2 | 90224 | 143.00 |
| 1.4571 | 104 | 2 | 90205 | 92.50 |
| 1.4571 | 159 | 3 | 90235 | 156.00 |
| 1.4404 | 204 | 2 | 90244 | 169.00 |
| 1.4404 | 219 | 3 | 90254 | 189.50 |
| 1.4404 | 254 | 2 | 90264 | Upon request |
| 1.4404 | 273 | 3 | 90274 | Upon request |

## Aluminium

| | | | | |
|---|---|---|---|---|
| 3.2315 | 76 | 3 | 9040 | 58.00 |
| 3.2315 | 108 | 3 | 9041 | 73.50 |
| 3.2315 | 160 | 4 | 9042 | 99.50 |

## Steel

| | | | | |
|---|---|---|---|---|
| 1.0037 | 76 | 3 | 9050 | 57.00 |
| 1.0037 | 108 | 3 | 9051 | 69.00 |
| 1.0037 | 159 | 3 | 9052 | 97.00 |

# General terms and conditions of business, delivery and payment

The individually agreed conditions or the following General Terms and Conditions of Business shall apply.

**1. General**
These general conditions or sales and delivery apply to all quotations, orders, purchase contracts, work contracts and deliveries that novotek provides to the customer. General business terms and conditions of the customer that deviate from these business terms and conditions shall not apply even if we have not objected to them expressly. Other terms and conditions shall only apply if they have been expressly acknowledged by us in writing. If individual provisions of the contract turn out to be legally invalid in whole or in part, this shall not affect the validity of the remaining provisions. The contracting parties shall replace the aforesaid provision by a new provision which comes as close as possible to the legal and economic intention of the invalid provision. A contract shall only be concluded when novotek issues a written order confirmation. If, in exception cases, no separate order confirmation is prepared, the invoice shall be deemed to be the order confirmation. We reserve the right to make technical modifications during the delivery period that will not adversely affect the function of the items supplied. novotek reserves all property and copyrights with regard to samples, cost estimates, drawings and similar. Information of a corporeal and incorporeal nature – including in electronic form – must not be made accessible to third parties. Similarly, novotek undertakes not to make information or documents designated by the customer as being confidential accessible to third parties without prior approval.

**2. Prices and terms of payment**
Our prices are net without value-added tax. All prices are plus the value-added tax prescribed by law that is applicable on the day of delivery. They shall apply ex warehouse in Magstadt, plus packaging and shipping costs unless otherwise agreed (in accordance with Incoterms 1990). The invoice amount shall be paid within 30 days after the date of invoicing, without any deduction. In the event of delayed or deferred payment, novotek shall be entitled to charge interest according to bank practices even without prior notification. Packaging cannot be returned. Unless our prices have been expressly confirmed as fixed prices, in case of increases in material, wage and other costs, we reserve the right to correct the prices. No interest shall be paid for advance payments. The right to withhold payments or to offset with counterclaims shall only be granted to the customer to the extent that his counterclaims are undisputed or have been legally upheld. Unless expressly prescribed by the customer, we shall not conclude transport insurance. Costs of any desired transport insurance shall be borne by the customer.

**3. Technical documents**
Technical documents shall remain our property and must not be copied, reproduced nor disclosed to third parties. Technical documentation relating to offers not resulting in a subsequent order must be returned to us upon request.

**4. Delivery times**
The delivery times specified in our quotations and order confirmations shall be regarded as targets but are not binding. The delivery time shall start on the date of order confirmation, however only if the order exactly matches the order confirmation and any documentation to be submitted by the customer is at our disposal. The delivery time shall be extended appropriately in case of unforeseen hindrances that are beyond the control of novotek despite using due diligence, irrespective of whether the cause rests with novotek itself, the customer or a third party. As soon as the cause for delay has been removed, the delivery period shall be rescheduled in writing. The customer shall only have the right to cancel the contract in the event of gross negligence or wilful misconduct on the part of novotek. The delivery date has been adhered to if the object to be delivered has been dispatched or collected by novotek or the supplier's plant within the agreed time, or if readiness to deliver has been notified.

**5. Cancellation**
Cancellation of an order places the customer under the obligation of paying for all expenses and costs incurred at the time of cancellation.

**6. Transfer of risk, acceptance**
The risk shall pass to the customer when the article to be supplied has left novotek or the supply plant, even if partial deliveries are made or if the supplier has assumed ancillary obligations such as costs of dispatch for the delivery and its installation. If acceptance is to take place, this is the determining factor with regard to the transfer of risk. If dispatch is delayed or not executed for reasons for which the supplier cannot be held responsible, the risk will be transferred to the customer from the day of notification of the dispatch or readiness to accept. novotek undertakes to take out the insurance policy which the customer requests at the customer's expense. – Partial deliveries are permissible as far as these can be reasonably expected of the customer. The customer undertakes to inspect the deliveries and services within a reasonable period and to notify novotek in writing without delay of any possible deficiencies. Transport damage must be reported to novotek within five working days. If this is not the case, the deliveries and services shall be deemed as accepted.

**7. Reservation of ownership**
The products supplied or sold by novotek shall remain the property of novotek until each and every claim novotek has on the customer arising from the respective contract has been paid. This shall also apply in the event that the delivered goods and services are processed or combined and/resold (extended and lengthened proprietary rights). The customer of novotek is entitled to the ownership and the contractual use of the object of purchase as long as he fulfils obligations arising from the agreement or from these General Terms and Conditions of Business and is not in payment default. If the customer of novotek is in payment default or has not fulfilled his obligations with regard to the reservation of ownership, novotek shall have the right to declare the cancellation of the contract. novotek can demand the return of the objects of the contract from the contractual partner and, after expiration of a reasonable deadline, can utilise the goods by selling them. The customer is obliged to notify novotek immediately in the event of any action of third parties, for example, seizures and consultation or initiation of insolvency proceedings. A withdrawal from the contract if a ground for insolvency exist for enforcement of the reservation of ownership and extended/lengthened reservation of ownership is not required.

**8. Liability for defects, warranty payments**
novotek shall grant a warranty for material defects in the delivery, to the exclusion of further claims, as follows: All such parts that have been found to be defective as a result of a circumstance occurring prior to the transfer of risk shall be repaired or replaced free-of-charge as novotek chooses. If such deficiencies are determined, novotek must be informed immediately in writing. Replaced parts shall become the property of novotek. The customer shall discuss with the supplier and agree upon a specific period and provide him with the requisite facilities for the apparently necessary repairs and replacement deliveries to be made; if the customer fails to do so, the supplier will not be liable for the consequences. Only in urgent cases where there is a risk to operational safety and to avert disproportionate further damage does the orderer have the right to rectify the defect himself or have a third party do the repair and to demand appropriate repayment for his costs. In such cases, the supplier has to be informed immediately. If the complaint is found to be well-founded, novotek shall bear the cost of repairs or substitute deliveries including shipping. In the framework of the statutory provisions, the purchaser has a right to rescind the contract if the supplier – taking account of the statutory exemptions – allows a reasonable period for the subsequent improvement or replacement delivery due to a quality defect to elapse fruitlessly. If only a minor deficiency exists, the customer only has a right to reduce the contractual price. Under no other circumstances shall the customer be entitled to demand a reduction in the contractual price. There shall be no claim for defects of the object of the contract under any of the conditions stated below: unsuitable or improper use; faulty assembly or commissioning by the customer and/or third parties; natural wear; faulty or negligent construction work, chemical, electrochemical or electric influences – unless these are the responsibility of novotek. If the customer or a third party makes an improper improvement, then novotek shall not be liable for the resulting consequences. The same shall apply to changes made to the object of delivery without the prior consent of the company. Claims for defects for all new objects sold shall become statute-barred one year after delivery of the object. Obvious defects have to be reported within 2 weeks in a written notification to novotek, based on sending of the notification, otherwise the vendor is exempt from liability for defects. If the object of the contract is defective, the contractual partner of the company shall have the following rights: novotek is obliged to make good the defect and will bring this about at its discretion by removing the defect or by supplying goods that are not defective. If the repairs or the replacements fail, the contracting party can demand a reduction of the purchase price or a rescission of the contract. Rescission of the contract is not permitted where the breach of duty on the part of novotek is only insubstantial.

**9. Liability, exclusion of further liability**
If the delivery item cannot be used by the customer for the contractually agreed purpose, due to culpability on the part of novotek, as a result of ignoring or faultily implementing proposals and advice put forward before or after signing of the contract, or through the violation of other additional contractual obligations, particularly instructions for operating and maintaining the object of delivery, then the arrangements specified under section 8 shall apply, with all further claims by the customer being ruled out, and the following: For loss or damage not suffered by the delivery item itself, novotek shall be liable (whatever the legal grounds involved) only

a. in the event of wrongful,
b. in the event of gross negligence on the part of the owner/the boards or senior executives,
c. in the event of culpable injury to life, limb and human health,
d. in the event of defects which the supplier has maliciously failed to disclose or whose absence it has guaranteed,
e. in the event of defects in the delivery item, insofar as liability exists under the German Product Liability Act for injury to persons or damage to privately used property. In the event of culpable violation of significant contractual obligations, novotek shall also be liable in the event of gross negligence of non-senior executives and in the event of slight negligence. In the latter case, liability shall be limited to reasonably foreseeable loss or damage typical of the contract. No further claims shall be accepted.

**10. Rules for governing law, jurisdiction and place of performance**
All legal relationships between novotek and the customer shall be governed solely by the law of the Federal Republic of Germany which governs legal relationships between German parties. The place of jurisdiction shall be the court responsible for the novotek's place of business. However, novotek shall be entitled to file a lawsuit at the customer's head office.

Status: June 2008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