



Special Sealing Products

Catalog 2007

Your Technology Specialist

simrit[®]

The information in this product catalog is based on the experience gained in decades of research on the development and manufacture of seals and components for vibration control in the Freudenberg group. It represents the current state of our knowledge.

The sealing effect of many products in the catalog is, however, not provided solely by the component. Indeed, in the specific application this effect depends on other parameters such as installation position and contact area, the pressure applied, operating temperature, media to be sealed, lubrication, vibration control-related effects and any ingress of dirt from the outside. This and other, unknown, factors in practical use can have a significant effect on the seals.

Against this background, general statements on the function of the products in the catalog are not possible. Information in this catalog only represents recommended values that are not correct

in every application. We therefore recommend you to discuss your specific application with our advisory service. In cases with high or special loads, for example due to aggressive media, the seal should be selected in collaboration with us; here trials on reliability are often indispensable.

In the context of product optimisation we reserve the right to change, without prior notice, the product range, production sites, products and their manufacturing process as well as the information in this catalog.

All previous issues become invalid on publication of this issue of the catalog.

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Simrit, Your Technology Specialist for Seals and Vibration Control



Simmering®



Fluid Power



Hydraulic Accumulator



O-Rings



Lederer

Liquid Silicon Products



Special Sealing Products



Vibration Control

Our unique service package sets standards in quality, functionality and cost effectiveness throughout the industry.

With its comprehensive product range and large number of services, Simrit provides a service package unique in the market for almost every application. Simrit employs its leading technological expertise so that you benefit: We analyse your entire system and fine-tune the individual components to each other in an optimum way. This means you get exactly the solution that best fulfils your requirements – cost effective and dependable. Reinforced by single sourcing that saves time and costs, you will find that Simrit is your ideal partner for all sealing- and vibration-related applications when it comes to complex systems.

We have been the leading experts in materials for decades, and this is a significant factor for success, exceptional performance and continuous technological advancement of our products. Famous product names such as Simmering®, Merkel, Integral Accumulator, ISC O-Ring or Lederer reflect this. Together with the fields of special sealing products and vibration technology, they are inseparably connected with the Simrit brand name and constitute the world's largest product range for all applications throughout industry.

As part of the Freudenberg Group, we draw upon established research, development and production expertise within the Group to constantly extend our technological lead through innova-

tive solutions for the purposes of – and in the service of – our global customers with their local market requirements. The close international cooperation of Simrit in Europe and America with our Japanese partner, NOK, in Asia provides you with consistent quality standards wherever our solutions are required. And with Simrit Service Centers in all industrial markets, our global sales network supports you and more than 100,000 other customers dependably and on a basis of mutual trust and cooperation at sites in every continent.

The Simrit service package at a glance:

- **World's largest product range**
Comprehensive solutions from a single source
- **Continuous innovations**
Technological prominence for the competitive advantage of our customers
- **Unique expertise in materials and high quality standards**
Leading know-how for safe and cost-effective applications
- **A huge number of integrated services**
Support from development up to continuous product deployment
- **Globality**
Global expertise with the knowledge of local market requirements

Your Simrit Partner





Elastomers with Excellent Characteristics – the Basis of Innovative Solutions

Thorough know-how about materials for more than 60 years

Simrit has now been developing innovative branded products at the highest level for more than 60 years. With in-depth experience on materials, well-founded knowledge of processing and extensive product know-how, again and again we create ideal pre-conditions for your success. However, the quality of the elastomer material is decisive for the optimum operation of seals and components used in vibration control. Therefore, we are particularly proud of our pioneering role worldwide in this sector.

Deliberately targeted development of materials guarantees the highest possible quality and long life

More than 250 engineers and chemists worldwide are developing new materials every day for the highest possible functional requirements in joint development ventures with various research institutions plus leading manufacturers of polymers and chemicals. The materials we develop must fulfil the respective customer-specific requirements and withstand all the loadings feasible in their branch of industry – both with regard to temperature, pressure and resistance to media and in the presence of static or

dynamic loadings. The length of life of our products is constantly being improved by optimising our materials. Constant monitoring on the road to these products becoming mass production materials also guarantees you the highest possible quality.

The Individual Materials We have Developed are Leaders Worldwide

Uniquely wide range of standard materials

We produce more than a billion seals annually from a production volume of more than 15,000 tons. When considered as a whole, a range of material, which is unique in its quality and quantity, is available to you with more than 1,500 mixtures of 850 raw materials for your individual applications in seals and vibration control. A large proportion of these are standardised mixtures. Of course, our competent team of experts will advise and assist you fully – from the selection of the right materials via the test phase to the start of production.



Comprehensive performance package and much more

Materials manufactured individually to your wishes and requirements are unusually important in the comprehensive performance package from Simrit. The use of polymers, based on our own raw materials and tailored to your requirements, enables Simrit to develop high performance materials which satisfy the highest functional demands. We use our global materials database for the selection of application-specific materials, which groups together the know-how

of our experts, working worldwide, to form a network of top technological services which we can call on at any time. Finally, the appropriate material with the optimum characteristics for your application is manufactured using computer-controlled procedures, from the selection of the raw material to the compounding process. Of course, always adhering to the highest standards in quality and processing and complying with ecological guidelines – in the interests of your success and the environment.

Simrit Academy – Secure these Advantages for Your Success



The Simrit Academy offers you seminars which are tailored to your needs in terms of content and specialisation levels. There are numerous advantages for you.

A know-how advantage

You receive information from more than 20 qualified experts with regards to state of the art products and materials. Thus ensuring the correct selection of parts as well as smooth workflows in your production processes.

Individuality

Our seminar programme covers the needs of beginners and pros alike. The selection is extensive, allowing for a choice appropriate to the level of knowledge.

Practical relevance

Reinforcement of theoretical knowledge through practical exercises. At the same time we invite you to view our production and research facilities.

Productivity

With the knowledge that you have gained, you can increase your productivity by appropriately selecting the correct products and materials every time.

Languages

All attendance seminars are offered in both German and English. Simultaneous translation is available at every Innovations Forum.

Sustainability

For each Simrit Academy event, you will also receive comprehensive documentation to accompany the course information. Your participation is substantiated by DIN-ISO 9001 format seminar certificate.

Simrit Seminars

You visit our Academy on location in Weinheim and directly experience all materials and products yourself. In doing so, you can choose one of three different seminar categories.

Simrit Basic Seminar

Participants without previous technical knowledge can get to know the entire Simrit performance package.

Simrit Professional Seminar

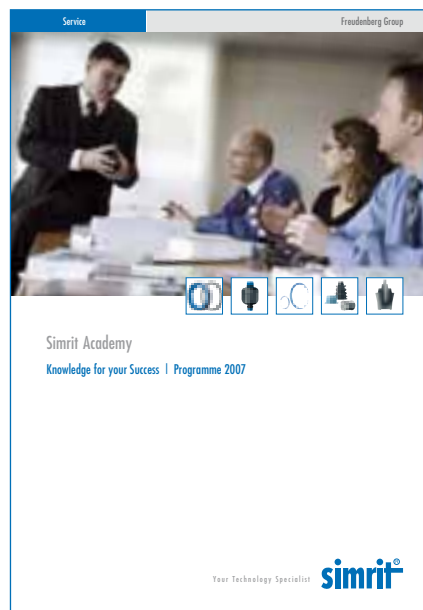
Become an expert on Simrit and obtain detailed knowledge about all products, processes and materials. Both in theory and in practice.

Simrit Seminar Special

The course contents are highly specialised and concentrate on conveying knowledge related to a specific product or material area.

Innovation Forum

Interested parties learn about all the new Simrit innovations in this lecture series, and can exchange knowledge and experience with panels of experts and with other participants.



Registration

You can easily register for Simrit seminars at www.simrit.com/academy. Additional detailed information on registering and on the seminars can be found in the Simrit Academy Programme 2007 brochure, which you can order or download from www.simrit.com.



Merkel Xpress – The 24 hour Express-Service for Seals, Guides and Pivoting Parts

When it has to be there in a hurry: Merkel Xpress from Simrit. Our service delivers the desired seal within 24 hours.

With Merkel Xpress from Simrit you can minimise your machine down-time – and therefore production costs. At the same time, you can reduce the number of spare parts you keep in stock. After all, if you can order it at any time, you don't need to keep it in stock. Ask us: you'll have your seal tomorrow.

The seal you need

Whatever you need at short notice, we can produce it within a few hours using state-of-the-art production technology. Tailor-made to suit your requirements, from single seals for prototypes through to mass production in economical batch sizes. Merkel Xpress saves you shaping costs and minimum order quantities – by using new materials and thanks to our high-speed production and delivery systems.

Merkel Xpress offers you:

- Delivery within 24 hours
- Seals of up to 4 metres in diameter
- From single seals to mass production
- Wide range of profiles
- Original Simrit materials and geometries
- Plus special designs and special materials
- Leading production know-how
- Continuous development of the product range

Tailor-made. Immediately. Economically. The Triple Advantage of Merkel Xpress

Materials

Polyurethane:

SQ-PU
SQ-HPU

Further materials:

- For low-temperature ranges (down to -50°C)
- Self-lubricating properties
- With FDA approval

Elastomers:

SQ-NBR
SQ-HNBR
SQ-FKM (fluorelastomer)
SQ-EPDM*
SQ-SIL*

* Also with FDA approval (food safe)

Plastomers:

SQ-POM
SQ-PA

Fluoroplastic (PTFE):

SQ-WFLON (white, virginal)
SQ-GFLON (with 15% glass fibre, 5% MoS₂)
SQ-BFLON (with 40% bronze, or 60%)
SQ-CFLON (25% carbon)

Further qualities on request.



A flexible production concept for every requirement

With the newest generation of special lathes and software solutions developed to precisely satisfy customer demands, we can produce every machine-manufactured seal possible, quickly and economically. More than 260 pre-programmed seal design types serve as a basis for our efficient and rapid manufacturing processes. In this regard we work with both special materials such as PEEK and

FFKM, Original Simrit polyurethane and, of course, upon request every other market-standard material for your specific application. The perfect solution for:

- Non-standard seal and machined-part spare parts for every manufacturer
- Rapidly required standard seals
- Small-volume series of special seals
- Samples
- Substitute seals
- End-of-life design types whose series production will not be restarted

Further information can be found at www.simrit.com.

Realise Your Objectives
Quickly with www.simrit.com



Simrit Online – more than just a facelift. Thanks to a smart Navigation System – developed exactly to your requirements – the information you are looking for can be found about products and services with just a few mouse clicks.

The new online presence from Simrit, with integrated Smart Navigation, offers you a particularly easy and quick work platform for your Internet research. There's no quicker way for you to achieve your objective of getting solid expertise for your planning. Whether you need product information, material data sheets or want to access 3D-CAD data – in the user-friendly Simrit database you are sure to quickly find what you are looking for.

**3D-CAD data –
Download added value**

With the 3D Download Service from Simrit you can reliably create your designs with visual clarity for your seal or vibration control solution. Including all technical details in three-dimensional display quality.

The new Simrit eCatalog

Up to 100.000 items accessible online and available within 24 hours. The new eCatalog in the Simrit portal makes it possible. And the best thing about it: The Simrit Product Navigator guides you in the easiest and most straightforward manner directly to the optimum product for your application. Find – compare – select. Convince yourself.

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Register once – benefit continuously. As a registered user of the mySimrit customer area, you benefit from the continuously expanding service advantages. From initial query through product availability to quick CAD downloads and even accessing current news, you receive true added value for a minimum of registration effort. The best thing to do is test us today.



We speak your language:

As a worldwide leading technology specialist, of course we also make our Internet services available to you in your native language. Right from the start, our new online presence is represented in the national language of the most important industrial markets. And, we are continually expanding our portal for you.

Simrit on the Internet – your platform for successful business

- Smart navigation and full-text searches for rapid results
- An extensive eCatalog with more than 100.000 items
- Easy download function for 3D-CAD
- An overview of our brochure service by mouse click
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- and much more



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Single Convolution Bellows

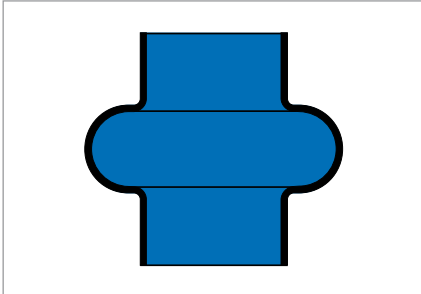


Fig. 1 Single Convolution Bellows

Product description

Single convolution bellows are protective components for shaft joints that are primarily subjected to angular movement. The axial flexibility is limited.

Product advantages

Single convolution bellows prevent the escape of lubricant at shaft joints and protect the joints against soiling.

Application

Single convolution bellows are used when a short stroke and narrow angle are to be sealed.
 Example: ball joint, connection of two tube ends.

Material

Material	CR	NBR
Hardness	42/50 Shore A	approx. 45 Shore A

Other materials on enquiry (after clarification of the material-job specification and the type).

Operating conditions

Material	CR	NBR
Temperature	-40 ... +100 °C	-30 ... +100 °C
Dynamic loading	very good	sufficient
Mineral oil and grease resistance	sufficient	good

The values listed in the table are recommended values.
 → Technical Manual.

Fitting & installation

The moving section of the bellows must not come into contact with the sharp edges on the shaft joint or with the surrounding parts of the machine.
 Hose clips should be used on the bellows connections to fasten the bellows to the joint.

Article list Single Convolution Bellows, ordered by Connection Ø 1

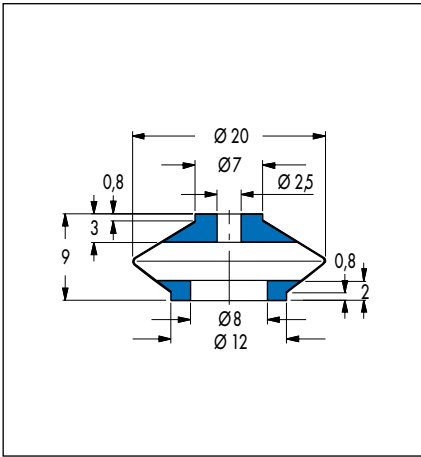
No. of convolutions	Manufactured length	Material thickness	Connection Ø 1	Connection Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
1	9,0	0,50	2,5	8,0	2,5	20	V6-00469	42 CR 764	29676	19	●
1	20,0	0,60	3,0	25,0	14,0	25	V6-01805	42 CR 764	401012	19	○
1	15,0	1,00	5,0	14,0	14,0	25	V6-00889	42 CR 764	38373	19	○
1	22,0	1,50	6,5	24,0	15,0	25	V6-01709	50 CR 879	440228	19	●
1	15,0	0,50	8,0	14,0	8,0	28	V6-00395	42 CR 764	439476	19	●
1	24,0	1,50	10,0	21,0	16,0	30	V6-00814	53 CR 858	25226	19	●
1	17,0	0,50	12,0	22,0	22,0	36	V6-00672	42 CR 764	400800	19	○
1	30,0	1,50	12,0	24,0	18,0	30	V6-01484	42 CR 764	129831	19	○
1	60,0	2,00	13,0	90,0	13,0	94	V6-00614	42 CR 764	457504	19	○
1	65,0	1,20	15,8	47,0	24,0	49	V6-00343	42 CR 764	440312	20	●
1	32,0	1,25	16,0	16,0	16,0	36	V6-00083	45 NBR 670	430853	20	●
1	36,0	1,50	16,0	48,0	16,0	66	V6-00132	42 CR 764	29301	20	●
1	24,0	1,00	16,0	62,0	25,0	62	V6-00350	42 CR 764	439443	20	○
1	38,0	1,25	18,0	18,0	18,0	38	V6-00084	45 NBR 670	431524	20	●
1	65,0	2,00	18,0	80,0	18,0	110	V6-00074	42 CR 764	29229	20	○
1	56,0	1,25	20,0	20,0	20,0	40	V6-00182	45 NBR 670	436927	20	●
1	56,0	1,25	20,0	20,0	20,0	40	V6-00182	42 CR 764	455544	20	●
1	50,0	1,50	20,0	55,0	32,0	60	V6-00922	42 CR 764	400892	20	○
1	60,0	0,60	21,0	80,0	42,0	70	V6-00890	42 CR 764	400880	20	○
1	40,0	1,25	22,0	22,0	22,0	44	V6-00085	45 NBR 670	435479	21	●
1	66,0	1,25	25,0	25,0	25,0	45	V6-00414	50 CR 879	436702	21	●
1	66,0	1,25	25,0	25,0	25,0	45	V6-00414	45 NBR 670	436705	21	●
1	45,0	1,25	26,0	26,0	26,0	50	V6-00037	45 NBR 670	438518	21	●
1	30,0	1,00	26,0	34,0	26,0	60	V6-01144	42 CR 764	372488	21	○
1	65,0	1,50	28,0	28,0	28,0	52	V6-00285	45 NBR 670	440303	21	○
1	50,0	1,50	29,0	29,0	29,0	53	V6-00086	45 NBR 670	436928	21	●
1	60,0	1,50	32,0	32,0	32,0	58	V6-00087	45 NBR 670	434024	21	●
1	75,0	1,50	32,0	32,0	32,0	58	V6-00286	45 NBR 670	434069	21	●
1	27,0	2,50	34,0	54,0	34,0	60	V6-00001	42 CR 764	31657	21	●
1	82,0	1,50	36,0	36,0	36,0	64	V6-00287	45 NBR 670	436921	22	●
1	65,0	1,50	37,0	37,0	37,0	65	V6-00088	45 NBR 670	440321	22	●
1	75,0	1,50	42,0	42,0	42,0	71	V6-00067	45 NBR 670	430851	22	●
1	75,0	1,50	42,0	42,0	42,0	71	V6-00067	50 CR 879	430852	22	●
1	90,0	1,50	47,0	47,0	47,0	76	V6-00070	45 NBR 670	437106	22	●
1	24,0	1,50	50,0	59,0	50,0	85	V6-00002	42 CR 764	31658	22	●
1	95,0	1,50	52,0	52,0	52,0	88	V6-00089	50 CR 879	432921	22	●
1	95,0	1,50	52,0	52,0	52,0	88	V6-00089	45 NBR 670	432923	22	●
1	95,0	1,75	58,0	58,0	58,0	98	V6-00101	45 NBR 670	434009	22	●
1	95,0	1,75	58,0	58,0	58,0	98	V6-00101	42 CR 764	434013	22	●
1	80,0	2,50	70,0	70,0	70,0	116	V6-00246	42 CR 764	440301	22	●
1	96,0	1,75	70,0	70,0	70,0	120	V6-00102	45 NBR 670	29269	22	○
1	105,0	1,75	80,0	80,0	80,0	135	V6-00103	45 NBR 670	454461	23	●
1	65,0	4,00	87,0	87,5	89,0	140	V6-00602	50 CR 879	452723	23	○
1	141,6	1,50	95,0	95,0	95,0	160	V6-00279	45 NBR 670	400681	23	○
1	90,0	1,50	143,0	260,0	160,0	240	V6-00978	42 CR 764	26945	23	●
1	23,0	1,00	151,0	207,0	207,0	320	V6-00021	42 CR 764	37894	23	○

● Available from stock ○ On request: Tool is available, delivery at short notice

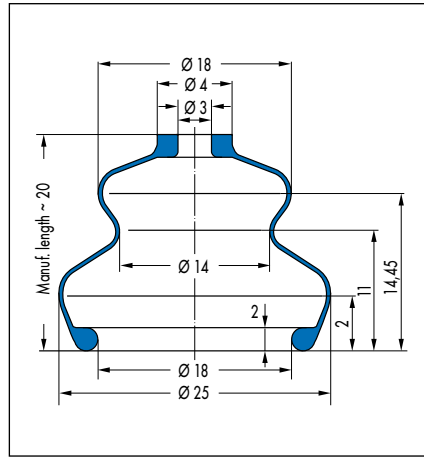
Article list Single Convolution Bellows, ordered by Type

No. of convo-lutions	Manu-factured length	Material thickness	Connection Ø 1	Connection Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
1	27,0	2,50	34,0	54,0	34,0	60	V6-00001	42 CR 764	31657	21	●
1	24,0	1,50	50,0	59,0	50,0	85	V6-00002	42 CR 764	31658	22	●
1	23,0	1,00	151,0	207,0	207,0	320	V6-00021	42 CR 764	37894	23	○
1	45,0	1,25	26,0	26,0	26,0	50	V6-00037	45 NBR 670	438518	21	●
1	75,0	1,50	42,0	42,0	42,0	71	V6-00067	45 NBR 670	430851	22	●
1	75,0	1,50	42,0	42,0	42,0	71	V6-00067	50 CR 879	430852	22	●
1	90,0	1,50	47,0	47,0	47,0	76	V6-00070	45 NBR 670	437106	22	●
1	65,0	2,00	18,0	80,0	18,0	110	V6-00074	42 CR 764	29229	20	○
1	32,0	1,25	16,0	16,0	16,0	36	V6-00083	45 NBR 670	430853	20	●
1	38,0	1,25	18,0	18,0	18,0	38	V6-00084	45 NBR 670	431524	20	●
1	40,0	1,25	22,0	22,0	22,0	44	V6-00085	45 NBR 670	435479	21	●
1	50,0	1,50	29,0	29,0	29,0	53	V6-00086	45 NBR 670	436928	21	●
1	60,0	1,50	32,0	32,0	32,0	58	V6-00087	45 NBR 670	434024	21	●
1	65,0	1,50	37,0	37,0	37,0	65	V6-00088	45 NBR 670	440321	22	●
1	95,0	1,50	52,0	52,0	52,0	88	V6-00089	50 CR 879	432921	22	●
1	95,0	1,50	52,0	52,0	52,0	88	V6-00089	45 NBR 670	432923	22	●
1	95,0	1,75	58,0	58,0	58,0	98	V6-00101	45 NBR 670	434009	22	●
1	95,0	1,75	58,0	58,0	58,0	98	V6-00101	42 CR 764	434013	22	●
1	96,0	1,75	70,0	70,0	70,0	120	V6-00102	45 NBR 670	29269	22	○
1	105,0	1,75	80,0	80,0	80,0	135	V6-00103	45 NBR 670	454461	23	●
1	36,0	1,50	16,0	48,0	16,0	66	V6-00132	42 CR 764	29301	20	●
1	56,0	1,25	20,0	20,0	20,0	40	V6-00182	45 NBR 670	436927	20	●
1	56,0	1,25	20,0	20,0	20,0	40	V6-00182	42 CR 764	455544	20	●
1	80,0	2,50	70,0	70,0	70,0	116	V6-00246	42 CR 764	440301	22	●
1	141,6	1,50	95,0	95,0	95,0	160	V6-00279	45 NBR 670	400681	23	○
1	65,0	1,50	28,0	28,0	28,0	52	V6-00285	45 NBR 670	440303	21	○
1	75,0	1,50	32,0	32,0	32,0	58	V6-00286	45 NBR 670	434069	21	●
1	82,0	1,50	36,0	36,0	36,0	64	V6-00287	45 NBR 670	436921	22	●
1	65,0	1,20	15,8	47,0	24,0	49	V6-00343	42 CR 764	440312	20	●
1	24,0	1,00	16,0	62,0	25,0	62	V6-00350	42 CR 764	439443	20	○
1	15,0	0,50	8,0	14,0	8,0	28	V6-00395	42 CR 764	439476	19	●
1	66,0	1,25	25,0	25,0	25,0	45	V6-00414	50 CR 879	436702	21	●
1	66,0	1,25	25,0	25,0	25,0	45	V6-00414	45 NBR 670	436705	21	●
1	9,0	0,50	2,5	8,0	2,5	20	V6-00469	42 CR 764	29676	19	●
1	65,0	4,00	87,0	87,5	89,0	140	V6-00602	50 CR 879	452723	23	○
1	60,0	2,00	13,0	90,0	13,0	94	V6-00614	42 CR 764	457504	19	○
1	17,0	0,50	12,0	22,0	22,0	36	V6-00672	42 CR 764	400800	19	○
1	24,0	1,50	10,0	21,0	16,0	30	V6-00814	53 CR 858	25226	19	●
1	15,0	1,00	5,0	14,0	14,0	25	V6-00889	42 CR 764	38373	19	○
1	60,0	0,60	21,0	80,0	42,0	70	V6-00890	42 CR 764	400880	20	○
1	50,0	1,50	20,0	55,0	32,0	60	V6-00922	42 CR 764	400892	20	○
1	90,0	1,50	143,0	260,0	160,0	240	V6-00978	42 CR 764	26945	23	●
1	30,0	1,00	26,0	34,0	26,0	60	V6-01144	42 CR 764	372488	21	○
1	30,0	1,50	12,0	24,0	18,0	30	V6-01484	42 CR 764	129831	19	○
1	22,0	1,50	6,5	24,0	15,0	25	V6-01709	50 CR 879	440228	19	●
1	20,0	0,60	3,0	25,0	14,0	25	V6-01805	42 CR 764	401012	19	○

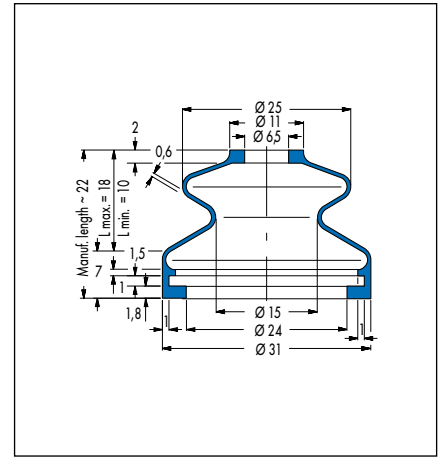
● Available from stock ○ On request: Tool is available, delivery at short notice



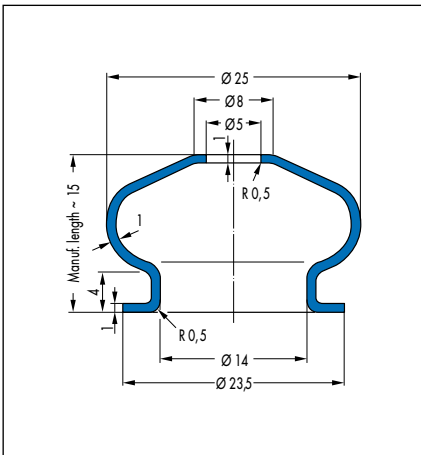
V6-469, Article No. 29676



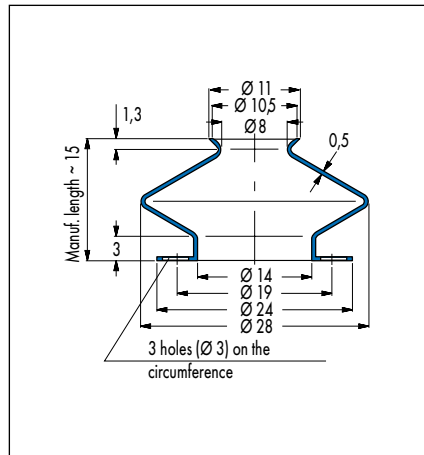
V6-1805, Article No. 401012



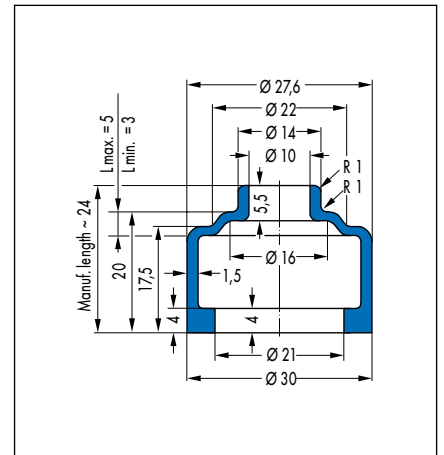
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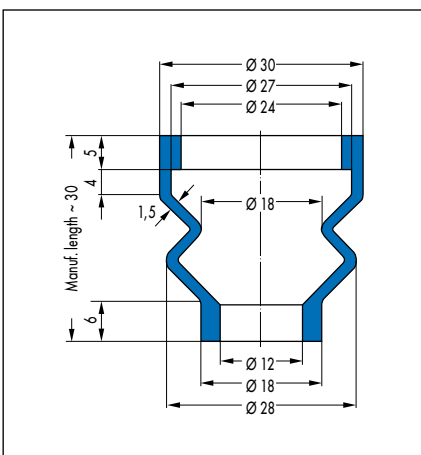
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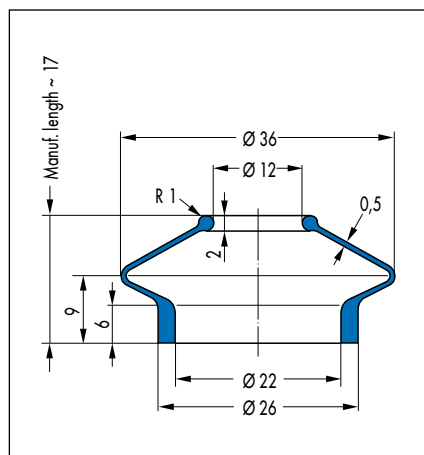
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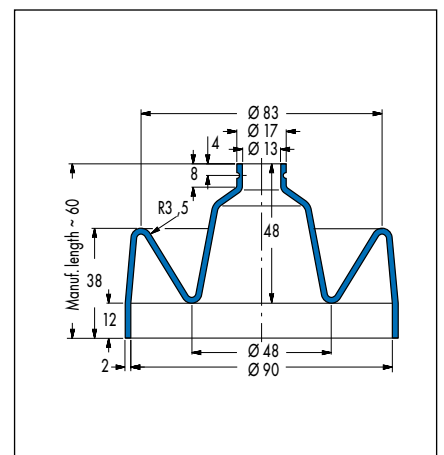
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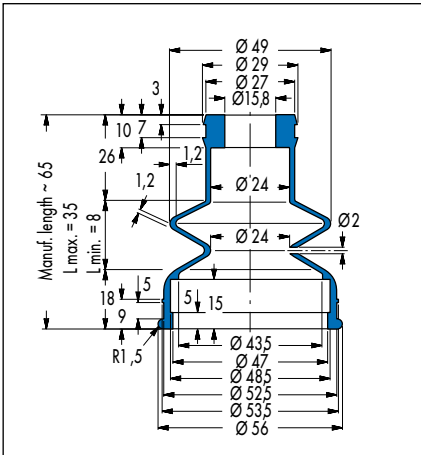
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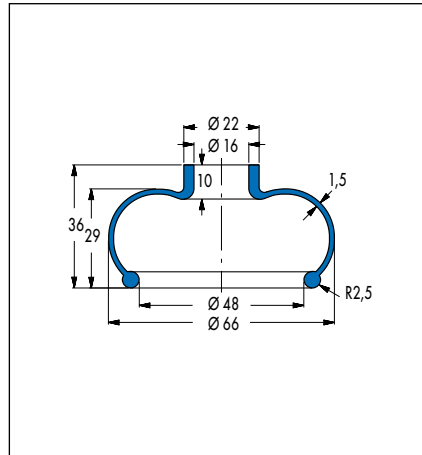
V6-672, Article No. 400800



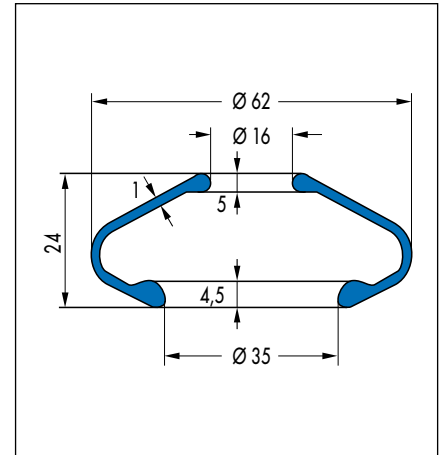
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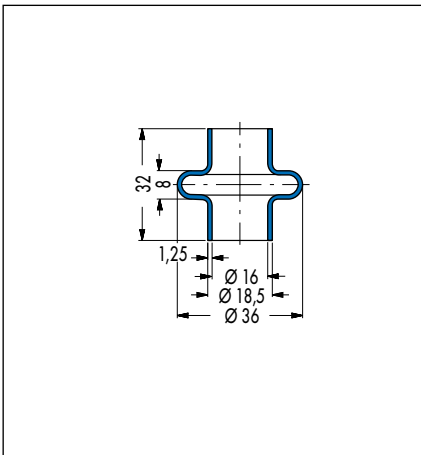
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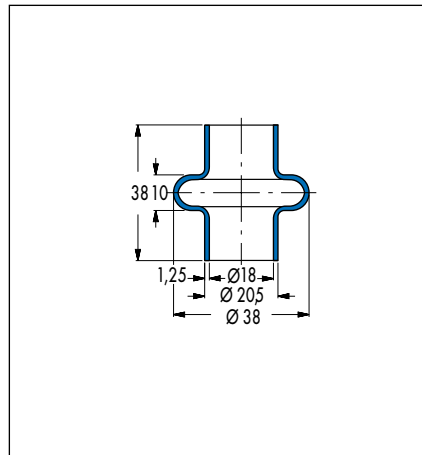
V6-132, Article No. 29301



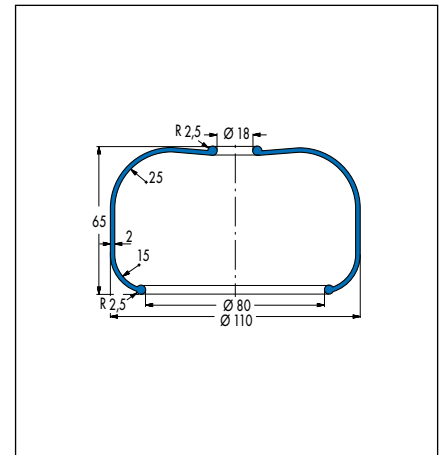
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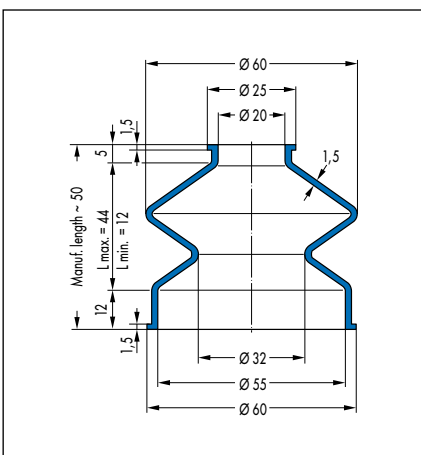
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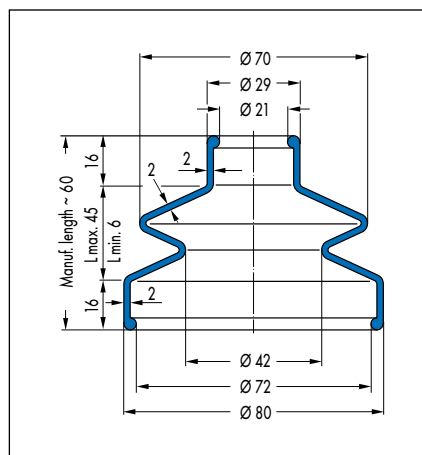
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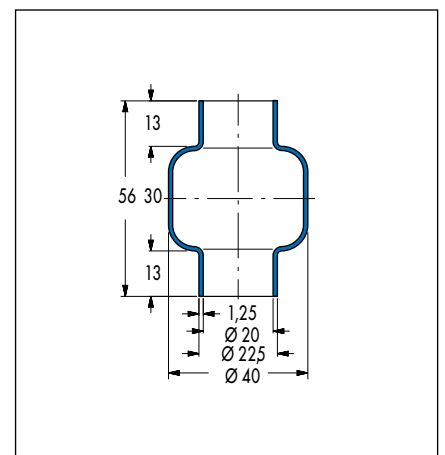
V6-74, Article No. 29229



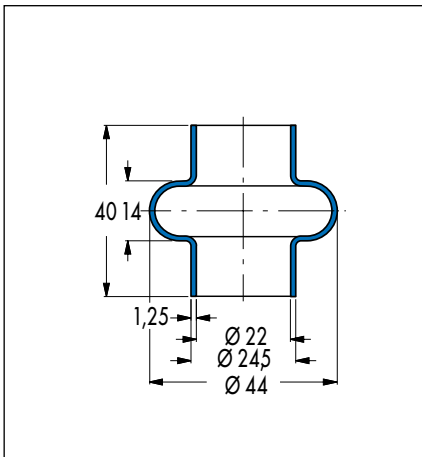
V6-922, Article No. 400892



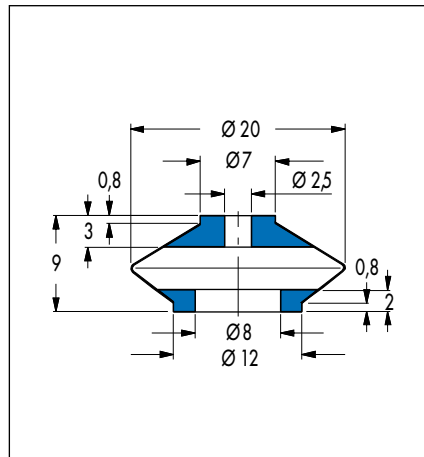
V6-890, Article No. 400880



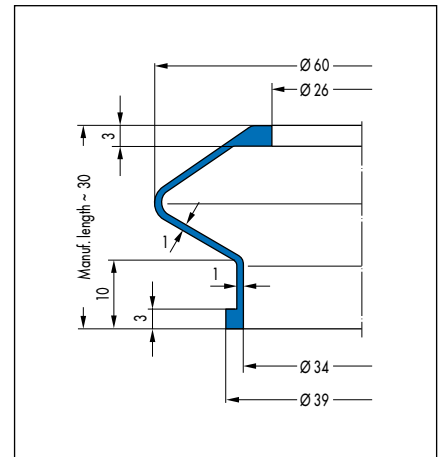
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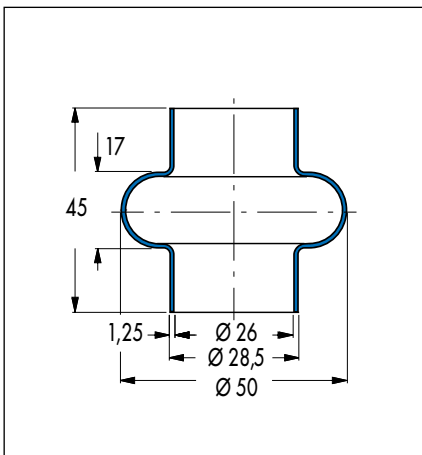
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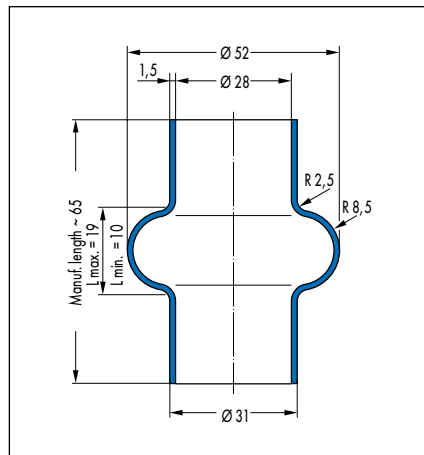
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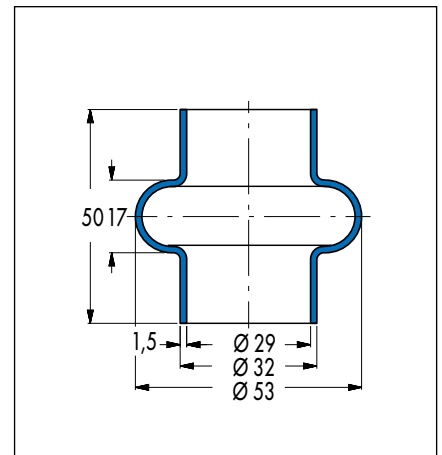
V6-1144, Article No. 372488



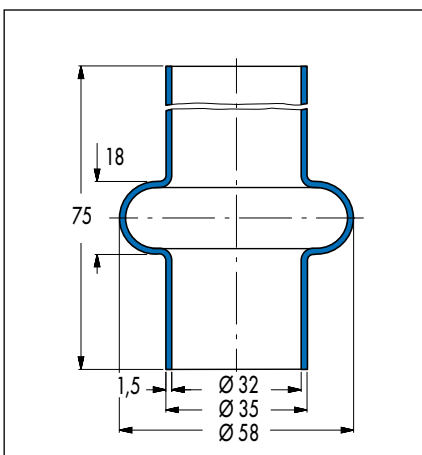
V6-37, Article No. 438518



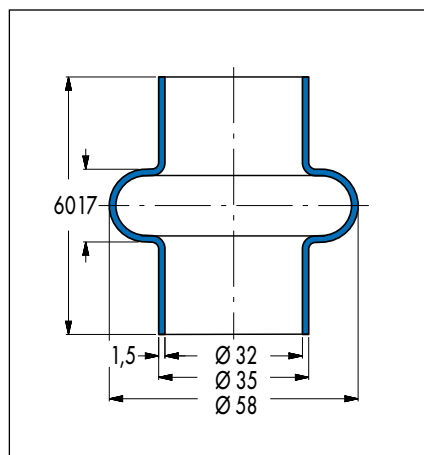
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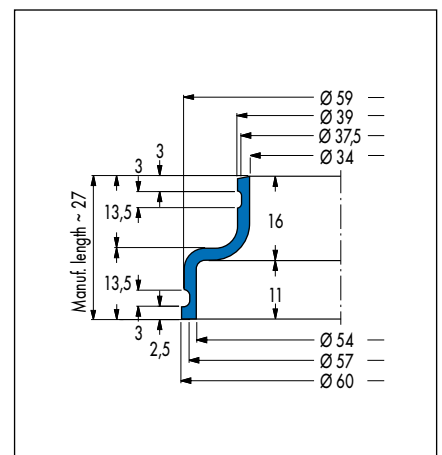
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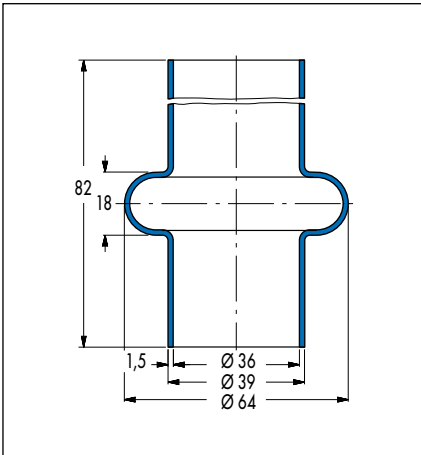
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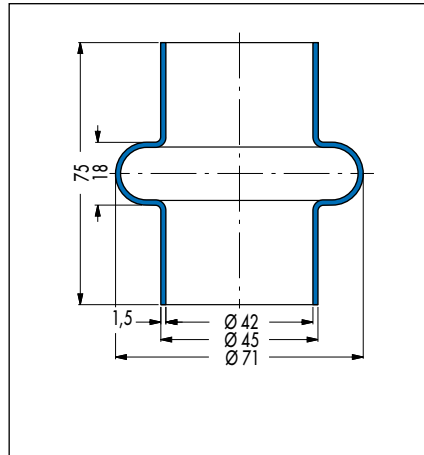
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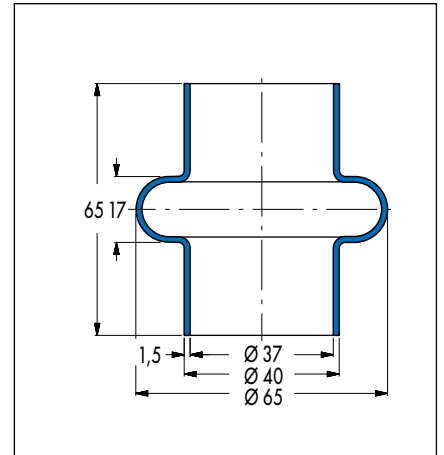
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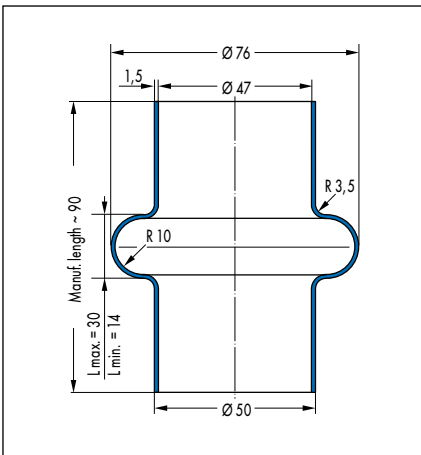
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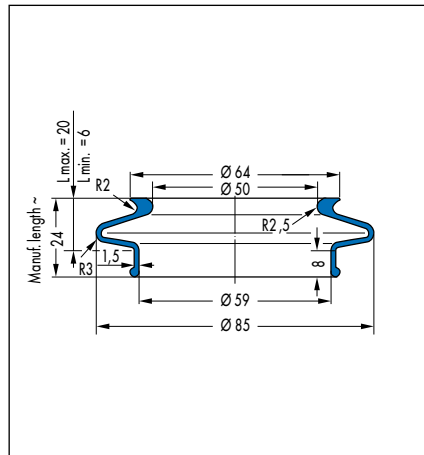
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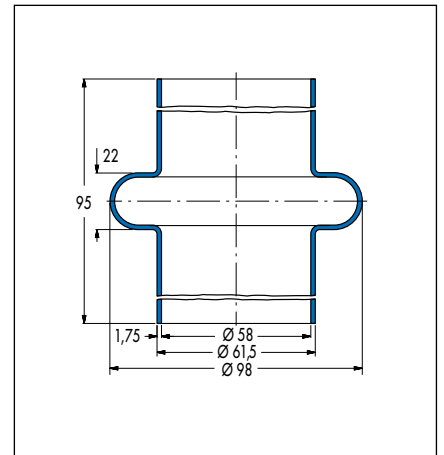
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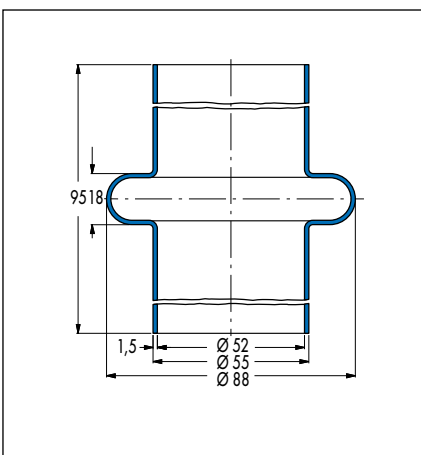
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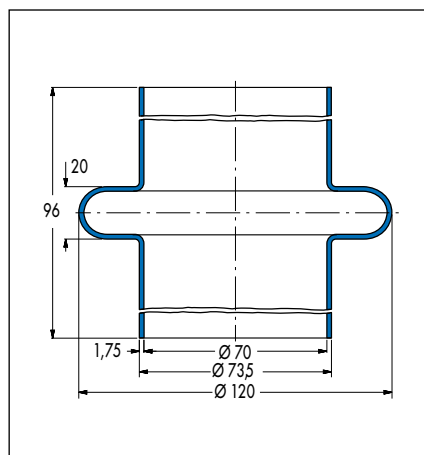
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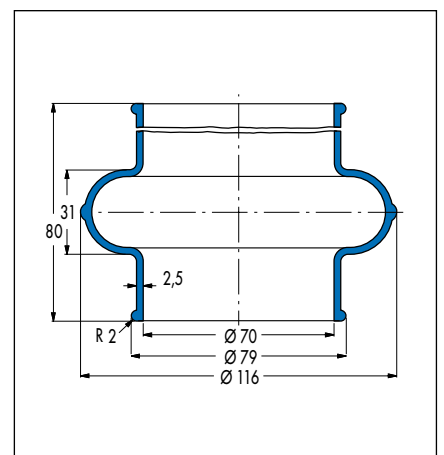
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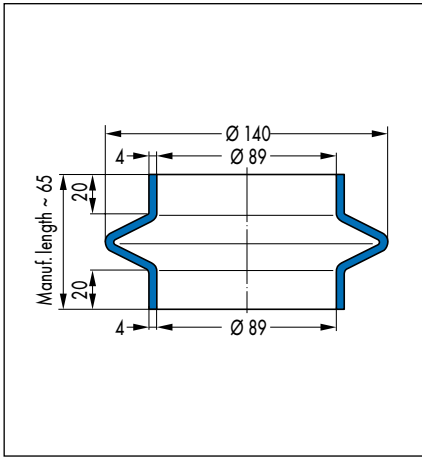
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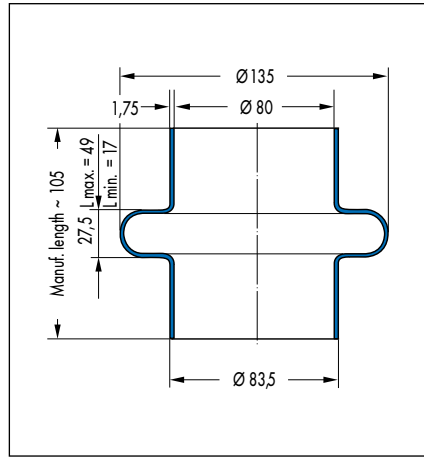
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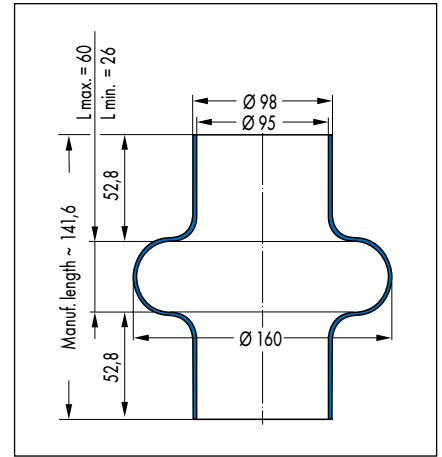
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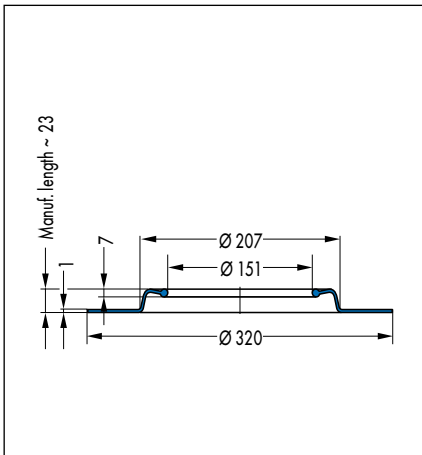
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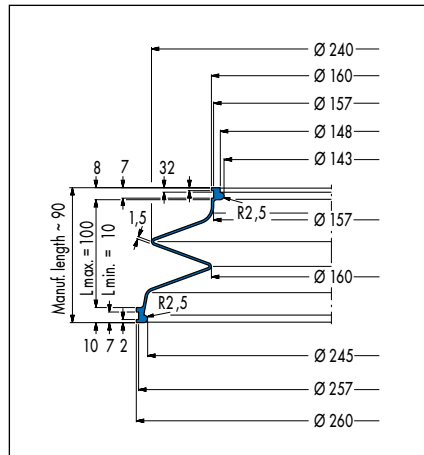
V6-103, Article No. 454461



V6-279, Article No. 400681



V6-21, Article No. 37894



V6-978, Article No. 26945

Multiple Convolution Bellows

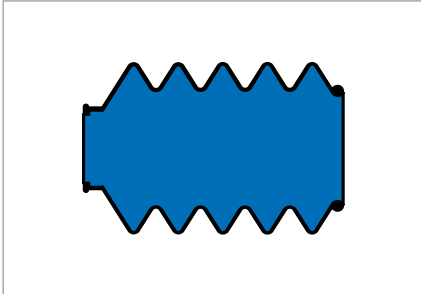


Fig. 1 Multiple Convolution Bellows

Product description

Bellows are protective elements comprising a moving section and two connection pieces for fastening. They protect axially moving rods and parts of machines against soiling, water spray, dust or the effects of the weather. Depending on their design, they can accommodate movements perpendicular to the axis or a combination of movements (e.g. gear levers).

Bellows are able to follow axial movements within their limits L_{min} (compressed length) and L_{max} (extended length). Special loads (non-axial movements, pressure loads etc.) affect the maximum working stroke and the flexibility → Technical Manual.

Product advantages

Depending on the application, bellows and connecting areas can have very different geometrical shapes and dimensions. More than 500 different bellows geometries are available to the user quickly and cost-effectively.

Application

There are many application cases for bellows, for example, the functional sealing of ball joints, connection of two tube ends, push rods (e.g. in hydraulic and pneumatic applications), axle bearings.

Material

Material	CR	NBR
Hardness	42/50 Shore A	approx. 45 Shore A

Other materials on enquiry (after clarification of the material-job specification and the type).

Operating conditions

Material	CR	NBR
Temperature	-40 ... +100 °C	-30 ... +100 °C
Dynamic loading	very good	sufficient
Mineral oil and grease resistance	sufficient	good

The values listed in the table are recommended values.

→ Technical Manual.

Fitting & installation

The moving section of the bellows must not come into contact with any sharp edges. It is imperative that continuous chaffing against moving parts of the machine is avoided.

Bellows are not able to absorb major excess pressure or vacuum, as otherwise excessive deformation would occur. To prevent a pressure build-up inside bellows on axial movements, a sufficient ventilation must be provided. Torsional loading of the bellows should be avoided.

For further information on installation: → Technical Manual.

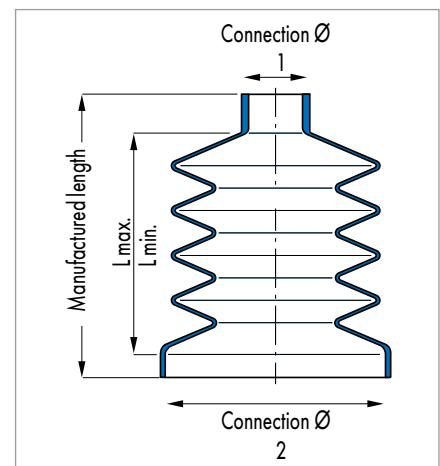


Fig. 2 Drawing with dimensions multiple convolution bellows

Article list Multiple Convolution Bellows, ordered by Connection Ø 1

No. of convolutions	Manufactured length	Length max.	Length min.	Material thickness	Connection Ø 1	Connection Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
2	10,0	8,0	3,0	0,30	3,0	6,0	4,5	7,60	V6-00748	42 CR 764	29944	43	●
2	13,0	10,0	4,0	0,50	3,0	9,5	7,8	13,50	V6-00618	42 CR 764	29785	43	●
3	100,0	160,0	25,0	1,50	3,0	62,0	72,0	99,00	V6-00694	50 CR 879	466184	43	○
3	10,0	12,0	4,0	0,30	3,5	5,0	4,2	7,50	V6-01109	50 CR 879	5417	43	○
8	80,0	85,0	20,0	1,00	4,0	8,0	12,5	24,00	V6-00249	42 CR 764	438531	43	●
2	18,0	20,0	6,0	0,50	4,0	16,0	11,0	22,00	V6-01231	42 CR 764	8934	43	●
3	35,0	35,0	5,5	0,50	4,0	18,0	10,5	22,00	V6-01008	42 CR 764	14405	43	●
2	20,0	25,0	4,0	0,60	4,0	18,0	14,0	25,00	V6-00949	42 CR 764	435	43	●
4	58,0	40,0	10,0	1,00	4,5	14,0	12,0	28,00	V6-01281	42 CR 764	389744	43	○
3	30,0	30,0	8,0	0,80	4,5	14,5	7,0	18,00	V6-00055	42 CR 764	29209	44	●
15	91,1	102,0	41,0	0,80	5,0	5,0	6,5	15,00	V6-20138	50 NBR 842	420271	44	○
3	40,0	45,0	12,0	1,00	5,0	12,0	12,0	28,00	V6-00322	42 CR 764	439472	44	○
4	45,0	50,0	15,0	1,00	5,0	12,0	12,0	24,00	V6-00258	42 CR 764	438028	44	●
3	12,0	15,0	5,0	0,40	5,0	15,0	16,5	20,50	V6-01207	42 CR 764	452568	44	○
3	14,5	20,0	5,0	0,60	5,0	18,0	16,0	24,00	V6-01194	45 NBR 670	440258	44	●
3	45,0	40,0	12,0	1,00	5,0	19,5	12,0	24,00	V6-00358	42 CR 764	435291	44	●
18	150,0	170,0	48,0	1,00	5,0	24,0	15,0	24,00	V6-00931	42 CR 764	440334	44	○
3	40,0	40,0	5,5	0,50	5,0	26,0	13,0	33,00	V6-01009	50 CR 879	456494	44	○
2	22,0	26,0	5,0	0,60	5,0	26,0	20,0	33,20	V6-00948	42 CR 764	434	45	●
2	22,0	26,0	5,0	0,60	5,0	26,0	20,0	33,20	V6-00948	50 CR 879	420983	45	●
4	28,0	34,0	14,0	0,70	5,0	35,5	10,0	35,50	V6-01526	42 CR 764	400999	45	○
9	86,0	75,0	26,0	1,00	5,4	17,0	12,5	32,00	V6-01466	57 CR 868	457512	45	○
2	20,0	16,0	5,0	0,60	5,5	10,0	8,0	16,00	V6-20104	50 NBR 842	400549	45	○
4	21,2	33,0	7,0	0,50	5,8	21,2	13,0	28,35	V6-20134	50 CR 879	453832	45	○
2	17,0	15,0	5,0	0,80	6,0	9,5	10,0	15,00	V6-00752	45 NBR 670	428864	45	●
7	40,0	50,0	15,0	0,50	6,0	10,0	11,0	17,00	V6-00169	42 CR 764	438526	45	●
8	75,0	95,0	28,0	1,00	6,0	15,0	12,5	24,00	V6-00126	42 CR 764	435526	45	●
7	70,0	90,0	20,0	1,00	6,0	20,0	13,0	36,00	V6-00167	42 CR 764	438520	45	●
2	26,0	30,0	20,0	0,50	6,0	32,0	21,0	40,00	V6-01104	42 CR 764	434028	46	●
3	25,0	35,0	5,0	0,50	7,0	10,8	12,0	25,00	V6-00471	50 CR 879	507077	46	○
3	40,0	50,0	8,0	0,50	7,0	10,8	13,5	30,00	V6-00525	45 NBR 670	438219	46	○
3	40,0	50,0	8,0	0,50	7,0	10,8	13,5	30,00	V6-00525	42 CR 764	438221	46	○
9	120,0	130,0	35,0	1,00	7,0	16,0	10,0	24,00	V6-00269	50 CR 879	438534	46	●
4	70,0	95,0	20,0	1,00	7,0	20,0	25,0	50,00	V6-01150	50 CR 879	142815	46	○
2	33,0	35,0	10,0	0,80	7,0	25,0	18,0	34,00	V6-00875	42 CR 764	5530	46	●
3	50,0	50,0	15,0	1,50	7,0	30,0	15,0	37,00	V6-00795	42 CR 764	451753	46	○
2	33,0	30,0	5,0	0,80	7,0	32,0	9,0	32,00	V6-01032	50 CR 879	402606	46	○
4	60,0	60,0	6,5	0,50	7,0	42,0	18,0	38,00	V6-01011	42 CR 764	400903	-	○
8	103,0	110,0	35,0	1,00	7,0	57,0	19,0	66,00	V6-20122	42 CR 764	452810	47	○
5	65,0	70,0	15,0	1,00	7,0	57,0	20,0	66,00	V6-00600	50 CR 879	438545	47	●
2	20,0	16,0	10,0	0,50	7,5	13,0	14,0	18,00	V6-01408	42 CR 764	400989	47	○
3	40,0	35,0	12,0	1,00	8,0	20,0	13,5	27,50	V6-00307	42 CR 764	29502	47	●
3	20,0	25,0	10,0	0,50	8,0	20,0	21,5	26,50	V6-01052	42 CR 764	81226	47	○
6	59,0	65,0	25,0	2,00	8,0	25,0	14,5	25,00	V6-00257	42 CR 764	439218	47	○
2	33,0	36,0	8,0	0,70	8,0	36,0	23,0	43,00	V6-00947	50 CR 879	436933	47	●
4	70,0	77,0	6,5	0,50	8,0	43,0	22,0	49,00	V6-01012	42 CR 764	453786	47	●
2	45,0	45,0	5,0	1,25	8,5	31,0	18,0	35,00	V6-01138	42 CR 764	428843	47	●

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No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Convec- tion Ø 1	Convec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
2	46,0	45,0	15,0	1,50	8,5	34,0	17,0	40,00	V6-00802	50 CR 879	400840	48	○
10	85,0	95,0	25,0	1,00	9,0	9,0	10,0	19,00	V6-00338	42 CR 764	439491	48	●
18	145,0	165,0	55,0	1,00	9,0	9,0	10,0	19,00	V6-00337	50 CR 879	439492	48	●
2	24,0	16,0	6,0	0,80	9,0	12,0	11,0	18,00	V6-00336	42 CR 764	439483	48	●
5	70,0	65,0	17,0	1,00	9,0	18,0	12,0	24,00	V6-00225	42 CR 764	428314	48	●
4	45,0	47,0	17,0	50,00	9,0	19,0	16,0	27,00	V6-00724	50 CR 879	438552	48	●
2	40,0	29,0	10,0	1,00	9,0	23,0	14,0	43,00	V6-00015	42 CR 764	439217	48	●
6	55,0	70,0	18,0	1,00	9,0	27,0	19,0	33,50	V6-00261	50 CR 879	439215	48	○
2	31,0	35,0	10,0	0,80	9,0	31,0	16,5	31,00	V6-00914	50 CR 879	400890	48	○
2	56,0	60,0	7,0	0,70	9,0	38,0	22,0	47,00	V6-00996	50 CR 879	457508	49	○
13	95,0	185,0	50,0	1,00	9,0	40,0	9,0	40,00	V6-00898	42 CR 764	400886	49	○
2	38,0	35,0	7,0	1,00	9,0	44,0	25,0	56,00	V6-00800	42 CR 764	435516	49	●
4	60,0	55,0	20,0	1,00	9,0	70,0	22,0	66,50	V6-00729	42 CR 764	432997	49	●
3	35,0	30,0	5,0	1,00	9,5	26,0	12,0	26,50	V6-00665	42 CR 764	426800	49	●
3	27,0	32,0	5,0	0,75	9,5	32,0	14,5	32,00	V6-00107	50 CR 879	439216	49	○
4	80,0	100,0	12,0	1,20	9,5	68,0	27,5	92,00	V6-00764	50 CR 879	380287	49	○
4	50,0	35,0	10,0	1,00	10,0	16,0	16,0	24,00	V6-01745	50 CR 879	436919	49	○
2	18,0	23,0	9,0	1,00	10,0	16,5	25,0	32,00	V6-00438	53 CR 858	29634	49	●
6	65,0	65,0	30,0	1,50	10,0	25,0	15,0	27,00	V6-00052	42 CR 764	432593	50	●
3	30,0	35,0	12,0	0,70	10,0	25,0	25,5	33,00	V6-00554	42 CR 764	438537	50	●
4	33,0	35,0	10,0	0,60	10,0	25,0	26,5	33,00	V6-00979	42 CR 764	5810	50	●
4	35,0	35,0	14,0	0,70	10,0	31,0	31,0	40,00	V6-00555	42 CR 764	438572	50	●
2	45,0	46,0	13,0	0,80	10,0	48,0	30,0	56,00	V6-00945	42 CR 764	413	50	○
3	78,0	80,0	15,0	2,00	10,0	52,0	15,5	49,50	V6-01348	50 CR 879	429741	50	○
3	78,0	80,0	15,0	2,00	10,0	52,0	15,5	49,50	V6-01348	42 CR 764	430248	50	●
7	160,0	195,0	40,0	2,00	10,0	56,0	50,0	80,00	V6-00741	53 CR 858	456488	50	○
3	100,0	100,0	15,0	1,50	10,0	127,0	24,0	101,00	V6-00793	42 CR 764	122760	50	○
5	81,0	70,0	20,0	1,00	11,0	26,5	22,0	33,50	V6-01119	42 CR 764	400940	50	○
2	46,0	35,0	12,0	1,50	11,0	31,0	17,0	31,00	V6-00833	50 CR 879	400864	51	○
4	92,0	80,0	20,0	1,50	11,0	35,0	27,0	44,50	V6-00829	50 CR 879	507862	51	○
2	60,0	45,0	15,0	1,50	11,0	54,0	21,0	50,00	V6-00111	42 CR 764	434031	51	●
2	54,0	45,0	15,0	1,50	11,0	54,0	23,0	50,00	V6-00320	42 CR 764	440257	51	●
6	134,0	170,0	40,0	1,50	11,0	102,0	43,0	119,50	V6-01218	50 CR 879	454250	51	○
8	150,0	145,0	35,0	1,00	11,5	19,0	23,4	41,00	V6-00836	50 CR 879	400869	51	○
6	55,0	80,0	25,0	1,00	12,0	15,0	15,0	27,00	V6-00158	42 CR 764	430845	51	●
2	18,0	18,0	7,0	1,00	12,0	22,0	16,0	31,00	V6-01724	60 NBR 692	357997	51	○
3	27,0	24,0	12,0	1,50	12,0	22,0	17,0	28,00	V6-01725	60 NBR 692	370363	51	○
2	32,0	26,0	8,0	0,80	12,0	23,0	15,5	30,00	V6-01585	50 CR 879	365460	52	○
2	54,0	40,0	10,0	1,50	12,0	24,0	18,0	33,00	V6-00288	50 CR 879	452930	52	●
6	85,0	100,0	25,0	1,00	12,0	25,0	20,0	38,00	V6-00650	42 CR 764	428275	52	●
4	82,0	75,0	20,0	1,50	12,0	26,0	23,0	41,00	V6-00022	42 CR 764	29192	52	●
2	55,0	50,0	12,0	1,60	12,0	28,0	20,0	39,00	V6-00289	42 CR 764	439474	52	●
3	55,0	50,0	12,0	1,00	12,0	34,0	12,0	30,00	V6-00716	42 CR 764	427272	52	●
5	45,0	60,0	18,0	1,50	12,0	36,0	35,0	46,00	V6-00880	50 CR 879	438558	52	●
5	45,0	60,0	18,0	0,70	12,0	36,0	36,5	46,00	V6-00580	50 CR 879	66382	52	●
5	45,0	60,0	18,0	0,70	12,0	36,0	36,5	46,00	V6-00580	42 CR 764	81222	52	○
2	70,0	65,0	15,0	1,75	12,0	42,0	31,0	54,00	V6-00423	42 CR 764	435215	52	●
5	57,0	65,0	18,0	1,00	12,0	42,0	41,0	53,00	V6-00581	42 CR 764	438541	53	●

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No. of convo-lutions	Manu-factured length	Length max.	Length min.	Material thick-ness	Connec-tion Ø 1	Connec-tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
5	57,0	65,0	18,0	1,00	12,0	42,0	41,0	53,00	V6-00581	45 NBR 670	438542	53	●
5	80,0	95,0	15,0	1,00	12,0	48,0	20,0	60,00	V6-00625	50 CR 879	438216	53	○
4	90,0	100,0	26,0	1,20	12,0	48,0	41,0	60,00	V6-00859	42 CR 764	31869	53	○
3	75,0	80,0	15,0	1,00	12,0	54,0	17,5	54,00	V6-00631	42 CR 764	426386	53	●
4	100,0	115,0	13,0	1,00	12,0	63,0	38,0	4,50	V6-01014	42 CR 764	454262	53	●
7	140,0	155,0	25,0	1,50	12,5	12,5	95,0	120,00	V6-01261	50 CR 879	454481	53	●
2	53,0	50,0	10,0	1,50	12,5	32,0	22,5	39,00	V6-00816	42 CR 764	434459	53	●
5	15,0	25,0	6,0	0,50	13,0	13,0	18,0	24,00	V6-00989	50 CR 879	117054	53	○
20	160,0	180,0	60,0	1,00	13,0	15,0	15,5	24,00	V6-00930	42 CR 764	400893	53	○
3	65,0	65,0	18,0	1,50	13,0	30,0	19,0	38,00	V6-00505	50 CR 879	453725	54	○
3	45,0	50,0	8,0	0,80	13,5	25,5	21,0	44,00	V6-00616	50 CR 879	400781	54	●
12	155,0	165,0	45,0	1,00	14,0	14,0	18,0	30,00	V6-00237	42 CR 764	427261	54	●
4	57,0	65,0	25,0	1,25	14,0	24,0	25,5	40,00	V6-00439	50 CR 879	29637	54	○
8	74,0	95,0	16,0	0,60	14,0	24,0	26,0	38,00	V6-00905	42 CR 764	428836	54	●
8	74,0	95,0	16,0	0,60	14,0	24,0	26,0	38,00	V6-00905	42 CR 764	437671	54	○
3	30,0	40,0	8,0	1,00	14,0	27,0	42,0	52,00	V6-00644	42 CR 764	400787	54	○
3	55,0	55,0	12,0	1,00	14,0	48,0	20,0	66,00	V6-00585	50 CR 879	436695	54	●
3	55,0	55,0	12,0	1,00	14,0	48,0	20,0	66,00	V6-00585	42 CR 764	436697	54	●
4	91,0	94,0	20,0	1,50	14,0	70,0	28,0	100,00	V6-01358	50 CR 879	451650	54	●
2	60,0	45,0	12,0	0,80	14,5	27,0	18,5	38,00	V6-00189	42 CR 764	440390	54	○
8	100,0	105,0	17,0	0,60	15,0	23,0	18,0	34,00	V6-01450	42 CR 764	452567	55	○
5	75,0	85,0	22,0	1,50	15,0	26,0	31,0	49,00	V6-00488	42 CR 764	426793	55	●
6	80,0	80,0	20,0	1,00	15,0	30,0	26,0	40,00	V6-00156	42 CR 764	436158	55	●
4	33,0	45,0	15,0	1,00	15,0	30,0	28,0	52,00	V6-00277	42 CR 764	435217	55	●
5	55,0	72,0	18,0	0,90	15,0	46,0	50,0	65,00	V6-01538	50 CR 879	434075	55	○
4	60,0	75,0	15,0	1,00	15,0	47,0	46,0	65,00	V6-00582	42 CR 764	432918	55	●
2	35,0	40,0	10,0	0,70	15,0	52,0	21,0	35,00	V6-00366	42 CR 764	427266	55	●
5	86,0	88,0	15,0	1,00	15,0	76,0	26,5	76,00	V6-00116	50 CR 879	439181	55	○
5	86,0	88,0	15,0	1,00	15,0	76,0	26,5	76,00	V6-00116	42 CR 764	439182	55	○
4	85,0	90,0	20,0	1,50	15,0	92,0	34,0	108,00	V6-00787	42 CR 764	29962	55	○
5	80,0	80,0	15,0	1,00	15,5	30,0	30,0	45,00	V6-01019	42 CR 764	438569	56	●
15	119,0	119,0	56,0	1,00	16,0	16,0	16,0	26,00	V6-01353	50 CR 879	82687	56	●
18	150,0	195,0	40,0	1,00	16,0	16,0	24,0	35,00	V6-00293	42 CR 764	434026	56	●
17	240,0	320,0	65,0	1,00	16,0	20,0	22,0	43,00	V6-00586	53 CR 858	431276	56	●
13	95,0	150,0	50,0	1,00	16,0	20,0	25,0	40,00	V6-00013	42 CR 764	438211	56	●
12	155,0	180,0	45,0	1,00	16,0	35,0	20,0	35,00	V6-00639	42 CR 764	400785	56	○
2	60,0	41,0	18,0	1,50	16,0	37,0	26,5	50,00	V6-00282	42 CR 764	440305	56	○
12	190,0	240,0	65,0	1,30	16,0	37,0	30,0	54,00	V6-00404	42 CR 764	428849	56	●
5	120,0	160,0	25,0	1,50	16,0	54,0	30,0	86,00	V6-00610	42 CR 764	426375	56	●
3	58,0	40,0	10,0	1,00	17,0	30,0	24,0	34,00	V6-00076	42 CR 764	433980	57	●
2	63,0	55,0	15,0	1,50	17,0	40,0	32,0	55,00	V6-00221	42 CR 764	428830	57	●
5	85,0	90,0	15,0	1,00	17,0	120,0	40,0	150,00	V6-01141	50 CR 879	454243	57	○
6	100,0	95,0	20,0	1,00	18,0	25,0	25,0	42,00	V6-00713	42 CR 764	431525	57	●
2	23,0	17,0	8,0	1,20	18,0	29,0	25,0	40,00	V6-01556	50 CR 879	432591	57	○
7	160,0	200,0	32,0	1,50	18,0	34,0	34,0	66,00	V6-00503	50 CR 879	440391	57	○
7	160,0	200,0	32,0	1,50	18,0	34,0	34,0	66,00	V6-00503	42 CR 764	440392	57	●
6	165,0	200,0	30,0	1,50	18,0	34,0	40,0	77,00	V6-00531	50 CR 879	453728	57	○
4	84,0	90,0	12,0	1,00	18,0	39,0	28,0	45,50	V6-00347	50 CR 879	501252	57	○

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No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
4	100,0	100,0	20,0	1,50	18,0	39,0	31,0	54,00	V6-00828	42 CR 764	11520	57	○
5	120,0	135,0	18,0	1,50	18,0	55,0	49,0	82,00	V6-00075	42 CR 764	439195	58	●
6	140,0	160,0	28,0	1,50	18,0	55,0	47,0	80,00	V6-00275	53 CR 858	451293	58	○
4	95,0	120,0	20,0	1,00	18,0	61,0	40,0	70,00	V6-00313	42 CR 764	440315	58	●
4	85,0	105,0	18,0	1,50	18,0	70,0	28,0	100,00	V6-00791	42 CR 764	426798	58	●
2	68,0	76,0	33,0	1,00	18,0	88,0	61,0	98,00	V6-00942	42 CR 764	450411	58	○
5	120,0	120,0	45,0	3,00	18,0	120,0	32,0	132,00	V6-00575	42 CR 764	29752	58	●
2	74,0	65,0	10,0	1,50	18,5	47,0	39,5	61,50	V6-00203	42 CR 764	431289	58	●
4	90,0	100,0	28,0	1,75	18,5	61,5	50,0	70,00	V6-00843	50 CR 879	432191	58	○
2	23,0	25,0	14,0	1,00	19,0	19,0	19,0	27,50	V6-00383	42 CR 764	430846	58	●
8	115,0	150,0	30,0	1,00	19,0	19,0	28,0	48,00	V6-00726	42 CR 764	426387	59	●
8	115,0	150,0	30,0	1,00	19,0	19,0	28,0	48,00	V6-00726	45 NBR 670	429078	59	●
15	140,0	150,0	35,0	1,00	19,0	32,0	35,0	46,00	V6-00679	42 CR 764	426799	59	●
4	70,0	95,0	15,0	1,00	19,0	60,0	56,0	80,00	V6-00565	42 CR 764	434030	59	●
4	70,0	90,0	13,0	1,00	19,0	65,0	25,0	65,00	V6-00714	42 CR 764	427269	59	●
4	70,0	90,0	13,0	1,00	19,0	65,0	25,0	90,00	V6-00714	45 NBR 670	427271	59	○
2	78,0	72,0	34,0	2,50	19,0	67,0	46,0	90,00	V6-20199	60 CR 87258	501112	59	○
3	80,0	80,0	10,0	1,50	19,0	82,0	45,0	98,00	V6-00955	42 CR 764	429670	59	●
26	290,0	340,0	130,0	1,80	19,5	19,5	23,0	37,00	V6-00915	50 CR 879	440260	59	○
2	48,0	55,0	20,0	1,50	19,5	44,5	32,5	55,00	V6-00130	42 CR 764	437298	59	●
4	35,0	40,0	8,0	0,60	20,0	20,0	19,0	29,00	V6-00722	42 CR 764	336382	59	●
15	120,0	160,0	40,0	1,00	20,0	20,0	24,0	35,00	V6-00236	42 CR 764	426319	60	●
2	50,0	50,0	10,0	1,50	20,0	30,0	46,0	60,00	V6-00274	45 NBR 670	439432	60	○
2	42,0	38,0	10,0	1,00	20,0	34,0	25,0	40,00	V6-01390	42 CR 764	400988	60	○
7	120,0	140,0	38,0	1,00	20,0	35,0	47,0	70,00	V6-00218	53 CR 858	430858	60	●
4	80,0	80,0	30,0	1,50	20,0	40,0	20,0	54,00	V6-01544	50 CR 879	301805	60	●
8	170,0	210,0	32,0	1,50	20,0	55,0	50,0	83,00	V6-00434	42 CR 764	438213	60	○
8	185,0	225,0	30,0	1,50	20,0	55,0	50,0	83,00	V6-00861	42 CR 764	429667	60	●
8	185,0	225,0	30,0	1,50	20,0	55,0	50,0	83,00	V6-00861	50 CR 879	429668	60	●
5	60,0	70,0	30,0	1,00	20,5	20,5	20,5	35,50	V6-00302	42 CR 764	440318	60	●
6	130,0	125,0	35,0	2,00	21,0	35,0	32,0	54,00	V6-00792	53 CR 858	430861	60	●
6	130,0	130,0	45,0	2,00	21,0	35,0	33,0	58,00	V6-00195	42 CR 764	436916	60	●
6	135,0	120,0	60,0	2,00	21,0	35,0	35,0	54,00	V6-00305	42 CR 764	426323	61	○
6	175,0	210,0	40,0	1,50	21,0	46,0	50,0	104,00	V6-00365	42 CR 764	431649	61	●
3	45,0	55,0	15,0	1,00	21,5	37,0	30,0	44,00	V6-00570	42 CR 764	436744	61	●
4	56,0	70,0	18,0	1,50	22,0	22,0	22,5	40,00	V6-00227	42 CR 764	439167	61	●
11	145,0	160,0	40,0	1,00	22,0	31,0	35,5	50,00	V6-00273	42 CR 764	426370	61	●
6	150,0	180,0	30,0	1,50	22,0	55,0	50,0	83,00	V6-00095	50 CR 879	438519	61	●
6	155,0	180,0	22,0	1,50	22,0	55,0	50,0	83,00	V6-00490	42 CR 764	457774	61	○
6	160,0	175,0	22,0	1,00	22,0	82,0	60,0	115,00	V6-00212	42 CR 764	439178	61	●
6	48,0	60,0	15,0	1,00	23,0	23,0	29,0	40,00	V6-00773	42 CR 764	435481	62	●
5	80,0	80,0	23,0	1,50	23,0	26,0	25,0	42,00	V6-00234	42 CR 764	440348	62	●
11	99,0	130,0	33,0	0,80	24,0	24,0	26,0	40,00	V6-20044	50 CR 879	384441	62	●
3	75,0	80,0	15,0	1,50	24,0	50,0	46,0	80,00	V6-00826	50 CR 879	456489	62	○
2	50,0	40,0	12,0	1,50	24,0	54,0	40,5	65,00	V6-00851	50 CR 879	457841	62	○
15	310,0	370,0	90,0	2,00	24,0	63,0	50,0	80,00	V6-00738	42 CR 764	60037192	62	○
7	160,0	185,0	32,0	1,50	24,0	70,0	55,0	95,00	V6-00069	42 CR 764	432599	62	●
7	160,0	185,0	32,0	1,50	24,0	70,0	55,0	95,00	V6-00069	53 CR 858	432600	62	○

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No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
3	100,0	105,0	5,0	1,00	24,0	72,0	52,0	120,00	V6-00604	42 CR 764	436936	62	●
8	190,0	220,0	40,0	1,50	24,0	94,0	40,0	114,00	V6-00530	42 CR 764	427267	62	●
7	120,0	130,0	30,0	1,00	25,0	25,0	34,0	52,00	V6-00416	42 CR 764	434015	63	●
4	35,0	40,0	15,0	0,60	25,0	25,0	37,0	46,00	V6-00462	42 CR 764	440279	63	●
4	35,0	40,0	15,0	0,60	25,0	25,0	37,0	46,00	V6-00462	45 NBR 670	440283	63	●
15	285,0	350,0	65,0	1,50	25,0	43,0	47,0	72,50	V6-00059	42 CR 764	29213	63	●
2	41,0	34,0	10,0	1,00	25,0	55,0	40,0	66,00	V6-00997	50 CR 879	451314	63	○
5	90,0	115,0	18,0	1,00	25,0	75,0	72,0	95,00	V6-00583	50 CR 879	457502	63	○
8	170,0	220,0	45,0	2,00	25,0	75,0	80,0	108,00	V6-00251	42 CR 764	435518	63	●
10	130,0	160,0	30,0	1,00	25,5	25,5	25,5	45,00	V6-00966	50 CR 879	350974	63	○
13	114,0	130,0	45,0	1,00	26,0	26,0	26,0	40,00	V6-00200	42 CR 764	438022	63	○
3	23,0	30,0	8,0	1,00	26,0	26,0	38,0	48,00	V6-00127	42 CR 764	432585	63	●
5	55,0	60,0	18,0	1,00	26,0	30,0	33,0	45,00	V6-00592	42 CR 764	426382	64	●
3	30,0	28,0	6,0	0,70	26,0	32,0	32,0	41,00	V6-00835	42 CR 764	452564	64	○
12	170,0	190,0	45,0	1,00	26,0	34,0	40,0	60,00	V6-00292	42 CR 764	436699	64	●
15	225,0	230,0	55,0	1,00	26,0	34,0	40,0	60,00	V6-00401	50 CR 879	440291	64	○
5	154,0	195,0	18,0	1,50	26,0	42,0	55,0	92,00	V6-00079	42 CR 764	431867	64	●
4	86,0	90,0	22,0	2,00	26,0	96,0	39,0	108,00	V6-01755	50 CR 879	451384	64	●
12	410,0	520,0	85,0	1,40	26,0	112,0	98,0	145,00	V6-01156	42 CR 764	454245	64	●
14	200,0	240,0	90,0	1,80	26,6	36,0	37,0	60,00	V6-00324	42 CR 764	440316	64	○
7	70,0	80,0	18,0	1,00	27,0	27,0	32,0	45,00	V6-00290	42 CR 764	432590	64	●
10	140,0	180,0	40,0	1,00	27,0	36,0	20,0	42,00	V6-00259	42 CR 764	439441	65	●
4	85,0	75,0	15,0	1,50	27,0	44,0	40,0	60,00	V6-00363	53 CR 858	432594	65	●
7	134,0	160,0	32,0	1,50	27,0	49,0	50,0	90,00	V6-00106	45 NBR 670	430856	65	●
7	134,0	160,0	32,0	1,50	27,0	49,0	50,0	90,00	V6-00106	42 CR 764	430857	65	●
2	60,0	60,0	8,0	2,00	27,0	52,0	45,0	90,00	V6-01055	42 CR 764	457773	65	●
4	75,0	70,0	18,0	1,50	27,0	54,0	30,0	60,00	V6-00857	42 CR 764	434023	65	●
4	115,0	98,0	28,0	2,00	27,5	95,5	32,0	115,00	V6-01723	65 CR 119905	438571	65	○
9	95,0	120,0	35,0	1,00	28,0	28,0	33,0	49,00	V6-00296	42 CR 764	426795	65	●
6	45,0	60,0	12,0	0,60	28,0	28,0	34,0	45,00	V6-00640	42 CR 764	427268	65	●
5	100,0	115,0	28,0	2,00	28,0	29,0	35,0	60,00	V6-00594	42 CR 764	429662	65	●
11	200,0	235,0	65,0	2,00	28,0	39,0	41,0	62,00	V6-00755	50 CR 879	451312	66	○
17	270,0	344,0	124,0	2,00	28,0	39,0	41,0	62,00	V6-00201	42 CR 764	454462	66	●
14	200,0	265,0	85,0	2,00	28,5	37,5	42,0	62,00	V6-00325	42 CR 764	426794	66	●
4	120,0	90,0	30,0	2,50	28,5	90,0	36,5	140,00	V6-00475	50 CR 879	400708	66	○
2	83,0	65,0	20,0	2,00	29,0	67,0	35,0	84,00	V6-01023	42 CR 764	454488	66	●
3	135,0	115,0	50,0	2,50	29,0	83,0	35,5	87,00	V6-00384	42 CR 764	440317	66	●
4	92,0	50,0	18,0	2,00	29,0	111,0	34,0	123,00	V6-01754	50 CR 879	451337	66	●
20	430,0	520,0	80,0	1,50	30,0	30,0	35,0	65,00	V6-00589	53 CR 858	15267	66	●
11	98,0	105,0	20,0	0,60	30,0	30,0	36,0	48,00	V6-00904	50 CR 879	375419	66	●
4	58,0	60,0	22,0	1,50	30,0	30,0	42,0	55,00	V6-00422	42 CR 764	428310	67	●
11	130,0	145,0	30,0	1,00	30,0	37,0	39,0	54,00	V6-00824	50 CR 879	368141	67	○
3	25,0	35,0	4,0	0,50	30,0	48,0	30,0	48,00	V6-00720	50 CR 879	400804	67	○
9	275,0	350,0	55,0	2,00	30,0	56,0	50,0	105,00	V6-00456	42 CR 764	29663	67	●
3	85,0	90,0	15,0	1,50	30,0	60,0	56,0	90,00	V6-00805	50 CR 879	365839	67	○
4	100,0	105,0	18,0	1,50	30,0	60,0	56,0	90,00	V6-00827	42 CR 764	355702	67	○
5	93,0	88,0	15,0	1,00	30,0	63,0	40,0	85,00	V6-01329	42 CR 764	60305	67	●
3	130,0	75,0	22,0	1,50	30,0	86,0	63,0	106,00	V6-00314	53 CR 858	451741	67	○

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No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
5	80,0	105,0	28,0	2,00	30,0	86,0	88,0	110,00	V6-00903	42 CR 764	438936	67	○
4	105,0	130,0	15,0	1,00	30,0	90,0	85,0	120,00	V6-00584	42 CR 764	375144	68	○
6	140,0	150,0	22,0	1,00	31,0	31,0	31,5	60,00	V6-00603	50 CR 879	438548	68	●
5	93,0	90,0	22,0	1,50	31,0	31,0	41,0	58,00	V6-00448	50 CR 879	122870	68	○
5	93,0	90,0	22,0	1,50	31,0	31,0	41,0	58,00	V6-00448	60 CR 176307	49046170	68	○
3	110,0	65,0	35,0	2,00	31,0	83,0	56,0	102,00	V6-00206	42 CR 764	428315	68	○
6	70,0	85,0	25,0	1,00	32,0	32,0	32,0	50,00	V6-00965	42 CR 764	453784	68	○
8	120,0	170,0	42,0	1,20	32,0	32,0	33,0	54,00	V6-00209	50 CR 879	439186	68	●
9	140,0	190,0	40,0	1,20	32,0	32,0	38,0	60,00	V6-00407	42 CR 764	428832	68	●
4	60,0	60,0	15,0	0,70	32,0	32,0	40,0	54,00	V6-01236	53 CR 858	436913	68	○
2	20,0	30,0	10,0	1,00	32,0	65,0	38,0	52,00	V6-00736	42 CR 764	426374	68	●
4	83,0	56,0	16,0	2,00	32,0	70,0	46,0	90,00	V6-01431	45 NBR 670	454267	69	○
4	105,0	70,0	35,0	2,50	34,0	92,0	65,0	114,50	V6-00207	42 CR 764	440293	-	○
5	160,0	130,0	20,0	2,00	34,0	166,0	62,0	190,00	V6-00925	42 CR 764	454474	69	●
13	180,0	200,0	45,0	1,50	35,0	35,0	38,0	60,00	V6-00266	42 CR 764	429647	69	●
7	120,0	100,0	30,0	2,00	35,0	35,0	42,0	55,00	V6-00281	42 CR 764	427264	69	●
4	52,0	60,0	14,0	1,00	35,0	35,0	45,0	58,00	V6-00659	50 CR 879	424147	69	●
7	210,0	285,0	30,0	1,50	35,0	55,0	63,0	106,00	V6-00652	42 CR 764	457563	69	○
15	220,0	260,0	35,0	1,00	35,0	65,0	37,5	95,00	V6-01080	42 CR 764	457509	69	○
6	125,0	130,0	35,0	2,00	35,0	74,0	55,0	86,00	V6-00654	50 CR 879	434029	69	●
19	295,0	325,0	75,0	1,50	35,0	121,0	37,0	56,00	V6-00117	42 CR 764	29288	69	○
6	80,0	120,0	25,0	0,70	36,0	36,0	19,5	36,00	V6-00053	42 CR 764	435517	70	●
3	125,0	80,0	35,0	2,50	36,0	77,0	56,0	74,50	V6-01449	50 CR 879	152544	70	○
3	76,0	90,0	23,0	2,00	36,0	115,0	41,5	125,00	V6-00419	42 CR 764	507686	70	○
8	110,0	120,0	35,0	1,50	36,5	38,5	44,0	60,00	V6-00204	42 CR 764	439168	70	○
7	85,0	95,0	28,0	1,25	37,0	37,0	43,0	58,00	V6-00308	42 CR 764	427265	70	●
4	40,0	50,0	10,0	0,60	37,0	40,0	40,0	52,00	V6-00467	42 CR 764	456485	70	○
7	110,0	145,0	24,0	1,00	37,0	50,0	55,0	75,00	V6-00790	50 CR 879	29965	70	○
8	130,0	150,0	30,0	0,80	37,0	57,0	45,0	79,00	V6-00823	42 CR 764	400862	70	○
8	135,0	170,0	28,0	1,50	38,0	38,0	30,0	55,00	V6-00297	45 NBR 670	501137	70	○
3	65,0	65,0	15,0	1,50	38,0	38,0	43,0	66,00	V6-00808	42 CR 764	439042	71	○
6	88,0	95,0	27,0	1,50	38,0	38,0	44,0	60,00	V6-00255	42 CR 764	451751	71	○
3	60,0	90,0	15,0	1,50	38,0	38,0	48,0	75,00	V6-00429	42 CR 764	431588	71	●
5	50,0	70,0	12,0	0,60	38,0	38,0	48,0	62,00	V6-00662	42 CR 764	434077	71	●
7	120,0	145,0	28,0	1,00	38,0	43,0	47,0	59,00	V6-00230	50 CR 879	439434	71	○
9	180,0	225,0	35,0	1,50	38,0	58,0	44,0	88,00	V6-00619	42 CR 764	431955	71	●
3	90,0	66,0	38,0	3,00	38,0	66,0	60,0	88,00	V6-00190	42 CR 764	438014	71	○
2	95,0	66,0	38,0	3,00	38,0	85,0	63,0	92,00	V6-00191	42 CR 764	428311	71	●
6	136,0	130,0	38,0	3,00	38,0	130,0	60,0	160,00	V6-00199	42 CR 764	438027	71	●
5	95,0	105,0	22,0	1,50	39,0	39,0	55,0	75,00	V6-00321	42 CR 764	429648	72	●
8	245,0	280,0	40,0	2,00	39,0	66,0	50,0	128,00	V6-00556	42 CR 764	29735	72	●
5	115,0	170,0	28,0	2,50	39,0	100,0	54,0	128,00	V6-00060	42 CR 764	428322	72	●
9	105,0	120,0	30,0	1,25	39,5	80,0	49,0	100,00	V6-00188	42 CR 764	432643	72	●
13	170,0	210,0	35,0	1,00	40,0	40,0	45,0	63,00	V6-00801	50 CR 879	438557	72	●
13	170,0	210,0	35,0	1,00	40,0	40,0	45,0	63,00	V6-00801	42 CR 764	440760	72	●
6	142,0	165,0	22,0	1,50	40,0	60,0	65,0	96,00	V6-00072	42 CR 764	434088	72	●
6	135,0	130,0	30,0	2,50	40,0	130,0	54,0	159,00	V6-00092	42 CR 764	434425	72	●
4	55,0	75,0	10,0	1,00	41,0	75,0	57,0	90,00	V6-00700	42 CR 764	153008	72	○

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No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
12	215,0	260,0	40,0	1,00	42,0	42,0	35,0	60,00	V6-00637	50 CR 879	438549	72	●
5	74,0	85,0	22,0	1,50	42,0	42,0	38,0	60,00	V6-00268	42 CR 764	432119	73	○
8	125,0	120,0	25,0	1,00	42,0	42,0	56,0	70,00	V6-00536	42 CR 764	426801	73	●
4	77,0	88,0	20,0	1,50	42,0	70,0	57,0	100,00	V6-20195	42 CR 764	501096	73	○
12	210,0	280,0	40,0	1,00	42,0	76,0	50,0	112,00	V6-00562	50 CR 879	29741	73	●
9	155,0	190,0	25,0	1,00	42,0	76,0	58,0	110,00	V6-00328	42 CR 764	432424	73	●
9	155,0	190,0	25,0	1,00	42,0	76,0	58,0	110,00	V6-00328	50 CR 879	454213	73	○
3	75,0	80,0	20,0	2,00	42,0	90,0	70,0	90,00	V6-01030	42 CR 764	400918	73	○
7	205,0	260,0	35,0	1,00	43,0	43,0	44,0	80,00	V6-00626	42 CR 764	437270	73	●
18	140,0	175,0	55,0	1,00	43,0	45,0	47,0	57,00	V6-00449	50 CR 879	456484	73	○
3	80,0	65,0	15,0	1,50	43,0	58,0	55,0	90,00	V6-00853	50 CR 879	465751	74	○
2	124,0	140,0	100,0	2,00	43,0	85,0	50,0	84,50	V6-00012	42 CR 764	426317	74	●
2	124,0	140,0	100,0	2,00	43,0	85,0	50,0	84,50	V6-00012	45 NBR 670	60032051	74	○
5	70,0	85,0	12,0	1,00	45,0	45,0	45,0	72,00	V6-00967	50 CR 879	89513	74	●
12	300,0	400,0	55,0	1,50	45,0	45,0	45,0	85,00	V6-01075	42 CR 764	400934	74	○
4	65,0	65,0	15,0	1,00	45,0	45,0	53,0	70,00	V6-00784	42 CR 764	432192	74	●
8	210,0	240,0	35,0	1,20	45,0	60,0	60,0	90,00	V6-00593	42 CR 764	439497	74	●
8	210,0	240,0	35,0	1,20	45,0	60,0	60,0	90,00	V6-00593	50 CR 879	439499	74	○
5	130,0	135,0	30,0	1,50	45,0	100,0	45,0	130,00	V6-01047	50 CR 879	454226	74	○
6	223,0	267,0	42,0	1,50	45,0	100,0	104,0	148,00	V6-01046	42 CR 764	400920	74	○
7	115,0	135,0	25,0	1,00	46,0	60,0	60,0	80,00	V6-00466	42 CR 764	430847	74	●
10	240,0	290,0	40,0	1,20	48,0	48,0	50,0	83,00	V6-01022	42 CR 764	432696	75	●
12	280,0	340,0	50,0	1,20	48,0	48,0	50,0	83,00	V6-01165	50 CR 879	454248	75	●
2	75,0	80,0	13,0	1,50	48,0	48,0	64,0	100,00	V6-01136	42 CR 764	425266	75	○
5	70,0	80,0	18,0	1,00	50,0	50,0	46,0	64,00	V6-00541	42 CR 764	25105	75	●
8	68,0	100,0	18,0	0,60	50,0	50,0	52,0	68,00	V6-00742	42 CR 764	426388	75	●
27	720,0	920,0	120,0	1,50	50,0	75,0	70,0	110,00	V6-00723	45 NBR 670	29915	75	●
3	100,0	125,0	15,0	2,00	50,0	92,0	80,0	144,00	V6-00821	42 CR 764	25235	75	●
7	170,0	220,0	30,0	0,80	50,0	100,0	68,0	100,00	V6-01029	50 CR 879	20231	75	○
2	85,0	65,0	36,0	3,00	50,0	102,0	50,0	125,00	V6-00091	50 CR 879	456482	75	●
2	55,0	50,0	30,0	3,00	52,0	52,0	55,0	84,00	V6-00291	42 CR 764	440381	76	●
11	205,0	270,0	45,0	1,20	52,0	52,0	58,0	85,00	V6-00987	50 CR 879	440232	76	●
11	205,0	270,0	45,0	1,20	52,0	52,0	58,0	85,00	V6-00987	42 CR 764	440233	76	●
9	205,0	240,0	40,0	1,50	52,0	70,0	60,0	90,00	V6-00976	42 CR 764	429665	76	●
4	72,0	100,0	15,0	1,50	54,0	58,0	61,0	100,00	V6-01064	50 CR 879	453735	76	○
4	190,0	115,0	80,0	1,50	55,0	55,0	50,0	70,00	V6-00226	42 CR 764	439437	76	○
6	120,0	140,0	22,0	1,00	55,0	55,0	74,0	98,00	V6-00577	42 CR 764	439496	76	○
6	120,0	130,0	20,0	1,00	55,0	67,0	60,0	85,00	V6-00740	53 CR 858	430860	76	●
4	120,0	95,0	50,0	2,00	55,0	125,0	70,0	138,00	V6-00205	42 CR 764	440285	76	●
5	123,0	120,0	18,0	1,00	56,0	59,0	62,0	88,00	V6-00153	42 CR 764	426797	76	●
29	550,0	680,0	160,0	2,00	56,0	64,0	64,0	90,00	V6-00519	42 CR 764	29705	77	○
2	57,0	60,0	15,0	2,50	56,0	115,0	64,0	115,00	V6-00779	50 CR 879	360138	77	○
11	310,0	375,0	40,0	1,50	56,0	140,0	65,0	190,00	V6-00926	42 CR 764	35807	77	○
2	50,0	60,0	12,0	1,50	57,0	79,0	70,0	98,00	V6-01226	42 CR 764	452566	77	○
16	350,0	470,0	65,0	1,00	58,0	58,0	58,0	95,00	V6-00606	53 CR 858	29774	77	●
9	180,0	195,0	100,0	2,00	58,0	72,0	67,0	108,00	V6-00866	42 CR 764	454218	77	○
5	150,0	185,0	25,0	1,50	58,0	128,0	75,0	180,00	V6-00352	50 CR 879	19577	77	●
8	215,0	255,0	37,0	1,50	59,0	59,0	50,0	90,00	V6-00937	45 NBR 670	60022627	77	○

● Available from stock ○ On request: Tool is available, delivery at short notice

No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
14	390,0	490,0	70,0	1,50	59,0	59,0	50,0	90,00	V6-00910	42 CR 764	103132	77	○
10	185,0	220,0	60,0	1,50	59,0	84,0	74,0	116,00	V6-01453	42 CR 764	454255	78	○
7	150,0	170,0	32,0	1,50	59,5	59,5	62,0	90,00	V6-00260	42 CR 764	434071	78	●
19	280,0	320,0	65,0	1,00	60,0	60,0	60,0	78,00	V6-00499	42 CR 764	25090	78	●
20	420,0	530,0	90,0	1,50	60,0	60,0	68,0	98,00	V6-00450	42 CR 764	29652	78	●
7	185,0	210,0	25,0	1,00	60,0	68,0	65,0	100,00	V6-00375	42 CR 764	428321	78	●
8	230,0	270,0	35,0	1,00	60,0	68,0	65,0	100,00	V6-00400	50 CR 879	438535	78	●
6	170,0	170,0	45,0	2,00	60,0	70,0	64,0	90,00	V6-00453	42 CR 764	426371	78	●
5	105,0	75,0	25,0	1,50	60,0	75,0	70,0	90,00	V6-01774	50 CR 879	451414	78	○
31	480,0	570,0	155,0	1,50	60,0	77,0	77,0	97,00	V6-01018	42 CR 764	454225	78	○
5	144,0	160,0	25,0	1,00	60,0	118,0	86,0	118,00	V6-01049	42 CR 764	454227	79	○
7	177,0	195,0	35,0	1,50	60,0	152,0	70,0	200,00	V6-00444	42 CR 764	29643	79	●
3	120,0	105,0	18,0	1,50	61,0	61,0	60,0	95,00	V6-00099	45 NBR 670	434091	79	●
3	120,0	105,0	18,0	1,50	61,0	61,0	60,0	95,00	V6-00099	42 CR 764	434092	79	●
4	110,0	95,0	25,0	2,50	63,0	70,0	76,0	100,00	V6-00242	42 CR 764	439438	79	○
11	490,0	640,0	45,0	1,50	63,5	138,0	75,0	185,00	V6-00917	50 CR 879	507015	79	○
4	82,0	110,0	15,0	1,50	64,0	68,0	70,0	110,00	V6-01063	50 CR 879	453733	79	●
12	280,0	360,0	50,0	1,00	65,0	65,0	65,0	100,00	V6-00968	42 CR 764	506619	79	○
8	75,0	110,0	15,0	0,60	65,0	65,0	72,0	90,00	V6-00743	50 CR 879	25159	79	○
5	155,0	120,0	28,0	2,00	68,0	68,0	70,0	100,00	V6-00497	50 CR 879	101244	79	○
6	180,0	230,0	32,0	1,50	68,0	107,0	80,0	120,00	V6-00329	42 CR 764	428309	80	●
11	410,0	535,0	60,0	1,50	70,0	70,0	70,0	125,00	V6-00424	42 CR 764	29620	80	●
6	110,0	130,0	20,0	1,00	70,0	75,0	70,0	95,00	V6-00638	42 CR 764	29803	80	●
10	222,0	258,0	50,0	1,50	70,0	90,0	65,0	100,00	V6-20173	50 CR 879	458302	-	○
6	185,0	245,0	25,0	1,50	70,0	170,0	85,0	210,00	V6-01033	42 CR 764	10596	80	○
6	130,0	130,0	35,0	2,00	72,0	100,0	80,0	100,00	V6-00477	50 CR 879	400709	80	○
12	272,0	350,0	50,0	1,50	75,0	75,0	75,0	108,00	V6-00093	42 CR 764	440343	80	●
10	225,0	300,0	50,0	1,50	75,0	75,0	78,0	120,00	V6-00813	50 CR 879	414718	80	○
4	75,0	75,0	14,0	1,00	75,0	80,0	80,0	86,00	V6-00934	50 CR 879	382212	80	○
3	25,0	36,0	15,0	1,00	75,0	126,0	75,0	126,00	V6-00441	42 CR 764	434020	80	●
4	125,0	90,0	15,0	2,00	78,0	78,0	84,0	110,00	V6-00501	50 CR 879	438944	81	●
4	125,0	90,0	15,0	2,00	78,0	78,0	84,0	110,00	V6-00501	42 CR 764	438946	81	●
11	335,0	420,0	50,0	1,50	78,0	130,0	86,0	130,00	V6-00520	45 NBR 670	25100	81	●
11	335,0	420,0	50,0	1,50	78,0	130,0	86,0	130,00	V6-00520	50 CR 879	307731	81	○
7	215,0	245,0	23,0	1,20	80,0	80,0	50,0	95,00	V6-00115	42 CR 764	29283	81	○
5	100,0	95,0	18,0	1,00	80,0	80,0	66,0	82,00	V6-00141	42 CR 764	451746	81	○
5	100,0	95,0	18,0	1,00	80,0	80,0	66,0	82,00	V6-00141	50 CR 879	451747	81	○
9	210,0	200,0	45,0	1,80	80,0	80,0	84,0	110,00	V6-00476	42 CR 764	61279	81	○
7	120,0	160,0	25,0	1,00	80,0	80,0	90,0	115,00	V6-01079	42 CR 764	454232	81	○
8	125,0	150,0	25,0	1,00	80,0	90,0	90,0	110,00	V6-00963	42 CR 764	454221	81	○
17	665,0	700,0	80,0	1,50	80,0	108,0	95,0	145,00	V6-00455	42 CR 764	29660	-	○
3	22,0	33,0	15,0	1,00	80,0	129,0	80,0	147,00	V6-00846	50 CR 879	307856	81	○
3	85,0	90,0	12,0	1,50	81,0	81,0	91,0	125,00	V6-00633	42 CR 764	426324	81	●
2	72,0	60,0	12,0	2,00	81,0	111,0	106,0	136,00	V6-00326	50 CR 879	454212	82	○
4	125,0	140,0	20,0	2,00	86,0	110,0	110,0	150,00	V6-00643	42 CR 764	29807	82	●
2	70,0	33,5	18,0	2,50	88,0	88,0	100,0	120,00	V6-01412	60 CR 87258	104484	82	●
14	395,0	495,0	70,0	1,50	89,0	89,0	75,0	115,00	V6-00911	42 CR 764	63487	82	○
13	330,0	340,0	60,0	1,50	89,0	89,0	92,0	122,00	V6-00807	42 CR 764	380578	82	○

● Available from stock ○ On request: Tool is available, delivery at short notice

No. of convo-lutions	Manu-factured length	Length max.	Length min.	Material thick-ness	Connec-tion Ø 1	Connec-tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
8	225,0	280,0	49,0	1,50	90,0	90,0	92,0	128,00	V6-00721	42 CR 764	29912	82	●
4	120,0	85,0	22,0	2,00	90,0	90,0	103,0	128,00	V6-00517	42 CR 764	454473	82	●
4	95,0	100,0	28,0	2,00	90,0	132,0	106,0	139,00	V6-00515	50 CR 879	400735	82	○
6	160,0	180,0	20,0	1,00	94,0	98,0	104,0	140,00	V6-01140	42 CR 764	454240	82	●
14	385,0	485,0	70,0	1,50	99,0	99,0	95,0	135,00	V6-00909	50 CR 879	505424	83	○
12	410,0	520,0	55,0	1,50	100,0	100,0	70,0	120,00	V6-00468	42 CR 764	29675	83	●
5	185,0	180,0	25,0	2,00	108,0	108,0	117,0	157,00	V6-00658	42 CR 764	25144	83	●
3	130,0	100,0	18,0	2,00	108,0	154,0	117,0	154,00	V6-00657	42 CR 764	400791	83	○
11	165,0	195,0	40,0	1,50	109,0	109,0	102,0	122,00	V6-00332	42 CR 764	454470	83	●
2	70,0	33,5	18,0	2,50	110,0	110,0	122,0	142,00	V6-01406	60 CR 87258	333285	83	○
2	40,0	55,0	13,0	1,00	110,0	115,0	125,0	150,00	V6-00621	50 CR 879	400783	83	○
11	205,0	240,0	60,0	1,50	112,0	122,0	122,0	145,00	V6-01247	42 CR 764	454251	83	●
2	80,0	55,0	15,0	2,00	113,0	148,0	140,0	180,00	V6-00443	53 CR 858	1065	83	○
8	225,0	280,0	40,0	2,00	118,0	118,0	100,0	140,00	V6-00642	42 CR 764	2708	84	●
5	115,0	125,0	22,0	1,30	118,0	155,0	126,0	155,00	V6-01003	50 CR 879	455224	84	○
9	265,0	310,0	50,0	2,00	120,0	140,0	145,0	190,00	V6-00542	50 CR 879	125325	84	○
3	200,0	125,0	50,0	4,00	120,0	173,0	128,0	173,00	V6-00493	50 CR 879	23442	84	○
6	150,0	200,0	28,0	2,00	125,0	156,0	124,0	190,00	V6-00217	42 CR 764	29370	84	●
22	395,0	630,0	132,0	1,30	125,0	156,0	125,0	190,00	V6-01444	50 CR 879	60040372	84	○
7	160,0	232,0	32,5	1,30	125,0	156,0	149,0	190,00	V6-01445	50 CR 879	355400	84	○
6	210,0	220,0	28,0	2,00	125,0	170,0	125,0	174,00	V6-00544	42 CR 764	29726	84	○
3	65,0	80,0	25,0	2,50	126,0	126,0	130,0	160,00	V6-00396	42 CR 764	454471	84	●
14	355,0	520,0	55,0	1,20	128,0	128,0	128,0	168,00	V6-00628	42 CR 764	29793	85	●
3	145,0	120,0	15,0	2,00	130,0	190,0	150,0	190,00	V6-01305	42 CR 764	400958	85	○
10	260,0	290,0	55,0	1,50	145,0	145,0	155,0	185,00	V6-00612	50 CR 879	29778	85	○
3	100,0	100,0	12,0	1,20	147,0	200,0	160,0	200,00	V6-00717	50 CR 879	5050499	85	○
4	110,0	110,0	22,0	2,00	153,0	153,0	153,0	183,00	V6-00349	50 CR 879	423911	85	○
7	120,0	160,0	35,0	1,00	154,0	154,0	130,0	160,00	V6-00250	42 CR 764	29416	85	●
4	200,0	180,0	60,0	3,00	154,0	188,0	160,0	205,00	V6-00330	42 CR 764	325674	85	○
3	110,0	110,0	30,0	2,00	159,0	159,0	159,0	191,00	V6-00420	42 CR 764	29612	85	○
3	90,0	53,0	22,0	2,50	160,0	160,0	172,0	192,00	V6-01413	60 CR 87258	104556	85	○
10	310,0	380,0	40,0	1,50	160,0	260,0	170,0	310,00	V6-00676	42 CR 764	29842	86	○
2	55,0	39,0	25,0	2,50	164,0	175,0	160,0	196,00	V6-01234	60 CR 87258	501406	86	○
3	130,0	150,0	25,0	1,50	178,0	250,0	178,0	257,00	V6-00782	50 CR 879	7509	86	○
13	175,0	240,0	70,0	2,50	180,0	180,0	180,0	220,00	V6-00345	50 CR 879	325185	86	○
3	80,0	70,0	35,0	3,00	180,0	180,0	190,0	210,00	V6-00661	45 NBR 670	29824	86	○
3	80,0	70,0	35,0	3,00	180,0	180,0	190,0	210,00	V6-00661	50 CR 879	60028128	86	○
14	340,0	460,0	60,0	1,50	190,0	190,0	170,0	210,00	V6-00767	42 CR 764	36413	86	●
3	90,0	55,0	40,0	2,50	200,0	200,0	212,0	232,00	V6-01528	50 CR 879	455421	86	●
4	150,0	160,0	40,0	2,00	208,0	208,0	208,0	250,00	V6-00318	50 CR 879	87072	86	●
5	152,0	160,0	30,0	2,00	222,5	222,5	190,0	227,00	V6-01736	42 CR 764	401008	86	○
5	150,0	160,0	30,0	1,20	222,5	222,5	191,5	227,00	V6-01793	42 CR 764	336447	87	○
5	150,0	150,0	30,0	2,00	228,5	228,5	233,0	234,50	V6-01737	42 CR 764	401009	87	○
9	185,0	245,0	36,0	1,30	245,0	245,0	245,0	280,00	V6-00841	42 CR 764	6473	87	○
9	300,0	380,0	60,0	2,50	265,0	265,0	265,0	325,00	V6-00632	50 CR 879	506890	87	○
6	205,0	195,0	30,0	1,50	270,0	270,0	260,0	300,00	V6-01031	50 CR 879	361913	87	○
10	295,0	400,0	55,0	2,00	270,0	270,0	270,0	340,00	V6-00766	50 CR 879	36412	87	○
11	400,0	500,0	55,0	2,50	290,0	290,0	290,0	350,00	V6-00732	50 NBR 842	510580	87	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Article list Multiple Convolution Bellows, ordered by Type

No. of convolutions	Manufactured length	Length max.	Length min.	Material thickness	Connection Ø 1	Connection Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
2	124,0	140,0	100,0	2,00	43,0	85,0	50,0	84,50	V6-00012	42 CR 764	426317	74	●
2	124,0	140,0	100,0	2,00	43,0	85,0	50,0	84,50	V6-00012	45 NBR 670	60032051	74	○
13	95,0	150,0	50,0	1,00	16,0	20,0	25,0	40,00	V6-00013	42 CR 764	438211	56	●
2	40,0	29,0	10,0	1,00	9,0	23,0	14,0	43,00	V6-00015	42 CR 764	439217	48	●
4	82,0	75,0	20,0	1,50	12,0	26,0	23,0	41,00	V6-00022	42 CR 764	29192	52	●
6	65,0	65,0	30,0	1,50	10,0	25,0	15,0	27,00	V6-00052	42 CR 764	432593	50	●
6	80,0	120,0	25,0	0,70	36,0	36,0	19,5	36,00	V6-00053	42 CR 764	435517	70	●
3	30,0	30,0	8,0	0,80	4,5	14,5	7,0	18,00	V6-00055	42 CR 764	29209	44	●
15	285,0	350,0	65,0	1,50	25,0	43,0	47,0	72,50	V6-00059	42 CR 764	29213	63	●
5	115,0	170,0	28,0	2,50	39,0	100,0	54,0	128,00	V6-00060	42 CR 764	428322	72	●
7	160,0	185,0	32,0	1,50	24,0	70,0	55,0	95,00	V6-00069	42 CR 764	432599	62	●
7	160,0	185,0	32,0	1,50	24,0	70,0	55,0	95,00	V6-00069	53 CR 858	432600	62	○
6	142,0	165,0	22,0	1,50	40,0	60,0	65,0	96,00	V6-00072	42 CR 764	434088	72	●
5	120,0	135,0	18,0	1,50	18,0	55,0	49,0	82,00	V6-00075	42 CR 764	439195	58	●
3	58,0	40,0	10,0	1,00	17,0	30,0	24,0	34,00	V6-00076	42 CR 764	433980	57	●
5	154,0	195,0	18,0	1,50	26,0	42,0	55,0	92,00	V6-00079	42 CR 764	431867	64	●
2	85,0	65,0	36,0	3,00	50,0	102,0	50,0	125,00	V6-00091	50 CR 879	456482	75	●
6	135,0	130,0	30,0	2,50	40,0	130,0	54,0	159,00	V6-00092	42 CR 764	434425	72	●
12	272,0	350,0	50,0	1,50	75,0	75,0	75,0	108,00	V6-00093	42 CR 764	440343	80	●
6	150,0	180,0	30,0	1,50	22,0	55,0	50,0	83,00	V6-00095	50 CR 879	438519	61	●
3	120,0	105,0	18,0	1,50	61,0	61,0	60,0	95,00	V6-00099	45 NBR 670	434091	79	●
3	120,0	105,0	18,0	1,50	61,0	61,0	60,0	95,00	V6-00099	42 CR 764	434092	79	●
7	134,0	160,0	32,0	1,50	27,0	49,0	50,0	90,00	V6-00106	45 NBR 670	430856	65	●
7	134,0	160,0	32,0	1,50	27,0	49,0	50,0	90,00	V6-00106	42 CR 764	430857	65	●
3	27,0	32,0	5,0	0,75	9,5	32,0	14,5	32,00	V6-00107	50 CR 879	439216	49	○
2	60,0	45,0	15,0	1,50	11,0	54,0	21,0	50,00	V6-00111	42 CR 764	434031	51	●
7	215,0	245,0	23,0	1,20	80,0	80,0	50,0	95,00	V6-00115	42 CR 764	29283	81	○
5	86,0	88,0	15,0	1,00	15,0	76,0	26,5	76,00	V6-00116	50 CR 879	439181	55	○
5	86,0	88,0	15,0	1,00	15,0	76,0	26,5	76,00	V6-00116	42 CR 764	439182	55	○
19	295,0	325,0	75,0	1,50	35,0	121,0	37,0	56,00	V6-00117	42 CR 764	29288	69	○
8	75,0	95,0	28,0	1,00	6,0	15,0	12,5	24,00	V6-00126	42 CR 764	435526	45	●
3	23,0	30,0	8,0	1,00	26,0	26,0	38,0	48,00	V6-00127	42 CR 764	432585	63	●
2	48,0	55,0	20,0	1,50	19,5	44,5	32,5	55,00	V6-00130	42 CR 764	437298	59	●
5	100,0	95,0	18,0	1,00	80,0	80,0	66,0	82,00	V6-00141	42 CR 764	451746	81	○
5	100,0	95,0	18,0	1,00	80,0	80,0	66,0	82,00	V6-00141	50 CR 879	451747	81	○
5	123,0	120,0	18,0	1,00	56,0	59,0	62,0	88,00	V6-00153	42 CR 764	426797	76	●
6	80,0	80,0	20,0	1,00	15,0	30,0	26,0	40,00	V6-00156	42 CR 764	436158	55	●
6	55,0	80,0	25,0	1,00	12,0	15,0	15,0	27,00	V6-00158	42 CR 764	430845	51	●
7	70,0	90,0	20,0	1,00	6,0	20,0	13,0	36,00	V6-00167	42 CR 764	438520	45	●
7	40,0	50,0	15,0	0,50	6,0	10,0	11,0	17,00	V6-00169	42 CR 764	438526	45	●
9	105,0	120,0	30,0	1,25	39,5	80,0	49,0	100,00	V6-00188	42 CR 764	432643	72	●
2	60,0	45,0	12,0	0,80	14,5	27,0	18,5	38,00	V6-00189	42 CR 764	440390	54	○
3	90,0	66,0	38,0	3,00	38,0	66,0	60,0	88,00	V6-00190	42 CR 764	438014	71	○
2	95,0	66,0	38,0	3,00	38,0	85,0	63,0	92,00	V6-00191	42 CR 764	428311	71	●
6	130,0	130,0	45,0	2,00	21,0	35,0	33,0	58,00	V6-00195	42 CR 764	436916	60	●
6	136,0	130,0	38,0	3,00	38,0	130,0	60,0	160,00	V6-00199	42 CR 764	438027	71	●
13	114,0	130,0	45,0	1,00	26,0	26,0	26,0	40,00	V6-00200	42 CR 764	438022	63	○

● Available from stock ○ On request: Tool is available, delivery at short notice

No. of convo-lutions	Manu-factured length	Length max.	Length min.	Material thick-ness	Connec-tion Ø 1	Connec-tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
17	270,0	344,0	124,0	2,00	28,0	39,0	41,0	62,00	V6-00201	42 CR 764	454462	66	●
2	74,0	65,0	10,0	1,50	18,5	47,0	39,5	61,50	V6-00203	42 CR 764	431289	58	●
8	110,0	120,0	35,0	1,50	36,5	38,5	44,0	60,00	V6-00204	42 CR 764	439168	70	○
4	120,0	95,0	50,0	2,00	55,0	125,0	70,0	138,00	V6-00205	42 CR 764	440285	76	●
3	110,0	65,0	35,0	2,00	31,0	83,0	56,0	102,00	V6-00206	42 CR 764	428315	68	○
4	105,0	70,0	35,0	2,50	34,0	92,0	65,0	114,50	V6-00207	42 CR 764	440293	-	○
8	120,0	170,0	42,0	1,20	32,0	32,0	33,0	54,00	V6-00209	50 CR 879	439186	68	●
6	160,0	175,0	22,0	1,00	22,0	82,0	60,0	115,00	V6-00212	42 CR 764	439178	61	●
6	150,0	200,0	28,0	2,00	125,0	156,0	124,0	190,00	V6-00217	42 CR 764	29370	84	●
7	120,0	140,0	38,0	1,00	20,0	35,0	47,0	70,00	V6-00218	53 CR 858	430858	60	●
2	63,0	55,0	15,0	1,50	17,0	40,0	32,0	55,00	V6-00221	42 CR 764	428830	57	●
5	70,0	65,0	17,0	1,00	9,0	18,0	12,0	24,00	V6-00225	42 CR 764	428314	48	●
4	190,0	115,0	80,0	1,50	55,0	55,0	50,0	70,00	V6-00226	42 CR 764	439437	76	○
4	56,0	70,0	18,0	1,50	22,0	22,0	22,5	40,00	V6-00227	42 CR 764	439167	61	●
7	120,0	145,0	28,0	1,00	38,0	43,0	47,0	59,00	V6-00230	50 CR 879	439434	71	○
5	80,0	80,0	23,0	1,50	23,0	26,0	25,0	42,00	V6-00234	42 CR 764	440348	62	●
15	120,0	160,0	40,0	1,00	20,0	20,0	24,0	35,00	V6-00236	42 CR 764	426319	60	●
12	155,0	165,0	45,0	1,00	14,0	14,0	18,0	30,00	V6-00237	42 CR 764	427261	54	●
4	110,0	95,0	25,0	2,50	63,0	70,0	76,0	100,00	V6-00242	42 CR 764	439438	79	○
8	80,0	85,0	20,0	1,00	4,0	8,0	12,5	24,00	V6-00249	42 CR 764	438531	43	●
7	120,0	160,0	35,0	1,00	154,0	154,0	130,0	160,00	V6-00250	42 CR 764	29416	85	●
8	170,0	220,0	45,0	2,00	25,0	75,0	80,0	108,00	V6-00251	42 CR 764	435518	63	●
6	88,0	95,0	27,0	1,50	38,0	38,0	44,0	60,00	V6-00255	42 CR 764	451751	71	○
6	59,0	65,0	25,0	2,00	8,0	25,0	14,5	25,00	V6-00257	42 CR 764	439218	47	○
4	45,0	50,0	15,0	1,00	5,0	12,0	12,0	24,00	V6-00258	42 CR 764	438028	44	●
10	140,0	180,0	40,0	1,00	27,0	36,0	20,0	42,00	V6-00259	42 CR 764	439441	65	●
7	150,0	170,0	32,0	1,50	59,5	59,5	62,0	90,00	V6-00260	42 CR 764	434071	78	●
6	55,0	70,0	18,0	1,00	9,0	27,0	19,0	33,50	V6-00261	50 CR 879	439215	48	○
13	180,0	200,0	45,0	1,50	35,0	35,0	38,0	60,00	V6-00266	42 CR 764	429647	69	●
5	74,0	85,0	22,0	1,50	42,0	42,0	38,0	60,00	V6-00268	42 CR 764	432119	73	○
9	120,0	130,0	35,0	1,00	7,0	16,0	10,0	24,00	V6-00269	50 CR 879	438534	46	●
11	145,0	160,0	40,0	1,00	22,0	31,0	35,5	50,00	V6-00273	42 CR 764	426370	61	●
2	50,0	50,0	10,0	1,50	20,0	30,0	46,0	60,00	V6-00274	45 NBR 670	439432	60	○
6	140,0	160,0	28,0	1,50	18,0	55,0	47,0	80,00	V6-00275	53 CR 858	451293	58	○
4	33,0	45,0	15,0	1,00	15,0	30,0	28,0	52,00	V6-00277	42 CR 764	435217	55	●
7	120,0	100,0	30,0	2,00	35,0	35,0	42,0	55,00	V6-00281	42 CR 764	427264	69	●
2	60,0	41,0	18,0	1,50	16,0	37,0	26,5	50,00	V6-00282	42 CR 764	440305	56	○
2	54,0	40,0	10,0	1,50	12,0	24,0	18,0	33,00	V6-00288	50 CR 879	452930	52	●
2	55,0	50,0	12,0	1,60	12,0	28,0	20,0	39,00	V6-00289	42 CR 764	439474	52	●
7	70,0	80,0	18,0	1,00	27,0	27,0	32,0	45,00	V6-00290	42 CR 764	432590	64	●
2	55,0	50,0	30,0	3,00	52,0	52,0	55,0	84,00	V6-00291	42 CR 764	440381	76	●
12	170,0	190,0	45,0	1,00	26,0	34,0	40,0	60,00	V6-00292	42 CR 764	436699	64	●
18	150,0	195,0	40,0	1,00	16,0	16,0	24,0	35,00	V6-00293	42 CR 764	434026	56	●
9	95,0	120,0	35,0	1,00	28,0	28,0	33,0	49,00	V6-00296	42 CR 764	426795	65	●
8	135,0	170,0	28,0	1,50	38,0	38,0	30,0	55,00	V6-00297	45 NBR 670	501137	70	○
5	60,0	70,0	30,0	1,00	20,5	20,5	20,5	35,50	V6-00302	42 CR 764	440318	60	●
6	135,0	120,0	60,0	2,00	21,0	35,0	35,0	54,00	V6-00305	42 CR 764	426323	61	○
3	40,0	35,0	12,0	1,00	8,0	20,0	13,5	27,50	V6-00307	42 CR 764	29502	47	●

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No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
7	85,0	95,0	28,0	1,25	37,0	37,0	43,0	58,00	V6-00308	42 CR 764	427265	70	●
4	95,0	120,0	20,0	1,00	18,0	61,0	40,0	70,00	V6-00313	42 CR 764	440315	58	●
3	130,0	75,0	22,0	1,50	30,0	86,0	63,0	106,00	V6-00314	53 CR 858	451741	67	○
4	150,0	160,0	40,0	2,00	208,0	208,0	208,0	250,00	V6-00318	50 CR 879	87072	86	●
2	54,0	45,0	15,0	1,50	11,0	54,0	23,0	50,00	V6-00320	42 CR 764	440257	51	●
5	95,0	105,0	22,0	1,50	39,0	39,0	55,0	75,00	V6-00321	42 CR 764	429648	72	●
3	40,0	45,0	12,0	1,00	5,0	12,0	12,0	28,00	V6-00322	42 CR 764	439472	44	○
14	200,0	240,0	90,0	1,80	26,6	36,0	37,0	60,00	V6-00324	42 CR 764	440316	64	○
14	200,0	265,0	85,0	2,00	28,5	37,5	42,0	62,00	V6-00325	42 CR 764	426794	66	●
2	72,0	60,0	12,0	2,00	81,0	111,0	106,0	136,00	V6-00326	50 CR 879	454212	82	○
9	155,0	190,0	25,0	1,00	42,0	76,0	58,0	110,00	V6-00328	42 CR 764	432424	73	●
9	155,0	190,0	25,0	1,00	42,0	76,0	58,0	110,00	V6-00328	50 CR 879	454213	73	○
6	180,0	230,0	32,0	1,50	68,0	107,0	80,0	120,00	V6-00329	42 CR 764	428309	80	●
4	200,0	180,0	60,0	3,00	154,0	188,0	160,0	205,00	V6-00330	42 CR 764	325674	85	○
11	165,0	195,0	40,0	1,50	109,0	109,0	102,0	122,00	V6-00332	42 CR 764	454470	83	●
2	24,0	16,0	6,0	0,80	9,0	12,0	11,0	18,00	V6-00336	42 CR 764	439483	48	●
18	145,0	165,0	55,0	1,00	9,0	9,0	10,0	19,00	V6-00337	50 CR 879	439492	48	●
10	85,0	95,0	25,0	1,00	9,0	9,0	10,0	19,00	V6-00338	42 CR 764	439491	48	●
13	175,0	240,0	70,0	2,50	180,0	180,0	180,0	220,00	V6-00345	50 CR 879	325185	86	○
4	84,0	90,0	12,0	1,00	18,0	39,0	28,0	45,50	V6-00347	50 CR 879	501252	57	○
4	110,0	110,0	22,0	2,00	153,0	153,0	153,0	183,00	V6-00349	50 CR 879	423911	85	○
5	150,0	185,0	25,0	1,50	58,0	128,0	75,0	180,00	V6-00352	50 CR 879	19577	77	●
3	45,0	40,0	12,0	1,00	5,0	19,5	12,0	24,00	V6-00358	42 CR 764	435291	44	●
4	85,0	75,0	15,0	1,50	27,0	44,0	40,0	60,00	V6-00363	53 CR 858	432594	65	●
6	175,0	210,0	40,0	1,50	21,0	46,0	50,0	104,00	V6-00365	42 CR 764	431649	61	●
2	35,0	40,0	10,0	0,70	15,0	52,0	21,0	35,00	V6-00366	42 CR 764	427266	55	●
7	185,0	210,0	25,0	1,00	60,0	68,0	65,0	100,00	V6-00375	42 CR 764	428321	78	●
2	23,0	25,0	14,0	1,00	19,0	19,0	19,0	27,50	V6-00383	42 CR 764	430846	58	●
3	135,0	115,0	50,0	2,50	29,0	83,0	35,5	87,00	V6-00384	42 CR 764	440317	66	●
3	65,0	80,0	25,0	2,50	126,0	126,0	130,0	160,00	V6-00396	42 CR 764	454471	84	●
8	230,0	270,0	35,0	1,00	60,0	68,0	65,0	100,00	V6-00400	50 CR 879	438535	78	●
15	225,0	230,0	55,0	1,00	26,0	34,0	40,0	60,00	V6-00401	50 CR 879	440291	64	○
12	190,0	240,0	65,0	1,30	16,0	37,0	30,0	54,00	V6-00404	42 CR 764	428849	56	●
9	140,0	190,0	40,0	1,20	32,0	32,0	38,0	60,00	V6-00407	42 CR 764	428832	68	●
7	120,0	130,0	30,0	1,00	25,0	25,0	34,0	52,00	V6-00416	42 CR 764	434015	63	●
3	76,0	90,0	23,0	2,00	36,0	115,0	41,5	125,00	V6-00419	42 CR 764	507686	70	○
3	110,0	110,0	30,0	2,00	159,0	159,0	159,0	191,00	V6-00420	42 CR 764	29612	85	○
4	58,0	60,0	22,0	1,50	30,0	30,0	42,0	55,00	V6-00422	42 CR 764	428310	67	●
2	70,0	65,0	15,0	1,75	12,0	42,0	31,0	54,00	V6-00423	42 CR 764	435215	52	●
11	410,0	535,0	60,0	1,50	70,0	70,0	70,0	125,00	V6-00424	42 CR 764	29620	80	●
3	60,0	90,0	15,0	1,50	38,0	38,0	48,0	75,00	V6-00429	42 CR 764	431588	71	●
8	170,0	210,0	32,0	1,50	20,0	55,0	50,0	83,00	V6-00434	42 CR 764	438213	60	○
2	18,0	23,0	9,0	1,00	10,0	16,5	25,0	32,00	V6-00438	53 CR 858	29634	49	●
4	57,0	65,0	25,0	1,25	14,0	24,0	25,5	40,00	V6-00439	50 CR 879	29637	54	○
3	25,0	36,0	15,0	1,00	75,0	126,0	75,0	126,00	V6-00441	42 CR 764	434020	80	●
2	80,0	55,0	15,0	2,00	113,0	148,0	140,0	180,00	V6-00443	53 CR 858	1065	83	○
7	177,0	195,0	35,0	1,50	60,0	152,0	70,0	200,00	V6-00444	42 CR 764	29643	79	●
5	93,0	90,0	22,0	1,50	31,0	31,0	41,0	58,00	V6-00448	50 CR 879	122870	68	○

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No. of convo-lutions	Manu-factured length	Length max.	Length min.	Material thick-ness	Connec-tion Ø 1	Connec-tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
5	93,0	90,0	22,0	1,50	31,0	31,0	41,0	58,00	V6-00448	60 CR 176307	49046170	68	○
18	140,0	175,0	55,0	1,00	43,0	45,0	47,0	57,00	V6-00449	50 CR 879	456484	73	○
20	420,0	530,0	90,0	1,50	60,0	60,0	68,0	98,00	V6-00450	42 CR 764	29652	78	●
6	170,0	170,0	45,0	2,00	60,0	70,0	64,0	90,00	V6-00453	42 CR 764	426371	78	●
17	665,0	700,0	80,0	1,50	80,0	108,0	95,0	145,00	V6-00455	42 CR 764	29660	-	○
9	275,0	350,0	55,0	2,00	30,0	56,0	50,0	105,00	V6-00456	42 CR 764	29663	67	●
4	35,0	40,0	15,0	0,60	25,0	25,0	37,0	46,00	V6-00462	42 CR 764	440279	63	●
4	35,0	40,0	15,0	0,60	25,0	25,0	37,0	46,00	V6-00462	45 NBR 670	440283	63	●
7	115,0	135,0	25,0	1,00	46,0	60,0	60,0	80,00	V6-00466	42 CR 764	430847	74	●
4	40,0	50,0	10,0	0,60	37,0	40,0	40,0	52,00	V6-00467	42 CR 764	456485	70	○
12	410,0	520,0	55,0	1,50	100,0	100,0	70,0	120,00	V6-00468	42 CR 764	29675	83	●
3	25,0	35,0	5,0	0,50	7,0	10,8	12,0	25,00	V6-00471	50 CR 879	507077	46	○
4	120,0	90,0	30,0	2,50	28,5	90,0	36,5	140,00	V6-00475	50 CR 879	400708	66	○
9	210,0	200,0	45,0	1,80	80,0	80,0	84,0	110,00	V6-00476	42 CR 764	61279	81	○
6	130,0	130,0	35,0	2,00	72,0	100,0	80,0	100,00	V6-00477	50 CR 879	400709	80	○
5	75,0	85,0	22,0	1,50	15,0	26,0	31,0	49,00	V6-00488	42 CR 764	426793	55	●
6	155,0	180,0	22,0	1,50	22,0	55,0	50,0	83,00	V6-00490	42 CR 764	457774	61	○
3	200,0	125,0	50,0	4,00	120,0	173,0	128,0	173,00	V6-00493	50 CR 879	23442	84	○
5	155,0	120,0	28,0	2,00	68,0	68,0	70,0	100,00	V6-00497	50 CR 879	101244	79	○
19	280,0	320,0	65,0	1,00	60,0	60,0	60,0	78,00	V6-00499	42 CR 764	25090	78	●
4	125,0	90,0	15,0	2,00	78,0	78,0	84,0	110,00	V6-00501	50 CR 879	438944	81	●
4	125,0	90,0	15,0	2,00	78,0	78,0	84,0	110,00	V6-00501	42 CR 764	438946	81	●
7	160,0	200,0	32,0	1,50	18,0	34,0	34,0	66,00	V6-00503	50 CR 879	440391	57	○
7	160,0	200,0	32,0	1,50	18,0	34,0	34,0	66,00	V6-00503	42 CR 764	440392	57	●
3	65,0	65,0	18,0	1,50	13,0	30,0	19,0	38,00	V6-00505	50 CR 879	453725	54	○
4	95,0	100,0	28,0	2,00	90,0	132,0	106,0	139,00	V6-00515	50 CR 879	400735	82	○
4	120,0	85,0	22,0	2,00	90,0	90,0	103,0	128,00	V6-00517	42 CR 764	454473	82	●
29	550,0	680,0	160,0	2,00	56,0	64,0	64,0	90,00	V6-00519	42 CR 764	29705	77	○
11	335,0	420,0	50,0	1,50	78,0	130,0	86,0	130,00	V6-00520	45 NBR 670	25100	81	●
11	335,0	420,0	50,0	1,50	78,0	130,0	86,0	130,00	V6-00520	50 CR 879	307731	81	○
3	40,0	50,0	8,0	0,50	7,0	10,8	13,5	30,00	V6-00525	45 NBR 670	438219	46	○
3	40,0	50,0	8,0	0,50	7,0	10,8	13,5	30,00	V6-00525	42 CR 764	438221	46	○
8	190,0	220,0	40,0	1,50	24,0	94,0	40,0	114,00	V6-00530	42 CR 764	427267	62	●
6	165,0	200,0	30,0	1,50	18,0	34,0	40,0	77,00	V6-00531	50 CR 879	453728	57	○
8	125,0	120,0	25,0	1,00	42,0	42,0	56,0	70,00	V6-00536	42 CR 764	426801	73	●
5	70,0	80,0	18,0	1,00	50,0	50,0	46,0	64,00	V6-00541	42 CR 764	25105	75	●
9	265,0	310,0	50,0	2,00	120,0	140,0	145,0	190,00	V6-00542	50 CR 879	125325	84	○
6	210,0	220,0	28,0	2,00	125,0	170,0	125,0	174,00	V6-00544	42 CR 764	29726	84	○
3	30,0	35,0	12,0	0,70	10,0	25,0	25,5	33,00	V6-00554	42 CR 764	438537	50	●
4	35,0	35,0	14,0	0,70	10,0	31,0	31,0	40,00	V6-00555	42 CR 764	438572	50	●
8	245,0	280,0	40,0	2,00	39,0	66,0	50,0	128,00	V6-00556	42 CR 764	29735	72	●
12	210,0	280,0	40,0	1,00	42,0	76,0	50,0	112,00	V6-00562	50 CR 879	29741	73	●
4	70,0	95,0	15,0	1,00	19,0	60,0	56,0	80,00	V6-00565	42 CR 764	434030	59	●
3	45,0	55,0	15,0	1,00	21,5	37,0	30,0	44,00	V6-00570	42 CR 764	436744	61	●
5	120,0	120,0	45,0	3,00	18,0	120,0	32,0	132,00	V6-00575	42 CR 764	29752	58	●
6	120,0	140,0	22,0	1,00	55,0	55,0	74,0	98,00	V6-00577	42 CR 764	439496	76	○
5	45,0	60,0	18,0	0,70	12,0	36,0	36,5	46,00	V6-00580	50 CR 879	66382	52	●
5	45,0	60,0	18,0	0,70	12,0	36,0	36,5	46,00	V6-00580	42 CR 764	81222	52	○

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No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
5	57,0	65,0	18,0	1,00	12,0	42,0	41,0	53,00	V6-00581	42 CR 764	438541	53	●
5	57,0	65,0	18,0	1,00	12,0	42,0	41,0	53,00	V6-00581	45 NBR 670	438542	53	●
4	60,0	75,0	15,0	1,00	15,0	47,0	46,0	65,00	V6-00582	42 CR 764	432918	55	●
5	90,0	115,0	18,0	1,00	25,0	75,0	72,0	95,00	V6-00583	50 CR 879	457502	63	○
4	105,0	130,0	15,0	1,00	30,0	90,0	85,0	120,00	V6-00584	42 CR 764	375144	68	○
3	55,0	55,0	12,0	1,00	14,0	48,0	20,0	66,00	V6-00585	50 CR 879	436695	54	●
3	55,0	55,0	12,0	1,00	14,0	48,0	20,0	66,00	V6-00585	42 CR 764	436697	54	●
17	240,0	320,0	65,0	1,00	16,0	20,0	22,0	43,00	V6-00586	53 CR 858	431276	56	●
20	430,0	520,0	80,0	1,50	30,0	30,0	35,0	65,00	V6-00589	53 CR 858	15267	66	●
5	55,0	60,0	18,0	1,00	26,0	30,0	33,0	45,00	V6-00592	42 CR 764	426382	64	●
8	210,0	240,0	35,0	1,20	45,0	60,0	60,0	90,00	V6-00593	42 CR 764	439497	74	●
8	210,0	240,0	35,0	1,20	45,0	60,0	60,0	90,00	V6-00593	50 CR 879	439499	74	○
5	100,0	115,0	28,0	2,00	28,0	29,0	35,0	60,00	V6-00594	42 CR 764	429662	65	●
5	65,0	70,0	15,0	1,00	7,0	57,0	20,0	66,00	V6-00600	50 CR 879	438545	47	●
6	140,0	150,0	22,0	1,00	31,0	31,0	31,5	60,00	V6-00603	50 CR 879	438548	68	●
3	100,0	105,0	5,0	1,00	24,0	72,0	52,0	120,00	V6-00604	42 CR 764	436936	62	●
16	350,0	470,0	65,0	1,00	58,0	58,0	58,0	95,00	V6-00606	53 CR 858	29774	77	●
5	120,0	160,0	25,0	1,50	16,0	54,0	30,0	86,00	V6-00610	42 CR 764	426375	56	●
10	260,0	290,0	55,0	1,50	145,0	145,0	155,0	185,00	V6-00612	50 CR 879	29778	85	○
3	45,0	50,0	8,0	0,80	13,5	25,5	21,0	44,00	V6-00616	50 CR 879	400781	54	●
2	13,0	10,0	4,0	0,50	3,0	9,5	7,8	13,50	V6-00618	42 CR 764	29785	43	●
9	180,0	225,0	35,0	1,50	38,0	58,0	44,0	88,00	V6-00619	42 CR 764	431955	71	●
2	40,0	55,0	13,0	1,00	110,0	115,0	125,0	150,00	V6-00621	50 CR 879	400783	83	○
5	80,0	95,0	15,0	1,00	12,0	48,0	20,0	60,00	V6-00625	50 CR 879	438216	53	○
7	205,0	260,0	35,0	1,00	43,0	43,0	44,0	80,00	V6-00626	42 CR 764	437270	73	●
14	355,0	520,0	55,0	1,20	128,0	128,0	128,0	168,00	V6-00628	42 CR 764	29793	85	●
3	75,0	80,0	15,0	1,00	12,0	54,0	17,5	54,00	V6-00631	42 CR 764	426386	53	●
9	300,0	380,0	60,0	2,50	265,0	265,0	265,0	325,00	V6-00632	50 CR 879	506890	87	○
3	85,0	90,0	12,0	1,50	81,0	81,0	91,0	125,00	V6-00633	42 CR 764	426324	81	●
12	215,0	260,0	40,0	1,00	42,0	42,0	35,0	60,00	V6-00637	50 CR 879	438549	72	●
6	110,0	130,0	20,0	1,00	70,0	75,0	70,0	95,00	V6-00638	42 CR 764	29803	80	●
12	155,0	180,0	45,0	1,00	16,0	35,0	20,0	35,00	V6-00639	42 CR 764	400785	56	○
6	45,0	60,0	12,0	0,60	28,0	28,0	34,0	45,00	V6-00640	42 CR 764	427268	65	●
8	225,0	280,0	40,0	2,00	118,0	118,0	100,0	140,00	V6-00642	42 CR 764	2708	84	●
4	125,0	140,0	20,0	2,00	86,0	110,0	110,0	150,00	V6-00643	42 CR 764	29807	82	●
3	30,0	40,0	8,0	1,00	14,0	27,0	42,0	52,00	V6-00644	42 CR 764	400787	54	○
6	85,0	100,0	25,0	1,00	12,0	25,0	20,0	38,00	V6-00650	42 CR 764	428275	52	●
7	210,0	285,0	30,0	1,50	35,0	55,0	63,0	106,00	V6-00652	42 CR 764	457563	69	○
6	125,0	130,0	35,0	2,00	35,0	74,0	55,0	86,00	V6-00654	50 CR 879	434029	69	●
3	130,0	100,0	18,0	2,00	108,0	154,0	117,0	154,00	V6-00657	42 CR 764	400791	83	○
5	185,0	180,0	25,0	2,00	108,0	108,0	117,0	157,00	V6-00658	42 CR 764	25144	83	●
4	52,0	60,0	14,0	1,00	35,0	35,0	45,0	58,00	V6-00659	50 CR 879	424147	69	●
3	80,0	70,0	35,0	3,00	180,0	180,0	190,0	210,00	V6-00661	45 NBR 670	29824	86	○
3	80,0	70,0	35,0	3,00	180,0	180,0	190,0	210,00	V6-00661	50 CR 879	60028128	86	○
5	50,0	70,0	12,0	0,60	38,0	38,0	48,0	62,00	V6-00662	42 CR 764	434077	71	●
3	35,0	30,0	5,0	1,00	9,5	26,0	12,0	26,50	V6-00665	42 CR 764	426800	49	●
10	310,0	380,0	40,0	1,50	160,0	260,0	170,0	310,00	V6-00676	42 CR 764	29842	86	○
15	140,0	150,0	35,0	1,00	19,0	32,0	35,0	46,00	V6-00679	42 CR 764	426799	59	●

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No. of convo-lutions	Manu-factured length	Length max.	Length min.	Material thick-ness	Connec-tion Ø 1	Connec-tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
3	100,0	160,0	25,0	1,50	3,0	62,0	72,0	99,00	V6-00694	50 CR 879	466184	43	○
4	55,0	75,0	10,0	1,00	41,0	75,0	57,0	90,00	V6-00700	42 CR 764	153008	72	○
6	100,0	95,0	20,0	1,00	18,0	25,0	25,0	42,00	V6-00713	42 CR 764	431525	57	●
4	70,0	90,0	13,0	1,00	19,0	65,0	25,0	65,00	V6-00714	42 CR 764	427269	59	●
4	70,0	90,0	13,0	1,00	19,0	65,0	25,0	90,00	V6-00714	45 NBR 670	427271	59	○
3	55,0	50,0	12,0	1,00	12,0	34,0	12,0	30,00	V6-00716	42 CR 764	427272	52	●
3	100,0	100,0	12,0	1,20	147,0	200,0	160,0	200,00	V6-00717	50 CR 879	5050499	85	○
3	25,0	35,0	4,0	0,50	30,0	48,0	30,0	48,00	V6-00720	50 CR 879	400804	67	○
8	225,0	280,0	49,0	1,50	90,0	90,0	92,0	128,00	V6-00721	42 CR 764	29912	82	●
4	35,0	40,0	8,0	0,60	20,0	20,0	19,0	29,00	V6-00722	42 CR 764	336382	59	●
27	720,0	920,0	120,0	1,50	50,0	75,0	70,0	110,00	V6-00723	45 NBR 670	29915	75	●
4	45,0	47,0	17,0	50,00	9,0	19,0	16,0	27,00	V6-00724	50 CR 879	438552	48	●
8	115,0	150,0	30,0	1,00	19,0	19,0	28,0	48,00	V6-00726	42 CR 764	426387	59	●
8	115,0	150,0	30,0	1,00	19,0	19,0	28,0	48,00	V6-00726	45 NBR 670	429078	59	●
4	60,0	55,0	20,0	1,00	9,0	70,0	22,0	66,50	V6-00729	42 CR 764	432997	49	●
11	400,0	500,0	55,0	2,50	290,0	290,0	290,0	350,00	V6-00732	50 NBR 842	510580	87	○
2	20,0	30,0	10,0	1,00	32,0	65,0	38,0	52,00	V6-00736	42 CR 764	426374	68	●
15	310,0	370,0	90,0	2,00	24,0	63,0	50,0	80,00	V6-00738	42 CR 764	60037192	62	○
6	120,0	130,0	20,0	1,00	55,0	67,0	60,0	85,00	V6-00740	53 CR 858	430860	76	●
7	160,0	195,0	40,0	2,00	10,0	56,0	50,0	80,00	V6-00741	53 CR 858	456488	50	○
8	68,0	100,0	18,0	0,60	50,0	50,0	52,0	68,00	V6-00742	42 CR 764	426388	75	●
8	75,0	110,0	15,0	0,60	65,0	65,0	72,0	90,00	V6-00743	50 CR 879	25159	79	○
2	10,0	8,0	3,0	0,30	3,0	6,0	4,5	7,60	V6-00748	42 CR 764	29944	43	●
2	17,0	15,0	5,0	0,80	6,0	9,5	10,0	15,00	V6-00752	45 NBR 670	428864	45	●
11	200,0	235,0	65,0	2,00	28,0	39,0	41,0	62,00	V6-00755	50 CR 879	451312	66	○
4	80,0	100,0	12,0	1,20	9,5	68,0	27,5	92,00	V6-00764	50 CR 879	380287	49	○
10	295,0	400,0	55,0	2,00	270,0	270,0	270,0	340,00	V6-00766	50 CR 879	36412	87	○
14	340,0	460,0	60,0	1,50	190,0	190,0	170,0	210,00	V6-00767	42 CR 764	36413	86	●
6	48,0	60,0	15,0	1,00	23,0	23,0	29,0	40,00	V6-00773	42 CR 764	435481	62	●
2	57,0	60,0	15,0	2,50	56,0	115,0	64,0	115,00	V6-00779	50 CR 879	360138	77	○
3	130,0	150,0	25,0	1,50	178,0	250,0	178,0	257,00	V6-00782	50 CR 879	7509	86	○
4	65,0	65,0	15,0	1,00	45,0	45,0	53,0	70,00	V6-00784	42 CR 764	432192	74	●
4	85,0	90,0	20,0	1,50	15,0	92,0	34,0	108,00	V6-00787	42 CR 764	29962	55	○
7	110,0	145,0	24,0	1,00	37,0	50,0	55,0	75,00	V6-00790	50 CR 879	29965	70	○
4	85,0	105,0	18,0	1,50	18,0	70,0	28,0	100,00	V6-00791	42 CR 764	426798	58	●
6	130,0	125,0	35,0	2,00	21,0	35,0	32,0	54,00	V6-00792	53 CR 858	430861	60	●
3	100,0	100,0	15,0	1,50	10,0	127,0	24,0	101,00	V6-00793	42 CR 764	122760	50	○
3	50,0	50,0	15,0	1,50	7,0	30,0	15,0	37,00	V6-00795	42 CR 764	451753	46	○
2	38,0	35,0	7,0	1,00	9,0	44,0	25,0	56,00	V6-00800	42 CR 764	435516	49	●
13	170,0	210,0	35,0	1,00	40,0	40,0	45,0	63,00	V6-00801	50 CR 879	438557	72	●
13	170,0	210,0	35,0	1,00	40,0	40,0	45,0	63,00	V6-00801	42 CR 764	440760	72	●
2	46,0	45,0	15,0	1,50	8,5	34,0	17,0	40,00	V6-00802	50 CR 879	400840	48	○
3	85,0	90,0	15,0	1,50	30,0	60,0	56,0	90,00	V6-00805	50 CR 879	365839	67	○
13	330,0	340,0	60,0	1,50	89,0	89,0	92,0	122,00	V6-00807	42 CR 764	380578	82	○
3	65,0	65,0	15,0	1,50	38,0	38,0	43,0	66,00	V6-00808	42 CR 764	439042	71	○
10	225,0	300,0	50,0	1,50	75,0	75,0	78,0	120,00	V6-00813	50 CR 879	414718	80	○
2	53,0	50,0	10,0	1,50	12,5	32,0	22,5	39,00	V6-00816	42 CR 764	434459	53	●
3	100,0	125,0	15,0	2,00	50,0	92,0	80,0	144,00	V6-00821	42 CR 764	25235	75	●

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No. of convolutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
8	130,0	150,0	30,0	0,80	37,0	57,0	45,0	79,00	V6-00823	42 CR 764	400862	70	○
11	130,0	145,0	30,0	1,00	30,0	37,0	39,0	54,00	V6-00824	50 CR 879	368141	67	○
3	75,0	80,0	15,0	1,50	24,0	50,0	46,0	80,00	V6-00826	50 CR 879	456489	62	○
4	100,0	105,0	18,0	1,50	30,0	60,0	56,0	90,00	V6-00827	42 CR 764	355702	67	○
4	100,0	100,0	20,0	1,50	18,0	39,0	31,0	54,00	V6-00828	42 CR 764	11520	57	○
4	92,0	80,0	20,0	1,50	11,0	35,0	27,0	44,50	V6-00829	50 CR 879	507862	51	○
2	46,0	35,0	12,0	1,50	11,0	31,0	17,0	31,00	V6-00833	50 CR 879	400864	51	○
3	30,0	28,0	6,0	0,70	26,0	32,0	32,0	41,00	V6-00835	42 CR 764	452564	64	○
8	150,0	145,0	35,0	1,00	11,5	19,0	23,4	41,00	V6-00836	50 CR 879	400869	51	○
9	185,0	245,0	36,0	1,30	245,0	245,0	245,0	280,00	V6-00841	42 CR 764	6473	87	○
4	90,0	100,0	28,0	1,75	18,5	61,5	50,0	70,00	V6-00843	50 CR 879	432191	58	○
3	22,0	33,0	15,0	1,00	80,0	129,0	80,0	147,00	V6-00846	50 CR 879	307856	81	○
2	50,0	40,0	12,0	1,50	24,0	54,0	40,5	65,00	V6-00851	50 CR 879	457841	62	○
3	80,0	65,0	15,0	1,50	43,0	58,0	55,0	90,00	V6-00853	50 CR 879	465751	74	○
4	75,0	70,0	18,0	1,50	27,0	54,0	30,0	60,00	V6-00857	42 CR 764	434023	65	●
4	90,0	100,0	26,0	1,20	12,0	48,0	41,0	60,00	V6-00859	42 CR 764	31869	53	○
8	185,0	225,0	30,0	1,50	20,0	55,0	50,0	83,00	V6-00861	42 CR 764	429667	60	●
8	185,0	225,0	30,0	1,50	20,0	55,0	50,0	83,00	V6-00861	50 CR 879	429668	60	●
9	180,0	195,0	100,0	2,00	58,0	72,0	67,0	108,00	V6-00866	42 CR 764	454218	77	○
2	33,0	35,0	10,0	0,80	7,0	25,0	18,0	34,00	V6-00875	42 CR 764	5530	46	●
5	45,0	60,0	18,0	1,50	12,0	36,0	35,0	46,00	V6-00880	50 CR 879	438558	52	●
13	95,0	185,0	50,0	1,00	9,0	40,0	9,0	40,00	V6-00898	42 CR 764	400886	49	○
5	80,0	105,0	28,0	2,00	30,0	86,0	88,0	110,00	V6-00903	42 CR 764	438936	67	○
11	98,0	105,0	20,0	0,60	30,0	30,0	36,0	48,00	V6-00904	50 CR 879	375419	66	●
8	74,0	95,0	16,0	0,60	14,0	24,0	26,0	38,00	V6-00905	42 CR 764	428836	54	●
8	74,0	95,0	16,0	0,60	14,0	24,0	26,0	38,00	V6-00905	42 CR 764	437671	54	○
14	385,0	485,0	70,0	1,50	99,0	99,0	95,0	135,00	V6-00909	50 CR 879	505424	83	○
14	390,0	490,0	70,0	1,50	59,0	59,0	50,0	90,00	V6-00910	42 CR 764	103132	77	○
14	395,0	495,0	70,0	1,50	89,0	89,0	75,0	115,00	V6-00911	42 CR 764	63487	82	○
2	31,0	35,0	10,0	0,80	9,0	31,0	16,5	31,00	V6-00914	50 CR 879	400890	48	○
26	290,0	340,0	130,0	1,80	19,5	19,5	23,0	37,00	V6-00915	50 CR 879	440260	59	○
11	490,0	640,0	45,0	1,50	63,5	138,0	75,0	185,00	V6-00917	50 CR 879	507015	79	○
5	160,0	130,0	20,0	2,00	34,0	166,0	62,0	190,00	V6-00925	42 CR 764	454474	69	●
11	310,0	375,0	40,0	1,50	56,0	140,0	65,0	190,00	V6-00926	42 CR 764	35807	77	○
20	160,0	180,0	60,0	1,00	13,0	15,0	15,5	24,00	V6-00930	42 CR 764	400893	53	○
18	150,0	170,0	48,0	1,00	5,0	24,0	15,0	24,00	V6-00931	42 CR 764	440334	44	○
4	75,0	75,0	14,0	1,00	75,0	80,0	80,0	86,00	V6-00934	50 CR 879	382212	80	○
8	215,0	255,0	37,0	1,50	59,0	59,0	50,0	90,00	V6-00937	45 NBR 670	60022627	77	○
2	68,0	76,0	33,0	1,00	18,0	88,0	61,0	98,00	V6-00942	42 CR 764	450411	58	○
2	45,0	46,0	13,0	0,80	10,0	48,0	30,0	56,00	V6-00945	42 CR 764	413	50	○
2	33,0	36,0	8,0	0,70	8,0	36,0	23,0	43,00	V6-00947	50 CR 879	436933	47	●
2	22,0	26,0	5,0	0,60	5,0	26,0	20,0	33,20	V6-00948	42 CR 764	434	45	●
2	22,0	26,0	5,0	0,60	5,0	26,0	20,0	33,20	V6-00948	50 CR 879	420983	45	●
2	20,0	25,0	4,0	0,60	4,0	18,0	14,0	25,00	V6-00949	42 CR 764	435	43	●
3	80,0	80,0	10,0	1,50	19,0	82,0	45,0	98,00	V6-00955	42 CR 764	429670	59	●
8	125,0	150,0	25,0	1,00	80,0	90,0	90,0	110,00	V6-00963	42 CR 764	454221	81	○
6	70,0	85,0	25,0	1,00	32,0	32,0	32,0	50,00	V6-00965	42 CR 764	453784	68	○
10	130,0	160,0	30,0	1,00	25,5	25,5	25,5	45,00	V6-00966	50 CR 879	350974	63	○

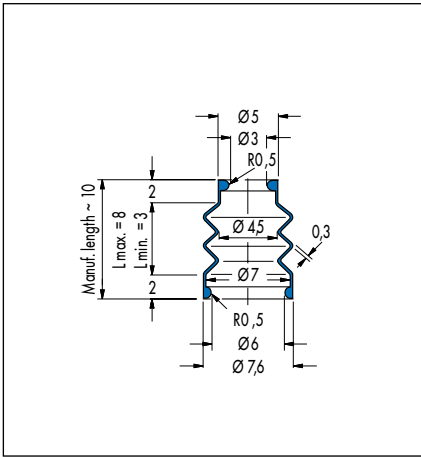
● Available from stock ○ On request: Tool is available, delivery at short notice

No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
5	70,0	85,0	12,0	1,00	45,0	45,0	45,0	72,00	V6-00967	50 CR 879	89513	74	●
12	280,0	360,0	50,0	1,00	65,0	65,0	65,0	100,00	V6-00968	42 CR 764	506619	79	○
9	205,0	240,0	40,0	1,50	52,0	70,0	60,0	90,00	V6-00976	42 CR 764	429665	76	●
4	33,0	35,0	10,0	0,60	10,0	25,0	26,5	33,00	V6-00979	42 CR 764	5810	50	●
11	205,0	270,0	45,0	1,20	52,0	52,0	58,0	85,00	V6-00987	50 CR 879	440232	76	●
11	205,0	270,0	45,0	1,20	52,0	52,0	58,0	85,00	V6-00987	42 CR 764	440233	76	●
5	15,0	25,0	6,0	0,50	13,0	13,0	18,0	24,00	V6-00989	50 CR 879	117054	53	○
2	56,0	60,0	7,0	0,70	9,0	38,0	22,0	47,00	V6-00996	50 CR 879	457508	49	○
2	41,0	34,0	10,0	1,00	25,0	55,0	40,0	66,00	V6-00997	50 CR 879	451314	63	○
5	115,0	125,0	22,0	1,30	118,0	155,0	126,0	155,00	V6-01003	50 CR 879	455224	84	○
3	35,0	35,0	5,5	0,50	4,0	18,0	10,5	22,00	V6-01008	42 CR 764	14405	43	●
3	40,0	40,0	5,5	0,50	5,0	26,0	13,0	33,00	V6-01009	50 CR 879	456494	44	○
4	60,0	60,0	6,5	0,50	7,0	42,0	18,0	38,00	V6-01011	42 CR 764	400903	-	○
4	70,0	77,0	6,5	0,50	8,0	43,0	22,0	49,00	V6-01012	42 CR 764	453786	47	●
4	100,0	115,0	13,0	1,00	12,0	63,0	38,0	4,50	V6-01014	42 CR 764	454262	53	●
31	480,0	570,0	155,0	1,50	60,0	77,0	77,0	97,00	V6-01018	42 CR 764	454225	78	○
5	80,0	80,0	15,0	1,00	15,5	30,0	30,0	45,00	V6-01019	42 CR 764	438569	56	●
10	240,0	290,0	40,0	1,20	48,0	48,0	50,0	83,00	V6-01022	42 CR 764	432696	75	●
2	83,0	65,0	20,0	2,00	29,0	67,0	35,0	84,00	V6-01023	42 CR 764	454488	66	●
7	170,0	220,0	30,0	0,80	50,0	100,0	68,0	100,00	V6-01029	50 CR 879	20231	75	○
3	75,0	80,0	20,0	2,00	42,0	90,0	70,0	90,00	V6-01030	42 CR 764	400918	73	○
6	205,0	195,0	30,0	1,50	270,0	270,0	260,0	300,00	V6-01031	50 CR 879	361913	87	○
2	33,0	30,0	5,0	0,80	7,0	32,0	9,0	32,00	V6-01032	50 CR 879	402606	46	○
6	185,0	245,0	25,0	1,50	70,0	170,0	85,0	210,00	V6-01033	42 CR 764	10596	80	○
6	223,0	267,0	42,0	1,50	45,0	100,0	104,0	148,00	V6-01046	42 CR 764	400920	74	○
5	130,0	135,0	30,0	1,50	45,0	100,0	45,0	130,00	V6-01047	50 CR 879	454226	74	○
5	144,0	160,0	25,0	1,00	60,0	118,0	86,0	118,00	V6-01049	42 CR 764	454227	79	○
3	20,0	25,0	10,0	0,50	8,0	20,0	21,5	26,50	V6-01052	42 CR 764	81226	47	○
2	60,0	60,0	8,0	2,00	27,0	52,0	45,0	90,00	V6-01055	42 CR 764	457773	65	●
4	82,0	110,0	15,0	1,50	64,0	68,0	70,0	110,00	V6-01063	50 CR 879	453733	79	●
4	72,0	100,0	15,0	1,50	54,0	58,0	61,0	100,00	V6-01064	50 CR 879	453735	76	○
12	300,0	400,0	55,0	1,50	45,0	45,0	45,0	85,00	V6-01075	42 CR 764	400934	74	○
7	120,0	160,0	25,0	1,00	80,0	80,0	90,0	115,00	V6-01079	42 CR 764	454232	81	○
15	220,0	260,0	35,0	1,00	35,0	65,0	37,5	95,00	V6-01080	42 CR 764	457509	69	○
2	26,0	30,0	20,0	0,50	6,0	32,0	21,0	40,00	V6-01104	42 CR 764	434028	46	●
3	10,0	12,0	4,0	0,30	3,5	5,0	4,2	7,50	V6-01109	50 CR 879	5417	43	○
5	81,0	70,0	20,0	1,00	11,0	26,5	22,0	33,50	V6-01119	42 CR 764	400940	50	○
2	75,0	80,0	13,0	1,50	48,0	48,0	64,0	100,00	V6-01136	42 CR 764	425266	75	○
2	45,0	45,0	5,0	1,25	8,5	31,0	18,0	35,00	V6-01138	42 CR 764	428843	47	●
6	160,0	180,0	20,0	1,00	94,0	98,0	104,0	140,00	V6-01140	42 CR 764	454240	82	●
5	85,0	90,0	15,0	1,00	17,0	120,0	40,0	150,00	V6-01141	50 CR 879	454243	57	○
4	70,0	95,0	20,0	1,00	7,0	20,0	25,0	50,00	V6-01150	50 CR 879	142815	46	○
12	410,0	520,0	85,0	1,40	26,0	112,0	98,0	145,00	V6-01156	42 CR 764	454245	64	●
12	280,0	340,0	50,0	1,20	48,0	48,0	50,0	83,00	V6-01165	50 CR 879	454248	75	●
3	14,5	20,0	5,0	0,60	5,0	18,0	16,0	24,00	V6-01194	45 NBR 670	440258	44	●
3	12,0	15,0	5,0	0,40	5,0	15,0	16,5	20,50	V6-01207	42 CR 764	452568	44	○
6	134,0	170,0	40,0	1,50	11,0	102,0	43,0	119,50	V6-01218	50 CR 879	454250	51	○
2	50,0	60,0	12,0	1,50	57,0	79,0	70,0	98,00	V6-01226	42 CR 764	452566	77	○

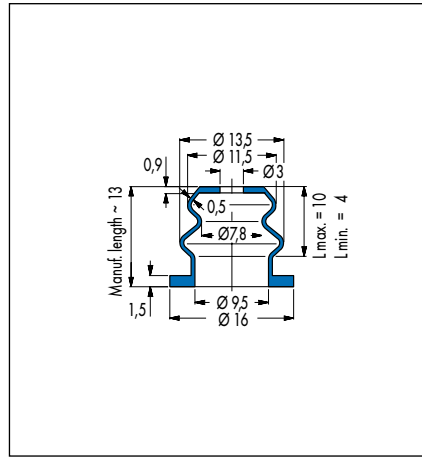
● Available from stock ○ On request: Tool is available, delivery at short notice

No. of convo- lutions	Manu- factured length	Length max.	Length min.	Material thick- ness	Connec- tion Ø 1	Connec- tion Ø 2	Smallest inside Ø	Largest outside Ø	Type	Material	Article No.	Page	
2	18,0	20,0	6,0	0,50	4,0	16,0	11,0	22,00	V6-01231	42 CR 764	8934	43	●
2	55,0	39,0	25,0	2,50	164,0	175,0	160,0	196,00	V6-01234	60 CR 87258	501406	86	○
4	60,0	60,0	15,0	0,70	32,0	32,0	40,0	54,00	V6-01236	53 CR 858	436913	68	○
11	205,0	240,0	60,0	1,50	112,0	122,0	122,0	145,00	V6-01247	42 CR 764	454251	83	●
7	140,0	155,0	25,0	1,50	12,5	12,5	95,0	120,00	V6-01261	50 CR 879	454481	53	●
4	58,0	40,0	10,0	1,00	4,5	14,0	12,0	28,00	V6-01281	42 CR 764	389744	43	○
3	145,0	120,0	15,0	2,00	130,0	190,0	150,0	190,00	V6-01305	42 CR 764	400958	85	○
5	93,0	88,0	15,0	1,00	30,0	63,0	40,0	85,00	V6-01329	42 CR 764	60305	67	●
3	78,0	80,0	15,0	2,00	10,0	52,0	15,5	49,50	V6-01348	50 CR 879	429741	50	○
3	78,0	80,0	15,0	2,00	10,0	52,0	15,5	49,50	V6-01348	42 CR 764	430248	50	●
15	119,0	119,0	56,0	1,00	16,0	16,0	16,0	26,00	V6-01353	50 CR 879	82687	56	●
4	91,0	94,0	20,0	1,50	14,0	70,0	28,0	100,00	V6-01358	50 CR 879	451650	54	●
2	42,0	38,0	10,0	1,00	20,0	34,0	25,0	40,00	V6-01390	42 CR 764	400988	60	○
2	70,0	33,5	18,0	2,50	110,0	110,0	122,0	142,00	V6-01406	60 CR 87258	333285	83	○
2	20,0	16,0	10,0	0,50	7,5	13,0	14,0	18,00	V6-01408	42 CR 764	400989	47	○
2	70,0	33,5	18,0	2,50	88,0	88,0	100,0	120,00	V6-01412	60 CR 87258	104484	82	●
3	90,0	53,0	22,0	2,50	160,0	160,0	172,0	192,00	V6-01413	60 CR 87258	104556	85	○
4	83,0	56,0	16,0	2,00	32,0	70,0	46,0	90,00	V6-01431	45 NBR 670	454267	69	○
22	395,0	630,0	132,0	1,30	125,0	156,0	125,0	190,00	V6-01444	50 CR 879	60040372	84	○
7	160,0	232,0	32,5	1,30	125,0	156,0	149,0	190,00	V6-01445	50 CR 879	355400	84	○
3	125,0	80,0	35,0	2,50	36,0	77,0	56,0	74,50	V6-01449	50 CR 879	152544	70	○
8	100,0	105,0	17,0	0,60	15,0	23,0	18,0	34,00	V6-01450	42 CR 764	452567	55	○
10	185,0	220,0	60,0	1,50	59,0	84,0	74,0	116,00	V6-01453	42 CR 764	454255	78	○
9	86,0	75,0	26,0	1,00	5,4	17,0	12,5	32,00	V6-01466	57 CR 868	457512	45	○
4	28,0	34,0	14,0	0,70	5,0	35,5	10,0	35,50	V6-01526	42 CR 764	400999	45	○
3	90,0	55,0	40,0	2,50	200,0	200,0	212,0	232,00	V6-01528	50 CR 879	455421	86	●
5	55,0	72,0	18,0	0,90	15,0	46,0	50,0	65,00	V6-01538	50 CR 879	434075	55	○
4	80,0	80,0	30,0	1,50	20,0	40,0	20,0	54,00	V6-01544	50 CR 879	301805	60	●
2	23,0	17,0	8,0	1,20	18,0	29,0	25,0	40,00	V6-01556	50 CR 879	432591	57	○
2	32,0	26,0	8,0	0,80	12,0	23,0	15,5	30,00	V6-01585	50 CR 879	365460	52	○
4	115,0	98,0	28,0	2,00	27,5	95,5	32,0	115,00	V6-01723	65 CR 119905	438571	65	○
2	18,0	18,0	7,0	1,00	12,0	22,0	16,0	31,00	V6-01724	60 NBR 692	357997	51	○
3	27,0	24,0	12,0	1,50	12,0	22,0	17,0	28,00	V6-01725	60 NBR 692	370363	51	○
5	152,0	160,0	30,0	2,00	222,5	222,5	190,0	227,00	V6-01736	42 CR 764	401008	86	○
5	150,0	150,0	30,0	2,00	228,5	228,5	233,0	234,50	V6-01737	42 CR 764	401009	87	○
4	50,0	35,0	10,0	1,00	10,0	16,0	16,0	24,00	V6-01745	50 CR 879	436919	49	○
4	92,0	50,0	18,0	2,00	29,0	111,0	34,0	123,00	V6-01754	50 CR 879	451337	66	●
4	86,0	90,0	22,0	2,00	26,0	96,0	39,0	108,00	V6-01755	50 CR 879	451384	64	●
5	105,0	75,0	25,0	1,50	60,0	75,0	70,0	90,00	V6-01774	50 CR 879	451414	78	○
5	150,0	160,0	30,0	1,20	222,5	222,5	191,5	227,00	V6-01793	42 CR 764	336447	87	○
11	99,0	130,0	33,0	0,80	24,0	24,0	26,0	40,00	V6-20044	50 CR 879	384441	62	●
2	20,0	16,0	5,0	0,60	5,5	10,0	8,0	16,00	V6-20104	50 NBR 842	400549	45	○
8	103,0	110,0	35,0	1,00	7,0	57,0	19,0	66,00	V6-20122	42 CR 764	452810	47	○
4	21,2	33,0	7,0	0,50	5,8	21,2	13,0	28,35	V6-20134	50 CR 879	453832	45	○
15	91,1	102,0	41,0	0,80	5,0	5,0	6,5	15,00	V6-20138	50 NBR 842	420271	44	○
10	222,0	258,0	50,0	1,50	70,0	90,0	65,0	100,00	V6-20173	50 CR 879	458302	-	○
4	77,0	88,0	20,0	1,50	42,0	70,0	57,0	100,00	V6-20195	42 CR 764	501096	73	○
2	78,0	72,0	34,0	2,50	19,0	67,0	46,0	90,00	V6-20199	60 CR 87258	501112	59	○

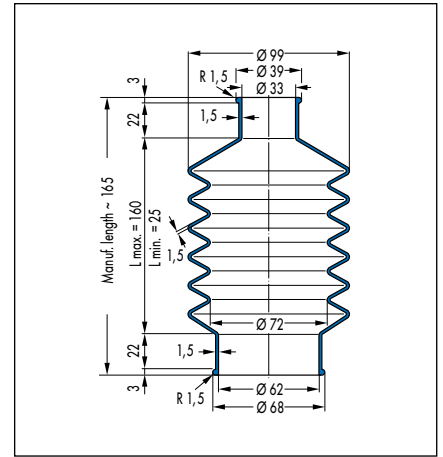
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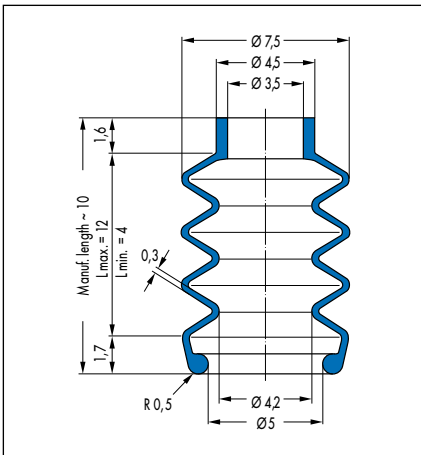
V6-748, Article No. 29944



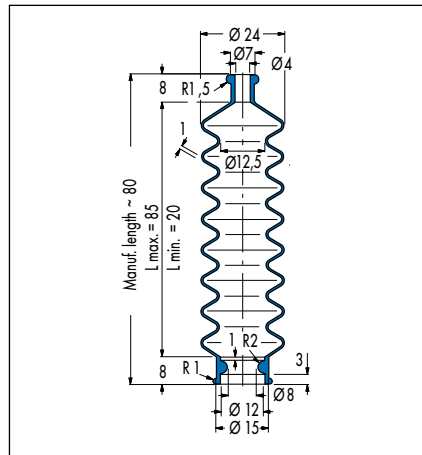
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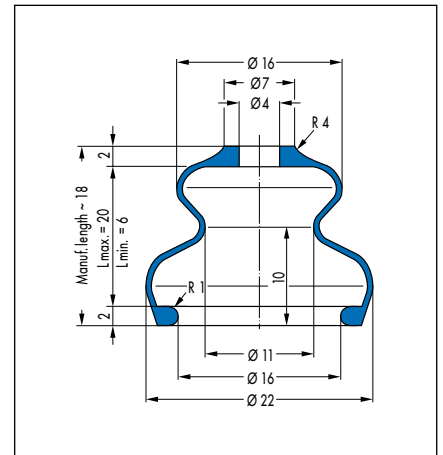
V6-694, Article No. 466184



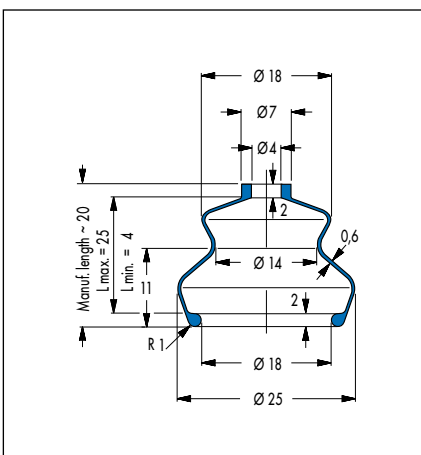
V6-1109, Article No. 5417



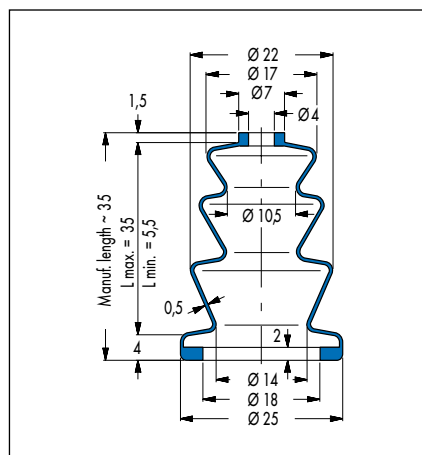
V6-249, Article No. 438531



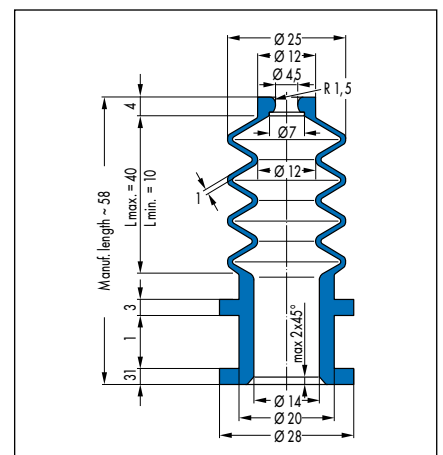
V6-1231, Article No. 8934



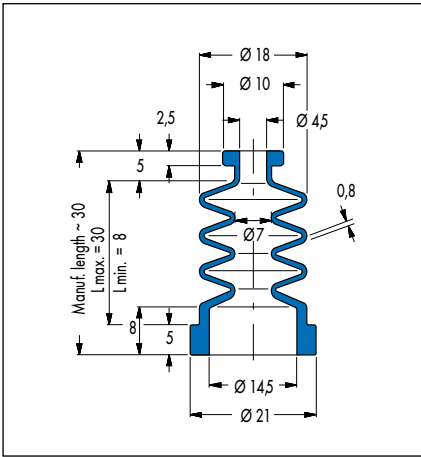
V6-949, Article No. 435



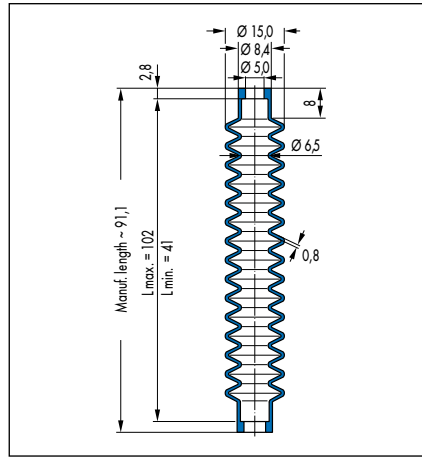
V6-1008, Article No. 14405



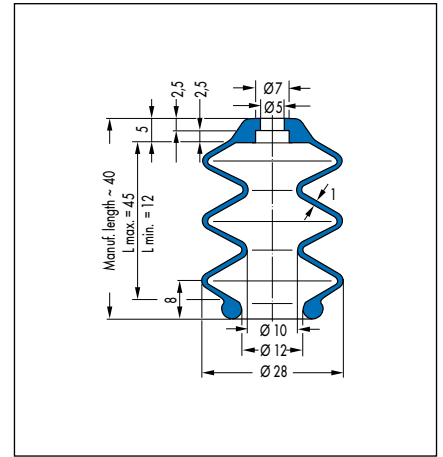
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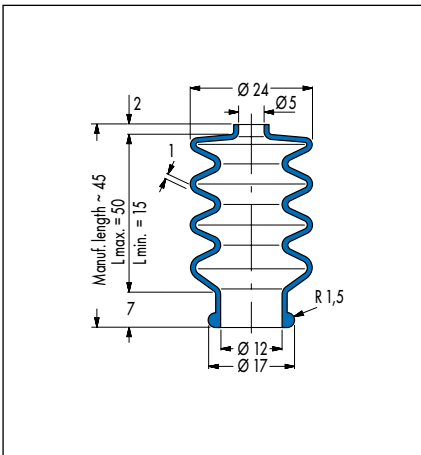
V6-55, Article No. 29209



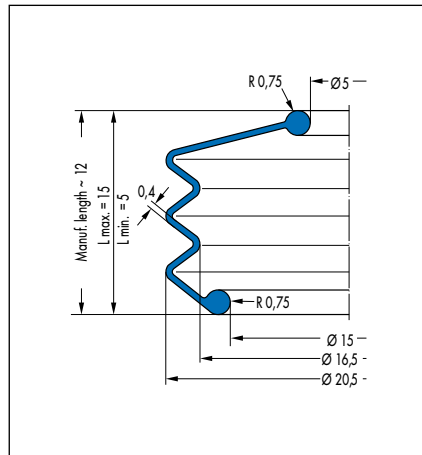
V6-20138, Article No. 420271



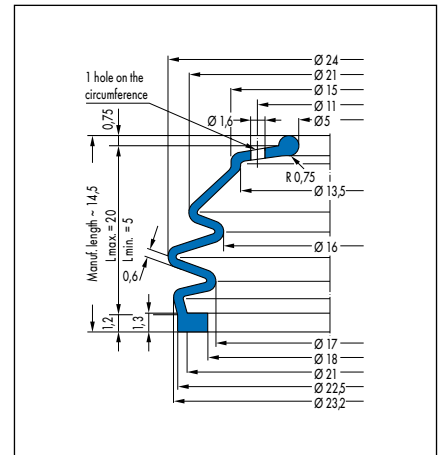
V6-322, Article No. 439472



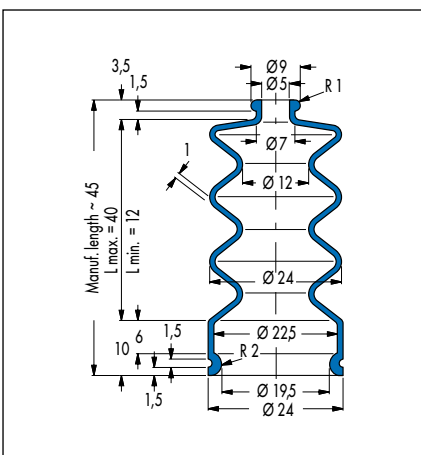
V6-258, Article No. 438028



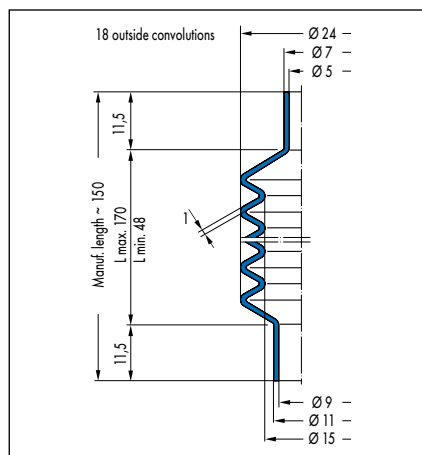
V6-1207, Article No. 452568



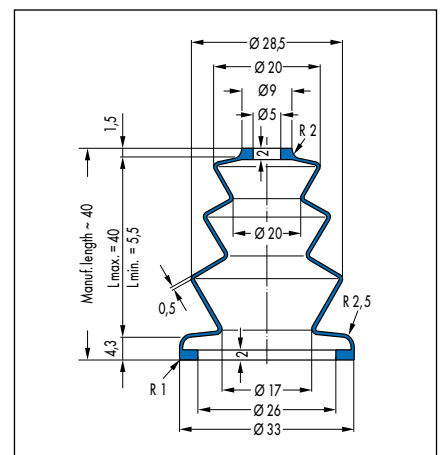
V6-1194, Article No. 440258



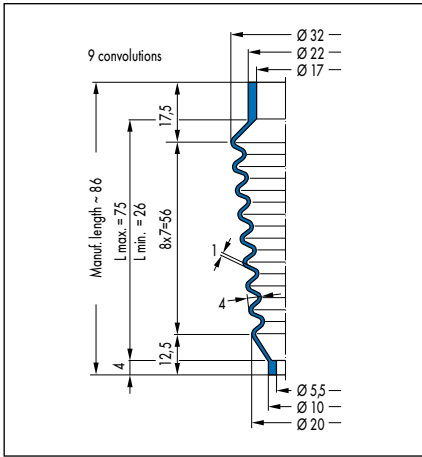
V6-358, Article No. 435291



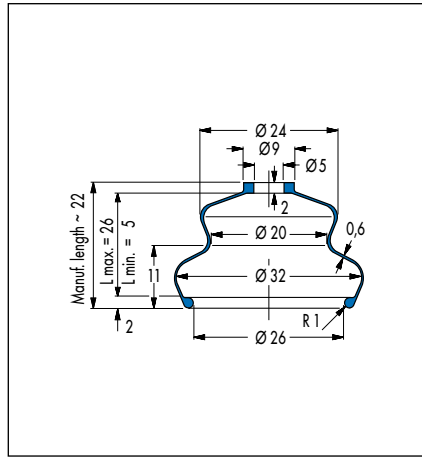
V6-931, Article No. 440334



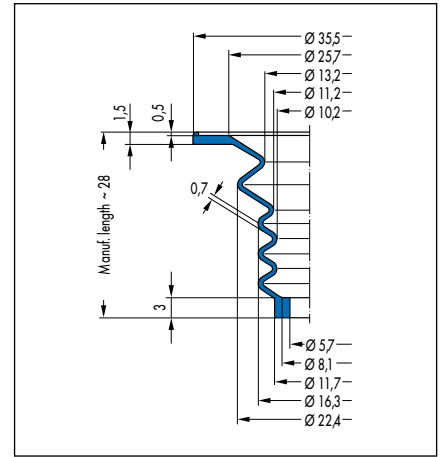
V6-1009, Article No. 456494



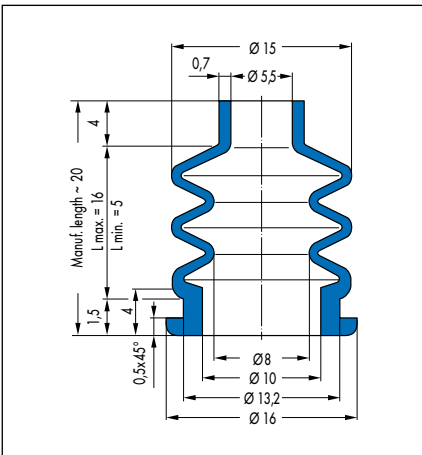
V6-1466, Article No. 457512



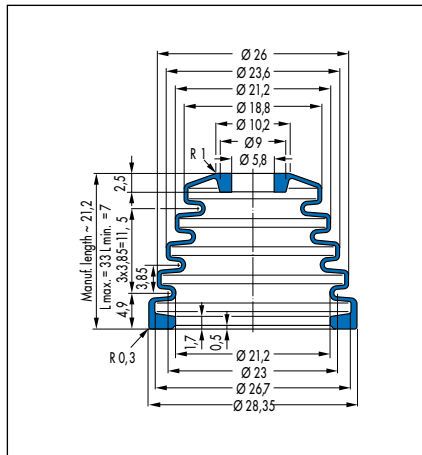
V6-948, Article No. 434 (42 CR 764)/
420983 (50 CR 879)



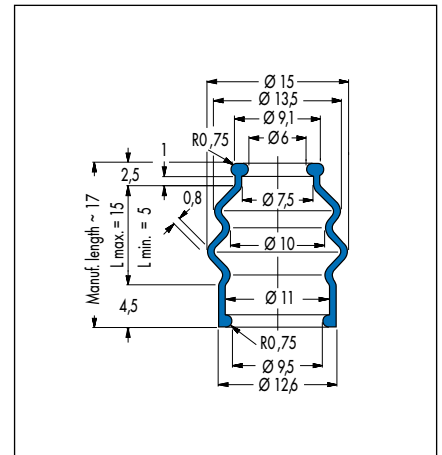
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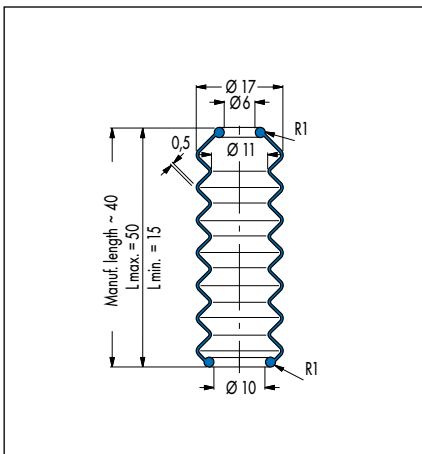
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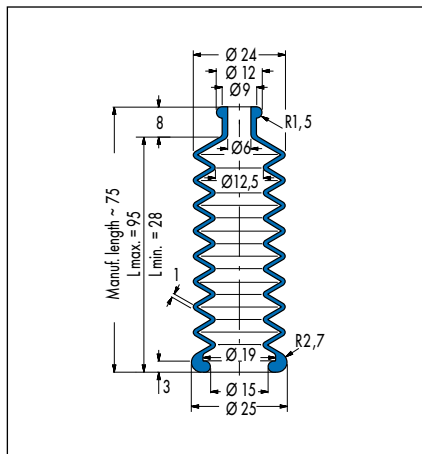
V6-20134, Article No. 453832



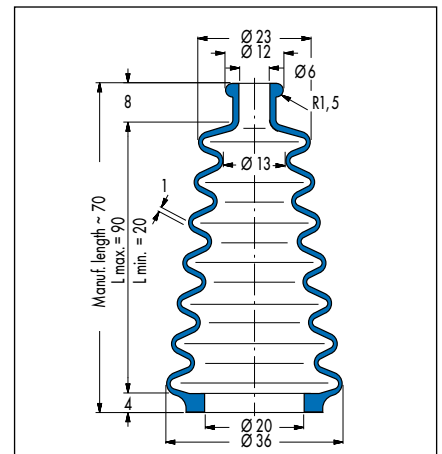
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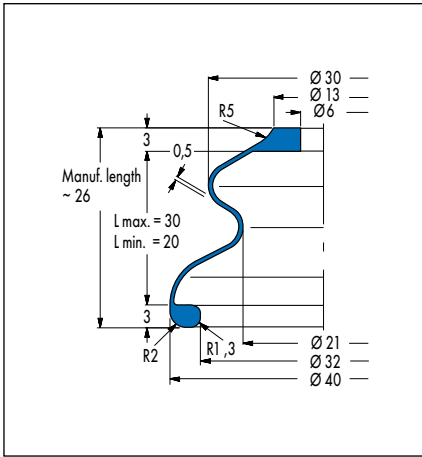
V6-169, Article No. 438526



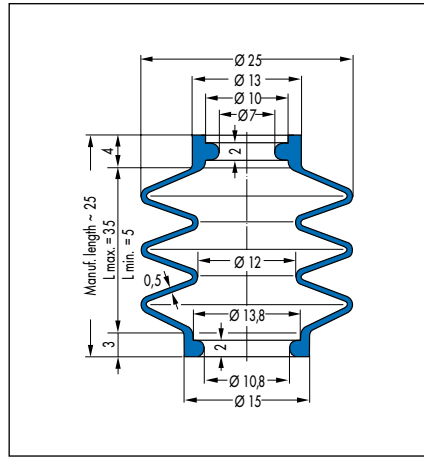
V6-126, Article No. 435526



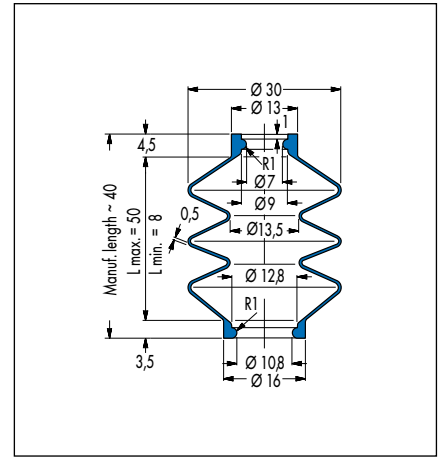
V6-167, Article No. 438520



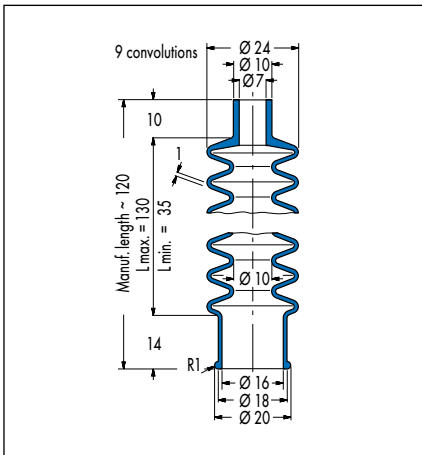
V6-1104, Article No. 434028



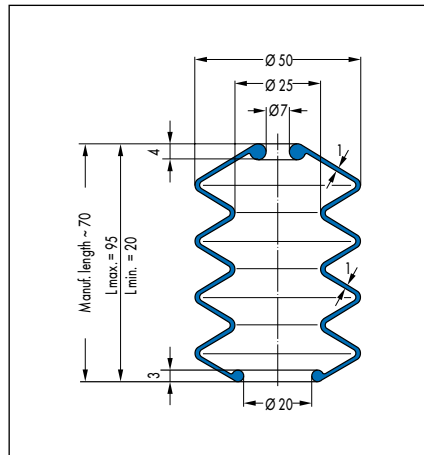
V6-471, Article No. 507077



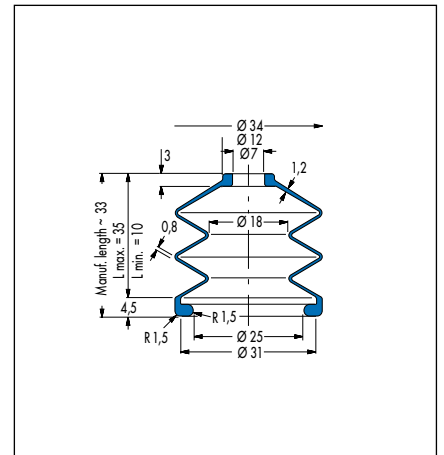
V6-525, Article No. 438219 (45 NBR 670)/438221 (42 CR 764)



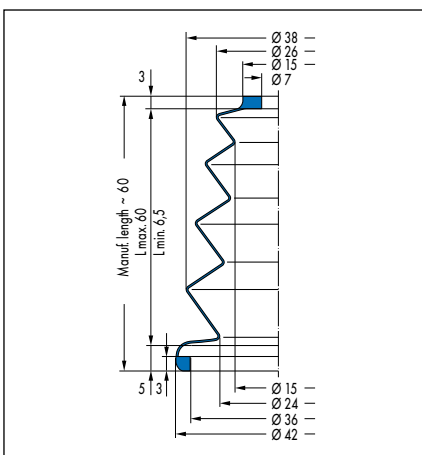
V6-269, Article No. 438534



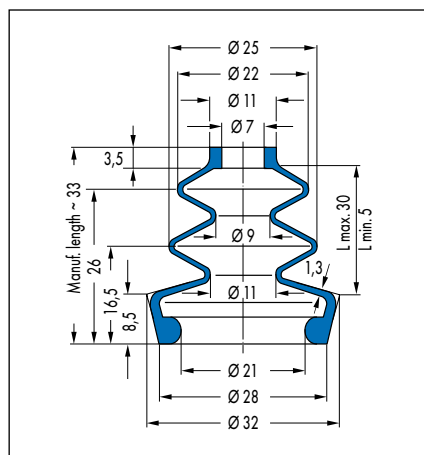
V6-1150, Article No. 142815



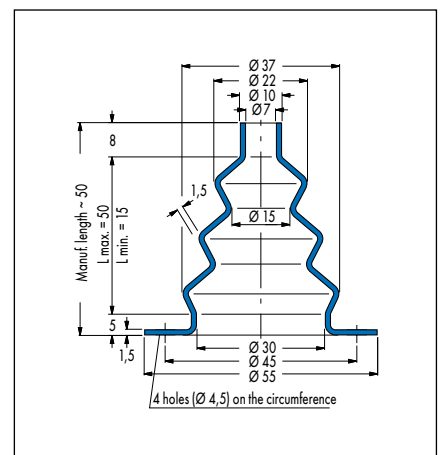
V6-875, Article No. 5530



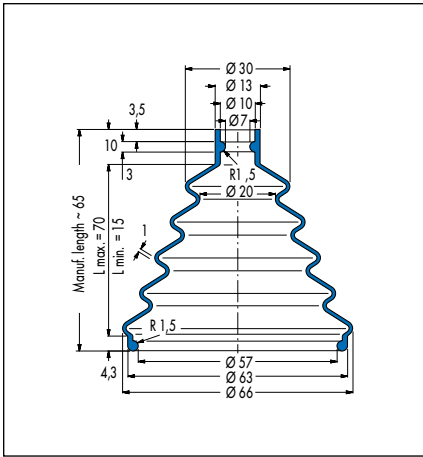
V6-1011, Article No. 400903



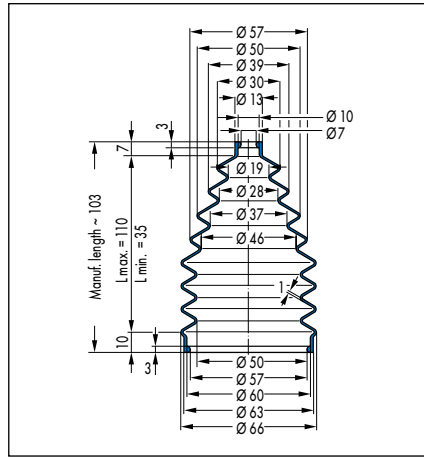
V6-1032, Article No. 402606



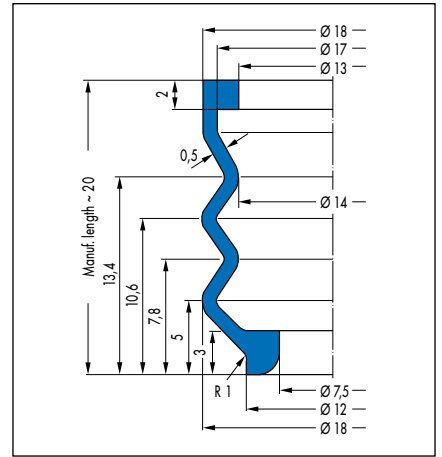
V6-795, Article No. 451753



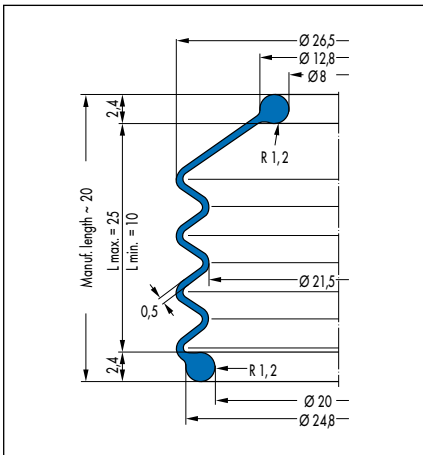
V6-600, Article No. 438545



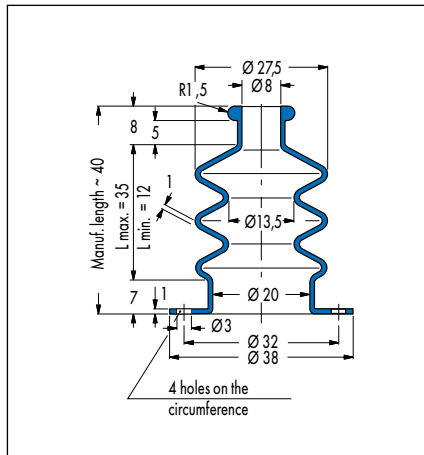
V6-20122, Article No. 452810



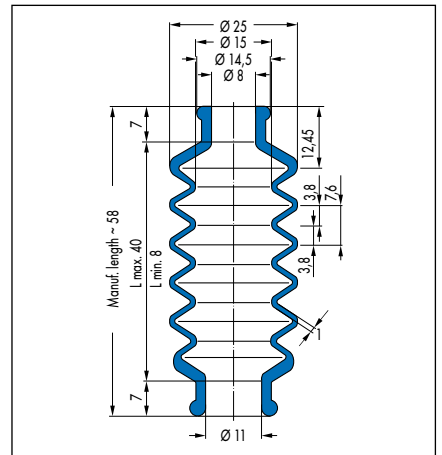
V6-1408, Article No. 400989



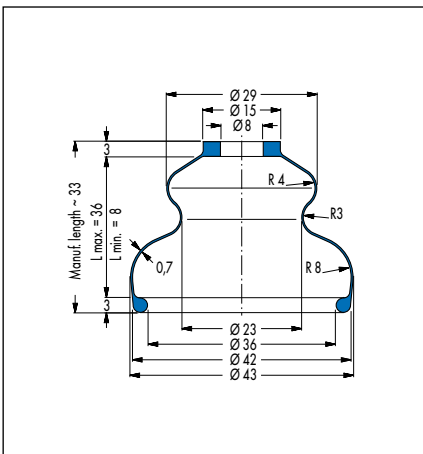
V6-1052, Article No. 81226



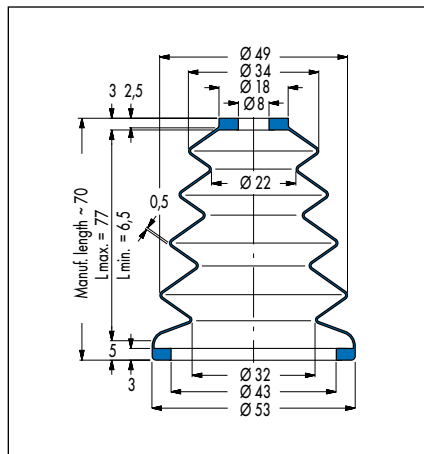
V6-307, Article No. 29502



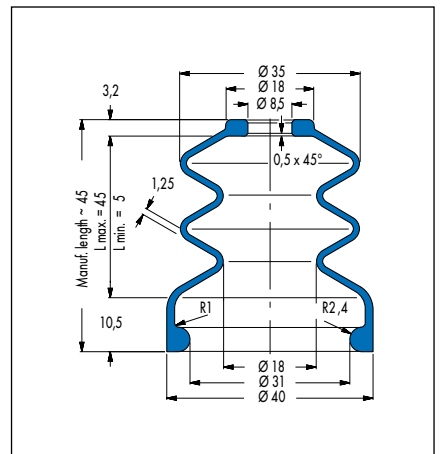
V6-257, Article No. 439218



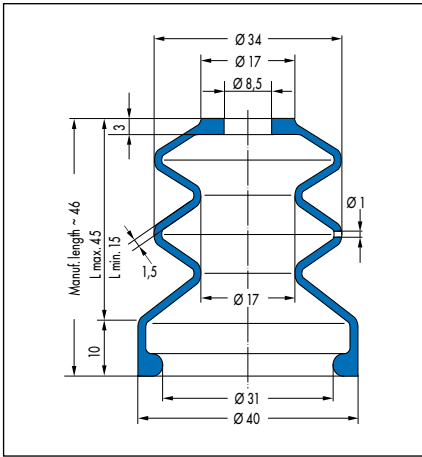
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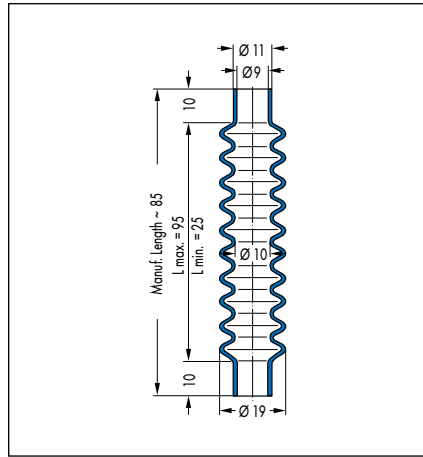
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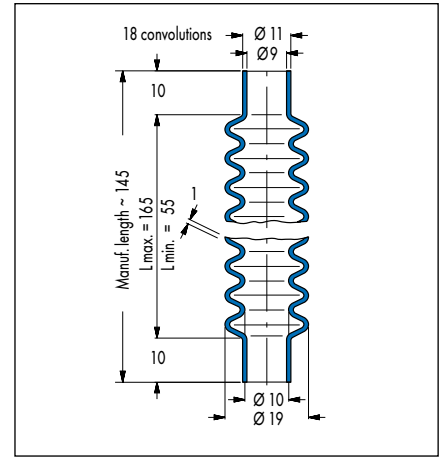
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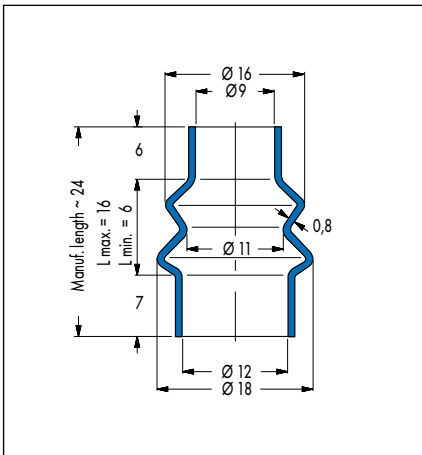
V6-802, Article No. 400840



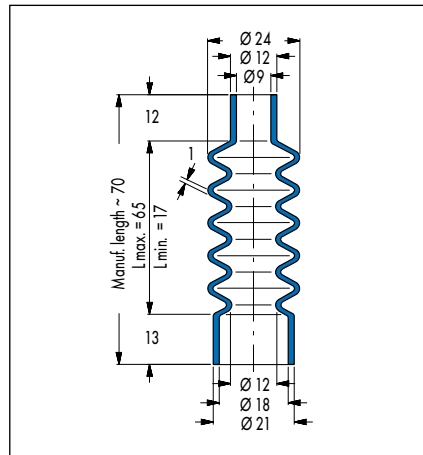
V6-338, Article No. 439491



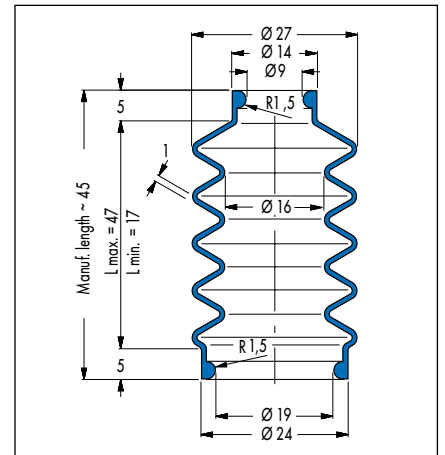
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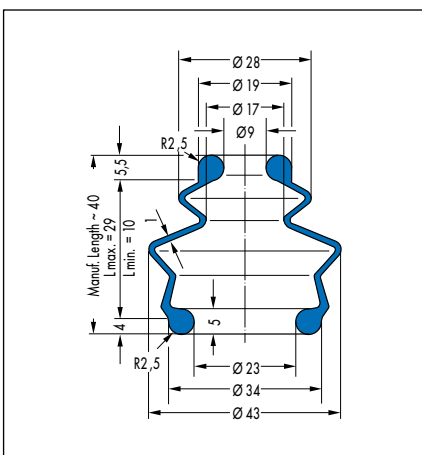
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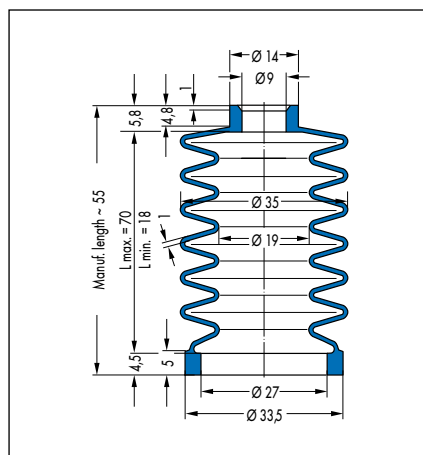
V6-225, Article No. 428314



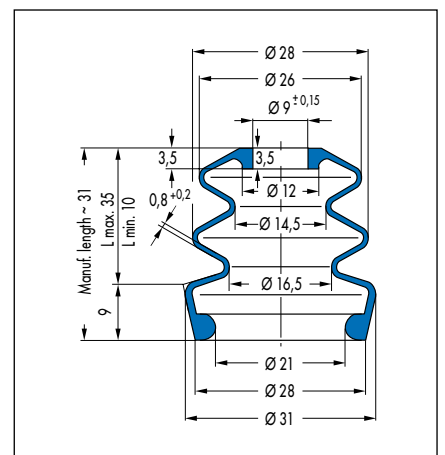
V6-724, Article No. 438552



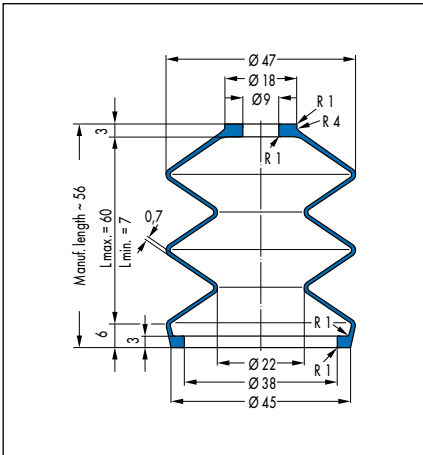
V6-15, Article No. 439217



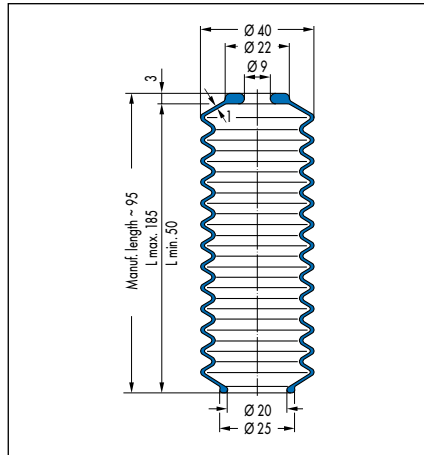
V6-261, Article No. 439215



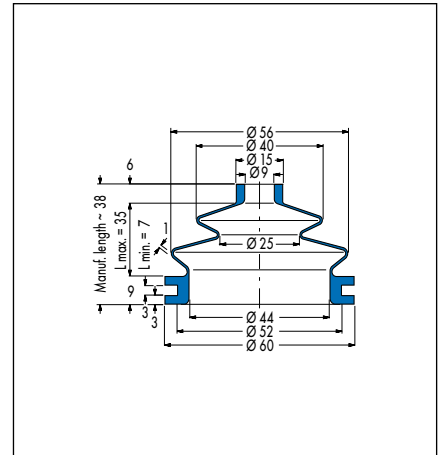
V6-914, Article No. 400890



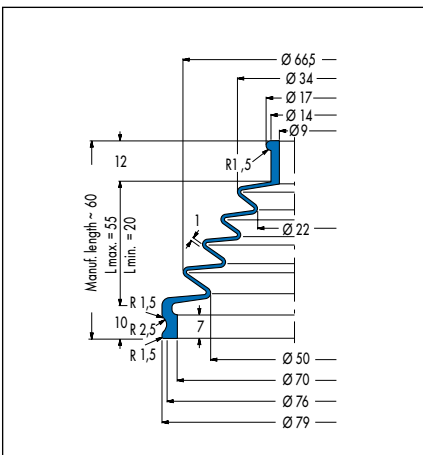
V6-996, Article No. 457508



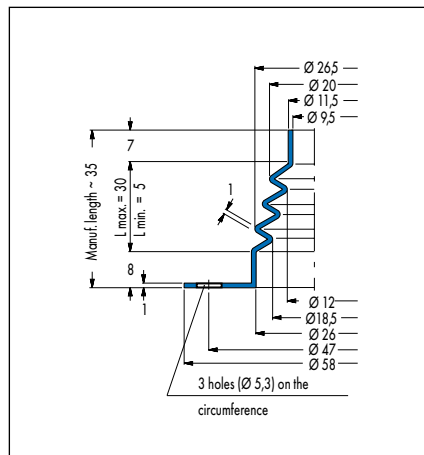
V6-898, Article No. 400886



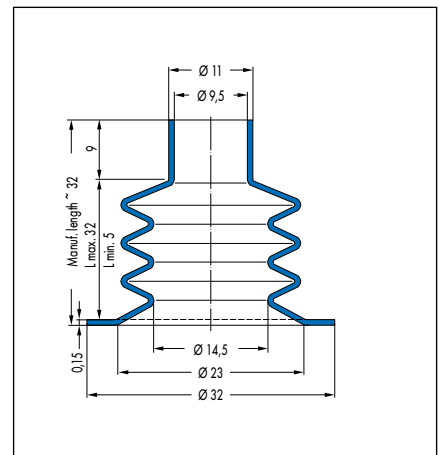
V6-800, Article No. 435516



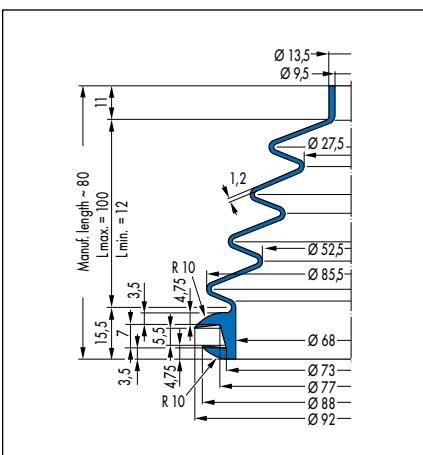
V6-729, Article No. 432997



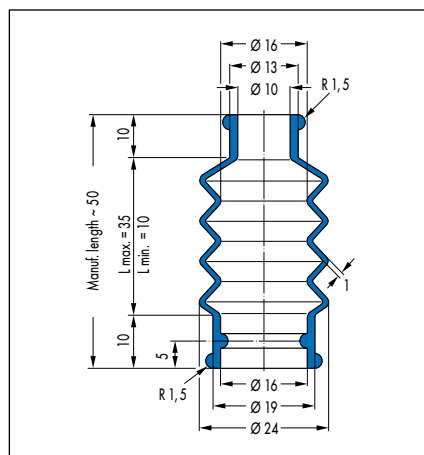
V6-665, Article No. 426800



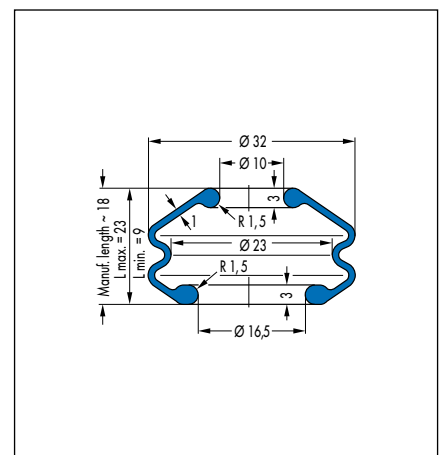
V6-107, Article No. 439216



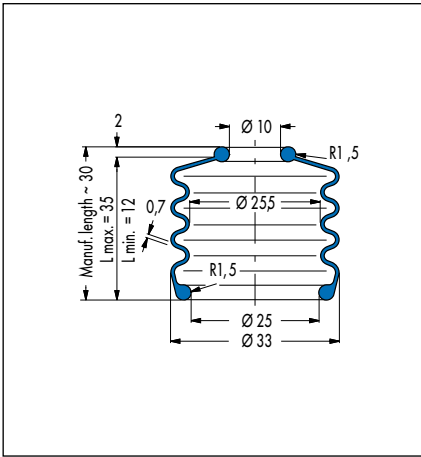
V6-764, Article No. 380287



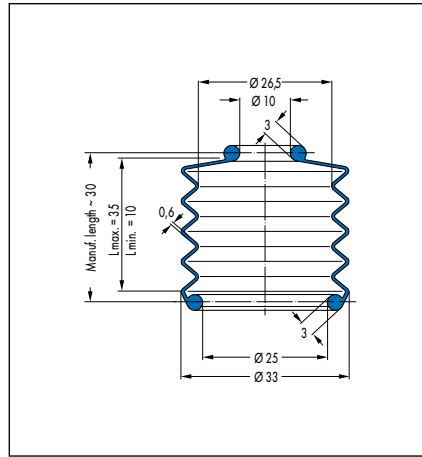
V6-1745, Article No. 436919



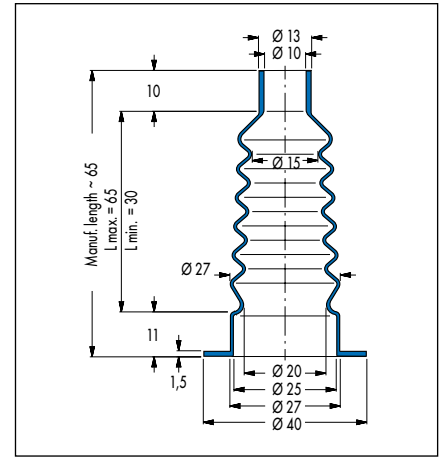
V6-438, Article No. 29634



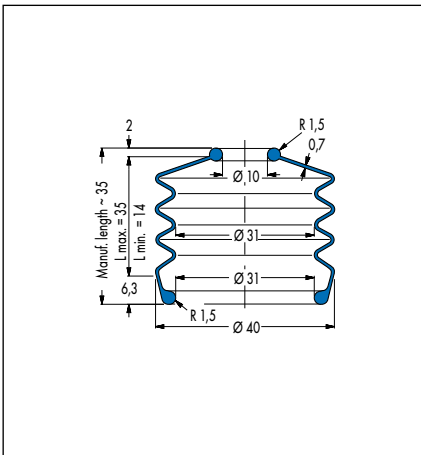
V6-554, Article No. 438537



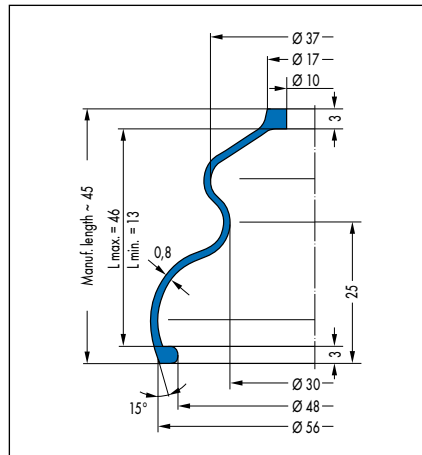
V6-979, Article No. 5810



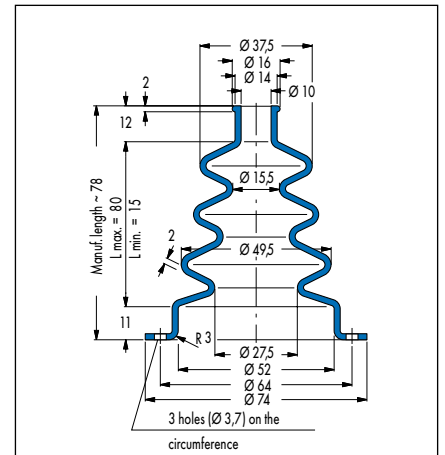
V6-52, Article No. 432593



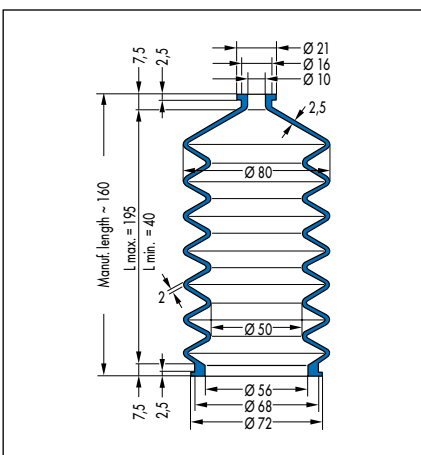
V6-555, Article No. 438572



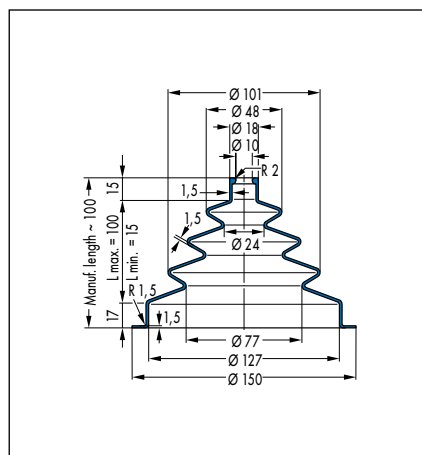
V6-945, Article No. 413



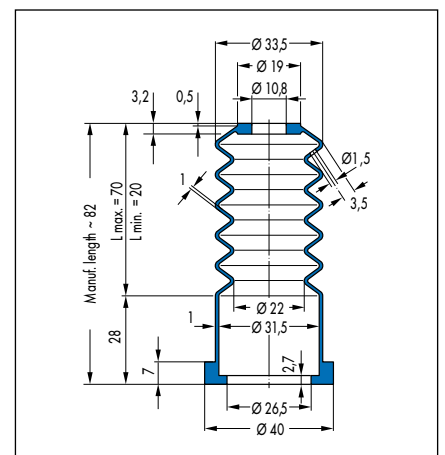
V6-1348, Art.-Nr. 429741 (50 CR 879)/
430248 (42 CR 764)



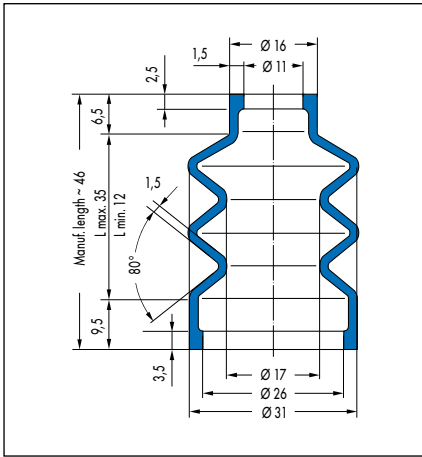
V6-741, Article No. 456488



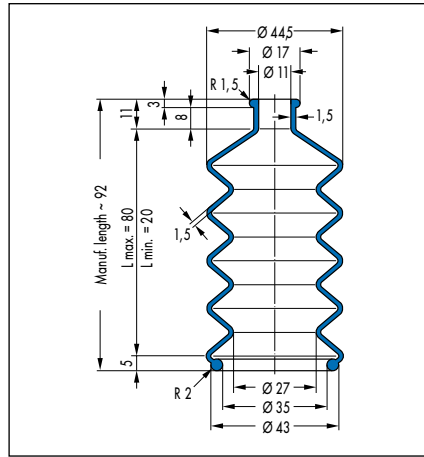
V6-793, Article No. 122760



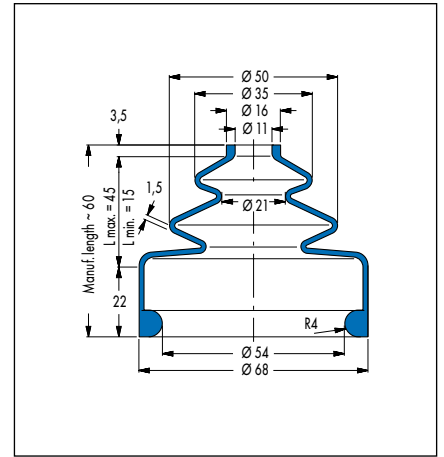
V6-1119, Article No. 400940



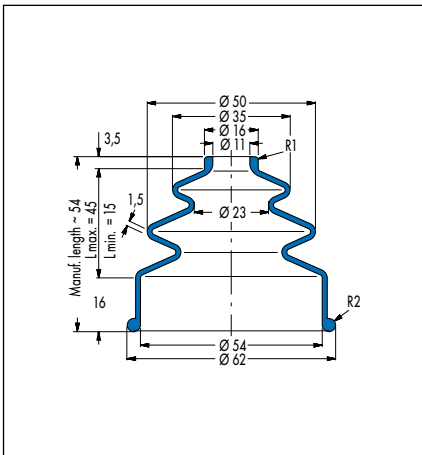
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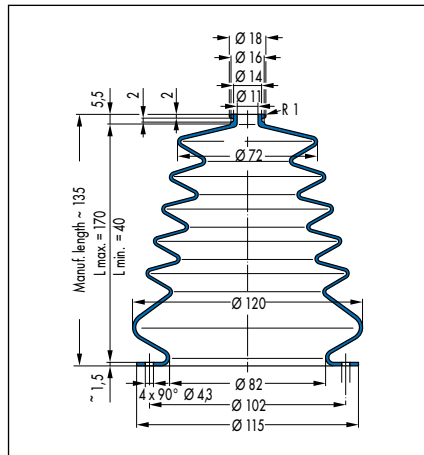
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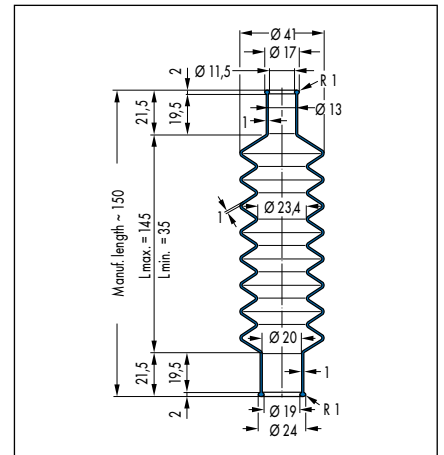
V6-111, Article No. 434031



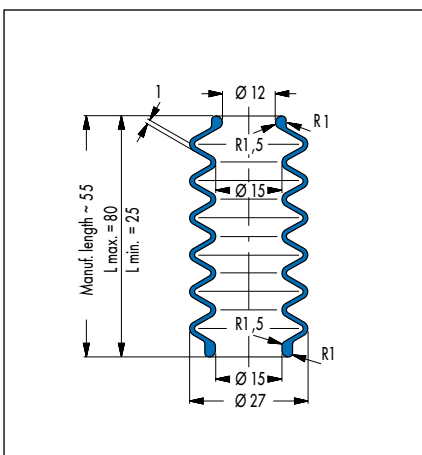
V6-320, Article No. 440257



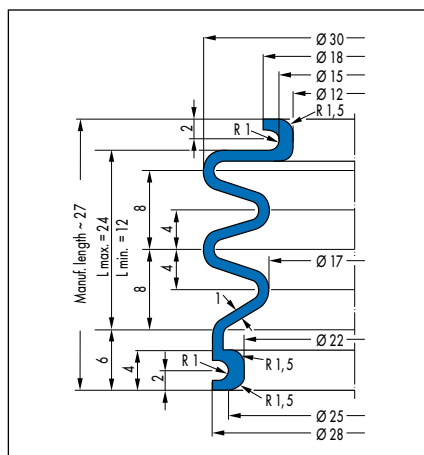
V6-1218, Article No. 454250



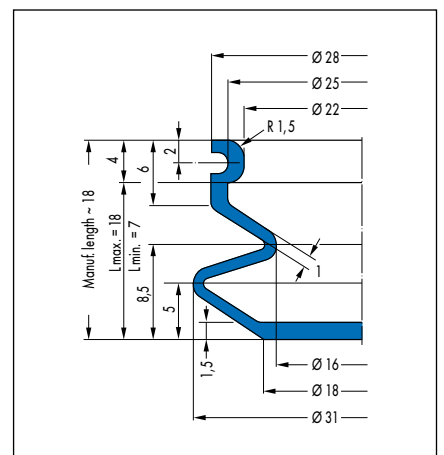
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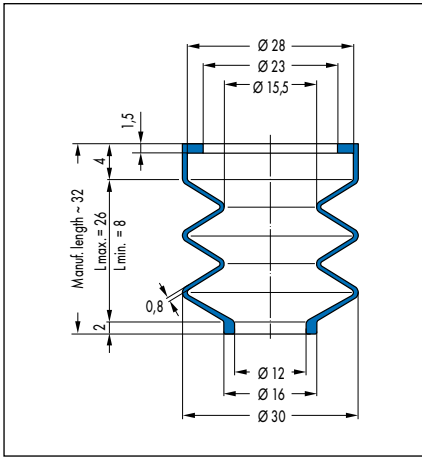
V6-158, Article No. 430845



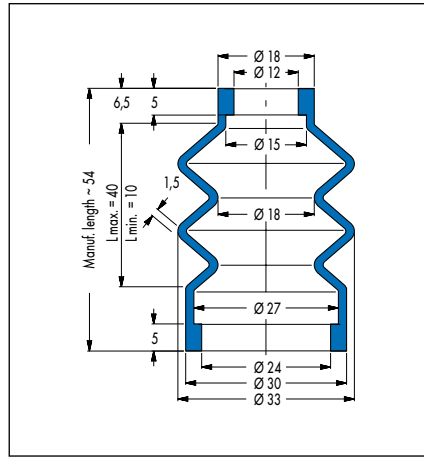
V6-1725, Article No. 370363



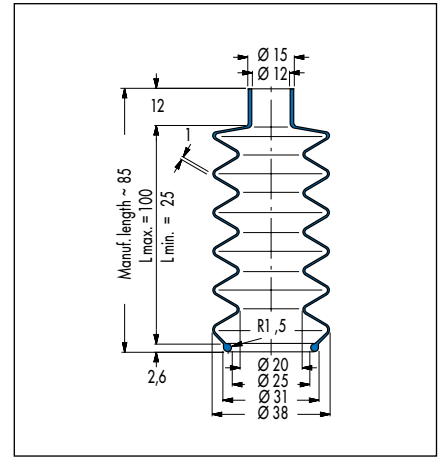
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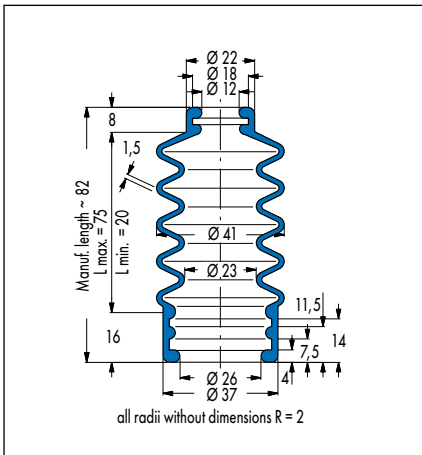
V6-1585, Article No. 365460



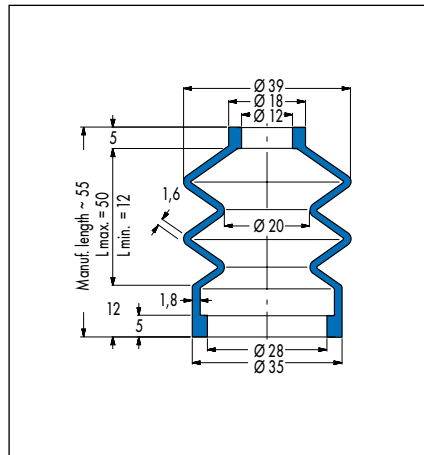
V6-288, Article No. 452930



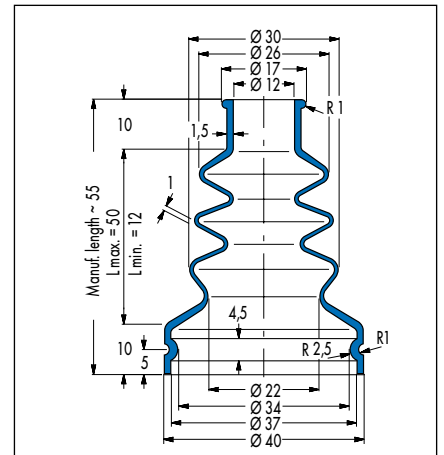
V6-650, Article No. 428275



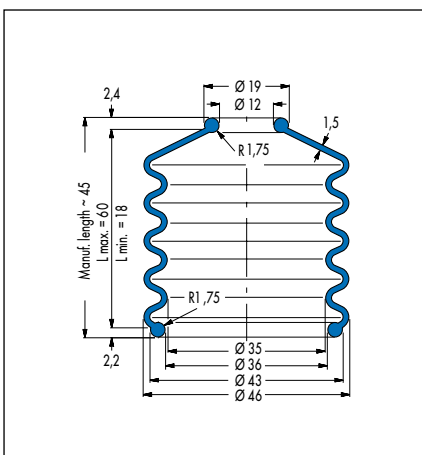
V6-22, Article No. 29192



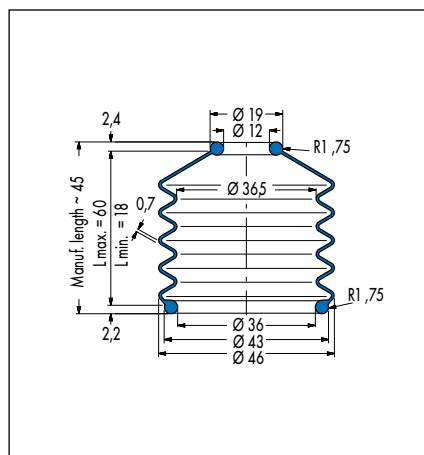
V6-289, Article No. 439474



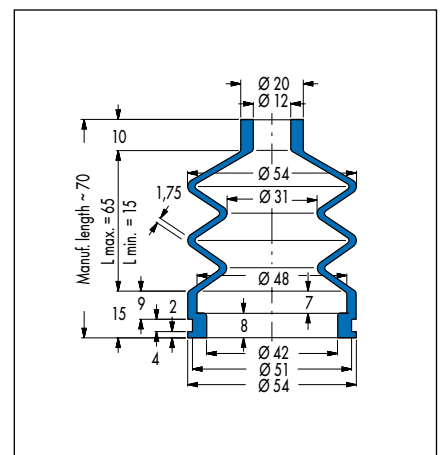
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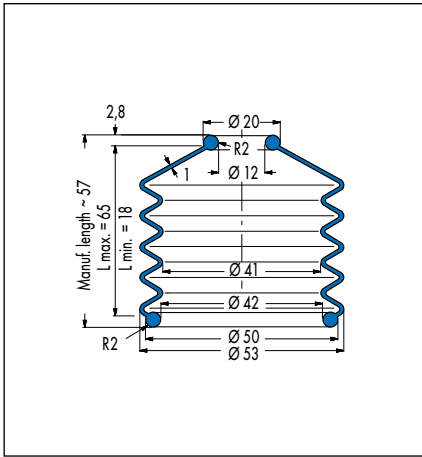
V6-880, Article No. 438558



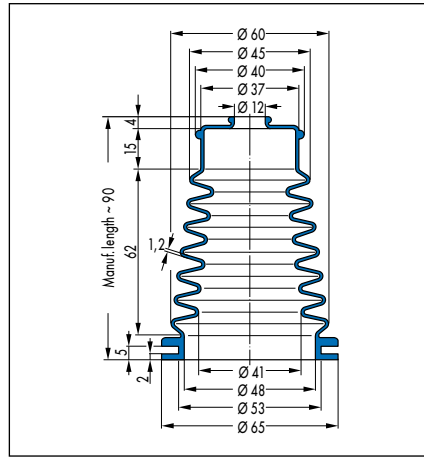
V6-580, Article No. 66382 (50 CR 879)/ 81222 (42 CR 764)



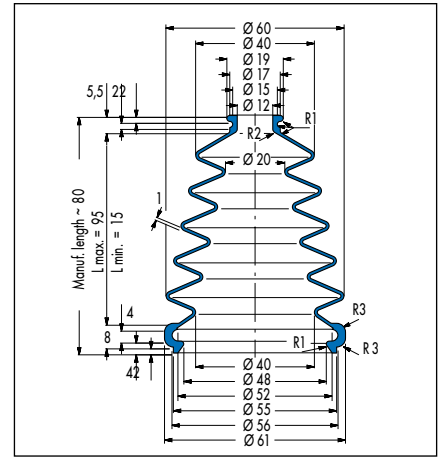
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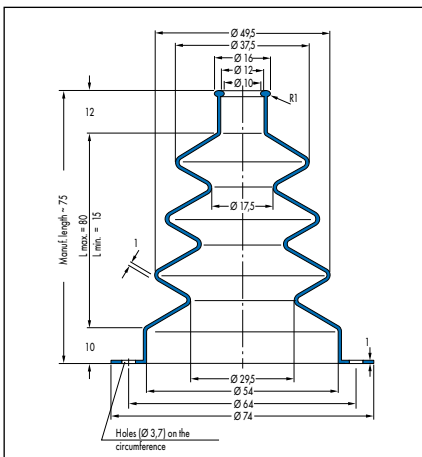
V6-581, Article No. 438541 (CR)/438542 (NBR)



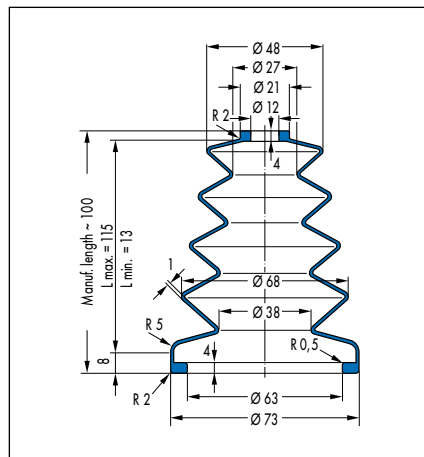
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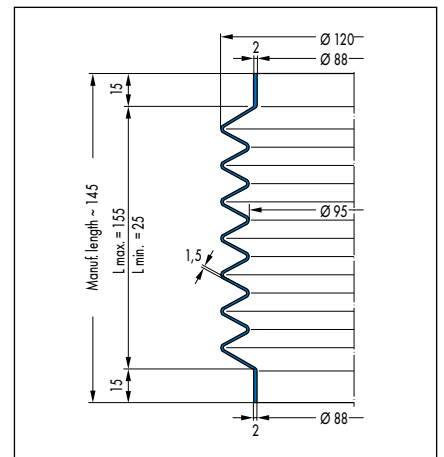
V6-625, Article No. 438216



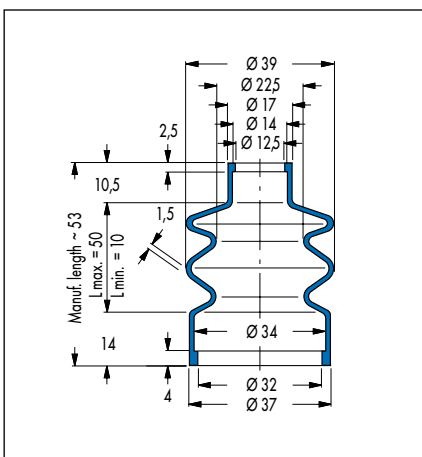
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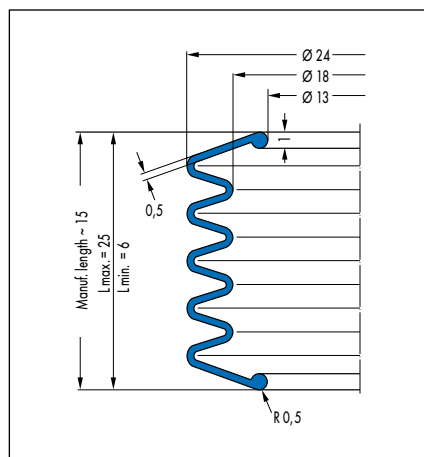
V6-1014, Article No. 454262



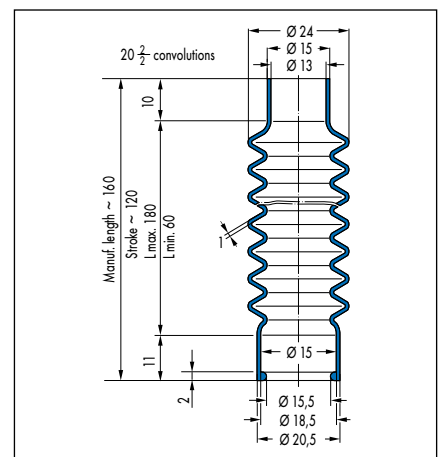
V6-1261, Article No. 454481



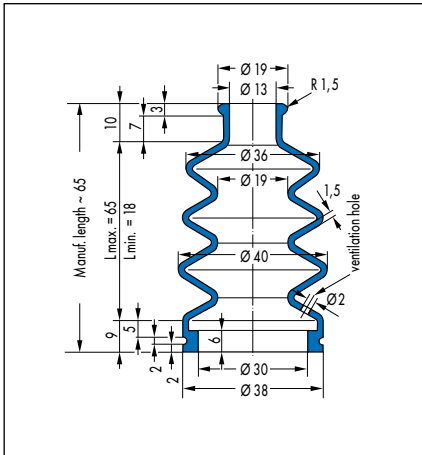
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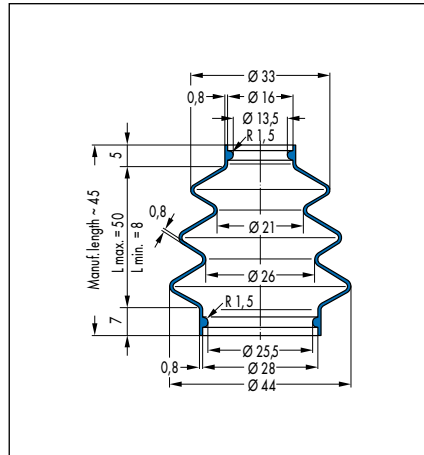
V6-989, Article No. 117054



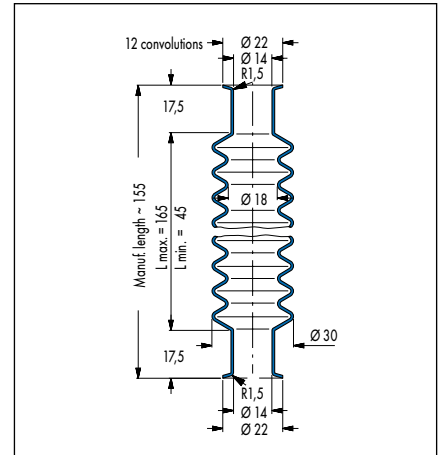
V6-930, Article No. 400893



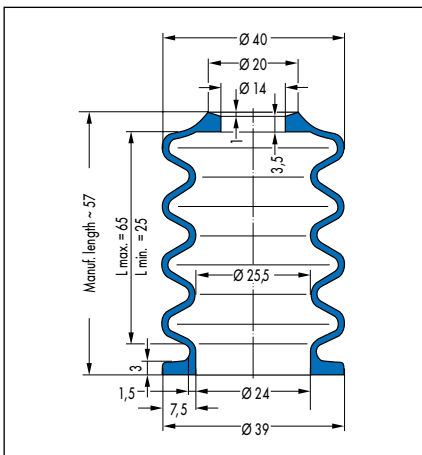
V6-505, Article No. 453725



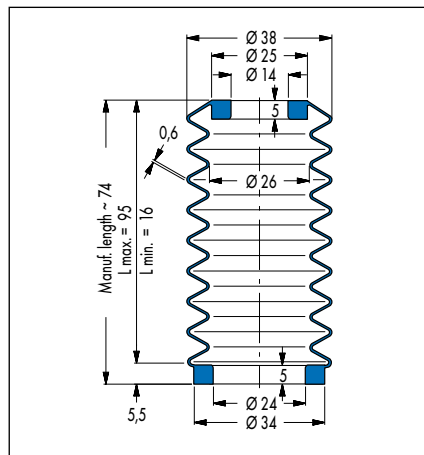
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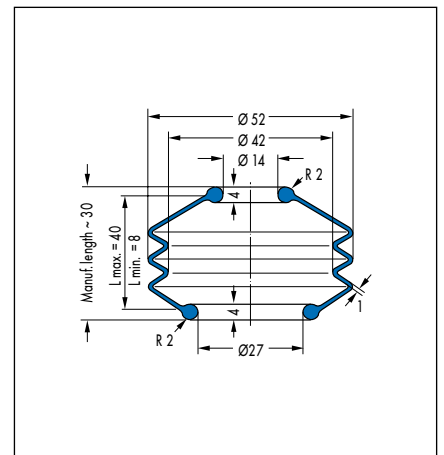
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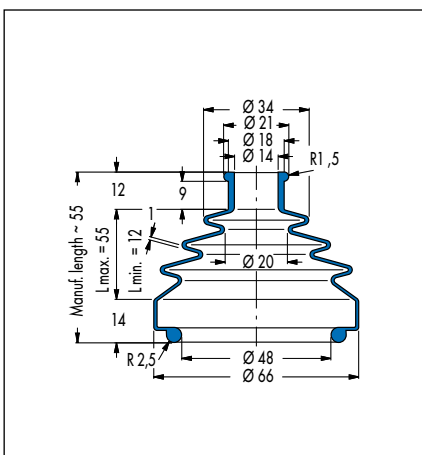
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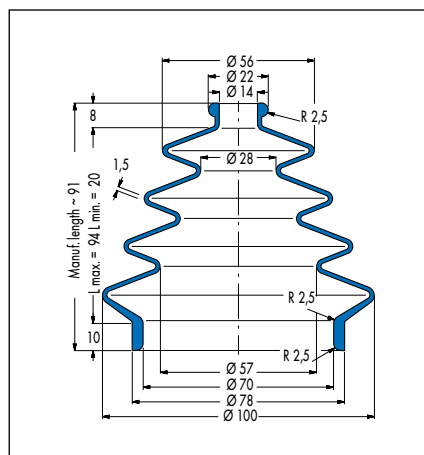
V6-905, Article No. 428836, 437671 (42 CR 764)



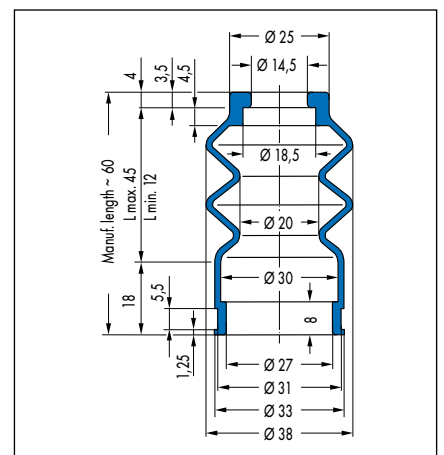
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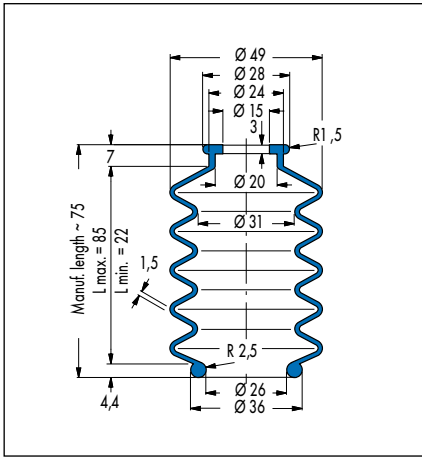
V6-585, Art.-Nr. 436695 (50 CR 879)/ 436697 (42 CR 764)



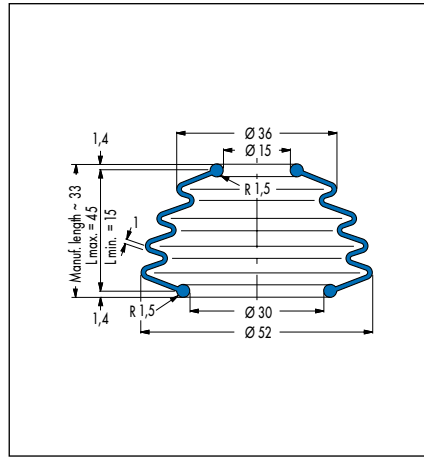
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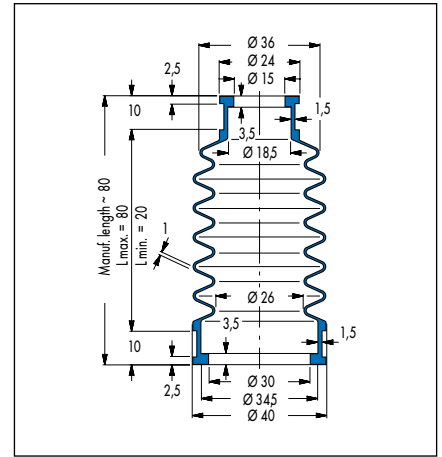
V6-189, Article No. 440390



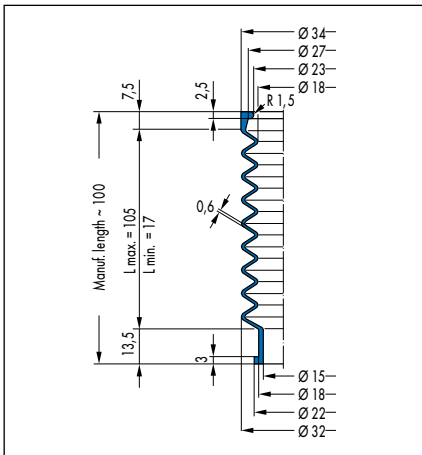
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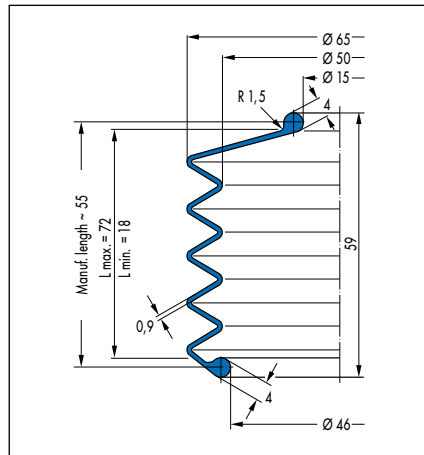
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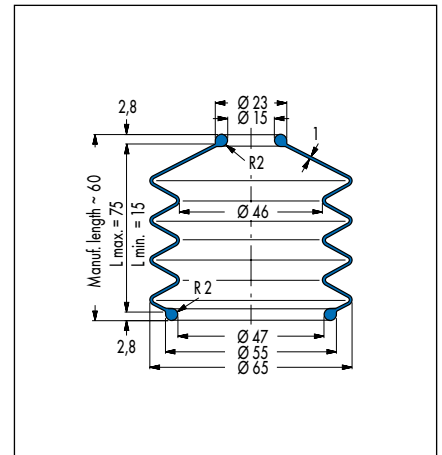
V6-156, Article No. 436158



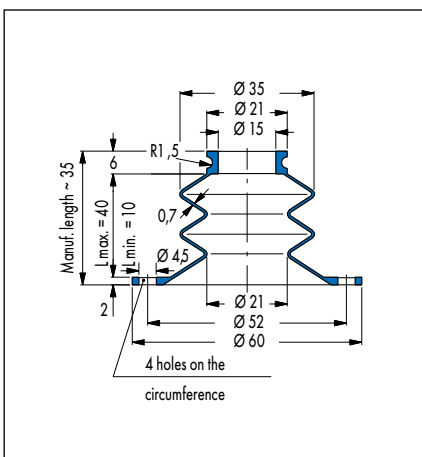
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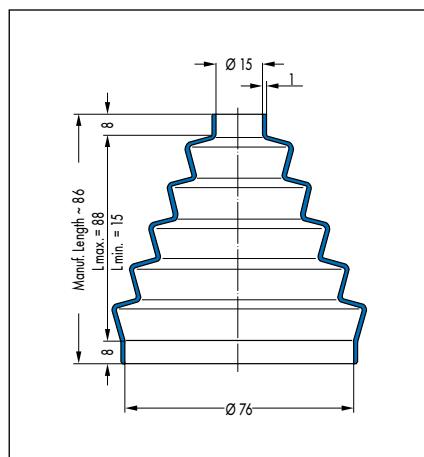
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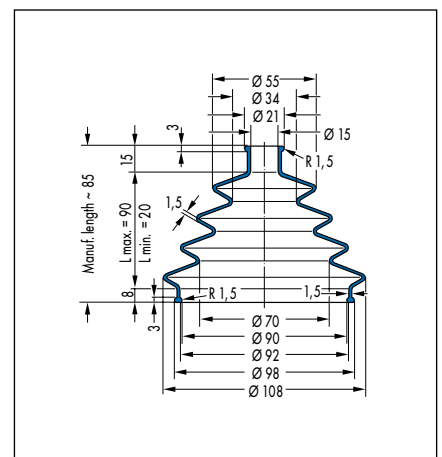
V6-582, Article No. 432918



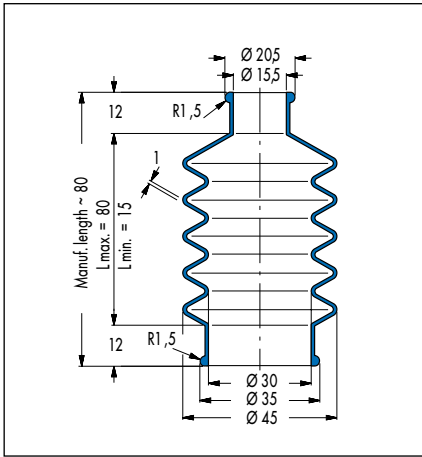
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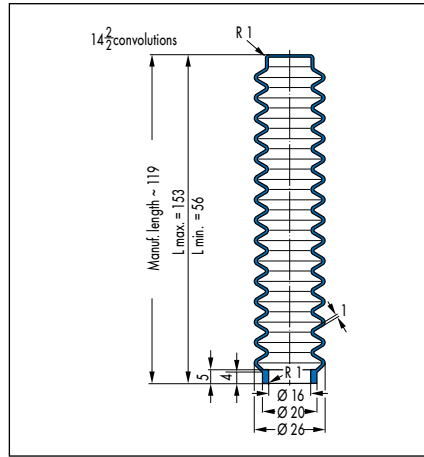
V6-116, Article No. 439182 (42 CR 764)/439181 (50 CR 879)



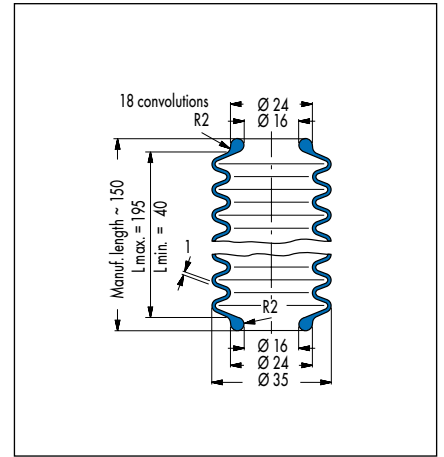
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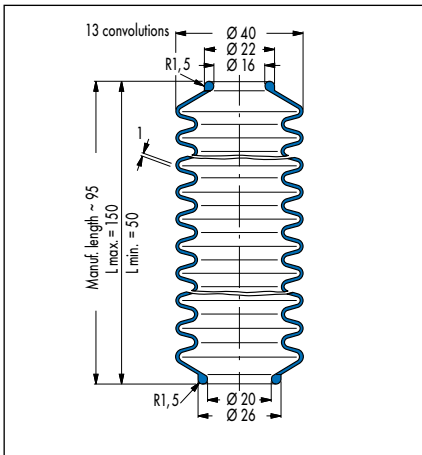
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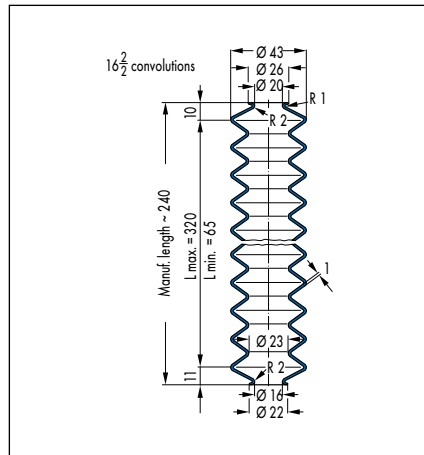
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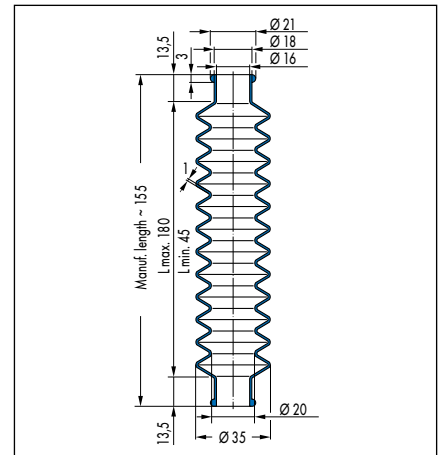
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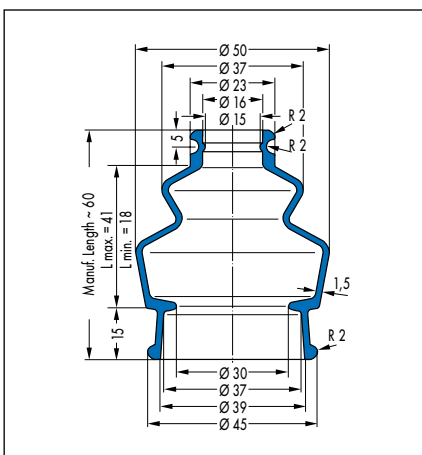
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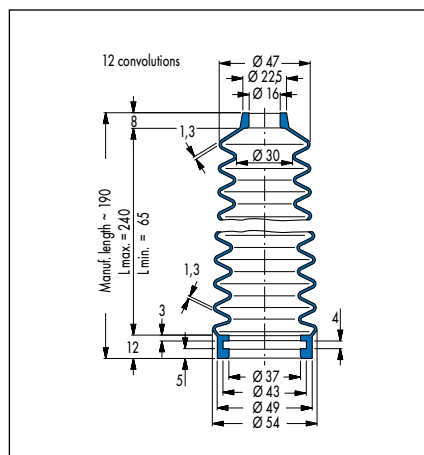
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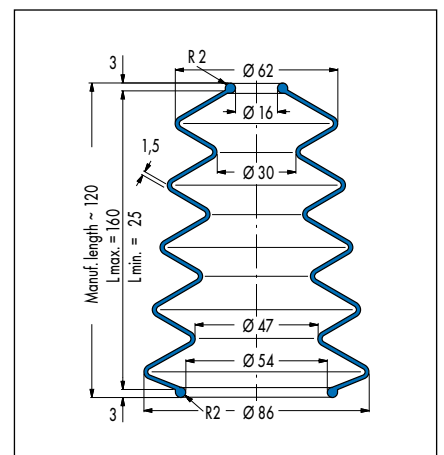
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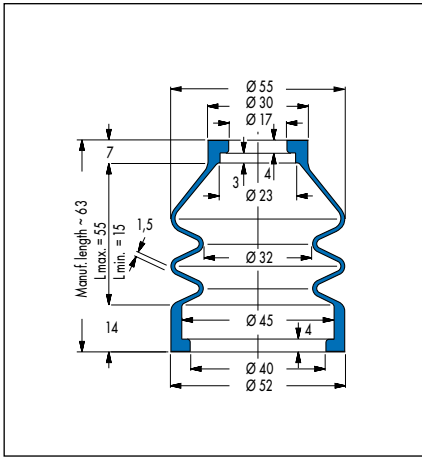
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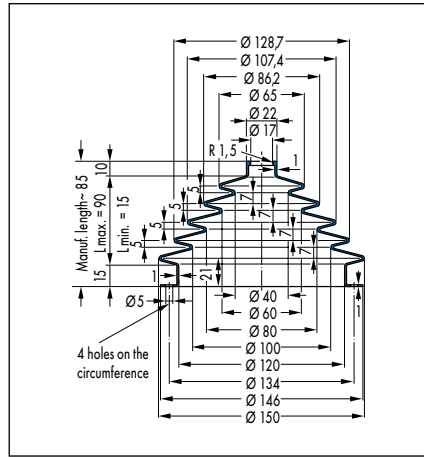
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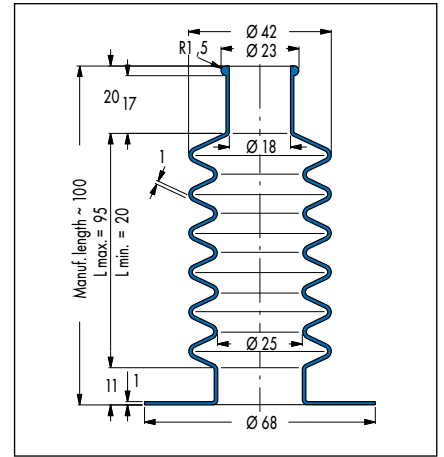
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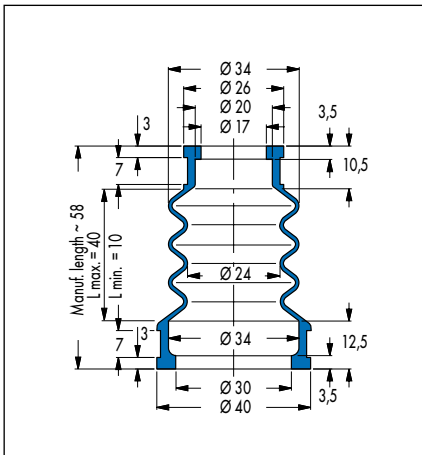
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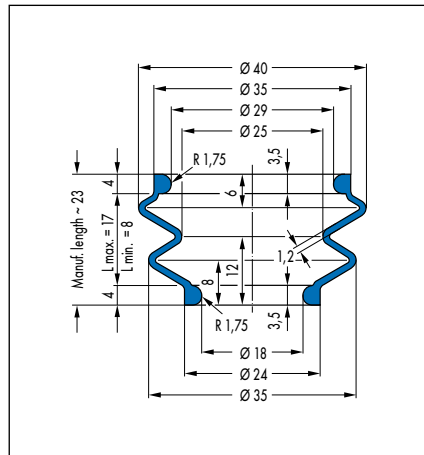
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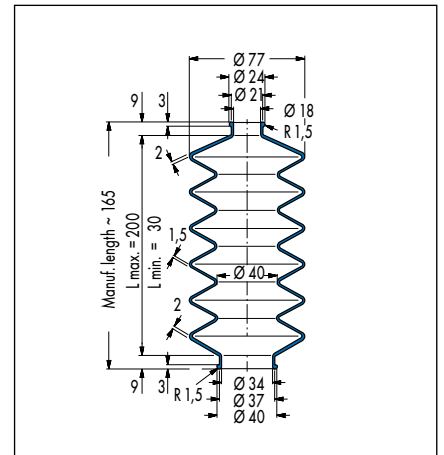
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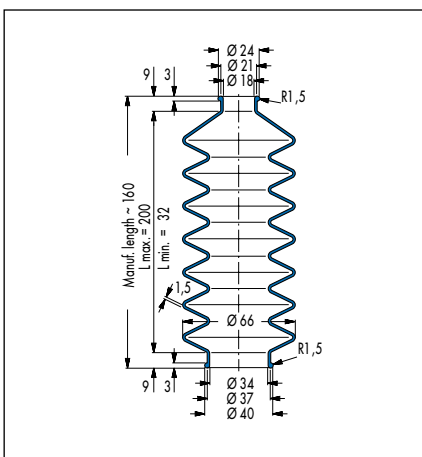
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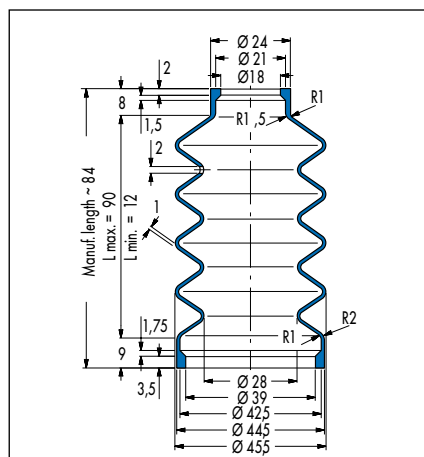
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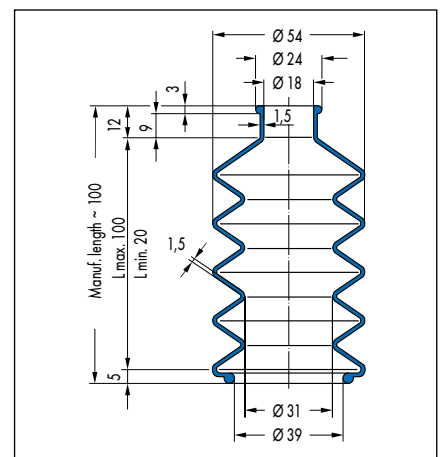
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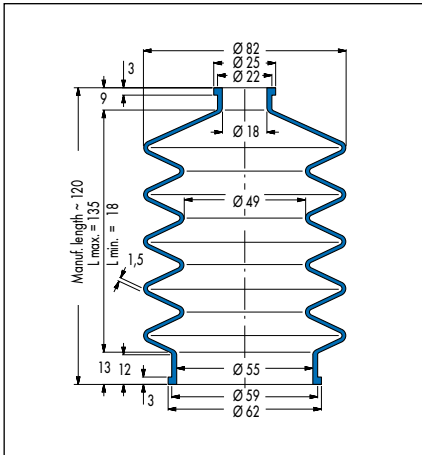
V6-503, Art.-Nr. 440392 (42 CR 764)/
440391 (50 CR 879)



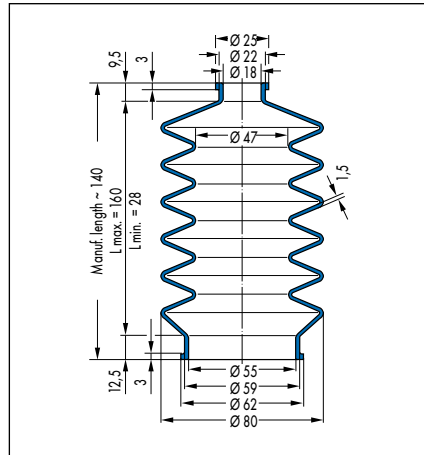
V6-347, Article No. 501252



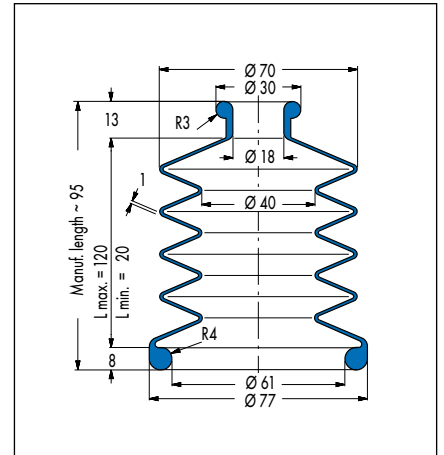
V6-828, Article No. 11520



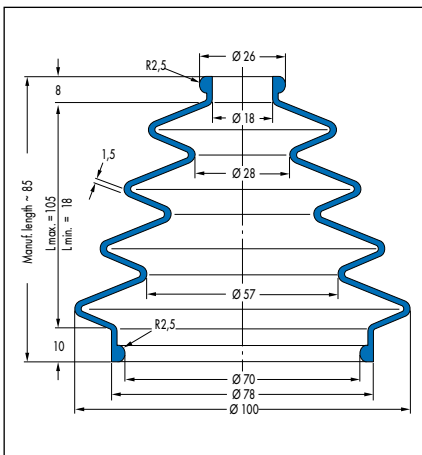
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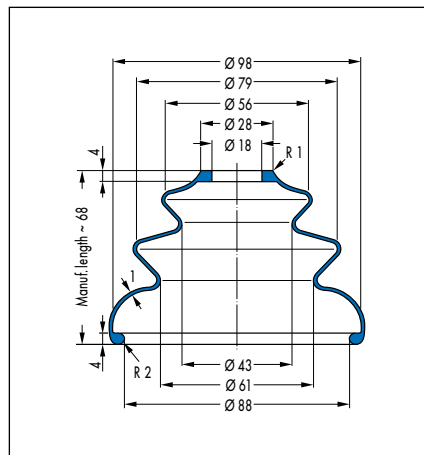
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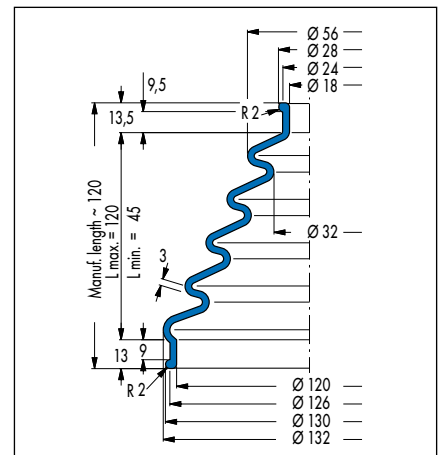
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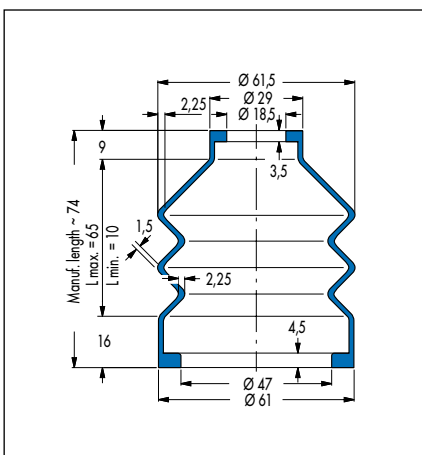
V6-791, Article No. 426798



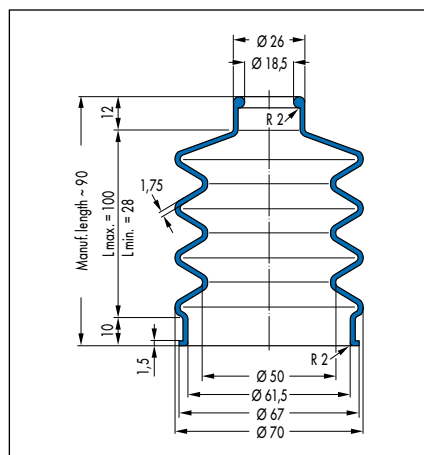
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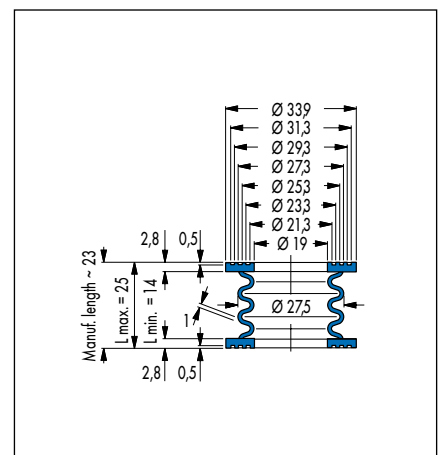
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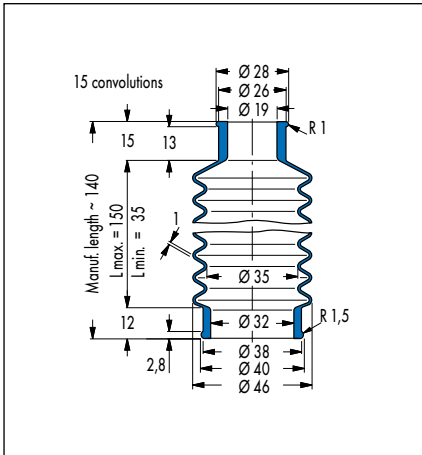
V6-203, Article No. 431289



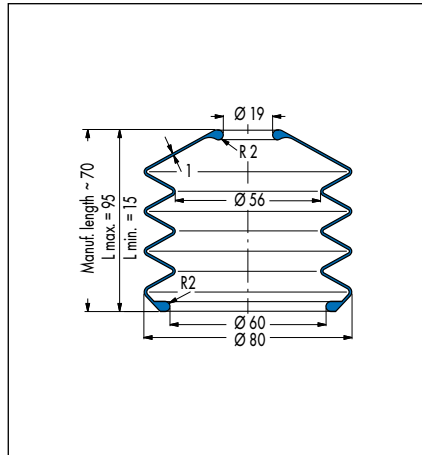
V6-843, Article No. 432191



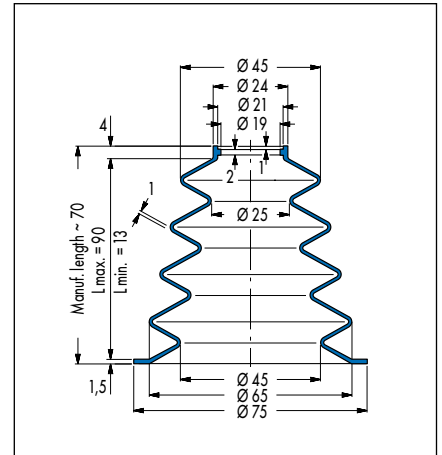
V6-383, Article No. 430846



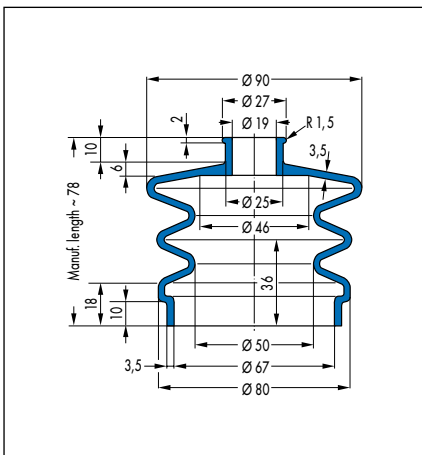
V6-679, Article No. 426799



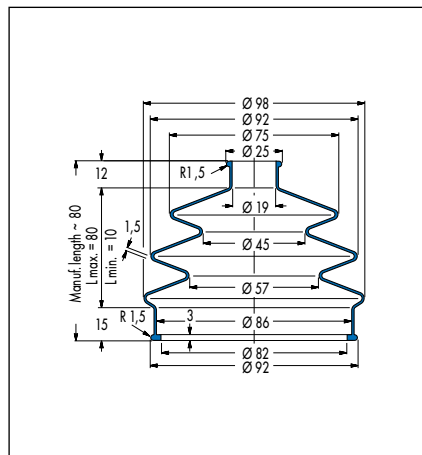
V6-565, Article No. 434030



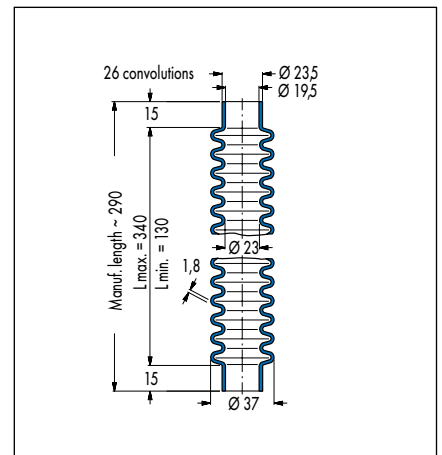
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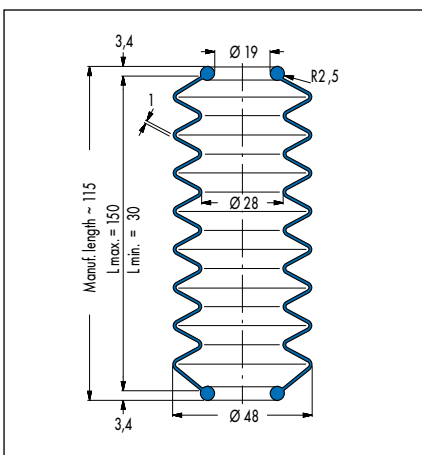
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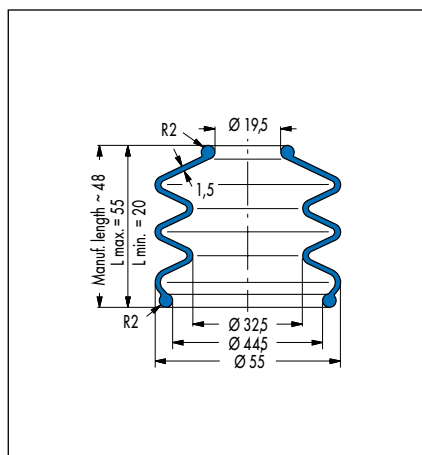
V6-955, Article No. 429670



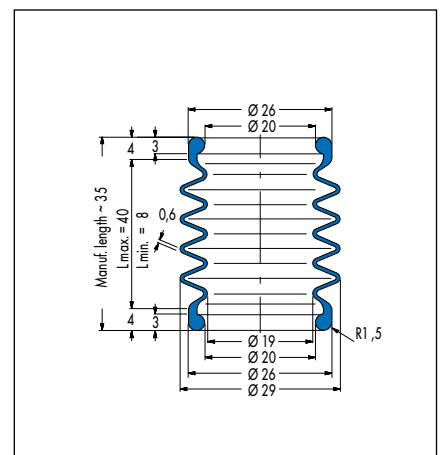
V6-915, Article No. 440260



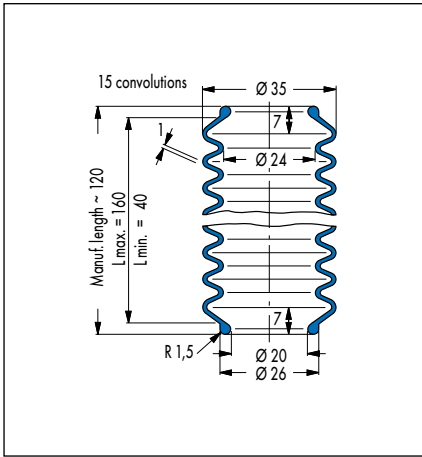
V6-726, Article No. 426387 (CR)/
429078 (NBR)



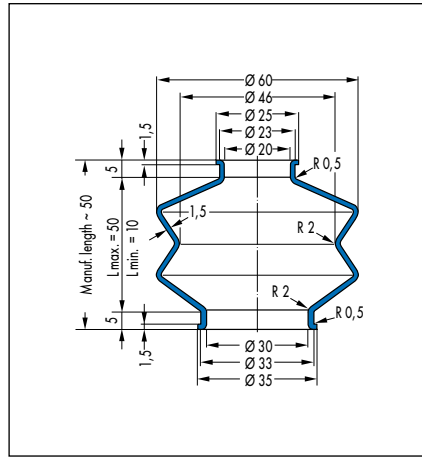
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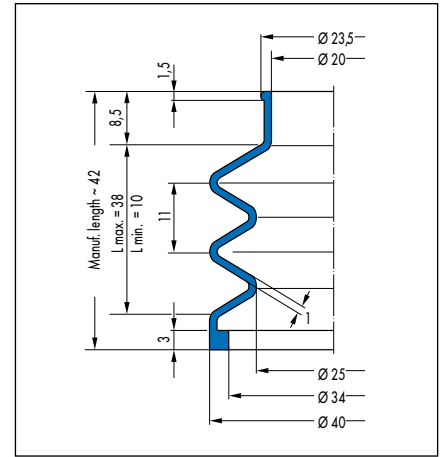
V6-722, Article No. 336382



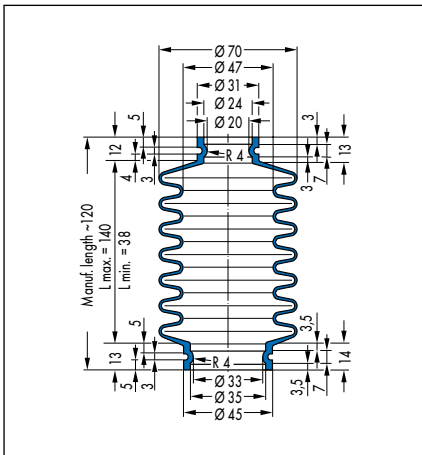
V6-236, Article No. 426319



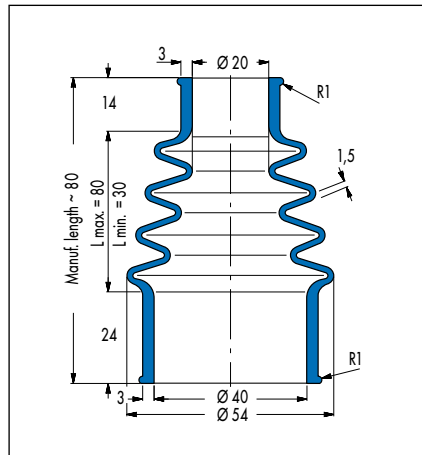
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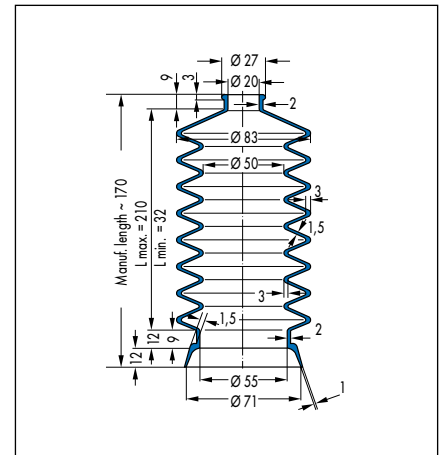
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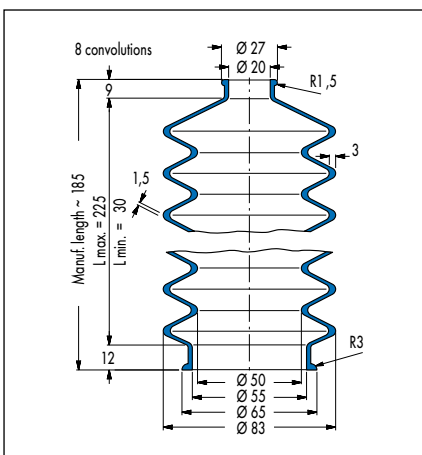
V6-218, Article No. 430858



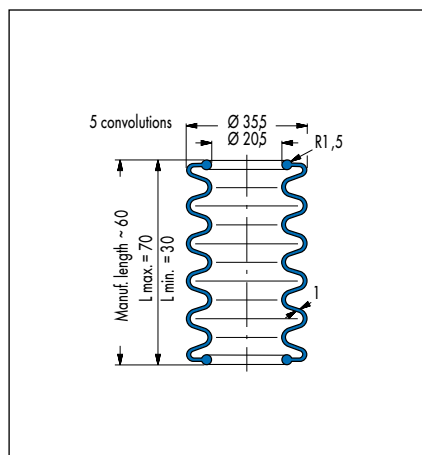
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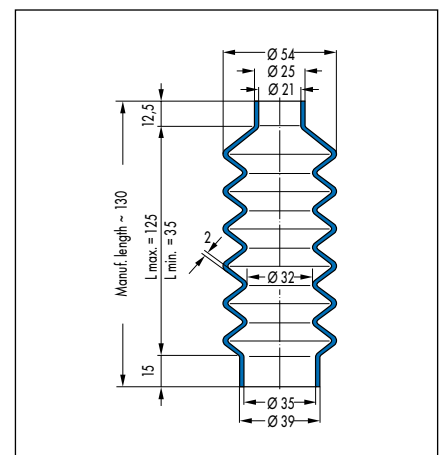
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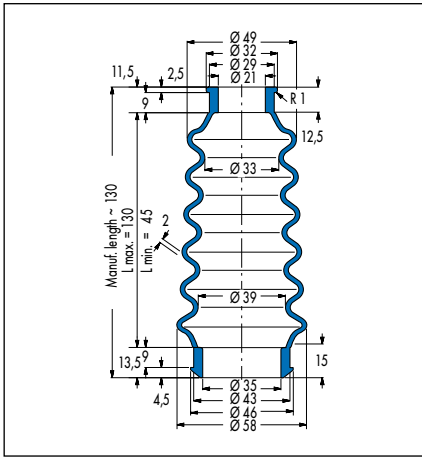
V6-861, Art.-Nr. 429667 (42 CR 764)/
429668 (50 CR 879)



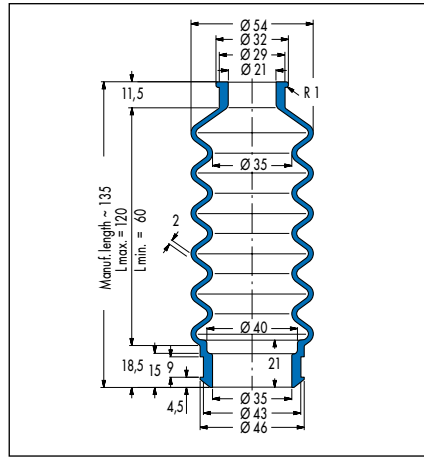
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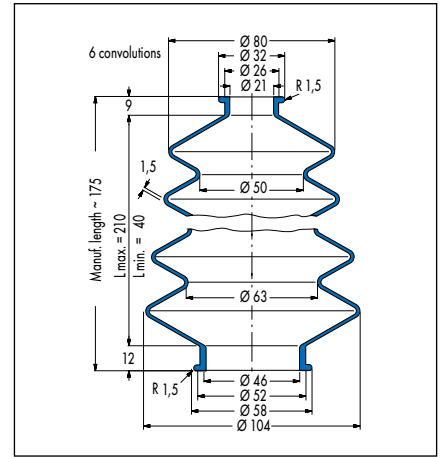
V6-792, Article No. 430861



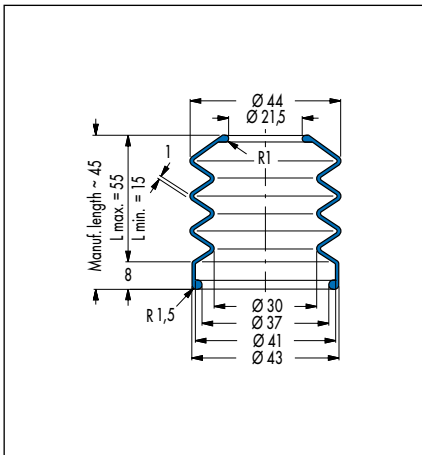
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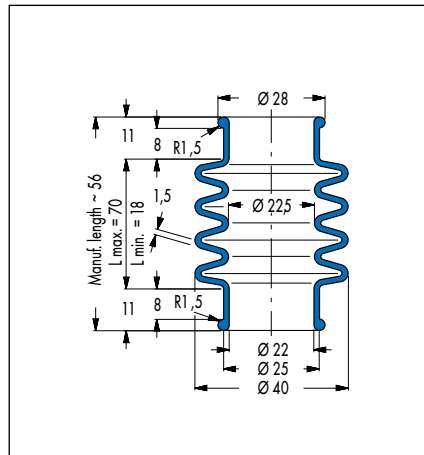
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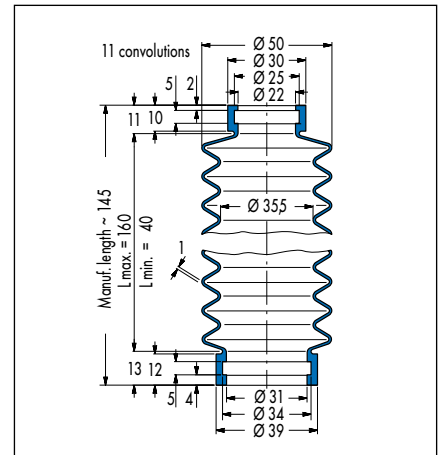
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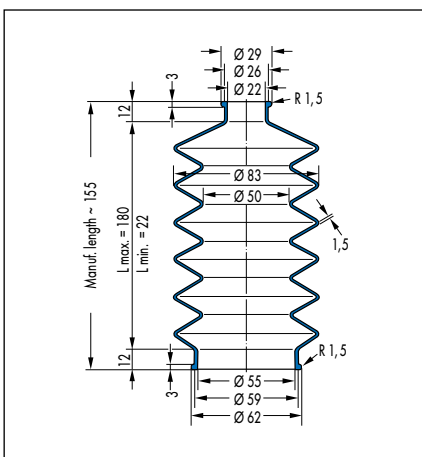
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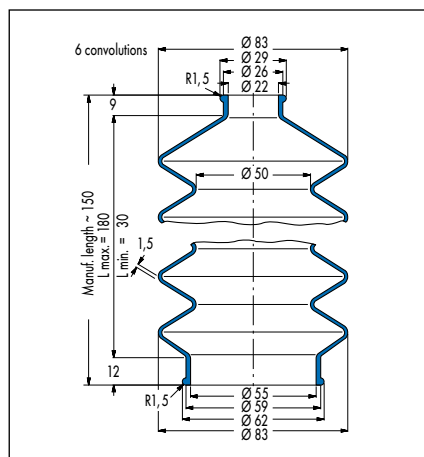
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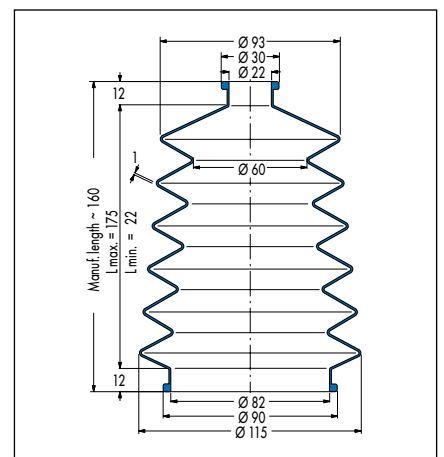
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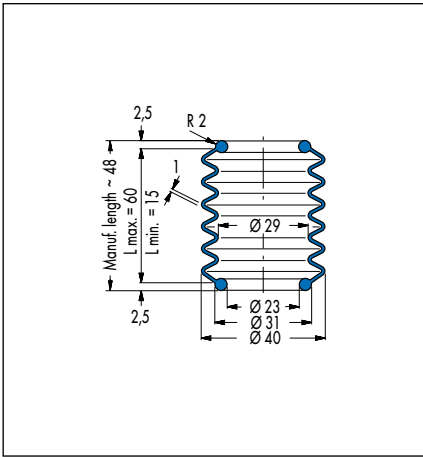
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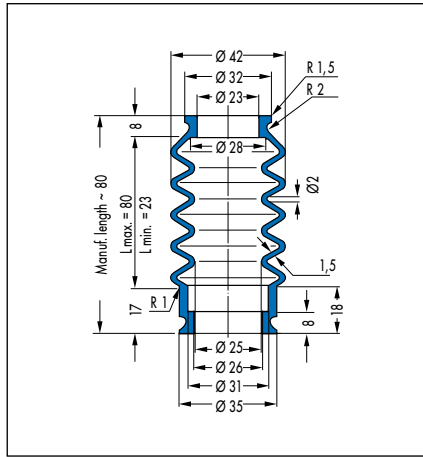
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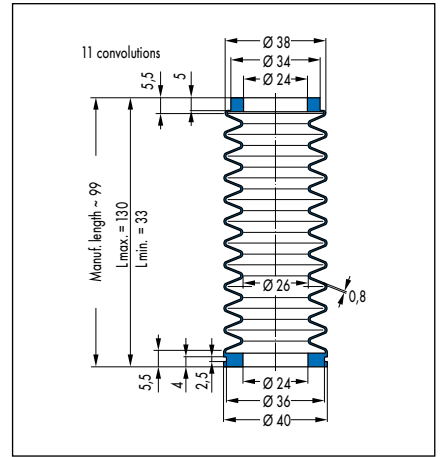
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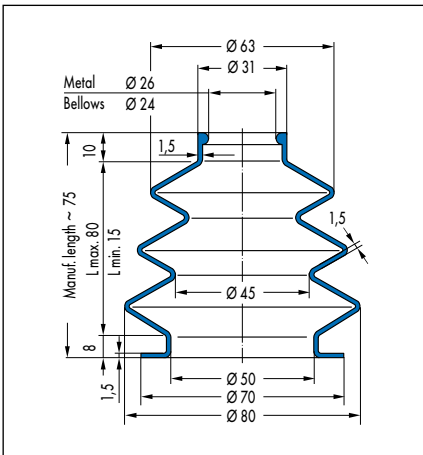
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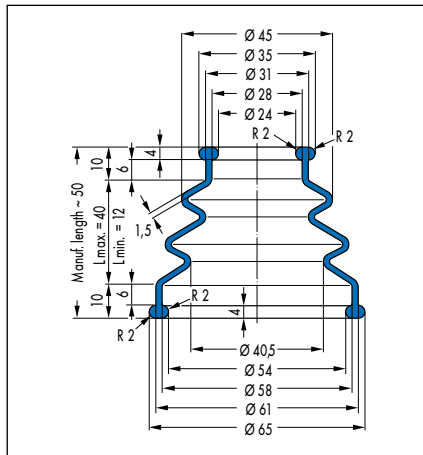
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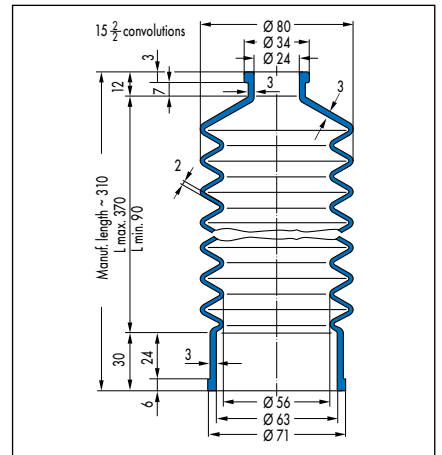
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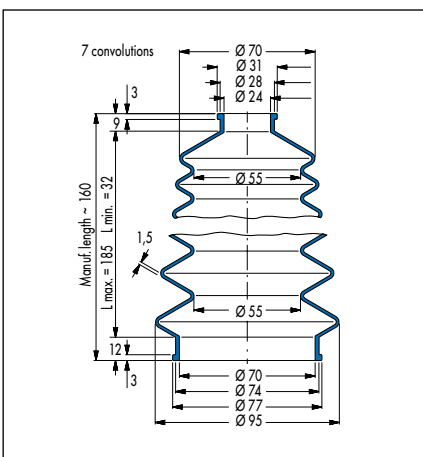
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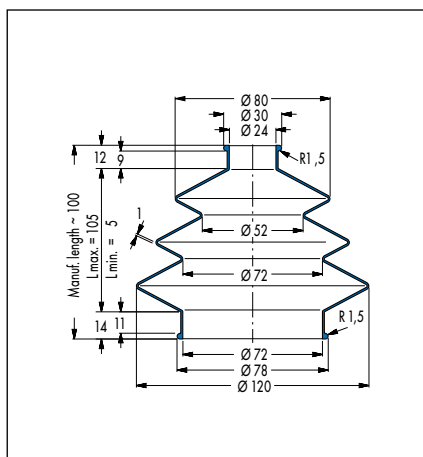
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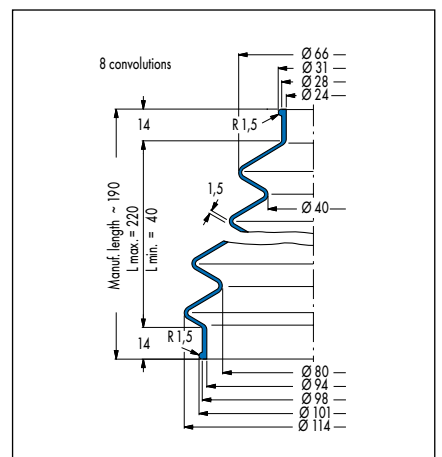
V6-738, Article No. 60037192



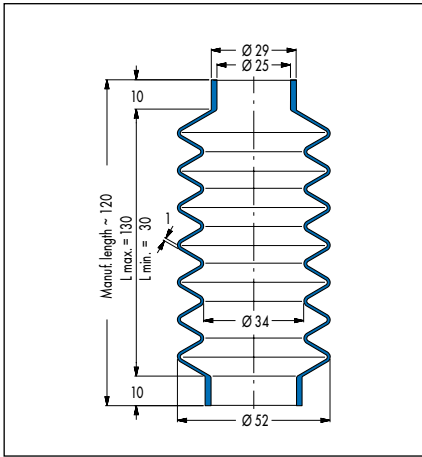
V6-69, Article No. 432599 (42 CR 764)/
432600 (53 CR 858)



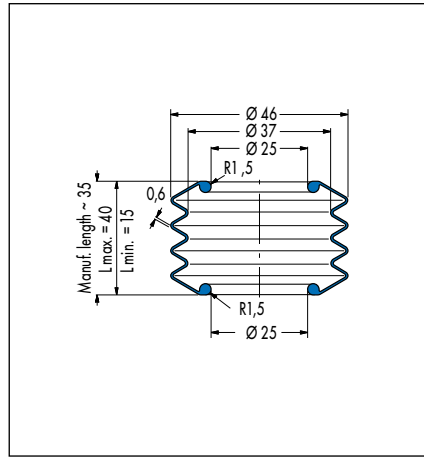
V6-604, Article No. 436936



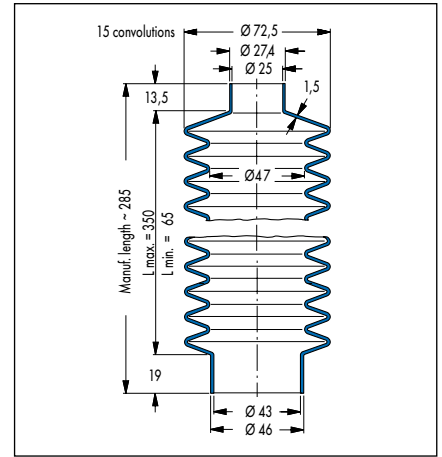
V6-530, Article No. 427267



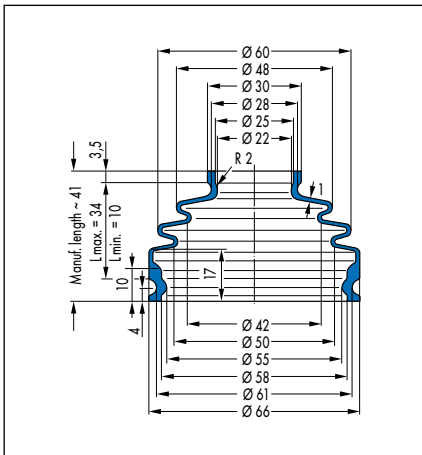
V6-416, Article No. 434015



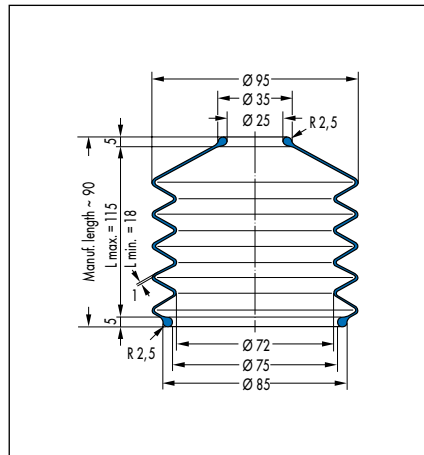
V6-462, Article No. 440279 (CR)/
440283 (NBR)



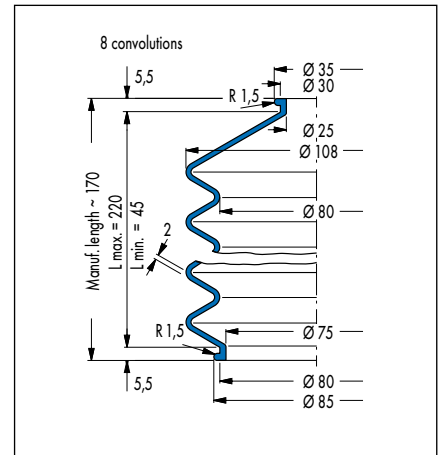
V6-59, Article No. 29213



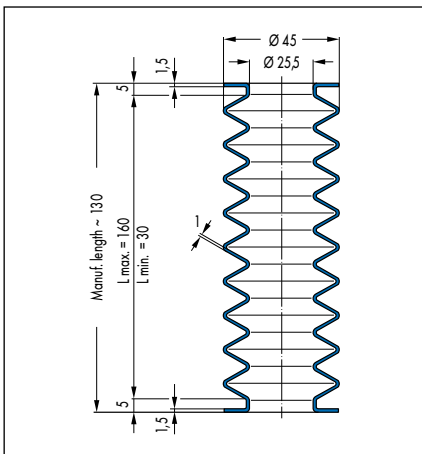
V6-997, Article No. 451314



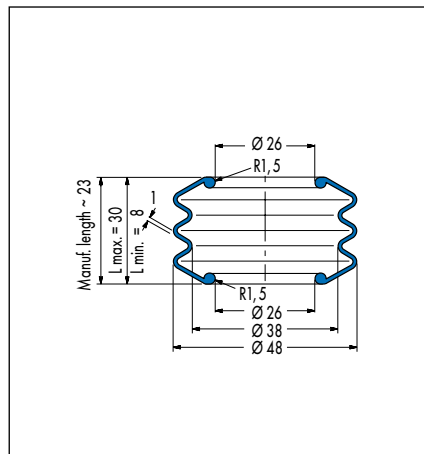
V6-583, Article No. 457502



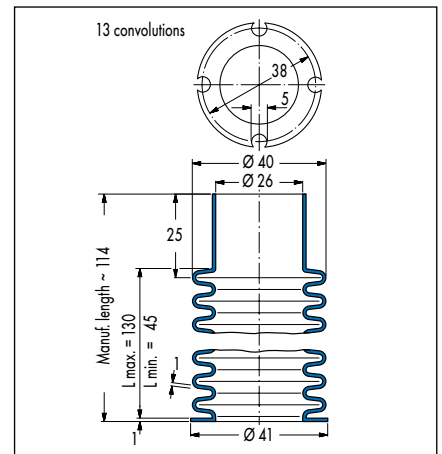
V6-251, Article No. 435518



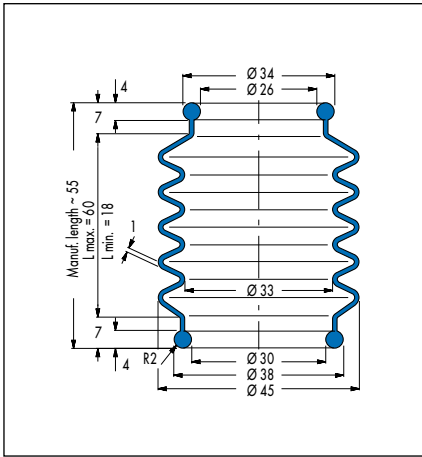
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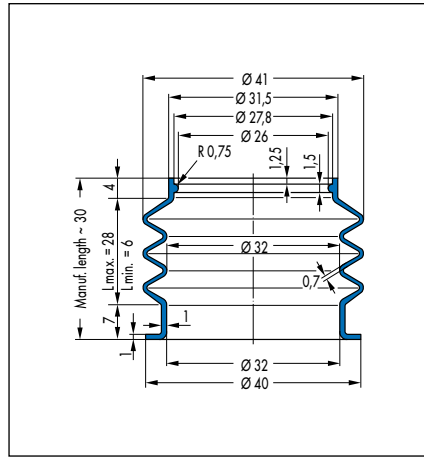
V6-127, Article No. 432585



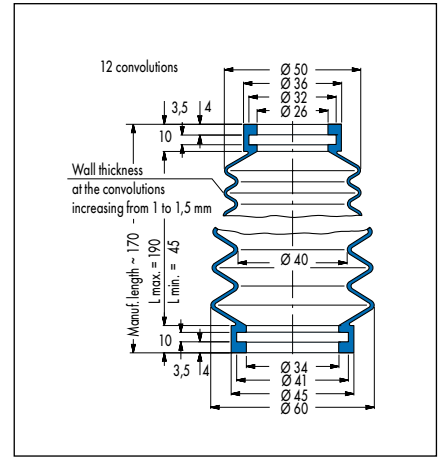
V6-200, Article No. 438022



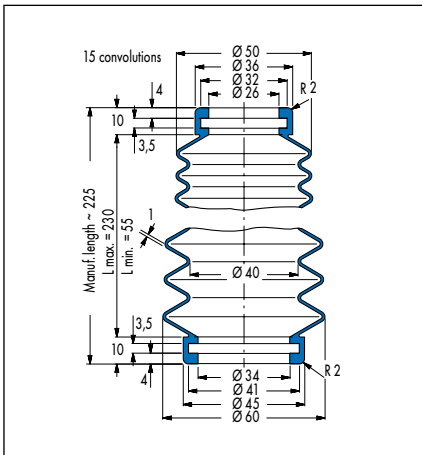
V6-592, Article No. 426382



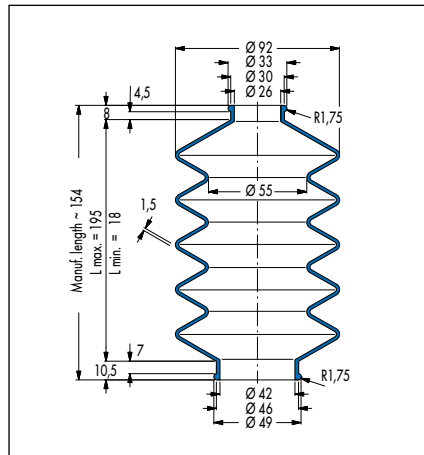
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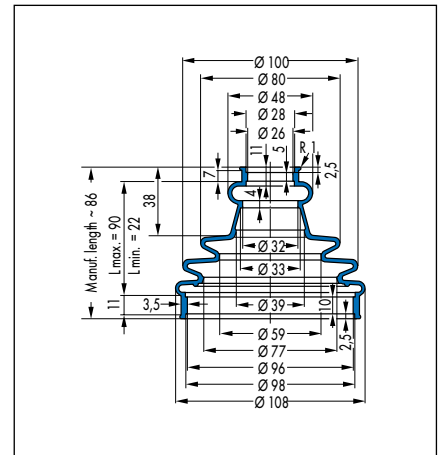
V6-292, Article No. 436699



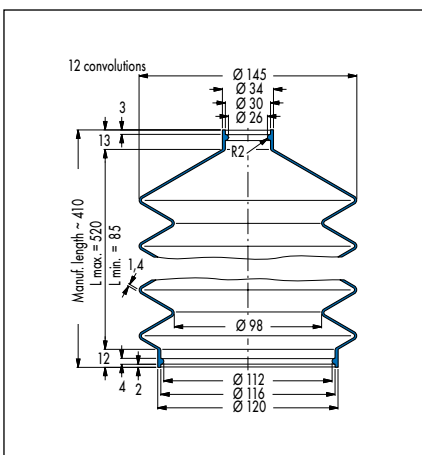
V6-401, Article No. 440291



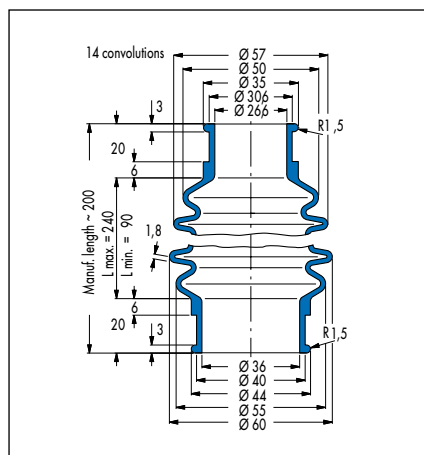
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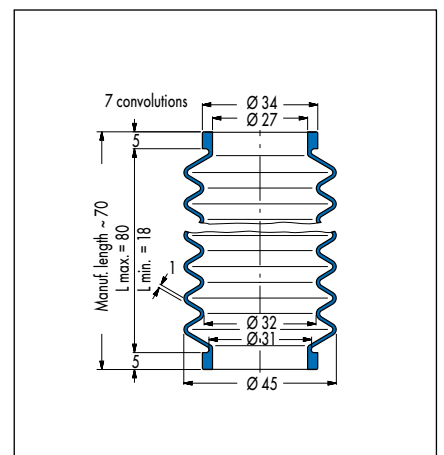
V6-1755, Article No. 451384



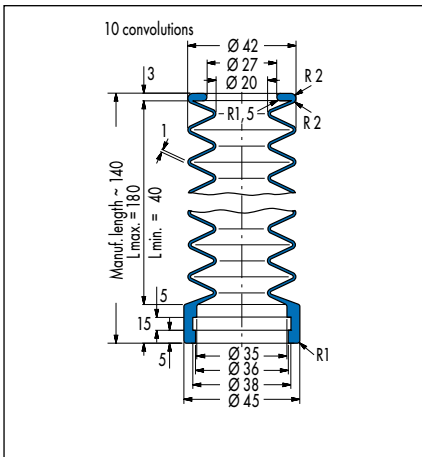
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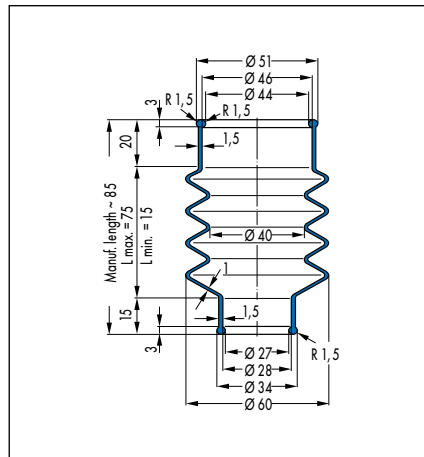
V6-324, Article No. 440316



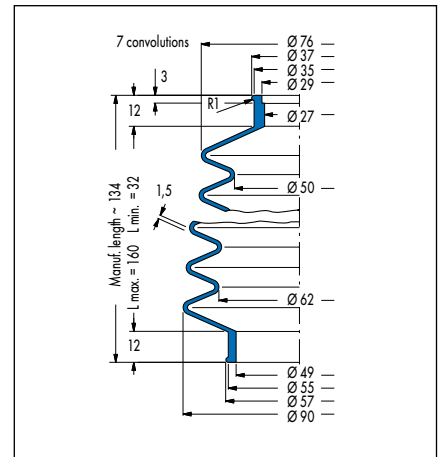
V6-290, Article No. 432590



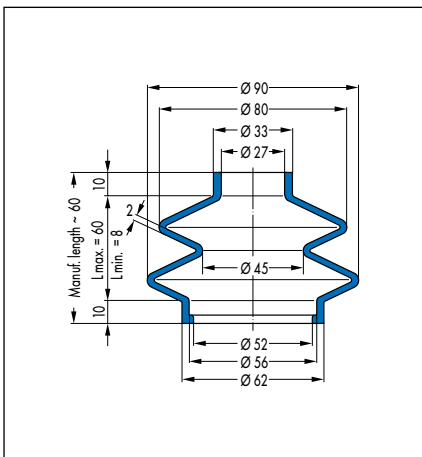
V6-259, Article No. 439441



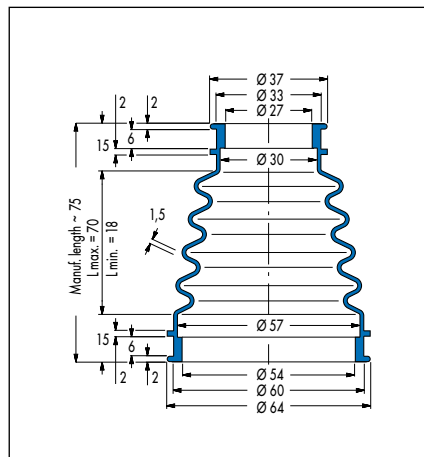
V6-363, Article No. 432594



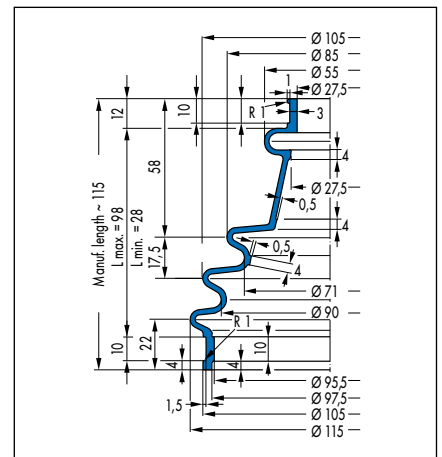
V6-106, Article No. 430856 (NBR)/
430857 (CR)



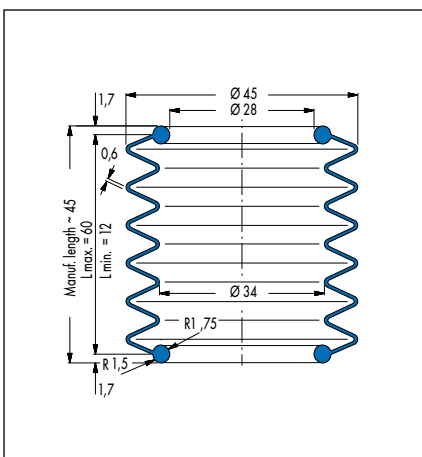
V6-1055, Article No. 457773



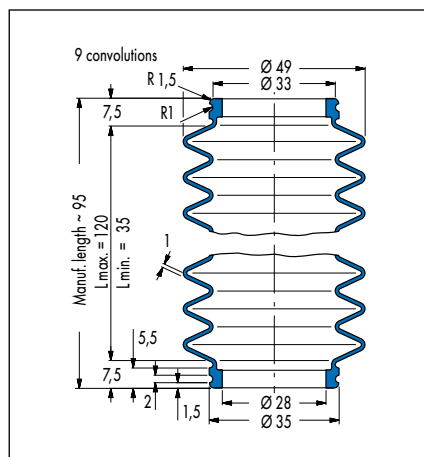
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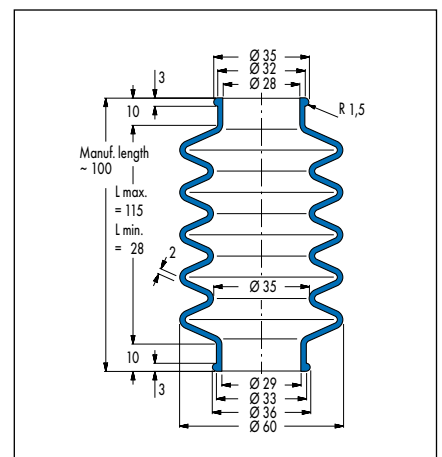
V6-1723, Article No. 438571



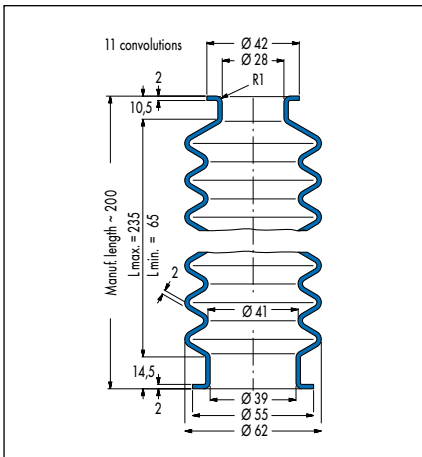
V6-640, Article No. 427268



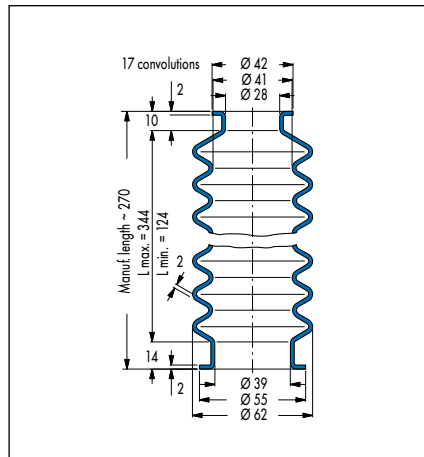
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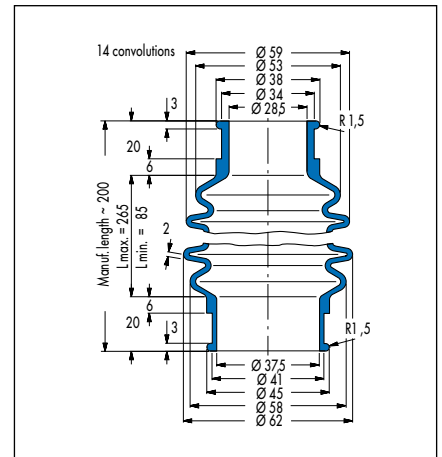
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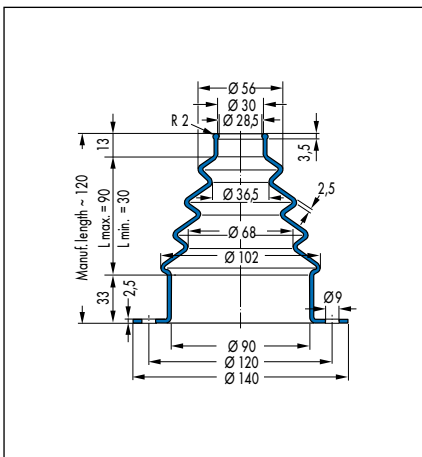
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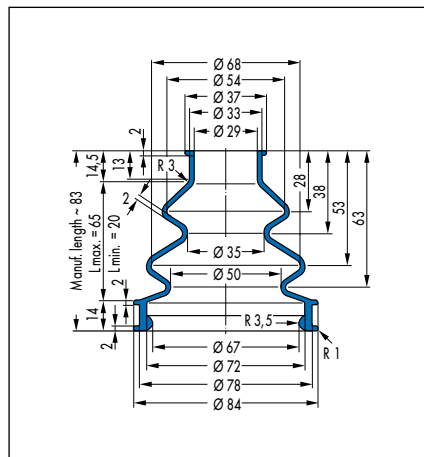
V6-201, Article No. 454462



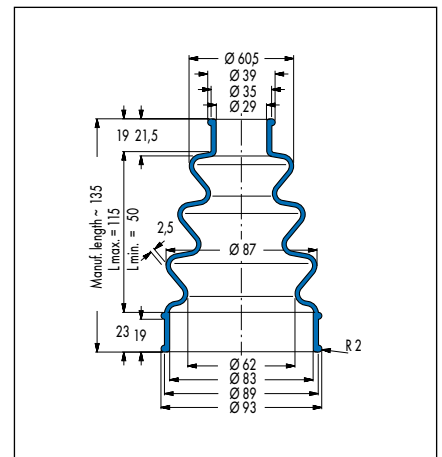
V6-325, Article No. 426794



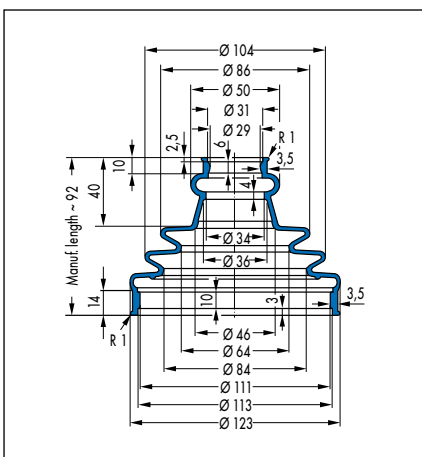
V6-475, Article No. 400708



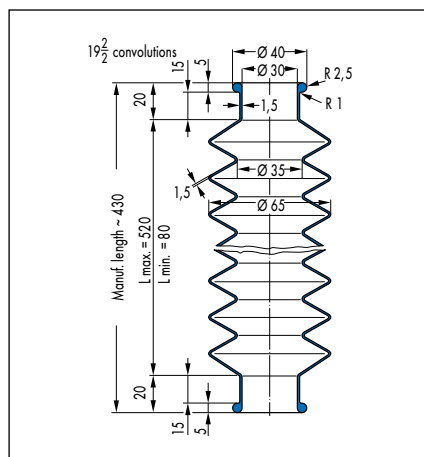
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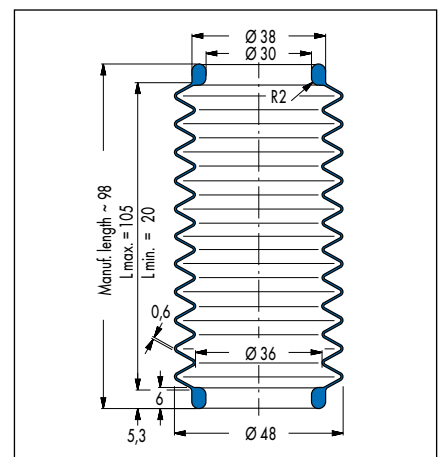
V6-384, Article No. 440317



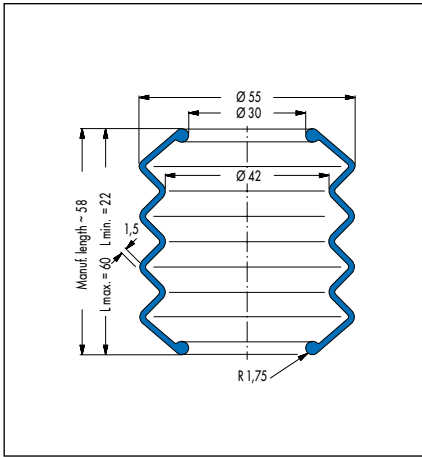
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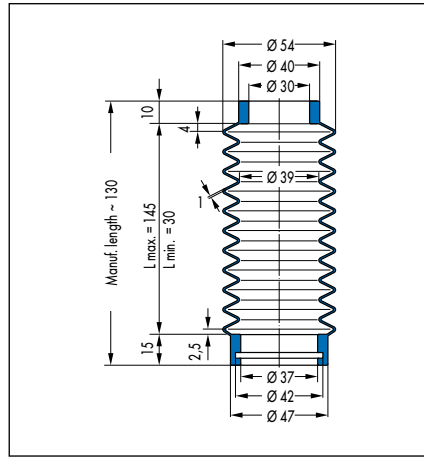
V6-589, Article No. 15267



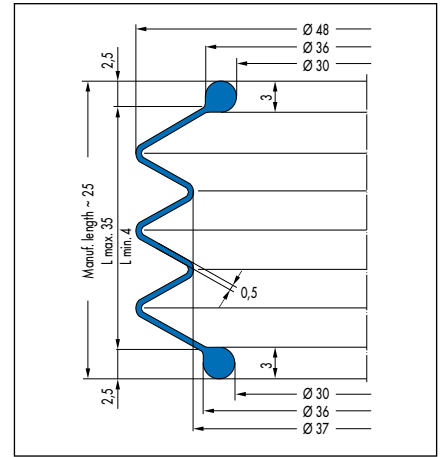
V6-904, Article No. 375419



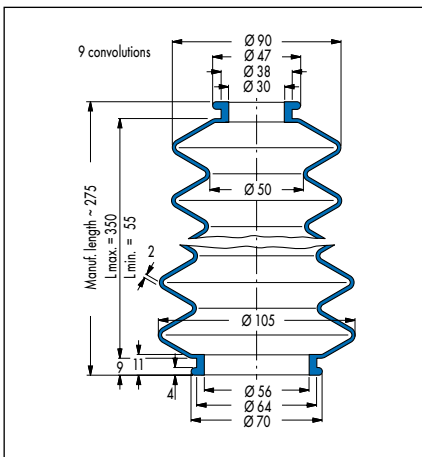
V6-422, Article No. 428310



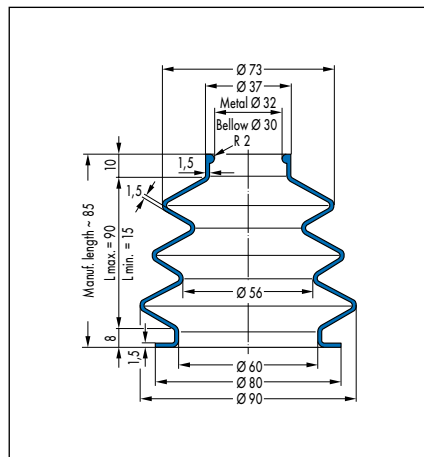
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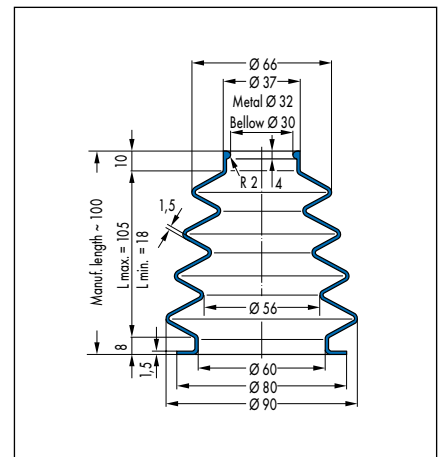
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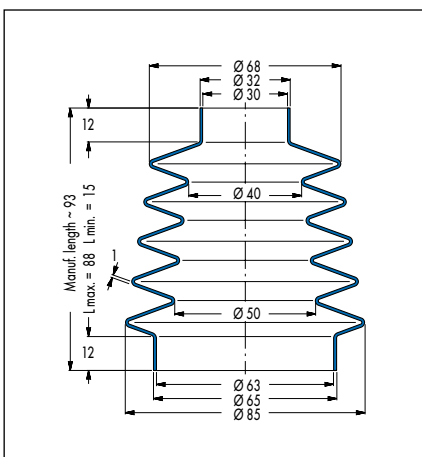
V6-456, Article No. 29663



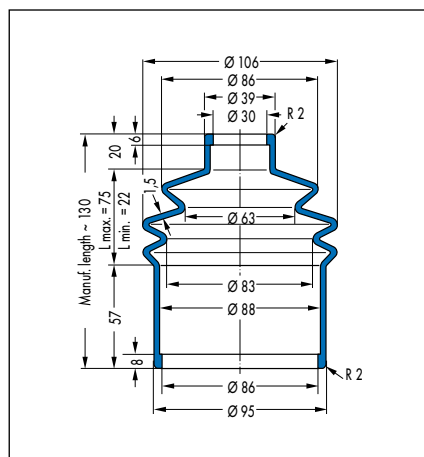
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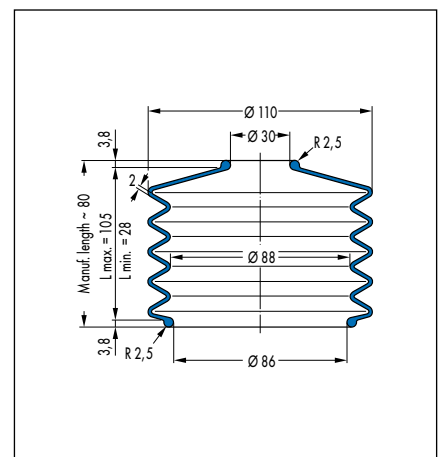
V6-827, Article No. 355702



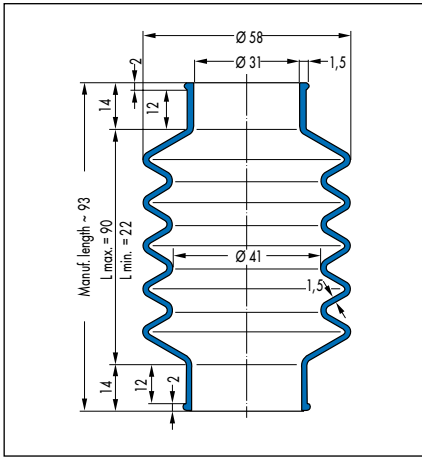
V6-1329, Article No. 60305



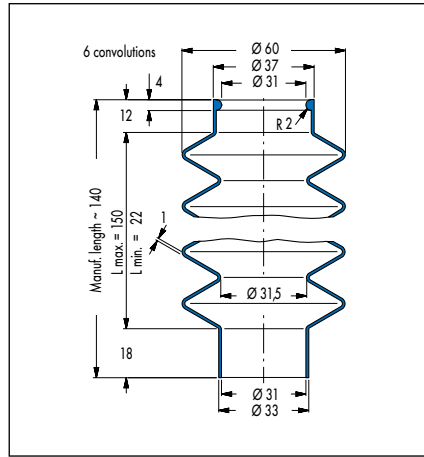
V6-314, Article No. 451741



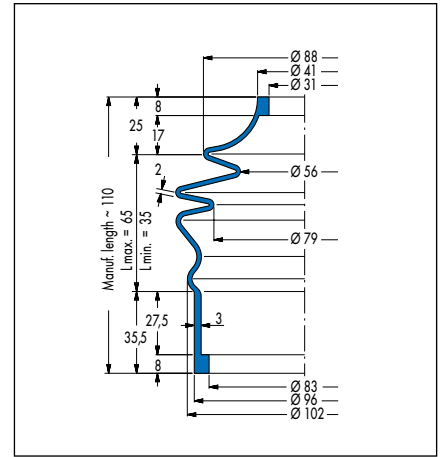
V6-903, Article No. 438936



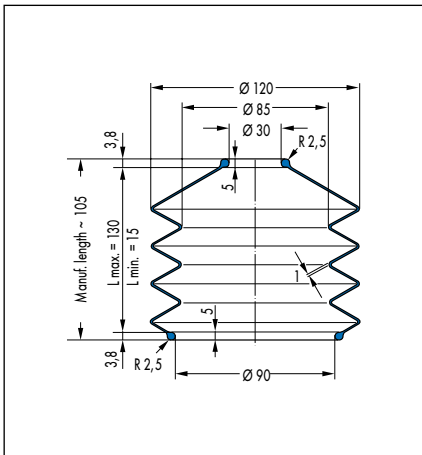
V6-448, Article No. 122870 (50 CR 879)/
49046170 (60 CR 176307)



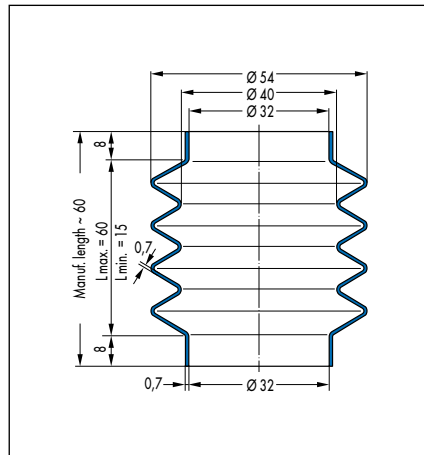
V6-603, Article No. 438548



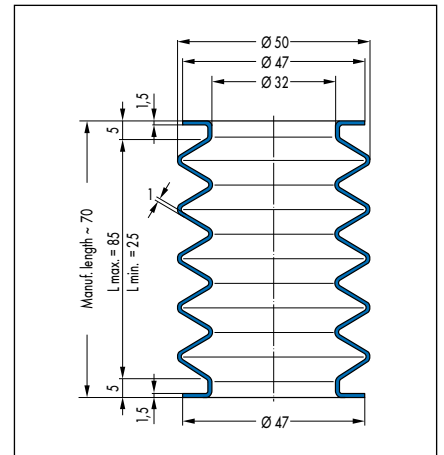
V6-206, Article No. 428315



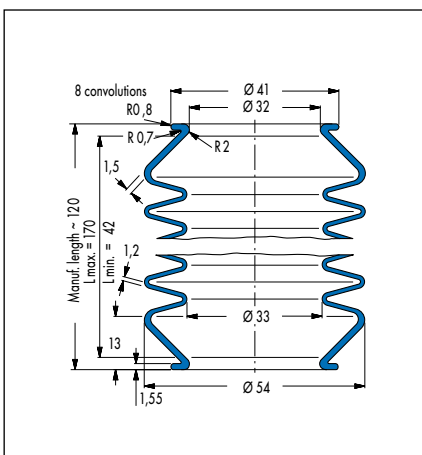
V6-584, Article No. 375144



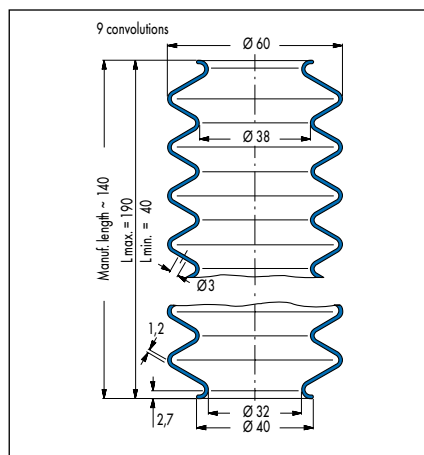
V6-1236, Article No. 436913



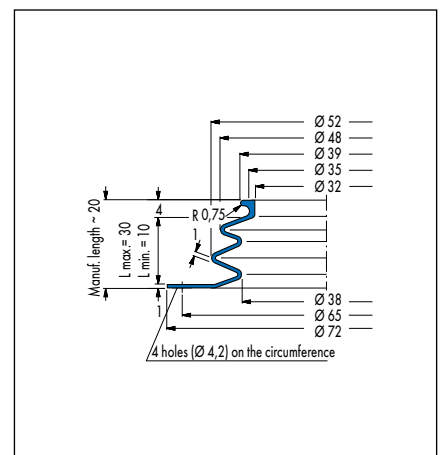
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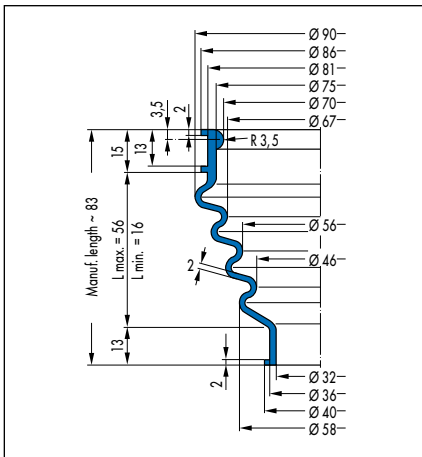
V6-209, Article No. 439186



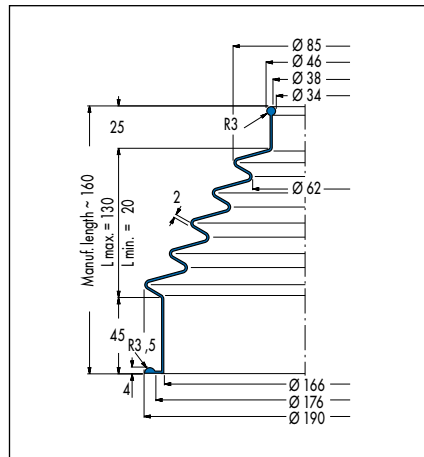
V6-407, Article No. 428832



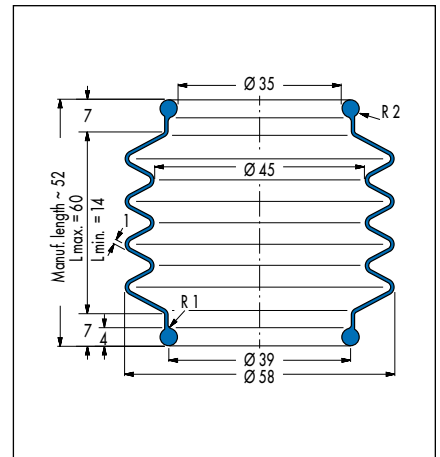
V6-736, Article No. 426374



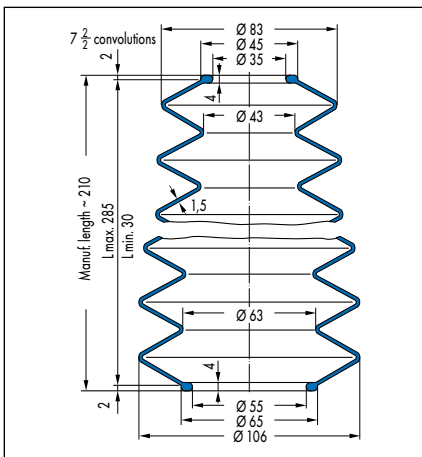
V6-1431, Article No. 454267



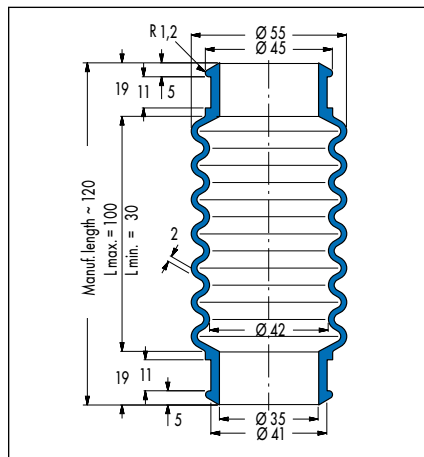
V6-925, Article No. 454474



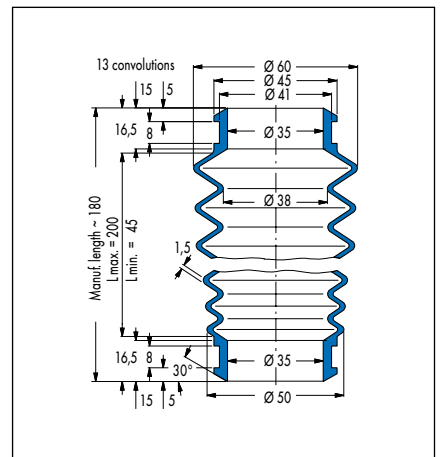
V6-659, Article No. 424147



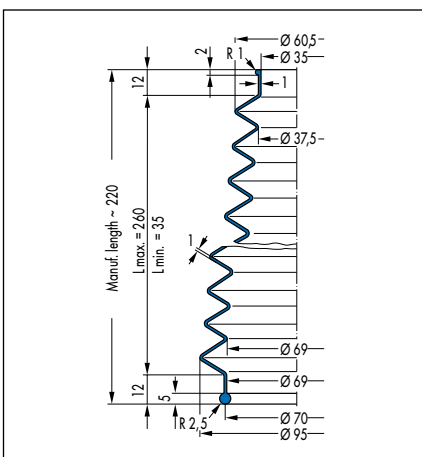
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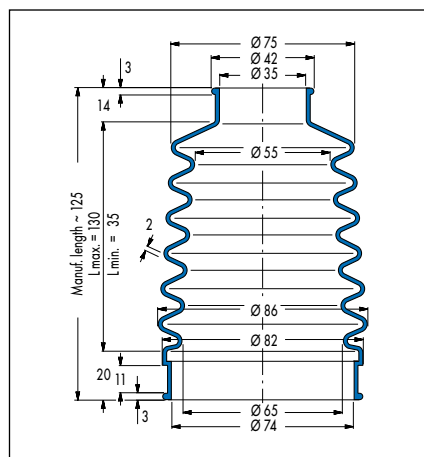
V6-281, Article No. 427264



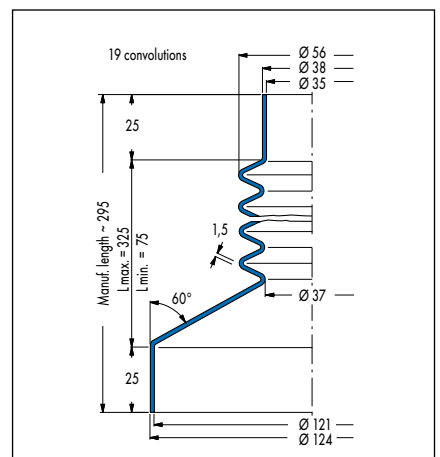
V6-266, Article No. 429647



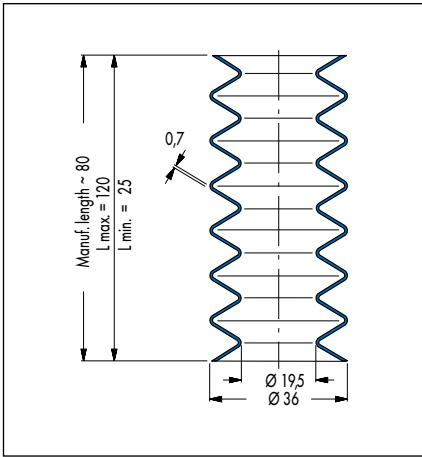
V6-1080, Article No. 457509



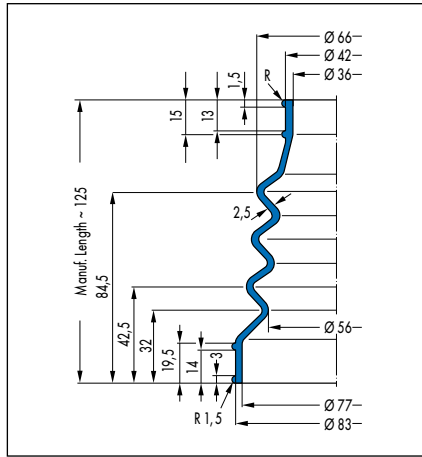
V6-654, Article No. 434029



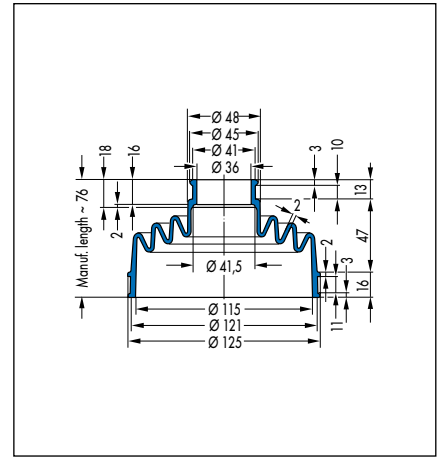
V6-117, Article No. 29288



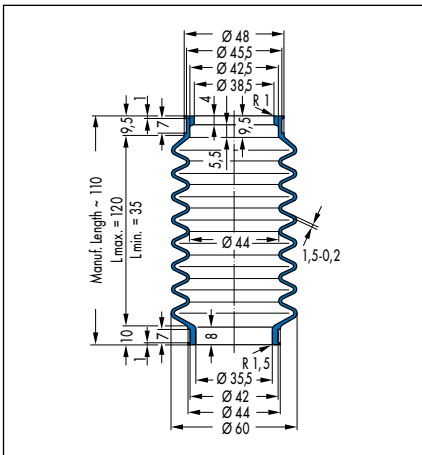
V6-53, Article No. 435517



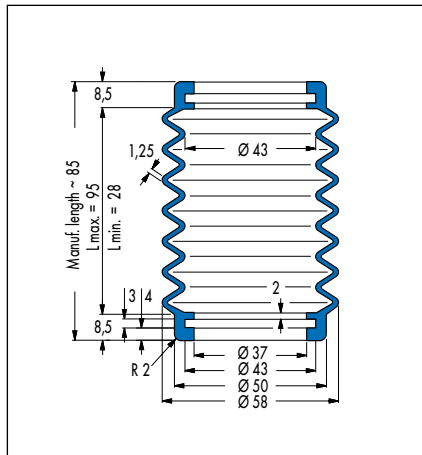
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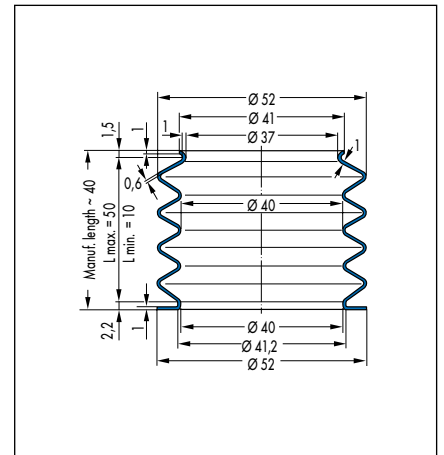
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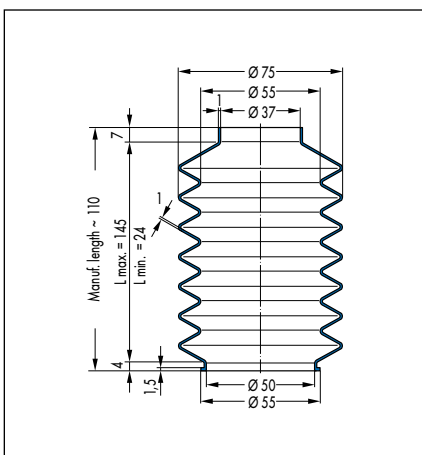
V6-204, Article No. 439168



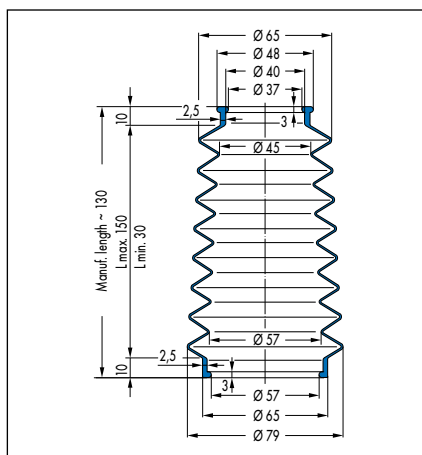
V6-308, Article No. 427265



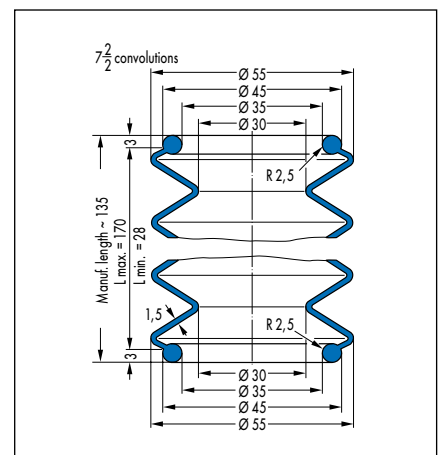
V6-467, Article No. 456485



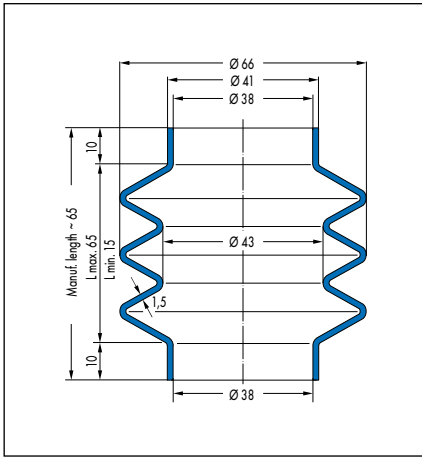
V6-790, Article No. 29965



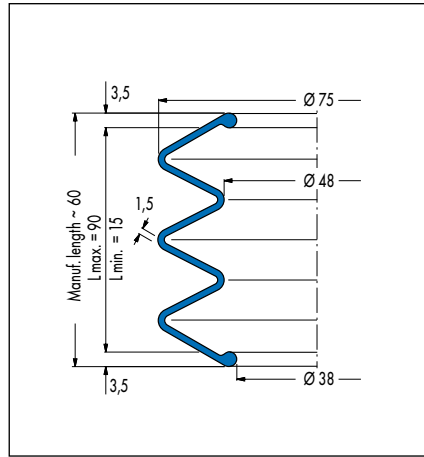
V6-823, Article No. 400862



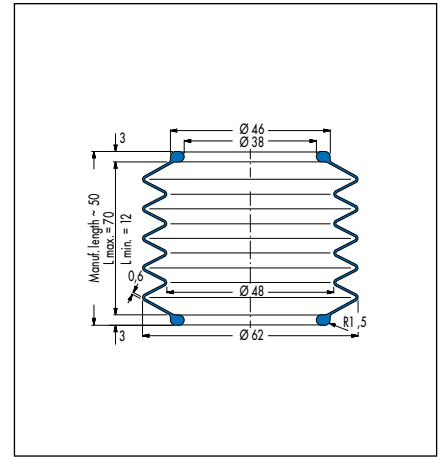
V6-297, Article No. 501137



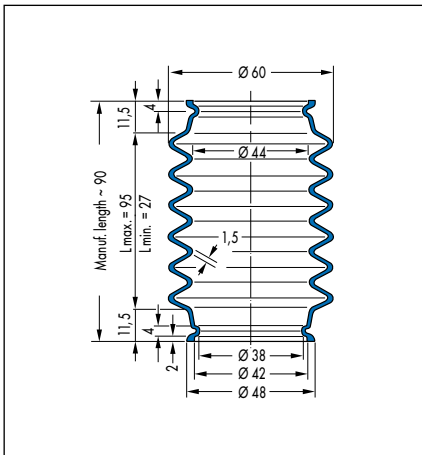
V6-808, Article No. 439042



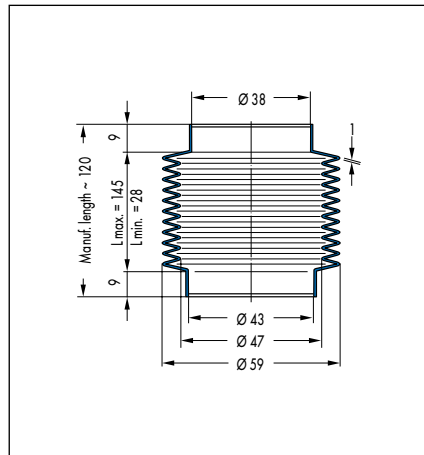
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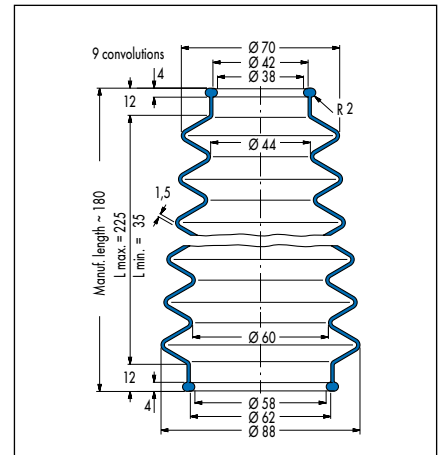
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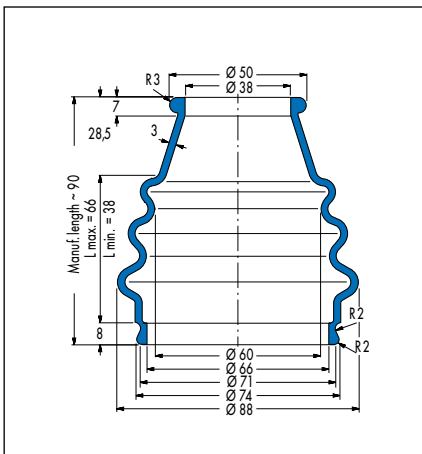
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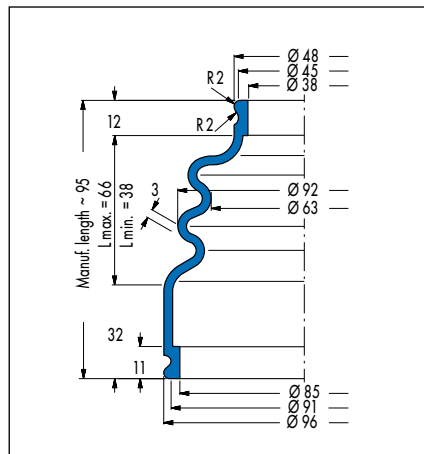
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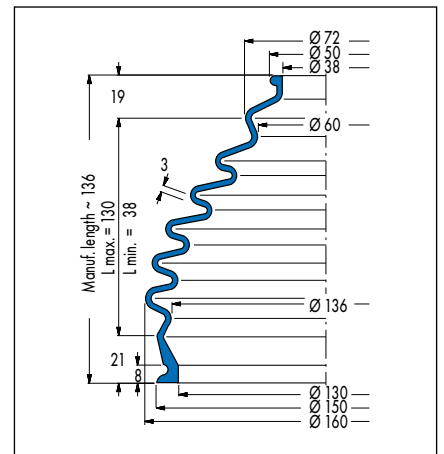
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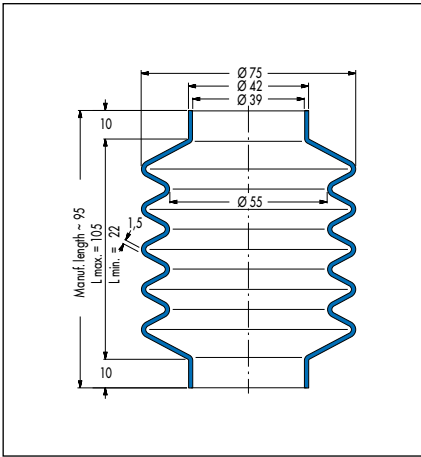
V6-190, Article No. 438014



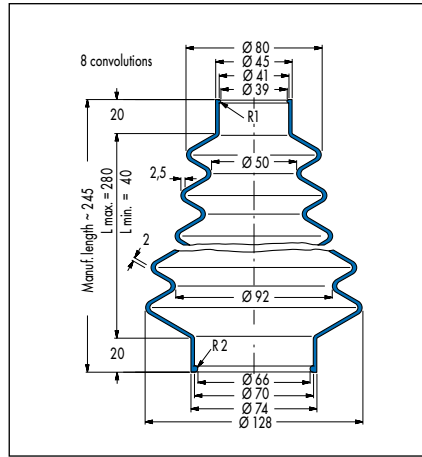
V6-191, Article No. 428311



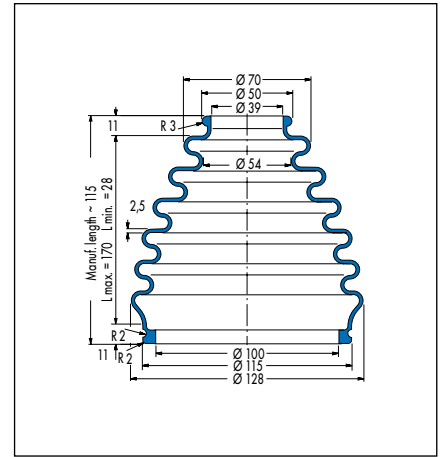
V6-199, Article No. 438027



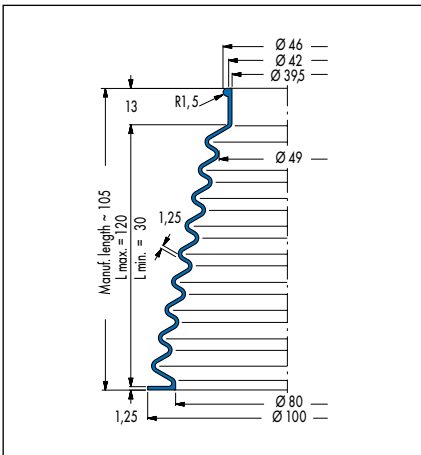
V6-321, Article No. 429648



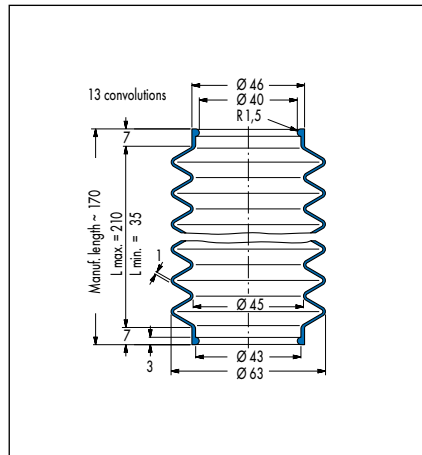
V6-556, Article No. 29735



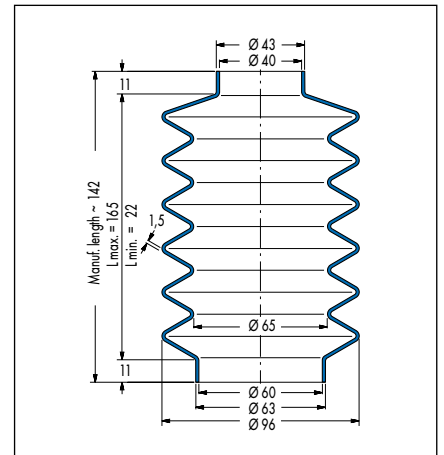
V6-60, Article No. 428322



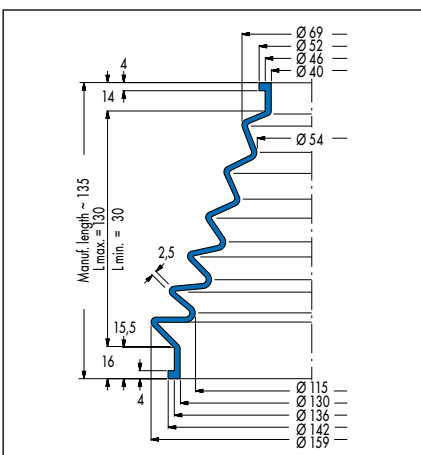
V6-188, Article No. 432643



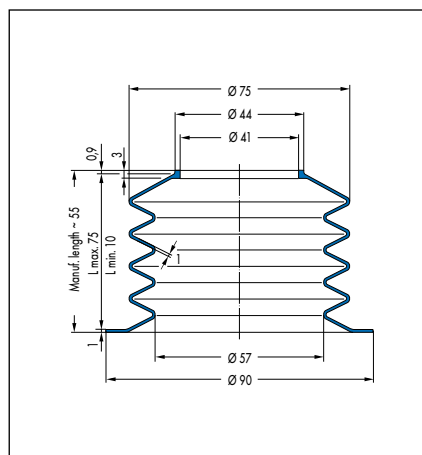
V6-801, Art.-Nr. 438557 (50 CR 879)/
440760 (42 CR 764)



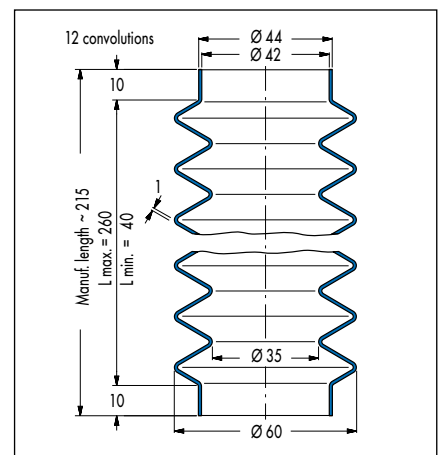
V6-72, Article No. 434088



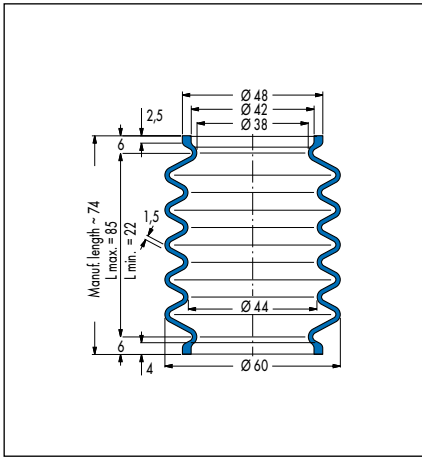
V6-92, Article No. 434425



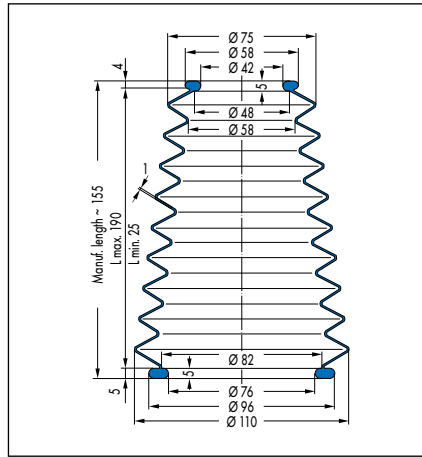
V6-700, Article No. 153008



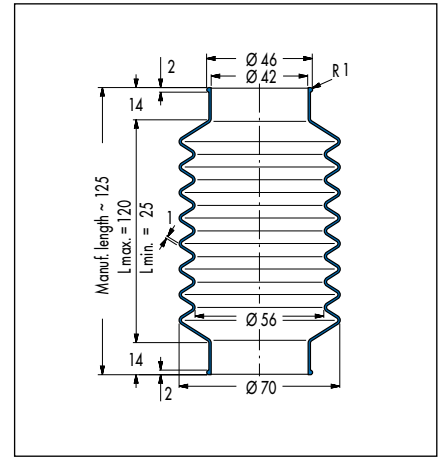
V6-637, Article No. 438549



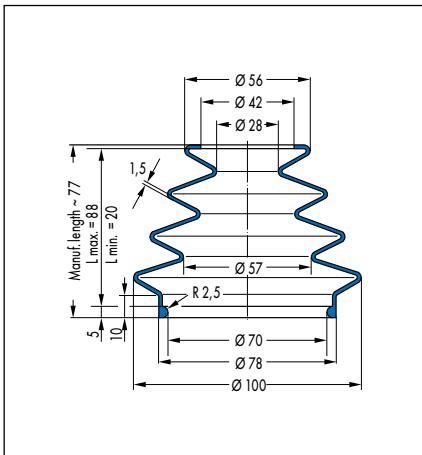
V6-268, Article No. 432119



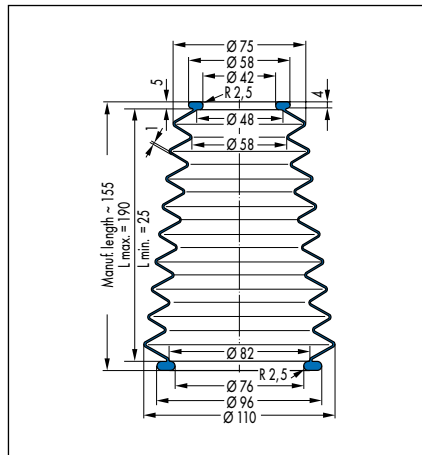
V6-328, Article No. 432424 (42 CR 764)/
454213 (50 CR 879)



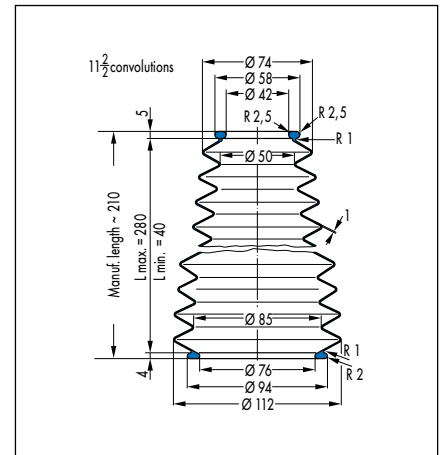
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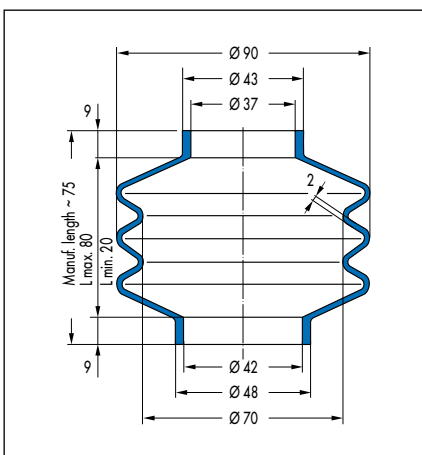
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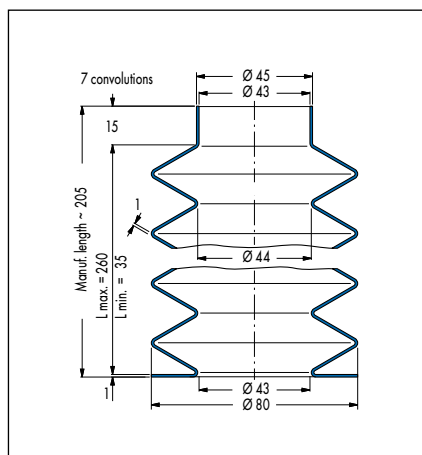
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454213 (50 CR 879)



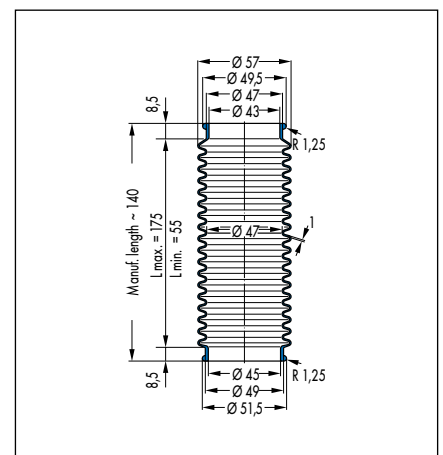
V6-562, Article No. 29741



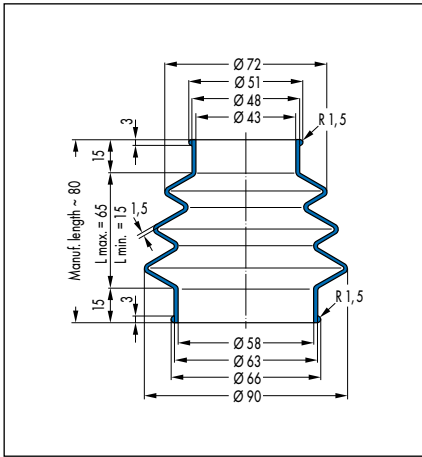
V6-1030, Article No. 400918



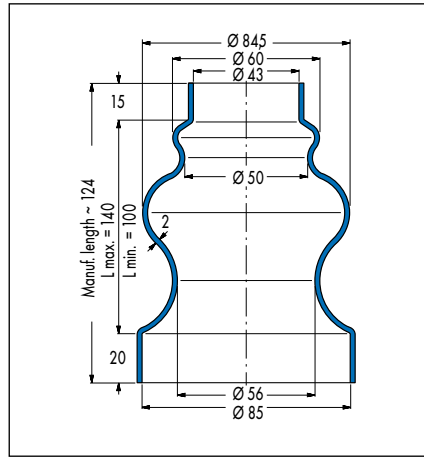
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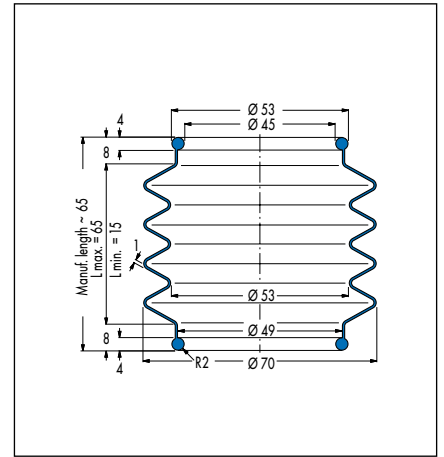
V6-449, Article No. 456484



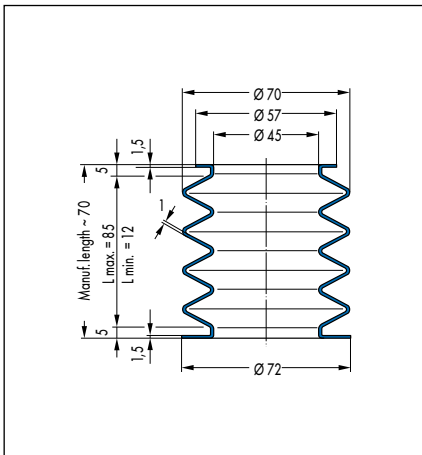
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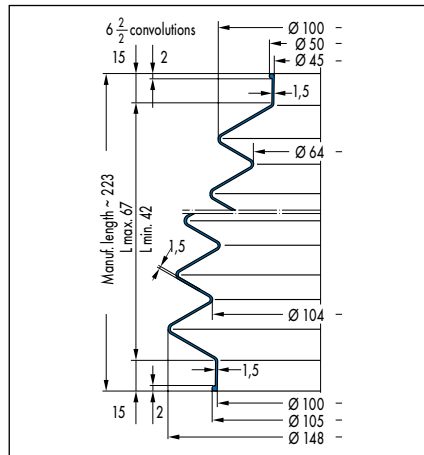
V6-12, Article No. 426317 (42 CR 764)/
60032051 (45 NBR 670)



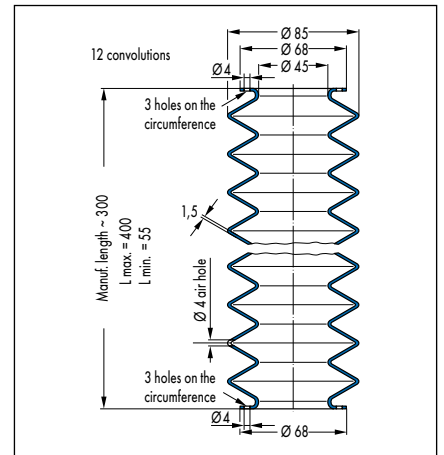
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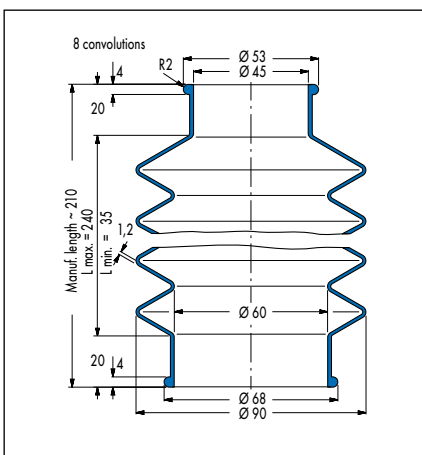
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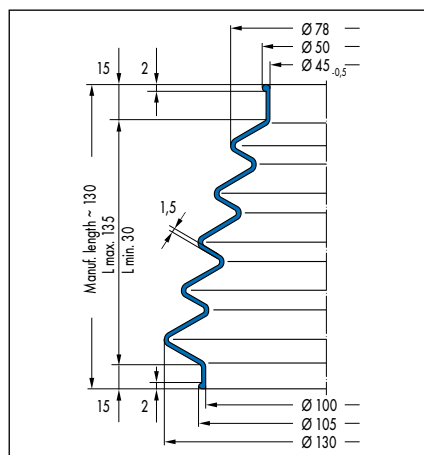
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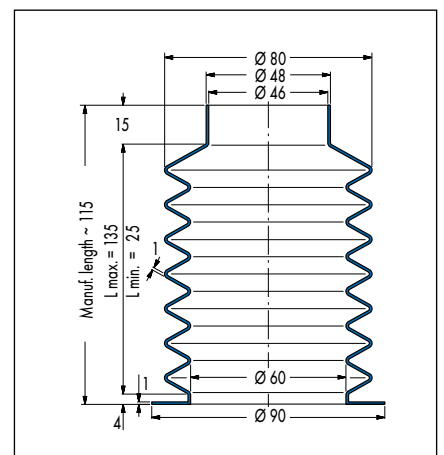
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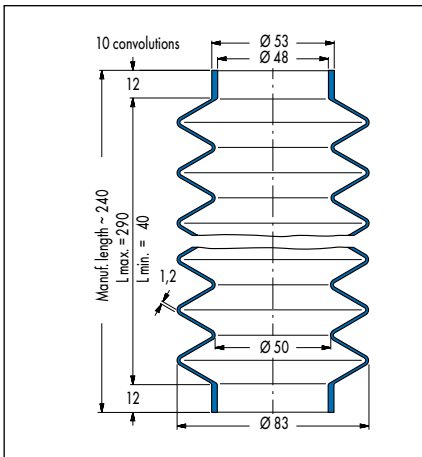
V6-593, Article No. 439497 (42 CR 764)/
439499 (50 CR 879)



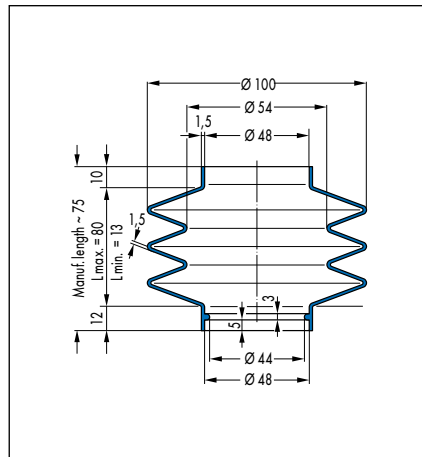
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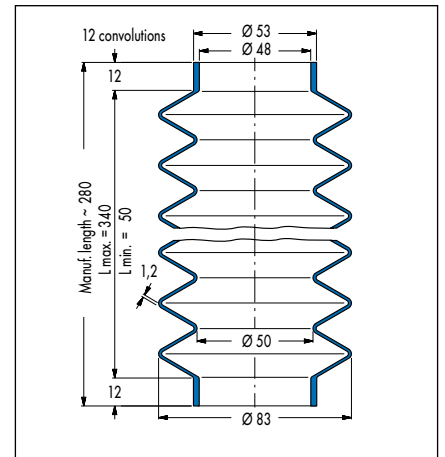
V6-466, Article No. 430847



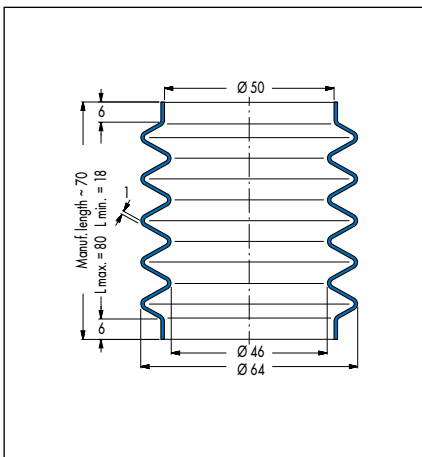
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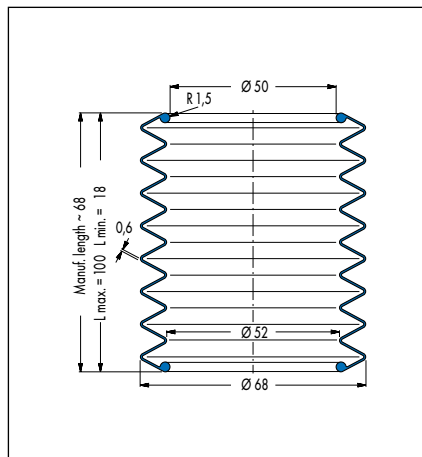
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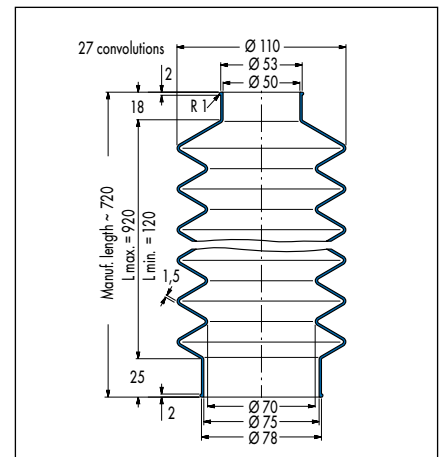
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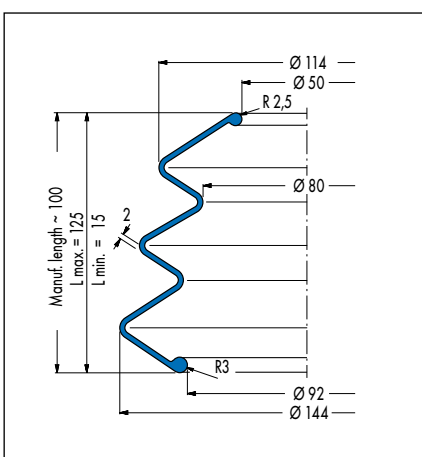
V6-541, Article No. 25105



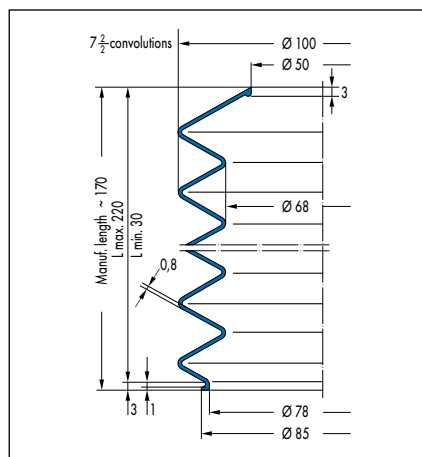
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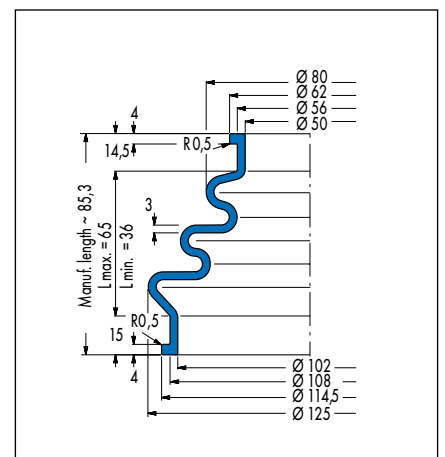
V6-723, Article No. 29915



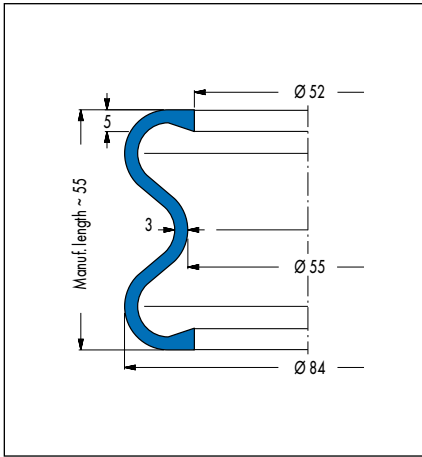
V6-821, Article No. 25235



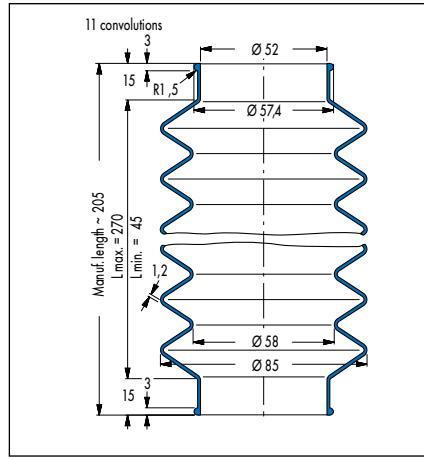
V6-1029, Article No. 20231



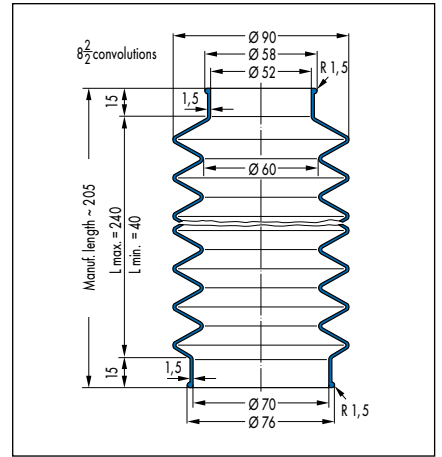
V6-91, Article No. 456482



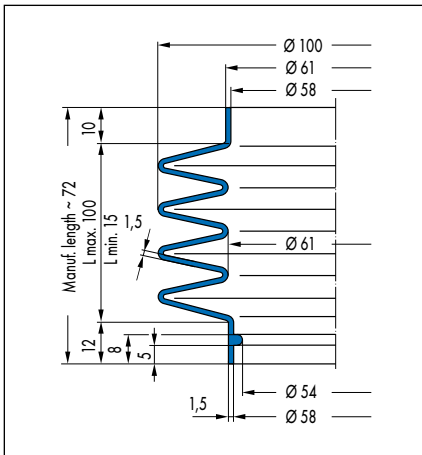
V6-291, Article No. 440381



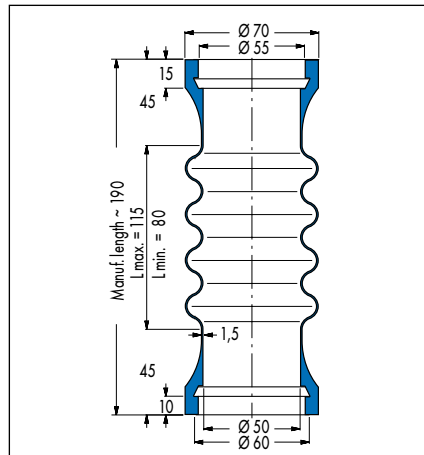
V6-987, Art.-Nr. 440232 (50 CR 879)/
440233 (42 CR 764)



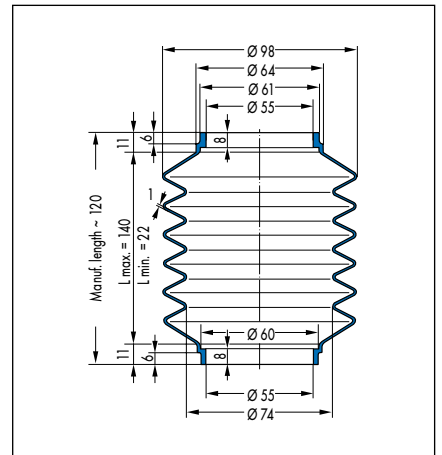
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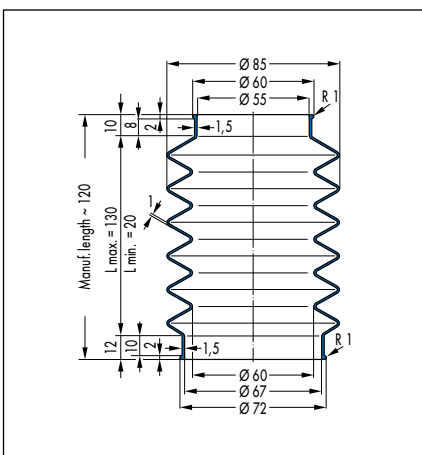
V6-1064, Article No. 453735



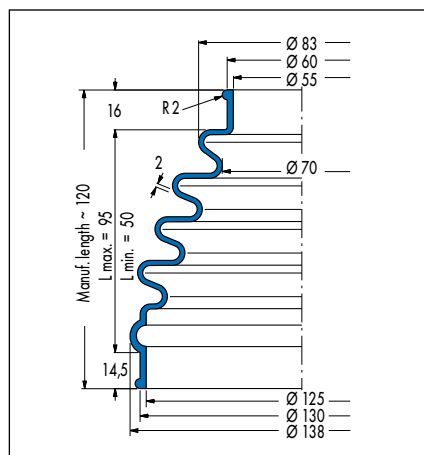
V6-226, Article No. 439437



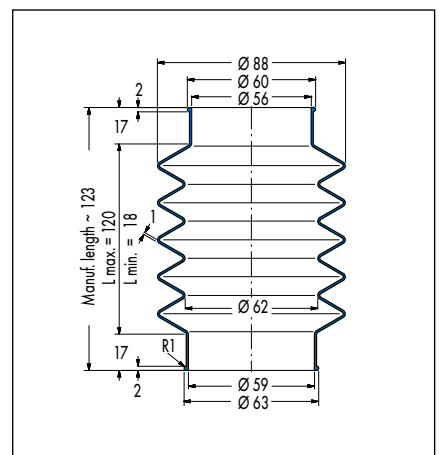
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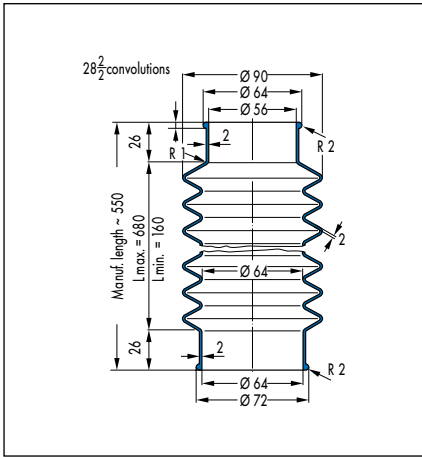
V6-740, Article No. 430860



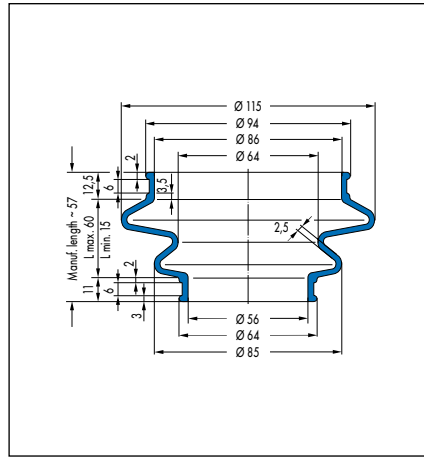
V6-205, Article No. 440285



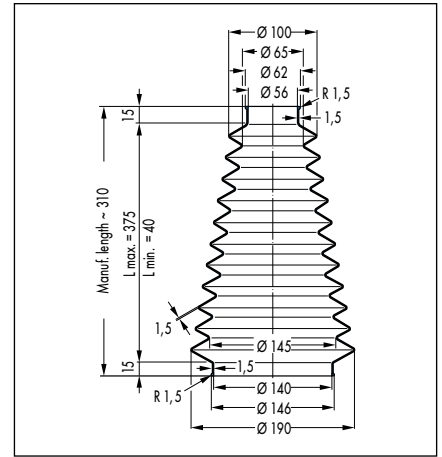
V6-153, Article No. 426797



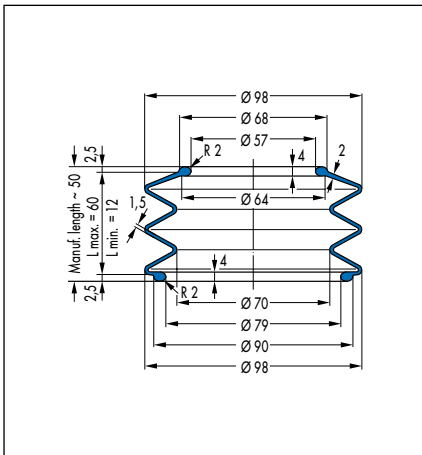
V6-519, Article No. 29705



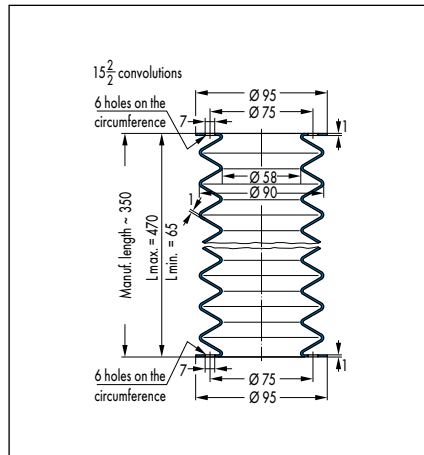
V6-779, Article No. 360138



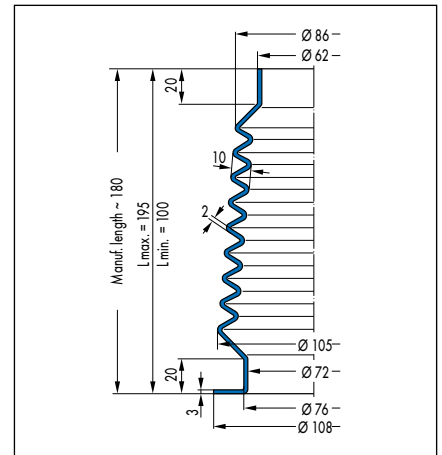
V6-926, Article No. 35807



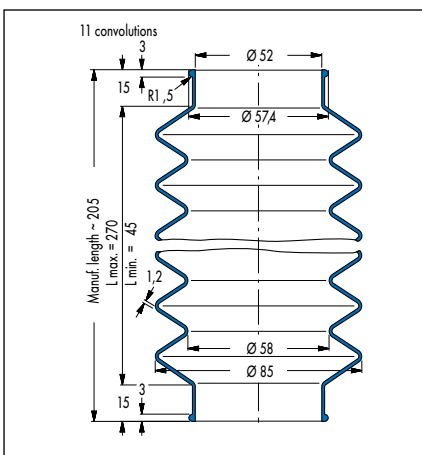
V6-1226, Article No. 452566



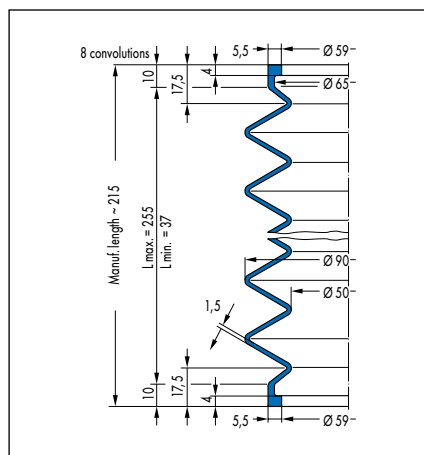
V6-606, Article No. 29774



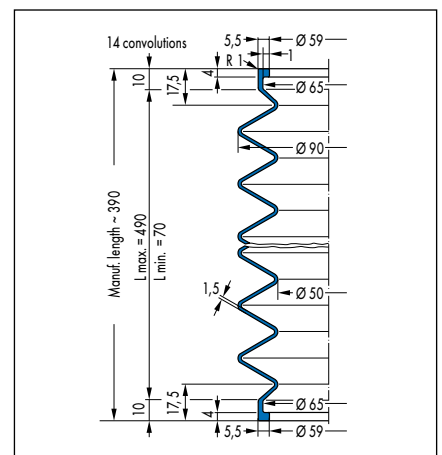
V6-866, Article No. 454218



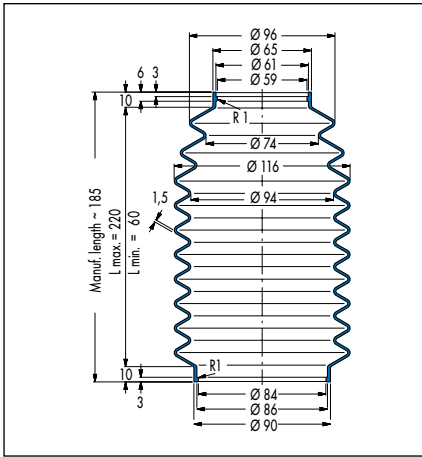
V6-352, Article No. 19577



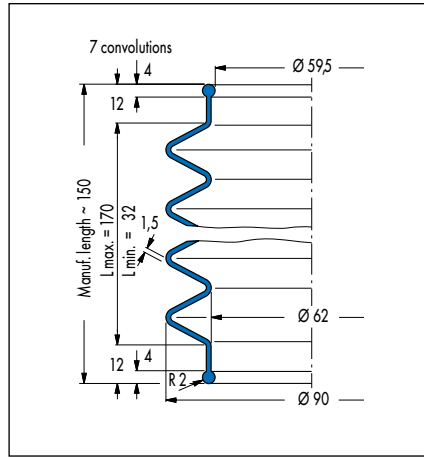
V6-937, Article No. 60022627



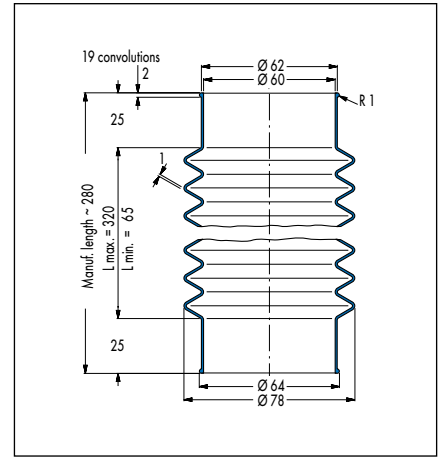
V6-910, Article No. 103132



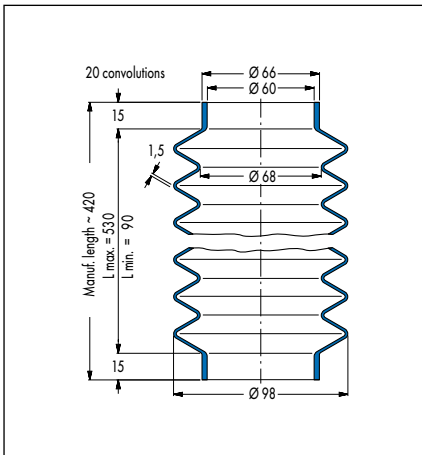
V6-1453, Article No. 454255



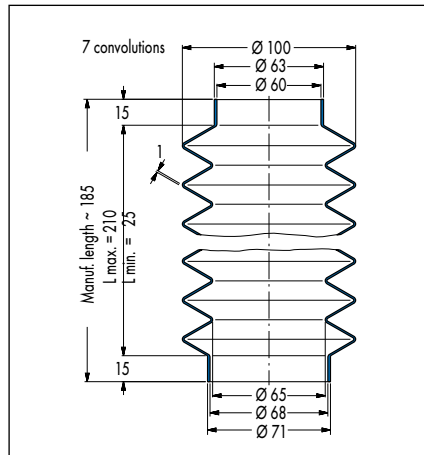
V6-260, Article No. 434071



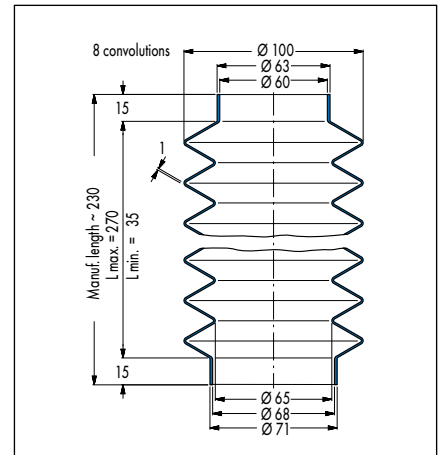
V6-499, Article No. 25090



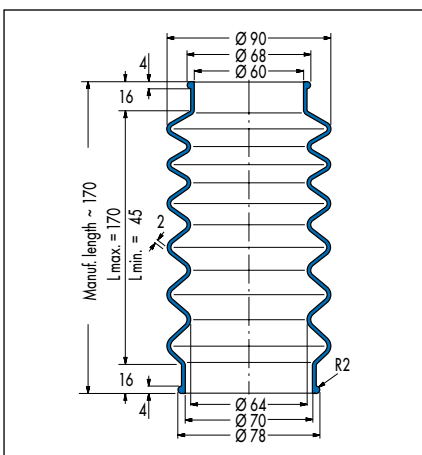
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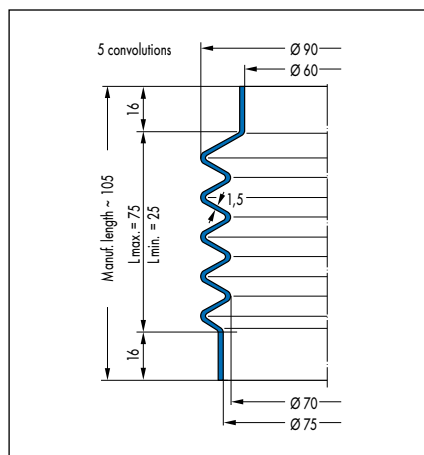
V6-375, Article No. 428321



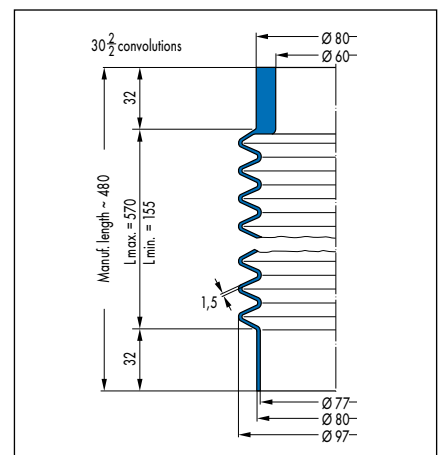
V6-400, Article No. 438535



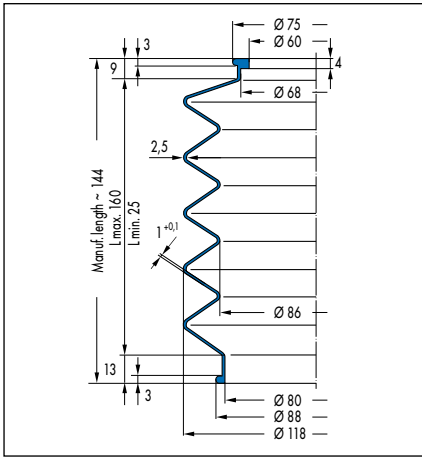
V6-453, Article No. 426371



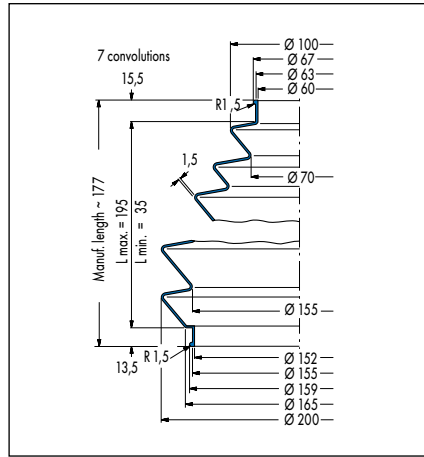
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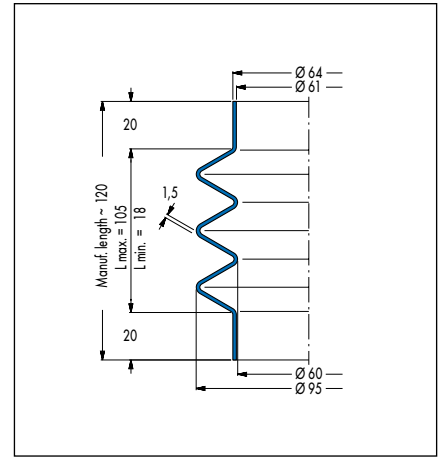
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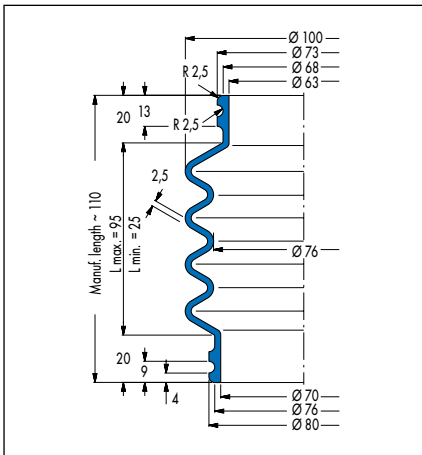
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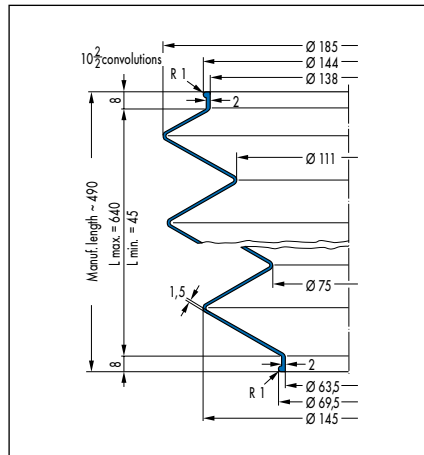
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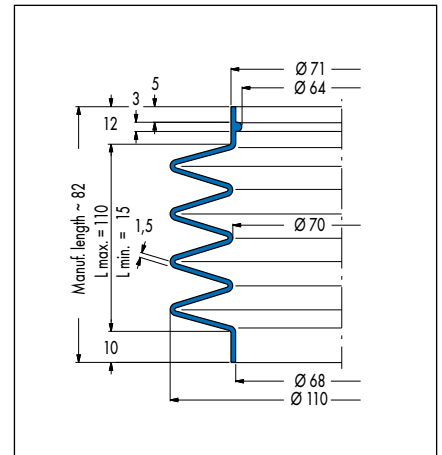
V6-99, Article No. 434091 (NBR)/
434092 (CR)



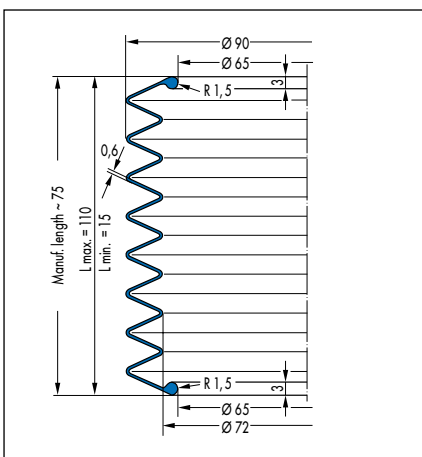
V6-242, Article No. 439438



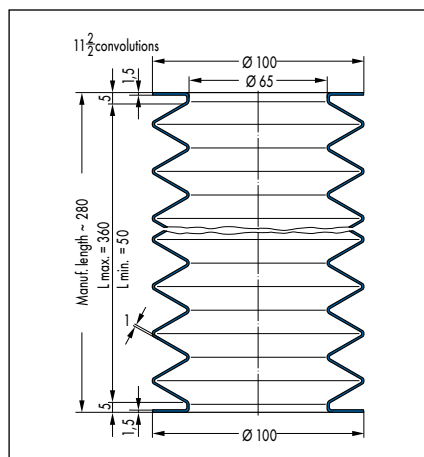
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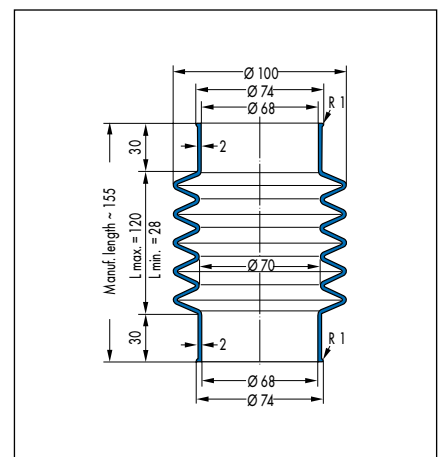
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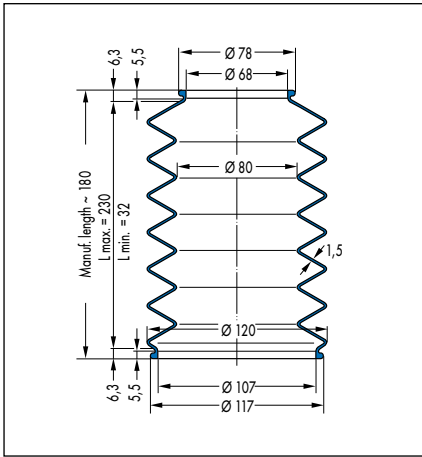
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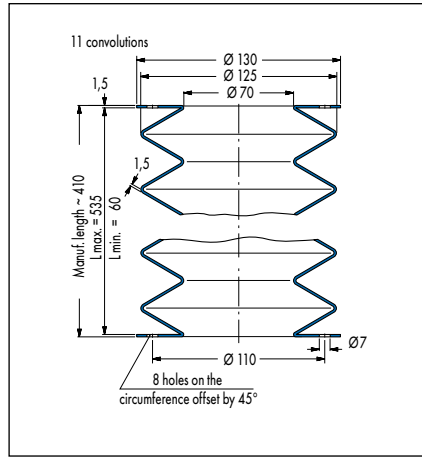
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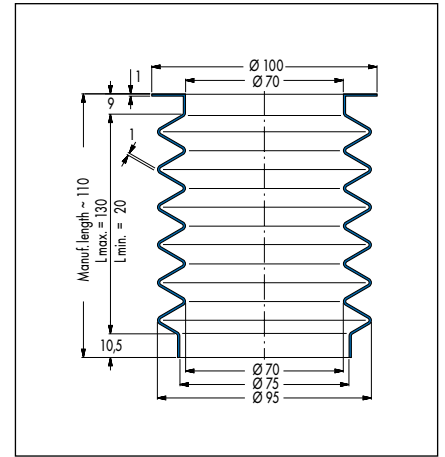
V6-497, Article No. 101244



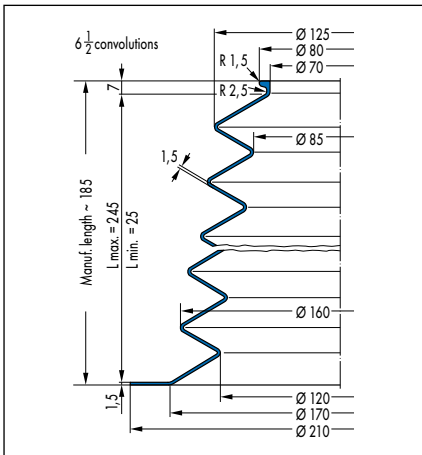
V6-329, Article No. 428309



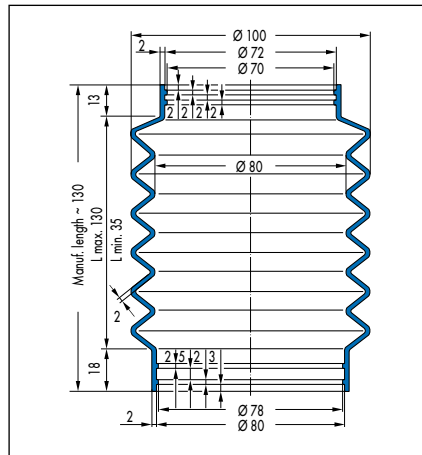
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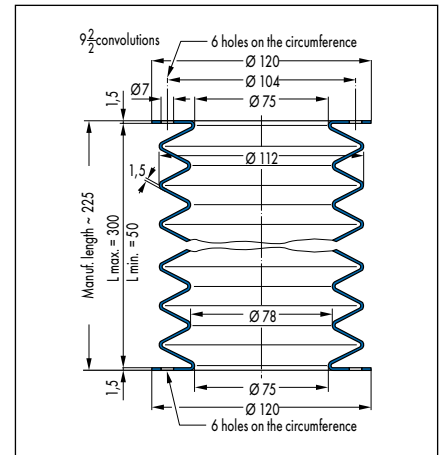
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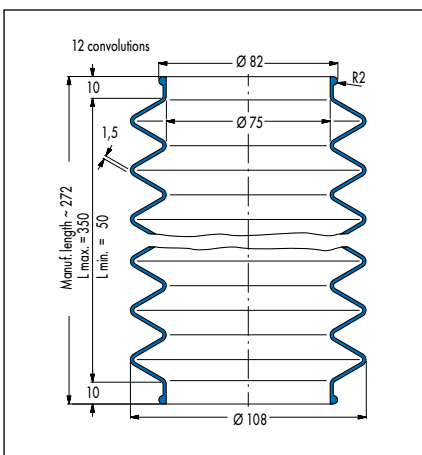
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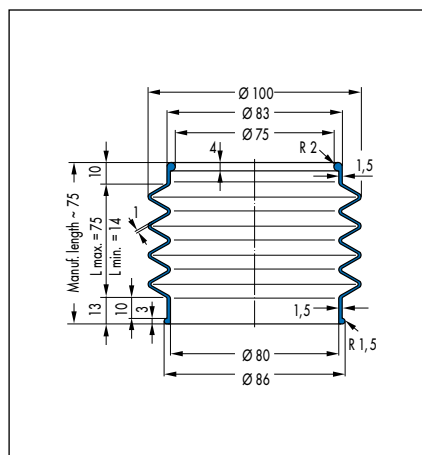
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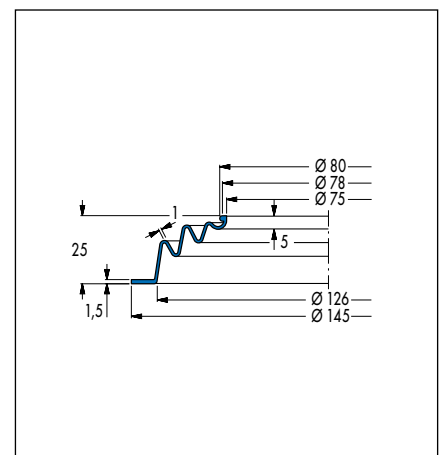
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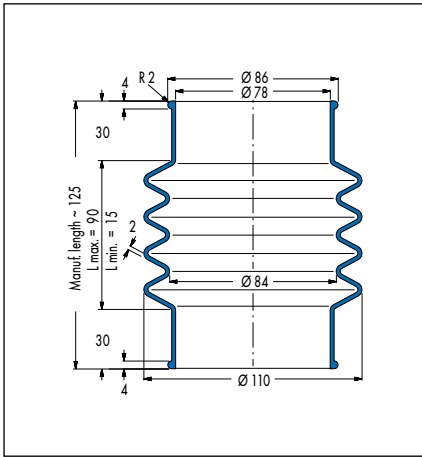
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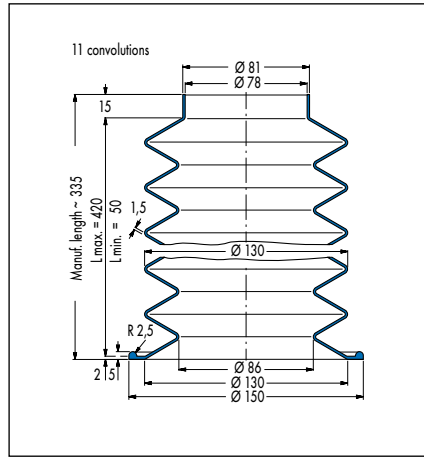
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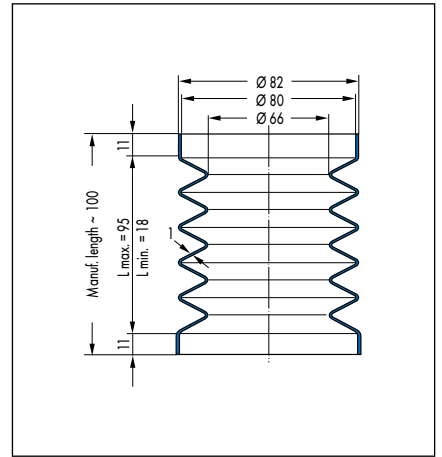
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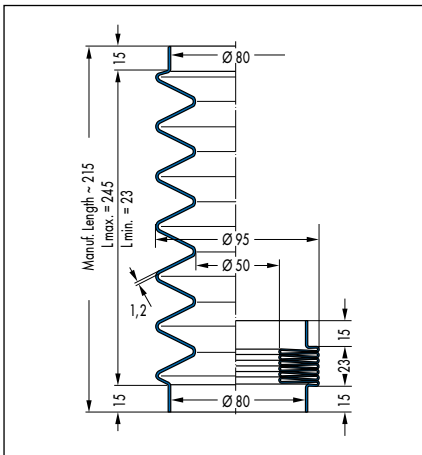
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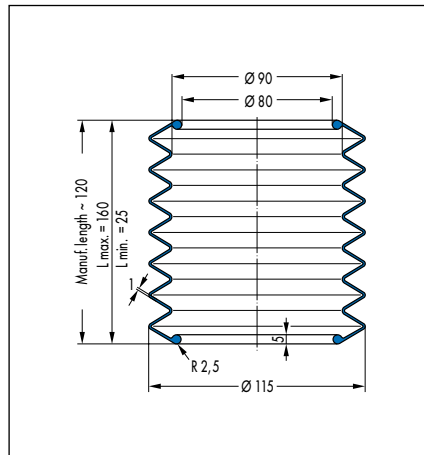
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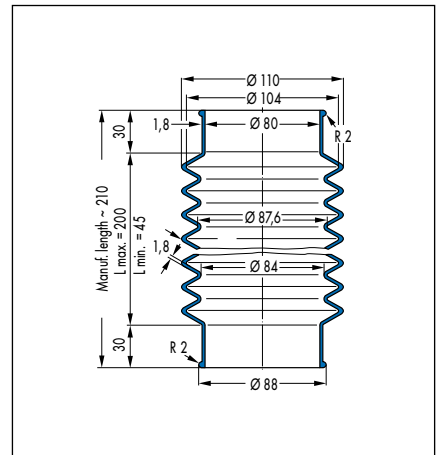
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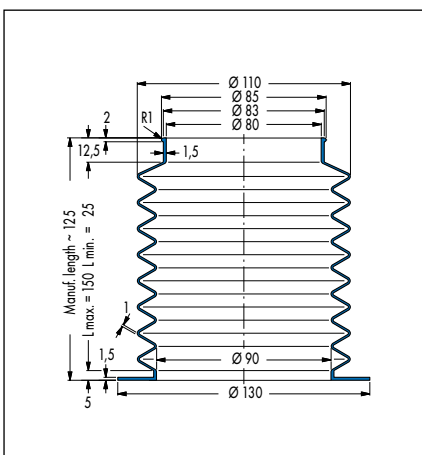
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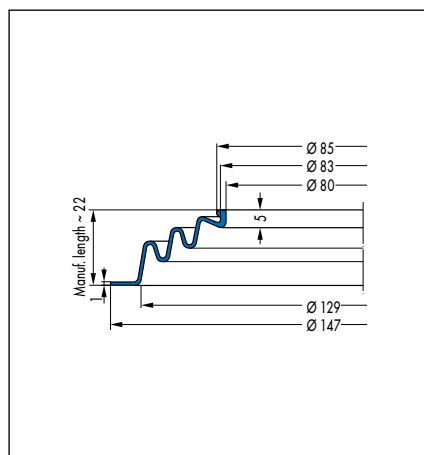
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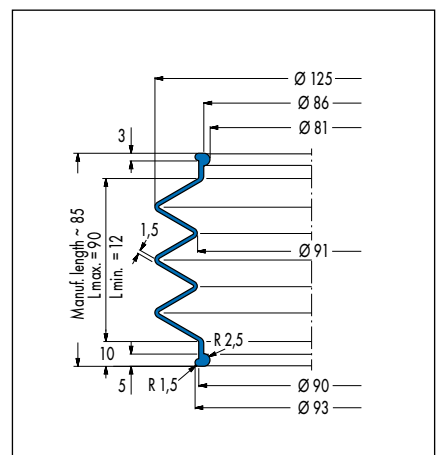
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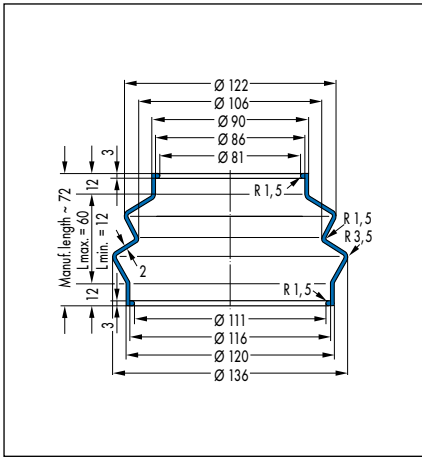
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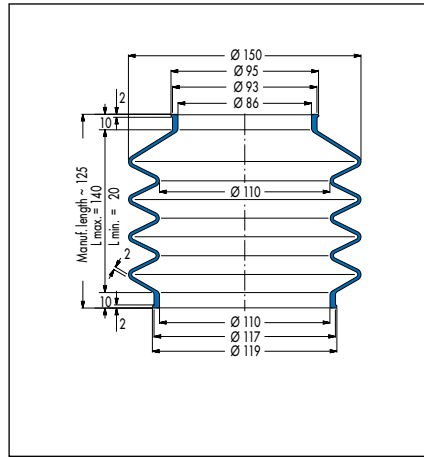
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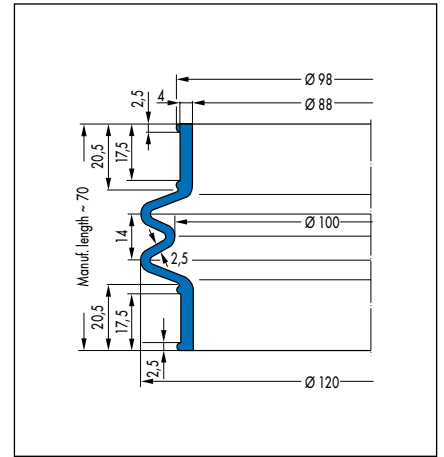
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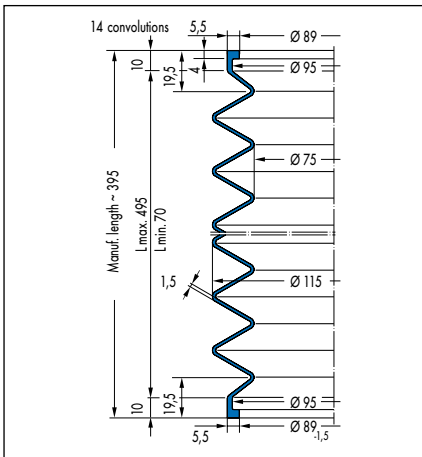
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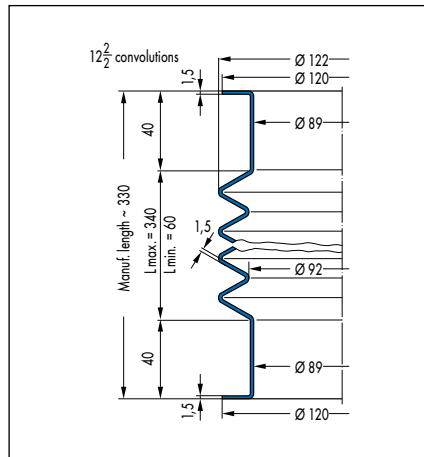
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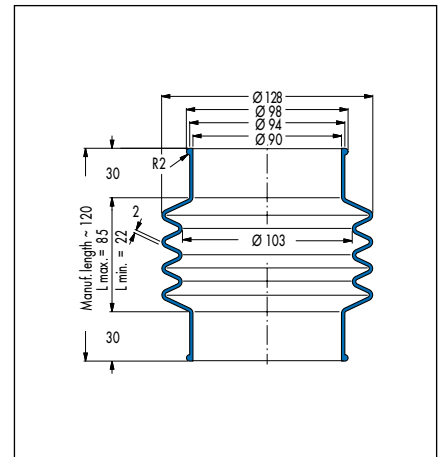
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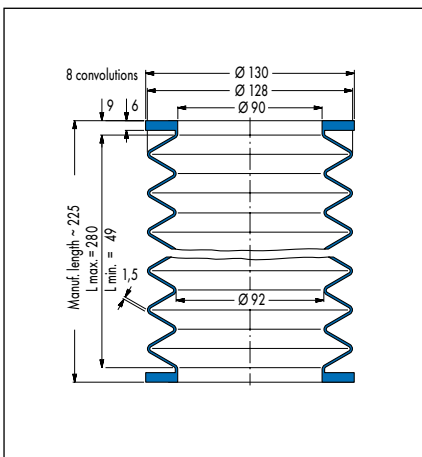
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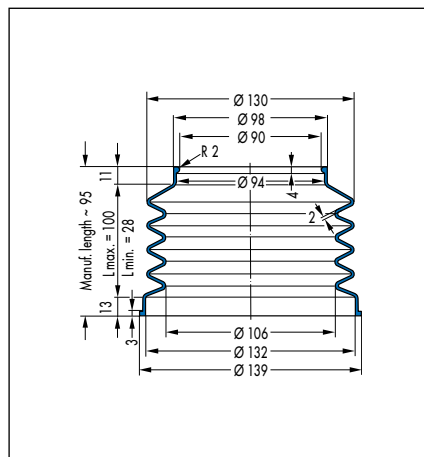
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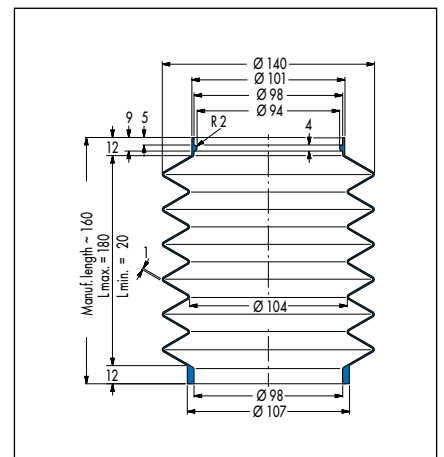
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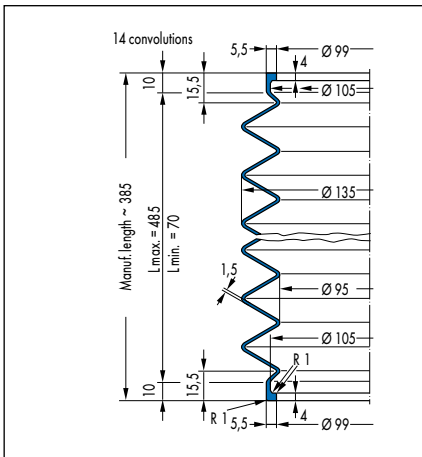
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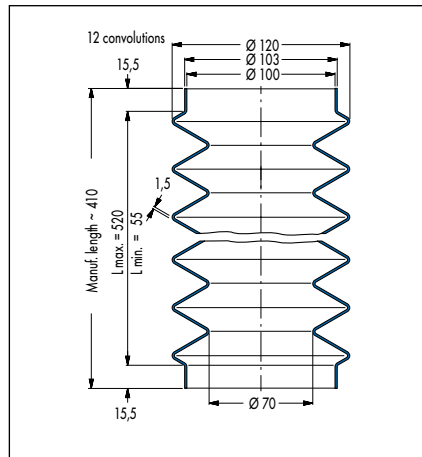
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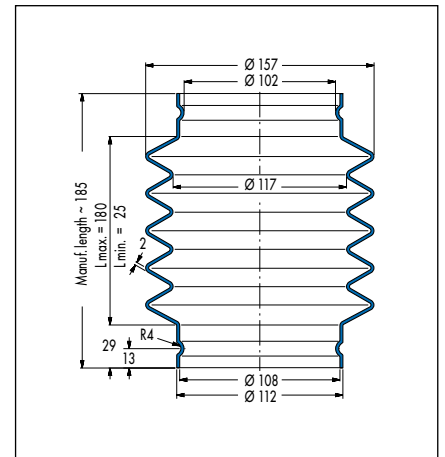
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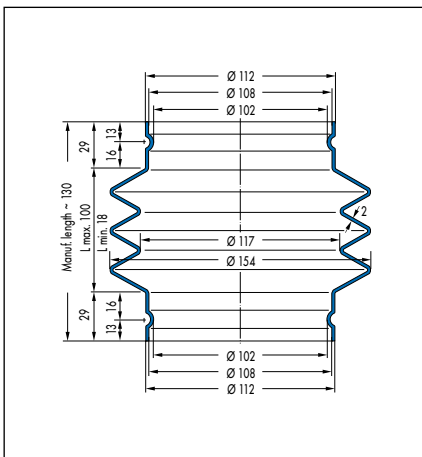
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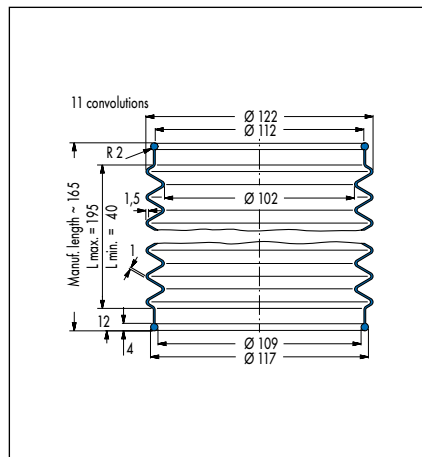
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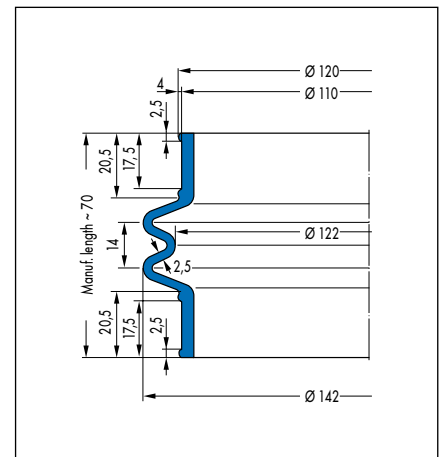
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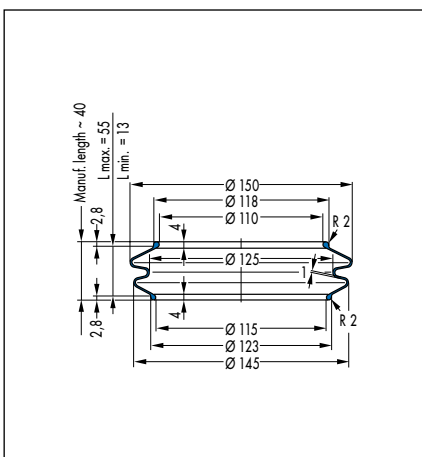
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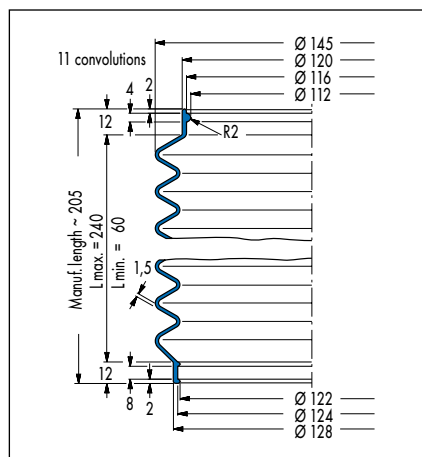
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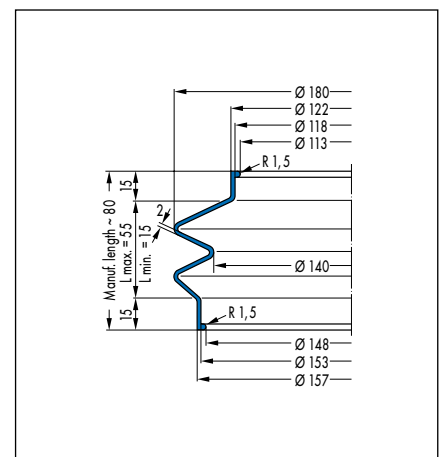
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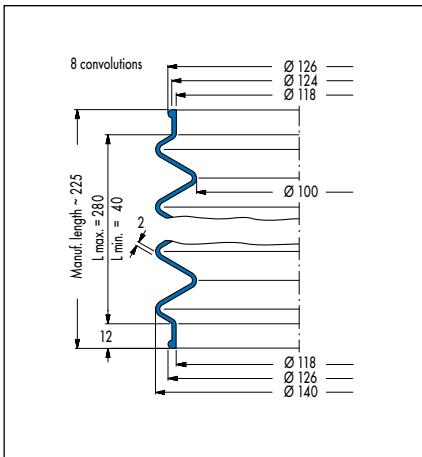
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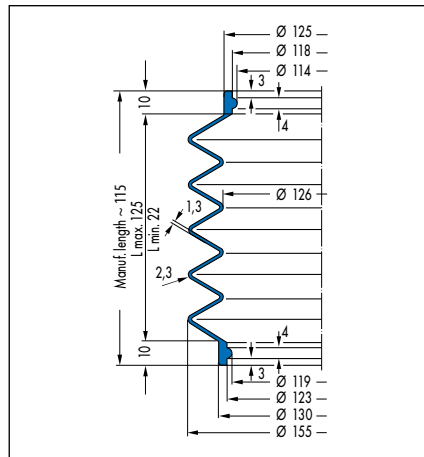
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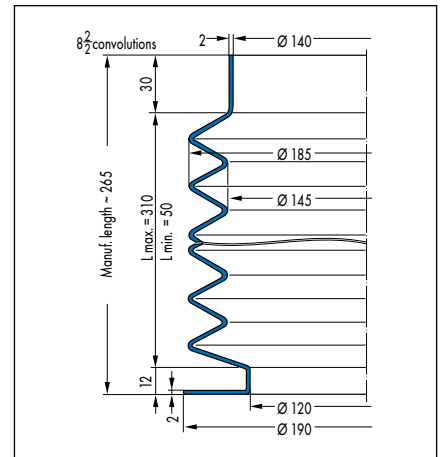
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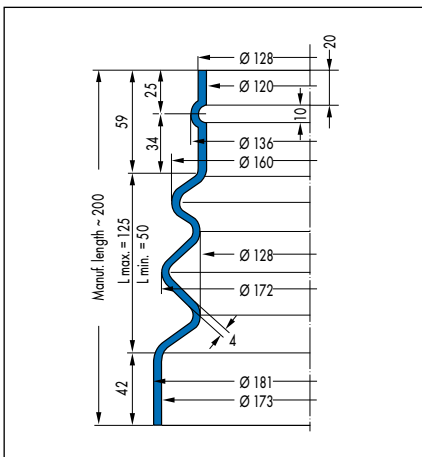
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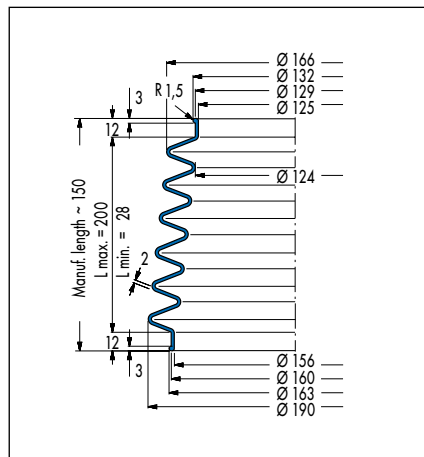
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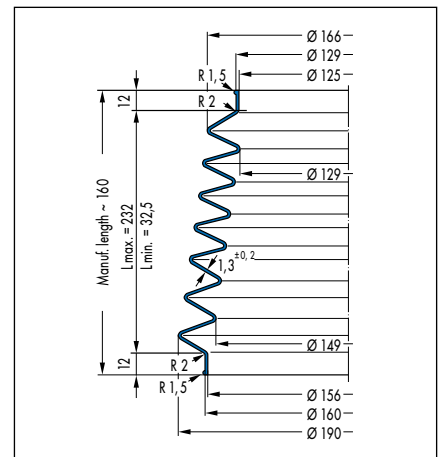
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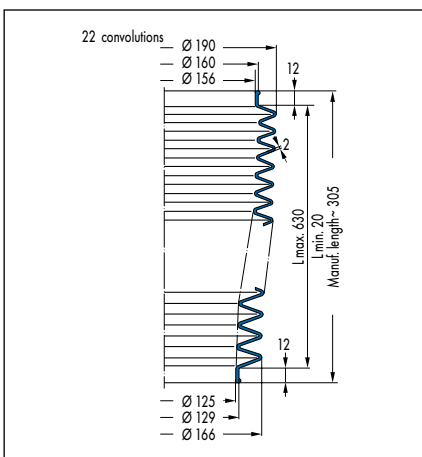
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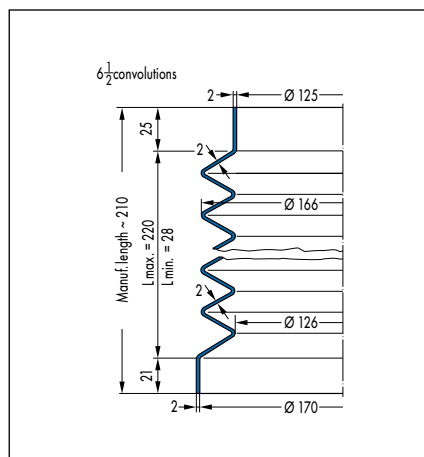
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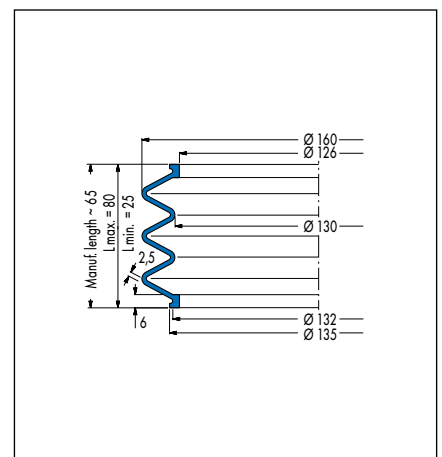
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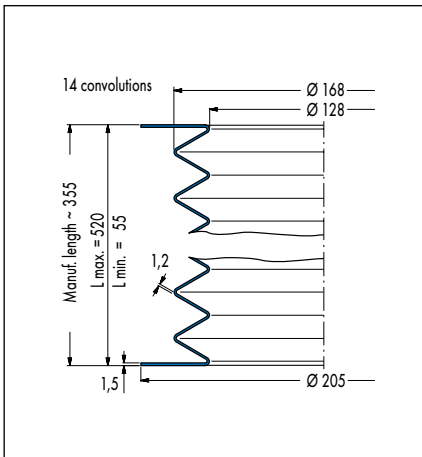
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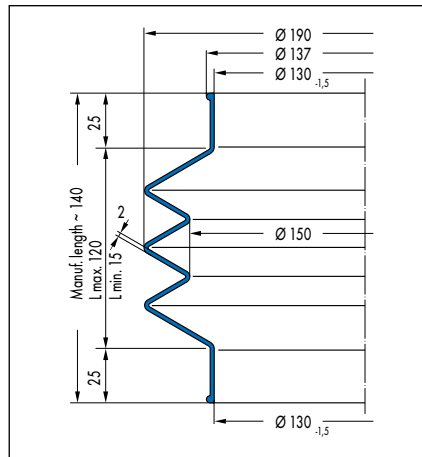
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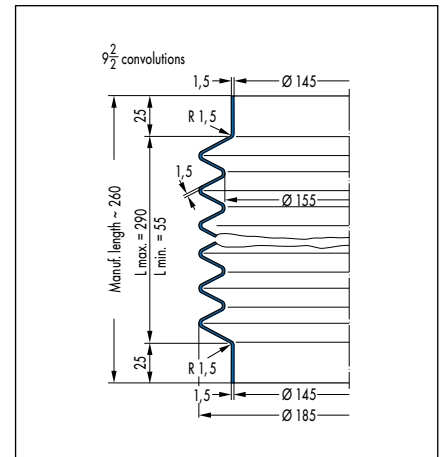
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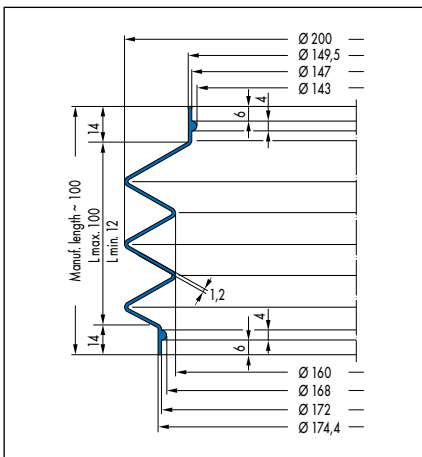
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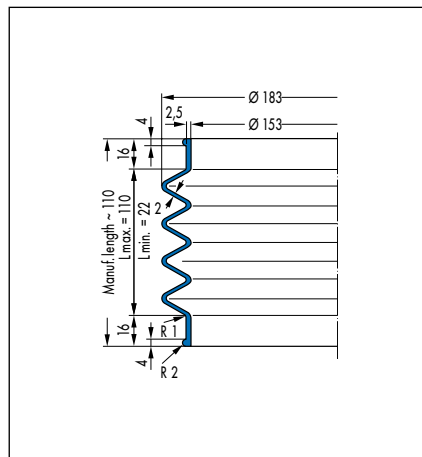
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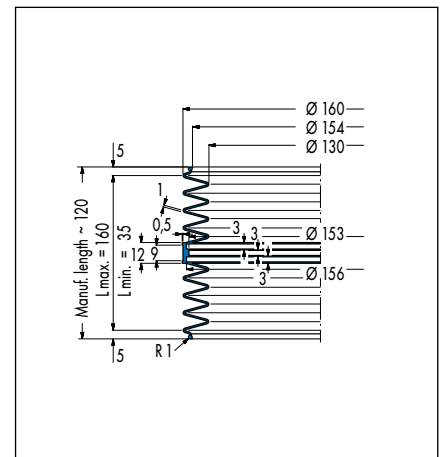
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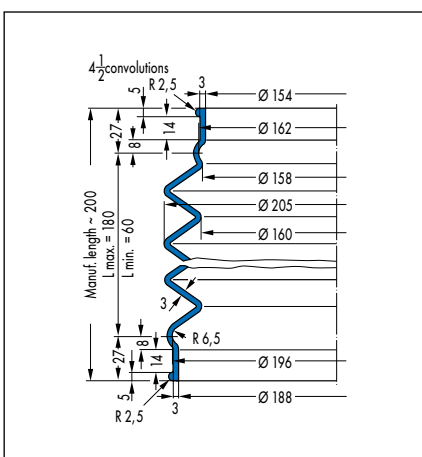
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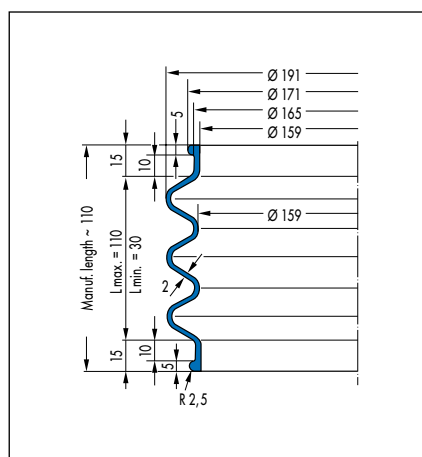
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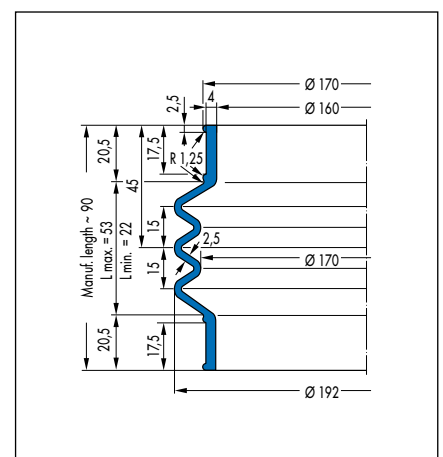
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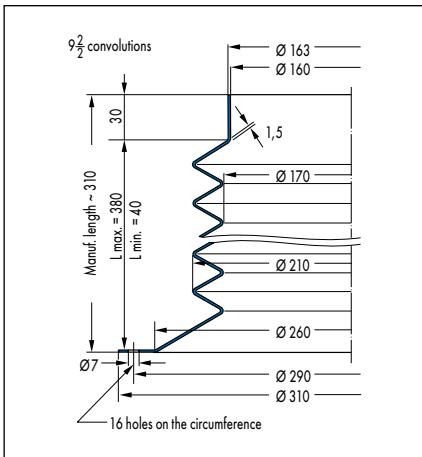
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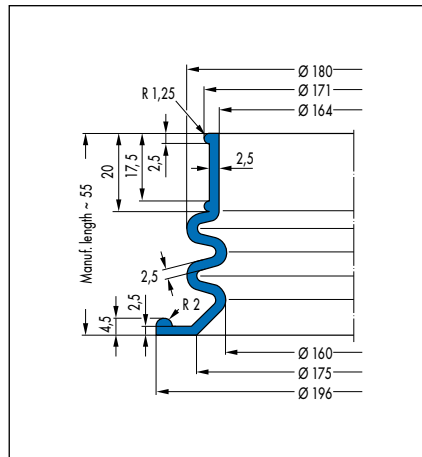
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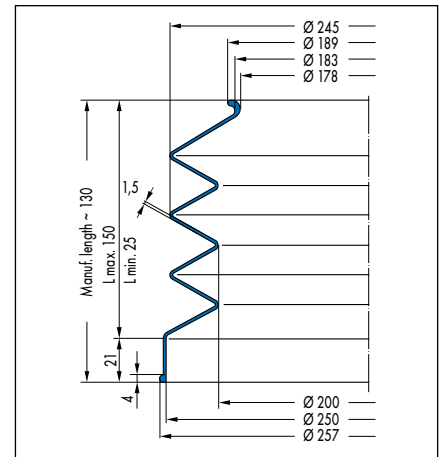
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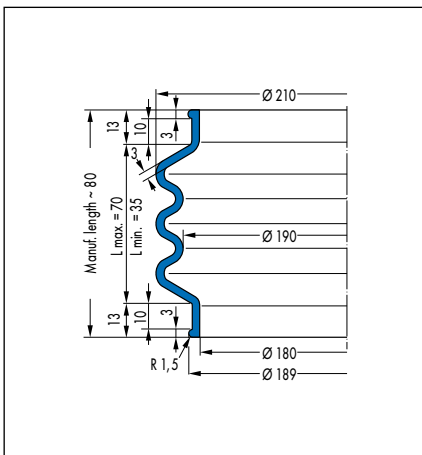
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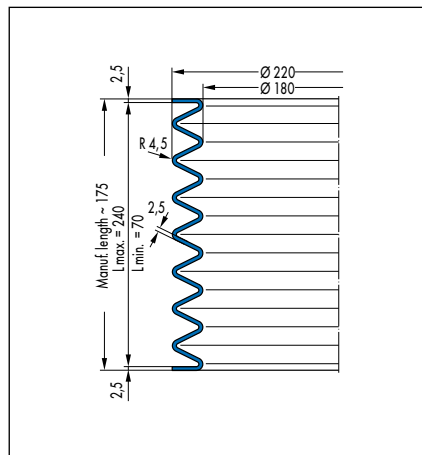
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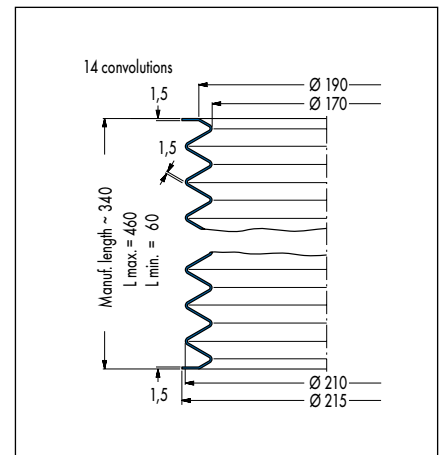
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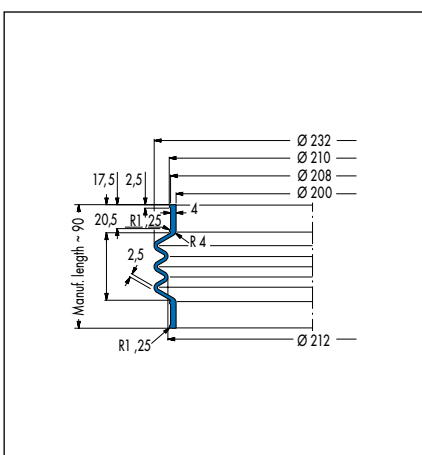
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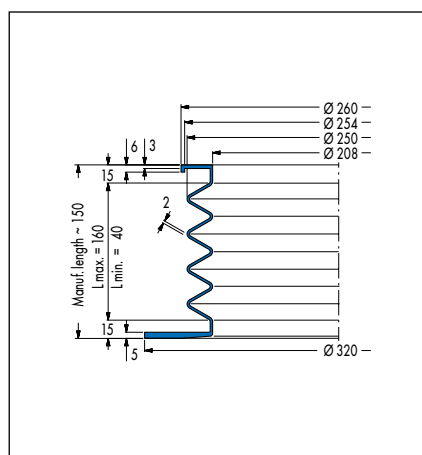
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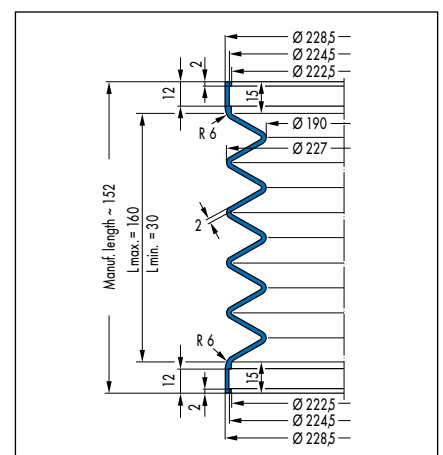
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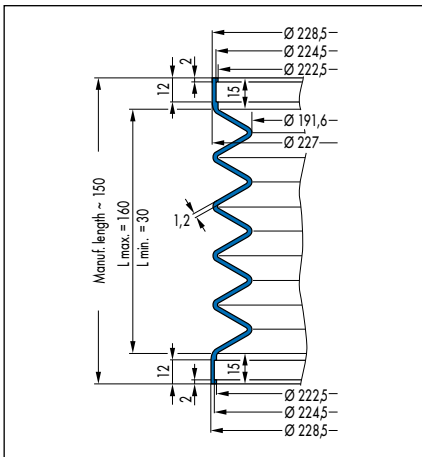
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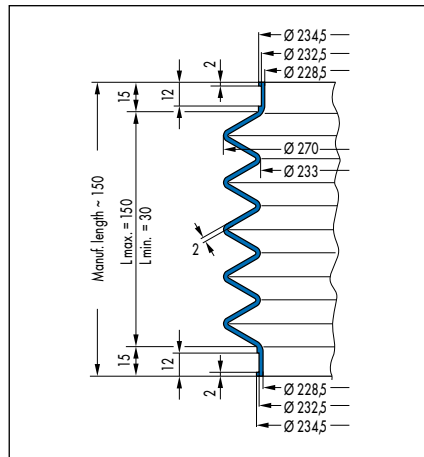
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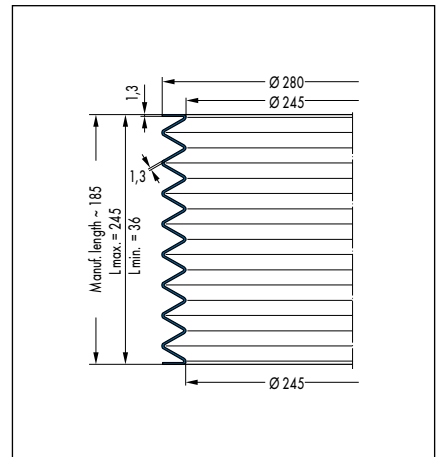
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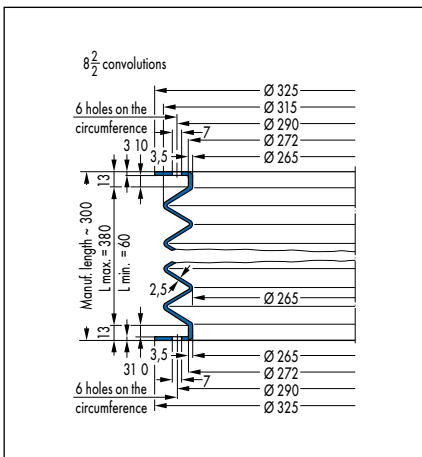
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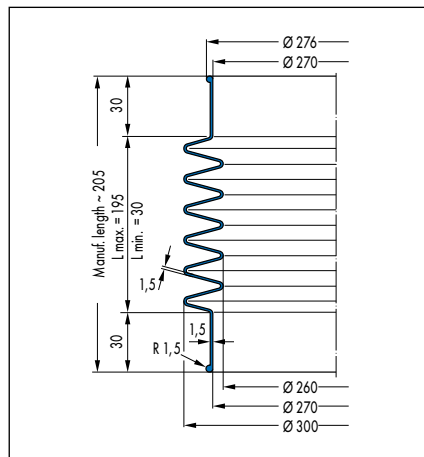
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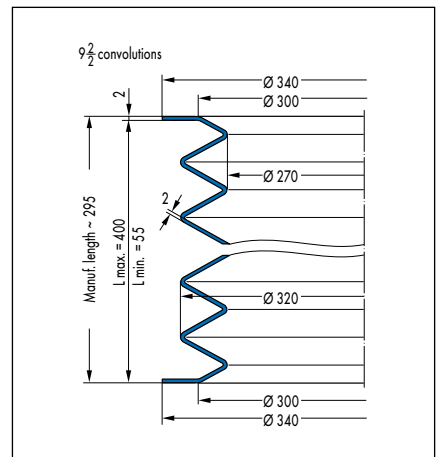
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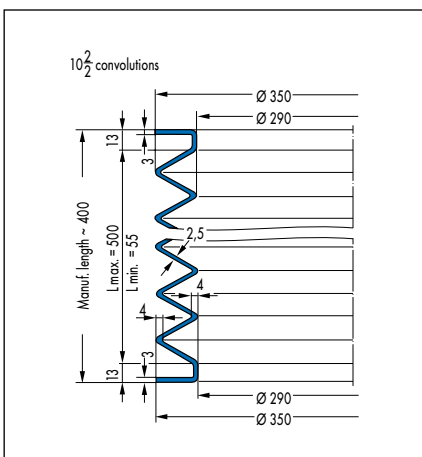
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V6-1031, Article No. 361913



V6-766, Article No. 36412



V6-732, Article No. 510580

Disk Bellow

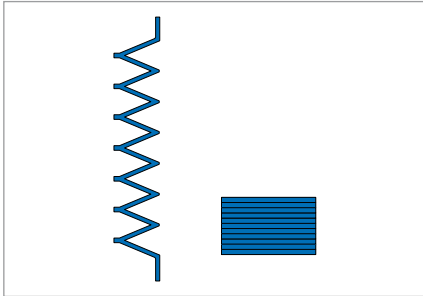


Fig. 1 Disk Bellow

Product description

Disk bellows can have an elongation ratio of up to 1:16. At the minimum length (in the compressed state) the bellows is reduced to a cylindrical block. Despite this small block size, a large L_{max} (maximum length) can be achieved. Wherever round drive elements (piston rods or threaded spindles) need to be securely protected against soiling or where people need to be prevented from contact with moving machine parts, the disk bellows is the right choice.

Product advantages

- Realises elongation ratios that no other bellows geometry can
- Medium of choice for bellows dimensions that are otherwise difficult to realise (e.g. 4 m manufactured length)
- Especially suited for applications where only a low number of pieces are needed as no forming costs arise for standard dimensions (see article overview)
- Freely-selectable connections: collar, flange or both.

Application

Especially for translation movements with large stroke, the disk bellows ensures the functional sealing of:

- Hydraulic and pneumatic cylinders
- Trapeze spindles or ball screws.

The disk bellows is used in drive technology (stroke or adjusting elements), in machines for special applications, as well as for many manufacturing technology applications.

Material

Material	CSM (chlorosulphonated polyethylene)	NBR (acrylonitrile-butadiene - rubber)	xTend
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Other materials on enquiry.

Operating conditions

Material	CSM	NBR	xTend
Temperature	-15 ... +110 °C	0 ... +90 °C	-10 ... +60 °C
Standard thicknesses	0,5/0,75/1 mm	1 mm	0,6/1 mm
Ozone stability	very good	low	good
UV stability	very good	low	-
Oil and grease resistance	good	very good	sufficient
Other properties	Good chemical resistance up to 40 °C	Use with higher oil and grease loading Antistatic design	A specially developed, highly tear-resistant thermoplastic Advantage: significant price advantage over larger convolution depths compared to CSM, NBR

Fitting & installation

$$L_{max} = \text{Convolution depth } (F_t) \times \text{No. of convolutions } (F_z)$$

$$F_t = (D_o - D_i) : 2$$

$$F_z = L_{max} / F_t$$

$$F_z = \text{Stroke} / (F_t - 2,5)$$

$$L_{min} = F_z \times 2,5$$

Where:

L_{max} = maximum length

L_{min} = minimum length

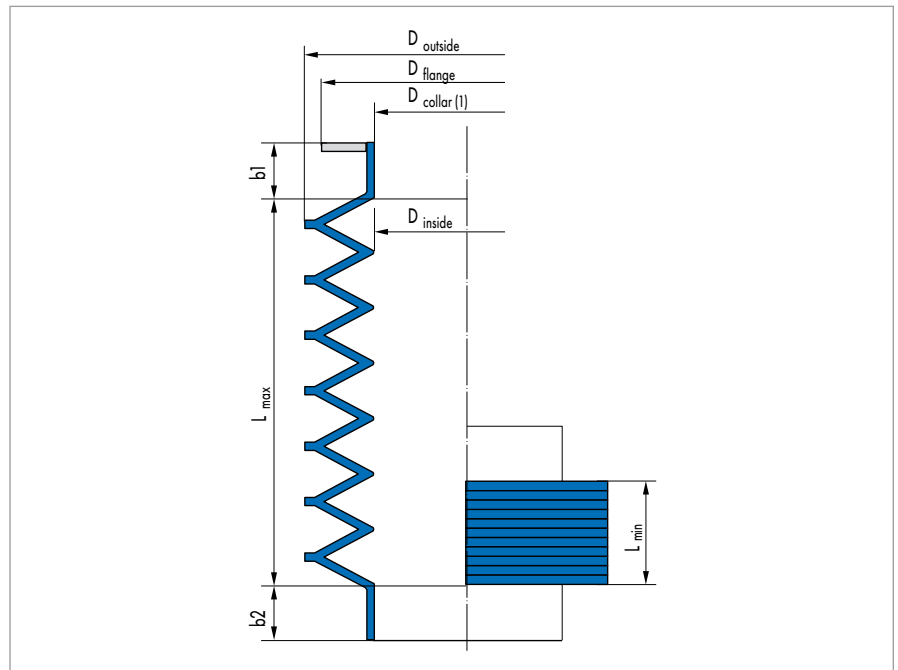
2,5 = L_{min} per convolution

For convolutions depths >33 mm, support disks are used on the inside.

The minimum length is increased in this case by 1 mm per convolution.

D_o = outside diameter

D_i = inside diameter



Design notes

The disk bellows can be installed vertically, horizontally or at an angle. For some installation situations, special constructive requirements for the use of a disk bellows must be observed

- Glide bushes can be used to prevent the bellows from jamming in the horizontal installation – especially for spindle drives.

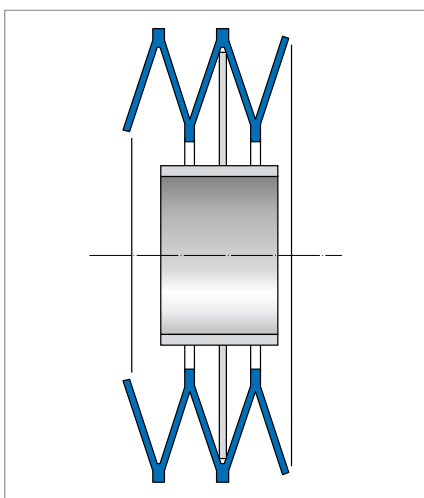


Fig. 2 Disk Bellows with spindle drives for horizontal installation

- Support disks stabilise the bellows for convolution depths over 30 mm and lengths over 1500 mm. At the same time, the support disks serve as an extension stop. Lengths of up to 4 m can thus be realised.

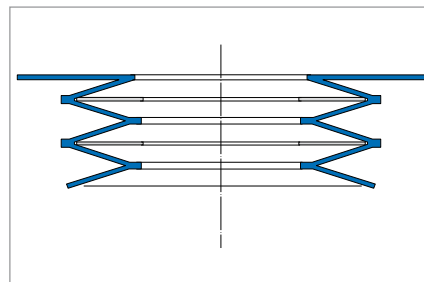


Fig. 3 Disk Bellows with flange and support disks

- Disk bellows are fully sealed. For this reason, they must be sufficiently ventilated (through valves or air flaps) to prevent the bellows from bursting during use.

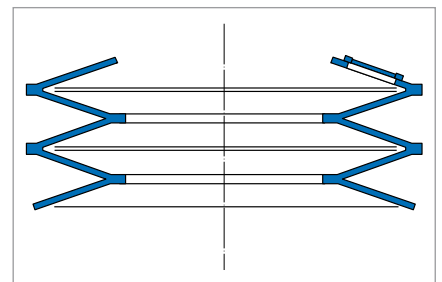


Fig. 4 Disk Bellows with ventilation valve

These accessories can be supplied with the order.

Disk Bellows without tool costs

Convolu- tion depth	12	15	18	21	24	27	30	33	36	39	42	45	48	51	60
Inside Ø	Outside Ø														
	Standard dimensions without tool costs							Standard dimensions without tool costs always with support disks							
18	42	48	54	60	66										
24	48	54	60	66	72										
30	54	60	66	72	78										
36	60	66	72	78	84										
42	66	72	78	84	90										
48	72	78	84	90	96	102	108								
54	78	84	90	96	102	108	114								
60	84	90	96	102	108	114	120								
66	90	96	102	108	114	120	126								
72	96	102	108	114	120	126	132								
78	102	108	114	120	126	132	138								
84	108	114	120	126	132	138	144	150	156	162	168				
90	114	120	126	132	138	144	150	156	162	168	174	180			
96	120	126	132	138	144	150	156	162	168	174	180	186			
102		132	138	144	150	156	162	168	174	180	186	192	198	204	210
108		138	144	150	156	162	168	174	180	186	192	198	204	210	216
114		144	150	156	162	168	174	180	186	192	198	204	210	216	222
120		150	156	162	168	174	180	186	192	198	204	210	216	222	228
126		156	162	168	174	180	186	192	198	204	210	216	222	228	234
132		162	168	174	180	186	192	198	204	210	216	222	228	234	240
138		168	174	180	186	192	198	204	210	216	222	228	228	240	246
144		174	180	186	192	198	204	210	216	222	228	234	240	246	252
150		180	186	192	198	204	210	216	222	228	234	240	246	252	258
156			192	198	204	210	216	222	228	234	240	246	252	258	264
162			198	204	210	216	222	228	234	240	246	252	258	264	270
168			204	210	216	222	228	234	240	246	252	258	264	270	276
174			210	216	222	228	234	240	246	252	258	264	270	276	282
180			216	222	228	234	240	246	252	258	264	270	276	282	288
186				228	234	240	246	252	258	264	270	276	282	288	294
192				234	240	246	252	258	264	270	276	282	288	294	300
198				240	246	252	258	264	270	276	282	288	294	300	306
204					252	258	264	270	276	282	288	294	300	306	312
210						264	270	276	282	288	294	300	306	312	318
216							276	282	288	294	300	306	312	318	324
222							282	288	294	300	306	312	318	324	330
228							288	294	300	306	312	318	324	330	336
234				276			294	300	306	312	318	324	330	336	342
240							300	306	312	318	324	330	336	342	348
246							306	312	318	324	330	336	342	348	354
252							312	318	324	330	336	342	348	354	360
258							318	324	330	336	342	348	354	360	366
264							324	330	336	342	348	354	360	366	372
270							330	336	342	348	354	360	366	372	378
276							336	342	348	354	360	366	372	378	384
282							342	348	354	360	366	372	378	384	
288						342	348	354	360	366	372	378	384		
300					348		360	366		384					
306							366								
312							372								
324							384								
348			384												

available at short notice in xTend available at short notice

Inside and outside diameters can be combined in 6 mm jumps (18 ... 384 mm), freely-selectable connections: collar, flange or both.

Bellows for Cable Bushing

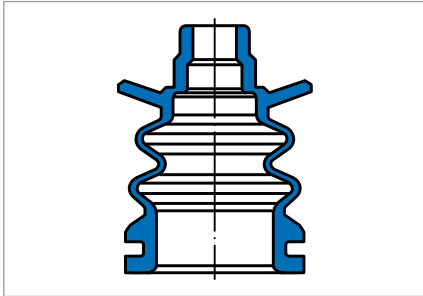


Fig. 1 Bellows for Cable Bushing

Product description

The Bellows for cable bushing is a bellows with flexible connection system. Cable bushings are located where cables, Bowden cables (or similar) must pass through chamber separations. Because of multiple connection diameters many different cable diameters can be sealed with a bellows for cable bushing.

The sealing of chamber separation using bellows for cable bushings protects the inner area against dirt, dust, water, contaminants, amongst others.

Product advantages

Ensures secure and continuous sealing of cable bushings and thus:

- Very good sealing properties through extensive sealing area in both connection areas
- Protection of technical or mechanical devices
- Noise reduction
- Low mechanical loading through friction for cables, Bowden cables or similar

- Easily installed with fitting straps
- Optically and aesthetically appealing sealing solution
- Installation and cost advantages through the use of one bellows for different diameter dimensions to be sealed
- Flexibility of movement through convoluted design
- Simple cable replacement possible without damage, thus service-friendly
- High product service life.

Application

- Agricultural and construction machinery
 - Electrical cables are run in/through the inside of the cabin
- Boat building
 - Control cables for outboard motors are run through the inner shell
- White goods
 - Power cables are run from the inside of the machine to the outside.

Material

Material	PVC
-----------------	-----

Other materials on enquiry.

Operating conditions

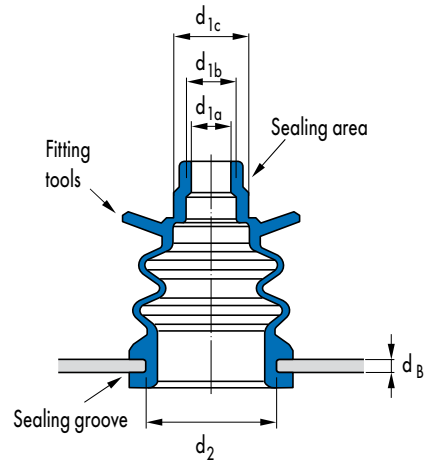
Material	PVC
Temperature	-40 ... +70 °C
Ozone resistance and resistance to ageing	very good
Lubricant and fuel resistance	limited
Water resistance	good

→ Technical Manual.

Fitting & installation

- Rounded metal edges (no burrs from punching)
- Tolerances of the bushings (d2) according to DIN ISO 2768-m
- Pre-treatment of the sheet metal surface not necessary.

Article list



d_1 [mm]	d_2 [mm]	d_B [mm]	Cable thickness [mm]	Type code
7/9/13	23	2,5	7,5 ... 15	V6-20316
15/18/21	33	2,5	15,5 ... 23	V6-20361
23/26/29	42	3,5	23,5 ... 32	V6-20362

Bellows Type 9000 made of PTFE

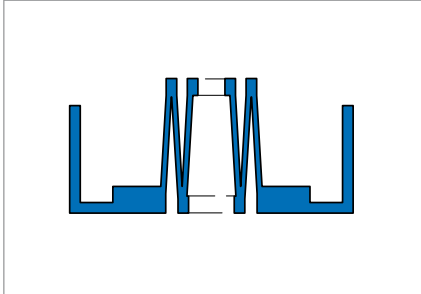


Fig. 1 Bellows Type 9000 made of PTFE

Product description

Highly flexible, large elongation, small installed length.

- Design component with protection and/or compensation function
- The moving section of the bellows features highly flexible, punched convolutions
- Sleeve or flange connection on both ends; other combinations possible.

Product advantages

- For various, special applications
- Universal chemical resistance
- High temperature resistant
- Highly flexible
- For special applications as special design.

Application

- Elongation and vibration compensation
- Rod protection in corrosive atmospheres
- Fluid flow for the chemical industry, pharmaceuticals, appliance manufacture including glass appliances, gas seals, exhaust air cabins and fans, metering pumps, regulation and shut-off valves.

Material

- Virgin, pure PTFE for general, industrial applications in chemistry
- Low pore, modified PTFE for applications in the food processing industry and pharmaceuticals
- Conductive PTFE to prevent static charging
- Pressure resistant PTFE compound (mineral/carbon additives).

Operating conditions

Abs. pressure	0,05 ... 0,2 MPa
Temperature	-120 ... +200 °C

Fitting & installation

Flanges must be very carefully fitted because the edge of the flange can easily damage the bellows. The mating surfaces must be flat and even. Over elongation of the bellows during installation and operation is to be avoided.

To suppress cold flow at the PTFE flange edge, soft seals must be used. The soft seals are also used for the even distribution of the contact forces.

Bellows Type 9002 made of PTFE

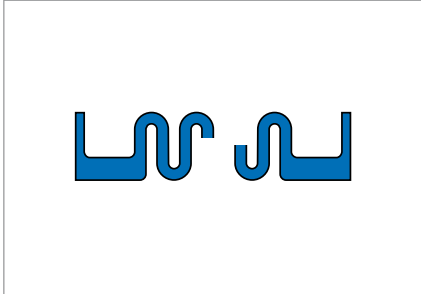


Fig. 1 Bellows Type 9002 made of PTFE

Product description

Stable walls, good flexibility and adequate elongation reserve.

- Design component with protection and/or compensation function
- The moving section of the bellows features stable, curved convolutions
- Sleeve or flange connection on both ends; other combinations possible.

Product advantages

- For various, special applications
- Universal chemical resistance
- High temperature resistant
- Highly flexible
- For special applications as special design.

Application

- Elongation and vibration compensation
- Rod protection in corrosive atmospheres
- Fluid flow for the chemical industry, pharmaceuticals, appliance manufacture including glass appliances, gas seals, exhaust air cabins and fans, metering pumps, regulation and shut-off valves.

Material

- Virgin, pure PTFE for general, industrial applications in chemistry
- Low pore, modified PTFE for applications in the food processing industry and pharmaceuticals
- Conductive PTFE to prevent static charging
- Pressure resistant PTFE compound (mineral/carbon additives).

Operating conditions

Abs. pressure	0,025 ... 0,6 MPa
Temperature	-120 ... +200 °C

Fitting & installation

Flanges must be very carefully fitted because the edge of the flange can easily damage the bellows. The mating surfaces must be flat and even. Over elongation of the bellows during installation and operation is to be avoided.

To suppress cold flow at the PTFE flange edge, soft seals must be used.

The soft seals are also used for the even distribution of the contact forces.

Bellows Type 9020 to 9023 made of PTFE

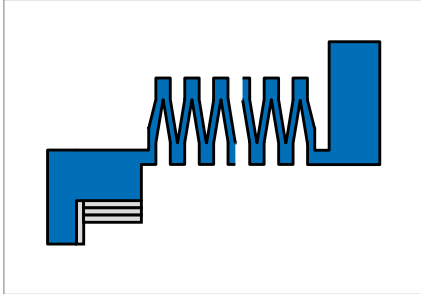


Fig. 1 Bellows Type 9020

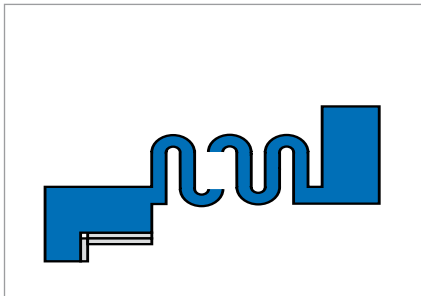


Fig. 2 Bellows Type 9022

Product description

Bellows geometry as for Type 9000, 9002, sealing cone and flange fittings are often manufactured from more pressure resistant PTFE compound.

- Design component with protection and/or compensation function
- The moving section of the bellows features highly flexible, pointed or stable curved convolutions
- For fastening to spindles and rods, threaded sleeves are anchored in the cone on the bellows.

Product advantages

- For various, special applications
- Universal chemical resistance
- High temperature resistant
- Highly flexible
- For special applications as special design.

Application

- Metering pumps
- Regulation and shut-off valves.

Material

- Virgin, pure PTFE for general, industrial applications in chemistry
- Low pore, modified PTFE for applications in the food processing industry and pharmaceuticals
- Conductive PTFE to prevent static charging
- Pressure resistant PTFE compound (mineral/carbon additives).

Operating conditions

Abs. pressure	0,05 ... 0,2 MPa (convolution type FBA-9000)
	vacuum ... 0,6 MPa (convolution type FBC-9002)
Temperature	-20 ... +200 °C

Fitting & installation

Flanges must be very carefully fitted because the edge of the flange can easily damage the bellows. The mating surfaces must be flat and even. Over elongation of the bellows during installation and operation is to be avoided.

To suppress cold flow at the PTFE flange edge, soft seals must be used.

The soft seals are also used for the even distribution of the contact forces.

Diaphragms

In nearly all sectors of industry, in specific applications designers need to flexibly connect together components, to separate spaces between components and at the same time to create a leak-proof separation.

These tasks can almost always be addressed by using a diaphragm made from highly elastic materials. Very different requirements in relation to mechanical, thermal and chemical loads result in custom designs in the majority of cases. Our specialists with know-how from many years of experience are available to prepare these custom designs.

Along with custom diaphragm shapes, we also offer standard products that are presented in the following section.

These are

- Long-stroke rolling diaphragms
- Rubberised fabrics
(fabric rubberised on both sides)
- Sheet goods.

Rubberised fabrics and sheet goods are predominantly used for the economic manufacture of flat diaphragms or gaskets by punching.

You will find detailed information on customer diaphragm designs in → Technical Manual.

Long-Stroke Rolling Diaphragms BFA

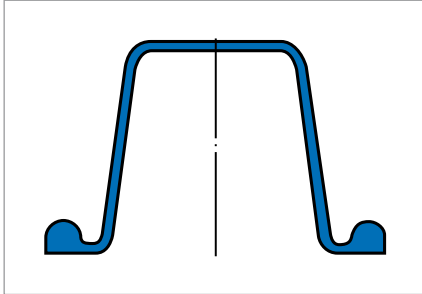


Fig. 1 Long-Stroke Rolling Diaphragms BFA

Product description

Long-stroke rolling diaphragms are thin-walled, special sensitive diaphragms made from highly elastic materials with fabric reinforcement.

Along with this standard design type BFA, the long-stroke rolling diaphragms can also be supplied made in special tools without fabric, type BFAO.

Product advantages

The small diaphragm thickness and large height of the diaphragm relative to the diameter provide the following advantages:

- Low, almost constant resistance to movement over the entire stroke
- Considerably greater stroke lengths in comparison to conventional diaphragms with the same diameter
- Effective area remains the same over entire stroke
- No additional resistance to movement on starting or on change in direction of movement; no notch point in operating range
- Low requirements on piston and cylinder in comparison to lip seals.

Application

Long-stroke rolling diaphragms are used in hydraulically and pneumatically-activated control and regulation equipment, pressure switches and pressure transducers as well as measuring and display equipment. In the design without fabric, they are used at low pressures.

Material

Standard material: 50 NBR 253 based on acrylonitrile-butadiene rubber (NBR) with or without polyester fabric → Technical Manual.

Details on general structure of long-stroke rolling diaphragms and the properties of the elastomers → Technical Manual.

Rolling diaphragms made from silicone rubber, fluoro rubber and EPDM with fabric are only produced to a height of $H_{max} = 0,6 D_g$ (D_g = cylinder diameter).

Operating conditions

The standard range BFA made from nitrile rubber with fabric reinforcement for use in compressed air and mineral oils permits operating pressures up to 10 bar and test pressures up to 15 bar. Special qualities are available on enquiry for applications involving town gas and natural gas, petrol and brake fluids as well as for high thermal loads.

The type BFAO should only be used when the operating pressure does not exceed 1,5 bar. Low longitudinal elongation must be taken into account.

In operation, even with piston return, a low pressure difference of approx. 0,15 bar must be present for all designs, otherwise folds or kinks will form in the rolling convolution. This counter pressure can be achieved using a regulator valve. A ventilation hole must be provided to prevent a pressure build-up on the non-pressurised side.

Fitting & installation

Long-stroke rolling diaphragms with fabric layer, the fabric must be on the non-pressurised side. The diaphragm is inverted before fitting. Should the rolling convolution formed in this way arch upwards when performing this action, the use of a mounting sleeve is necessary. Do not use a screwdriver!

Another possible fitting method: fit inverted rolling diaphragm to the piston, place bead in the groove and push piston into the cylinder. In this way the rolling convolution is formed. The piston must be secured against twisting after fitting to avoid the formation of a skewed convolution. A plain washer is sufficient as the spring support. Stroke limiting is always to be provided. The rolling area for the diaphragm must be finely machined and polished. The transition radii on the clamping flange, piston base and cover plate are to be smooth and free from scoring.

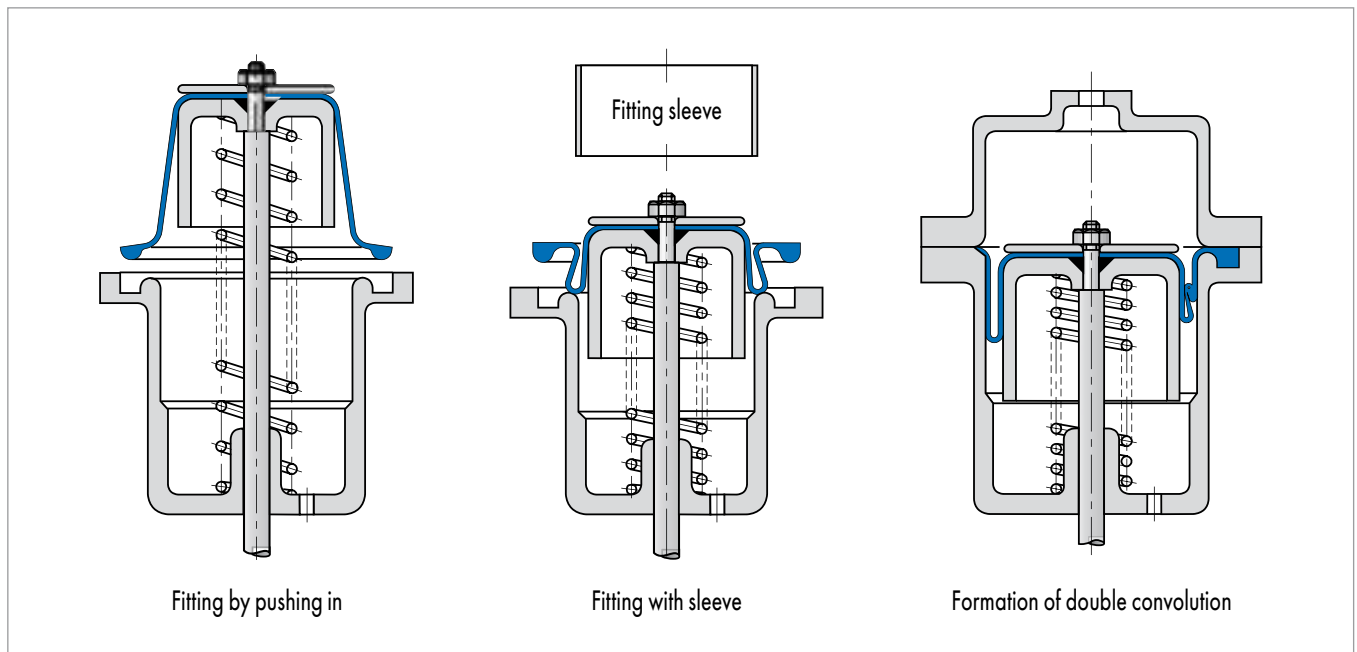


Fig. 2 Fitting

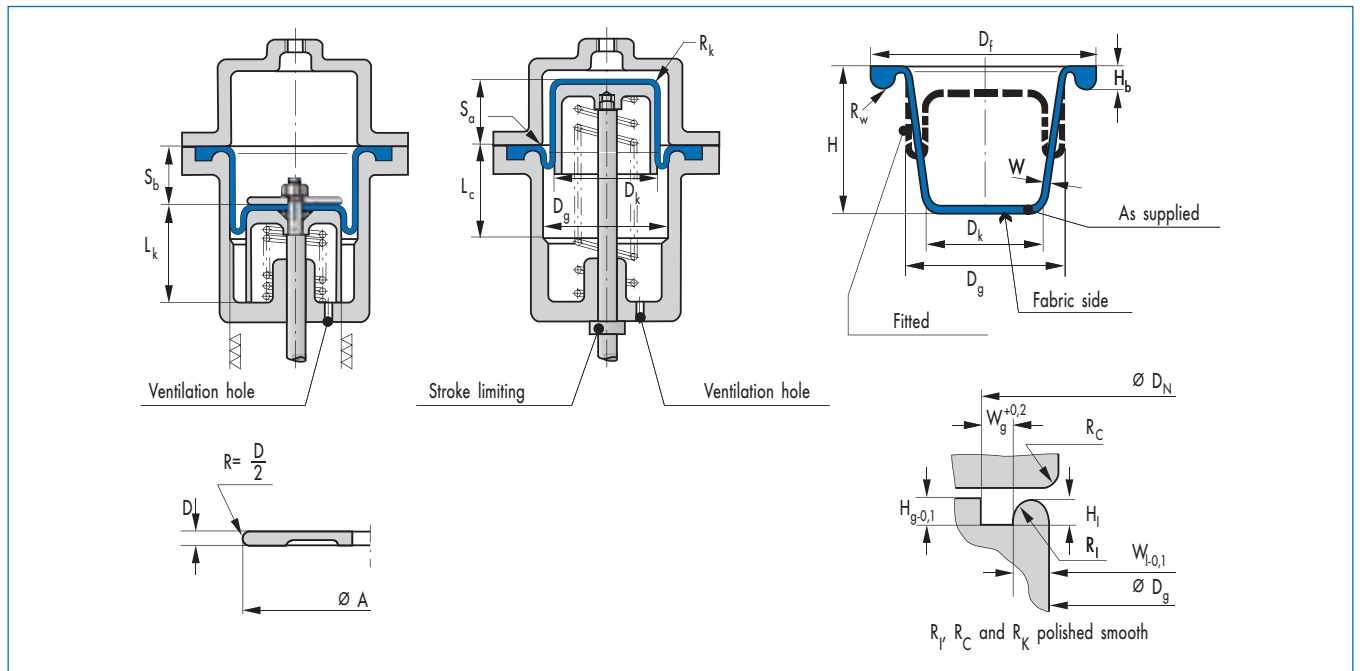
Cylinder Ø	D _g	up to 60 mm	up to 100 mm	up to 150 mm	> 150 mm
Installation dimensions					
Piston Ø	D _k	D _g - 5	D _g - 10	D _g - 10	D _g - 10
Groove Ø	D _n	D _g + 15	D _g + 21	D _g + 27,5	D _g + 27,5
Piston radius	R _k	3,50	4,50	5,80	7,00
Cover radius	R _c	2,00	2,00	2,00	2,00
Groove depth	H _g	3,00	4,00	5,00	5,00
Groove width	W _g	4,00	5,50	7,20	7,20
Rim width	W _i	3,50	5,00	6,50	6,50
Rim height	H _i	2,30	3,10	3,50	3,50
Rim radius	R _i	1,75	2,50	3,25	3,25
Diaphragm dimensions					
Flange Ø	D _f	D _g + 14	D _g + 20	D _g + 26	D _g + 26
Wall thickness	W	0,45	0,55	0,80	1,00
Flange bead	H _b	3,60	5,00	6,30	6,30
Radius	R _w	1,75	2,50	3,25	3,25
Minimum length of finely machined areas					
on the piston	L _k	0,5 (H+S _a)	0,5 (H+S _a)	0,5 (H+S _a)	0,5 (H+S _a)
on the cylinder	L _c	0,5 (H+S _b)	0,5 (H+S _b)	0,5 (H+S _b)	0,5 (H+S _b)
Diaphragm stroke					
in one direction max.	S _a	H-8	H-14	H-20	H-20
in opposite direction max.	S _b	H-8	H-14	H-20	H-20
Fastening plate					
	a	D _k +2,9	D _k +4,1	D _k +5,6	D _k +6
	D	1,5	3,0	4,0	5,0

Article list

The dimensions given in the tool and stock lists are nominal dimensions. The effective dimensions of long stroke rolling diaphragms deviate from these nominal dimensions somewhat. The diameters D_g and D_k are designed a little smaller and the height somewhat larger. The aim is to stretch the diaphragm slightly during

installation. This is necessary for the correct function of the diaphragm. This dimensional correction results in greater security that the rolling fold will be retained in the end positions.

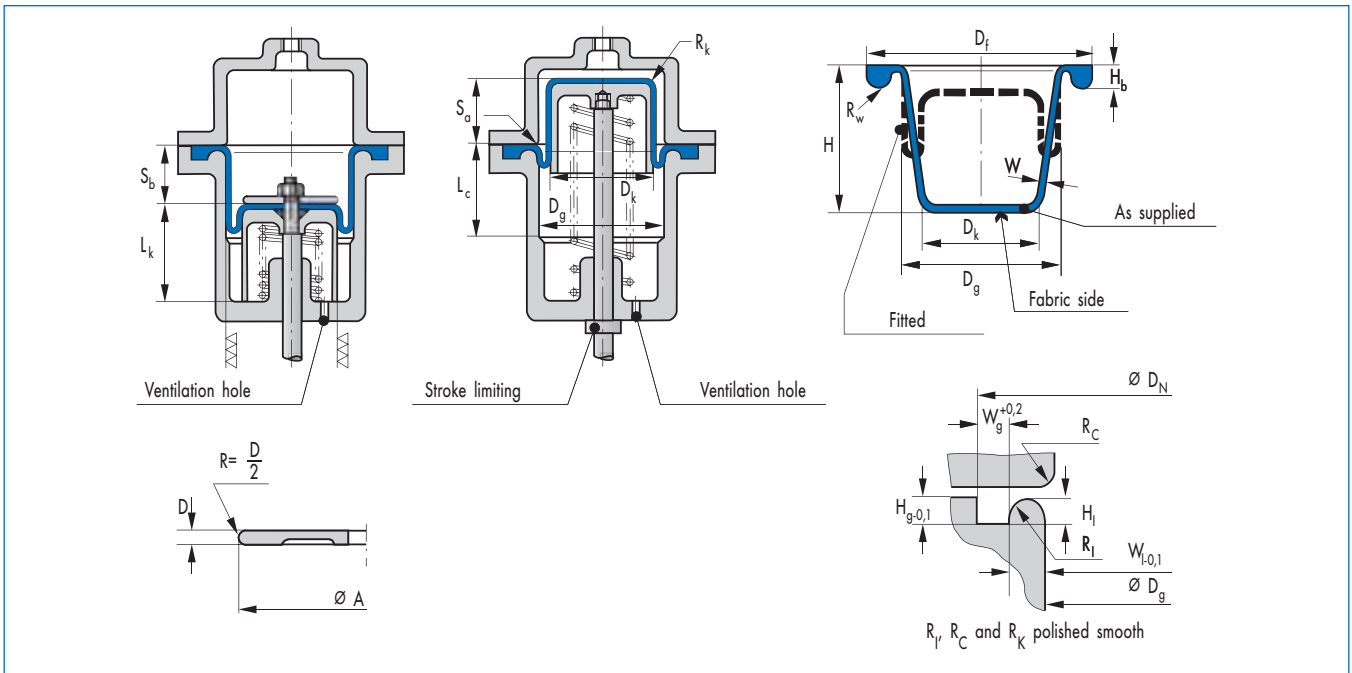
The following table states the sizes available at short notice in the standard design BFA, as well as the installation dimensions. The two first numbers identify the cylinder diameter and the piston diameter respectively, the third gives the diaphragm height for the permissible stroke.



D_g	D_k	H	W	A_w^*	Material	Article No.	
16	12	13	0,45	154	50 NBR 253	2227	●
20	15	20	0,45	241	50 NBR 253	35842	●
25	20	10	0,45	398	50 NBR 253	23898	●
25	20	15	0,45	398	50 NBR 253	34050	●
25	20	20	0,45	398	50 NBR 253	457	●
25	20	25	0,45	398	50 NBR 253	33921	●
30	25	10	0,45	594	50 NBR 253	530043	○
30	25	18	0,45	594	50 NBR 253	110820	●
30	25	25	0,45	594	50 NBR 253	37944	●
30	25	30	0,45	594	50 NBR 253	35794	●
33	28	27	0,45	731	50 NBR 253	426243	○
35	30	10	0,45	830	50 NBR 253	37112	●
35	30	22	0,45	830	50 NBR 253	35960	●
35	30	28	0,45	830	50 NBR 253	35805	●
35	30	35	0,45	830	50 NBR 253	34445	●
40	35	18	0,45	1104	50 NBR 253	2294	●
40	35	25	0,45	1104	50 NBR 253	96543	●
40	35	35	0,45	1104	50 NBR 253	35851	○
40	35	40	0,45	1104	50 NBR 253	35845	●
45	40	10	0,45	1419	50 NBR 253	35946	●

● Available from stock ○ On request: Tool is available, delivery at short notice

* For the effective area A_w (pressure area) the following applies: $A_w = \pi/16 (D_g+D_k)^2$



D _g	D _k	H	W	A _w *	Material	Article No.	
45	40	20	0,45	1419	50 NBR 253	2299	●
45	40	25	0,45	1419	50 NBR 253	37548	●
45	40	35	0,45	1419	50 NBR 253	34361	●
45	40	45	0,45	1419	50 NBR 253	2313	●
50	45	10	0,45	1772	50 NBR 253	37137	○
50	45	20	0,45	1772	50 NBR 253	110975	○
50	45	30	0,45	1772	50 NBR 253	1610	●
50	45	40	0,45	1772	50 NBR 253	2365	●
50	45	50	0,45	1772	50 NBR 253	2383	●
55	50	15	0,45	2165	50 NBR 253	2414	○
55	50	25	0,45	2165	50 NBR 253	36178	●
55	50	35	0,45	2165	50 NBR 253	36456	●
55	50	45	0,45	2165	50 NBR 253	110513	○
55	50	55	0,45	2165	50 NBR 253	36018	●
60	55	15	0,45	2597	50 NBR 253	2431	○
60	55	25	0,45	2597	50 NBR 253	2437	●
60	55	35	0,45	2597	50 NBR 253	1639	●
60	55	50	0,45	2597	50 NBR 253	377743	●
60	55	60	0,45	2597	50 NBR 253	2444	●
70	60	15	0,55	3318	50 NBR 253	33042	●
70	60	25	0,55	3318	50 NBR 253	2452	●
70	60	40	0,55	3318	50 NBR 253	2183	●
70	60	55	0,55	3318	50 NBR 253	110779	●
70	60	70	0,55	3318	50 NBR 253	2198	●
80	70	15	0,55	4418	50 NBR 253	2148	○
80	70	30	0,55	4418	50 NBR 253	94598	●
80	70	45	0,55	4418	50 NBR 253	1658	●
80	70	65	0,55	4418	50 NBR 253	1780	●
80	70	80	0,55	4418	50 NBR 253	1781	●
90	80	25	0,55	5675	50 NBR 253	1794	●

● Available from stock ○ On request: Tool is available, delivery at short notice

* For the effective area A_w (pressure area) the following applies: A_w = π/16 (D_g+D_k)²

D _g	D _k	H	W	A _w *	Material	Article No.	
90	80	35	0,55	5675	50 NBR 253	33807	○
90	80	55	0,55	5675	50 NBR 253	36105	●
90	80	70	0,55	5675	50 NBR 253	38186	●
90	80	90	0,55	5675	50 NBR 253	1798	●
100	90	25	0,55	7088	50 NBR 253	1845	●
100	90	40	0,55	7088	50 NBR 253	1661	●
100	90	60	0,55	7088	50 NBR 253	1864	●
100	90	80	0,55	7088	50 NBR 253	36019	●
100	90	100	0,55	7088	50 NBR 253	1868	●
110	100	25	0,8	8659	50 NBR 253	110455	○
110	100	40	0,8	8659	50 NBR 253	14673	○
110	100	65	0,8	8659	50 NBR 253	1875	●
110	100	85	0,8	8659	50 NBR 253	35934	●
110	100	110	0,8	8659	50 NBR 253	37522	●
120	110	25	0,8	10387	50 NBR 253	36127	●
120	110	50	0,8	10387	50 NBR 253	1888	●
120	110	75	0,8	10387	50 NBR 253	1891	○
120	110	120	0,8	10387	50 NBR 253	37155	●
130	120	30	0,8	12272	50 NBR 253	1924	○
130	120	55	0,8	12272	50 NBR 253	36428	○
130	120	80	0,8	12272	50 NBR 253	110973	●
130	120	130	0,8	12272	50 NBR 253	37780	●
140	130	30	0,8	14314	50 NBR 253	13171	●
140	130	55	0,8	14314	50 NBR 253	20628	○
140	130	80	0,8	14314	50 NBR 253	1934	●
140	130	110	0,8	14314	50 NBR 253	469688	○
140	130	140	0,8	14314	50 NBR 253	372821	●
150	140	30	0,8	16513	50 NBR 253	1951	●
150	140	60	0,8	16513	50 NBR 253	36455	●
150	140	90	0,8	16513	50 NBR 253	160753	○
150	140	120	0,8	16513	50 NBR 253	37013	●
150	140	150	0,8	16513	50 NBR 253	1963	●
165	155	70	1	20106	50 NBR 253	1976	○
180	170	30	1	24053	50 NBR 253	401089	○
180	170	60	1	24053	50 NBR 253	2000	●
180	170	90	1	24053	50 NBR 253	2001	●
180	170	120	1	24053	50 NBR 253	384024	○
200	190	30	1	29865	50 NBR 253	406704	○
200	190	60	1	29865	50 NBR 253	35906	●
200	190	90	1	29865	50 NBR 253	35905	●
200	190	120	1	29865	50 NBR 253	35695	●
220	210	80	1	36305	50 NBR 253	160756	○
250	240	70	1	47144	50 NBR 253	34908	○
250	240	120	1	47144	50 NBR 253	2016	○
260	250	50	1	51071	50 NBR 253	34921	○
285	270	65	1	60481	50 NBR 253	95935	○
320	310	90	1	77931	50 NBR 253	32278	○
320	310	120	1	77931	50 NBR 253	39645	○
415	400	80	1	130420	50 NBR 253	37193	○

● Available from stock ○ On request: Tool is available, delivery at short notice

* For the effective area A_w (pressure area) the following applies: $A_w = \pi/16 (D_g + D_k)^2$

Rubberised Fabric

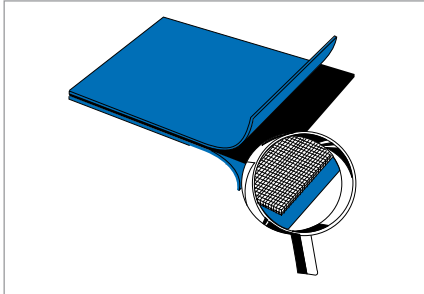


Fig. 1 Rubberised Fabric

Product description

Rubberised fabrics are special, high-quality fabrics coated on both sides with suitable elastomer qualities. Special production processes make it possible for even thin layers of elastomer to be applied to the pre-treated fabrics with good adhesion and free of pores.

Product advantages

Flat diaphragms can be punched from these rubberised fabrics without problems. The manufacture of moulded diaphragms is performed by embossing at raised temperatures, here certain restrictions in relation to the diaphragm height that can be attained must be taken into account depending on the fabric quality and material thickness.

Application

Diaphragms made from rubberised fabric have the task of forming a leak-proof yet flexible separation. Rubberised fabrics are designed to suit the mechanical, thermal and chemical loads for the related application. Main areas of use:

- Measuring, regulating or control diaphragms
- Pump diaphragms
- Separating diaphragms
- Flat diaphragms.

Material

Acrylonitrile-butadiene rubber (NBR), chloro-butadiene rubber (CR), ethylene-propylene-terpolymer rubber (EPDM), epichlorohydrin rubber (ECO) and fluoro elastomer (FKM) are preferably used as elastomers. Polyester (PES), polyamide (PA) and spun rayon (ZW) are used for reinforcement. The coating comprises one of the stated elastomers depending on the application.

Operating conditions

The media resistance is dependent on the coating material and the fabric. This can be found in the table of stock articles. The maximum tensile force defines the pressure resistance of the rubberised fabric. → Technical Manual.

Fitting & installation

A prerequisite for clean sealing in the clamping area is adequate compression (10% of sheet thickness) as well as a score-free surface on the metal or plastic parts.

Rubberised fabric designs

Code	Article No.	Elastomer	Fabric ^{a)}	Nominal width [mm]	Max. tensile force [N/mm]	Thickness [mm]	Tolerance	Colour	Operating temperature min/max [°C] ^{b)}	Media	
MT 471	505412	NBR	PA	1,40	11	0,30	±0,03	Blue	-25 ... +90	Fuels, heating and fuel gases, mineral oils, greases, inorganic acids and bases, flame resistant hydraulic fluids (HFA, B, C), oil-bearing compressed air, water to 80 °C	●
MT 479	505414	NBR	PA	1,40	11	0,17	±0,03	Blue	-25 ... +90		●
MT 481	505415	NBR	PES	1,50	50	0,90	±0,07	Blue	-25 ... +90		●
MT 486	505416	NBR	ZW	1,50	15	0,38	±0,05	Red	-20 ... +90		●
MT 496	147030	NBR	PA	1,50	50	1,10	±0,15	Red	-30 ... +90		●
MT 488	49042567	NBR	PA	1,50	50	1,10	±0,15	Red/ Green ^{d)}	-20 ... +90	Diesel fuels, mineral oils, oil-bearing compressed air, heating oils, water up to 80 °C	●
MT 489	49042568	NBR	PA	1,50	40	0,68	±0,07	Red/ Green ^{d)}	-20 ... +90		●
MT 490	505417	NBR	PA	1,50	24	0,40	±0,05	Green	-20 ... +90		●
MT 475	505413	CR	PES	1,50	25	0,45	±0,05	Black	-30 ... +90	Oil-bearing air, water (ozone and UV resistant)	●
MT 510	49046470	CR	PA	1,50	50	1,10	±0,15	Black	-30 ... +90		●
MT 511	505419	EPDM	PA	1,50	24	0,55	±0,06	Black	-45 ... +120	Hot water, steam, glycol based brake fluid	●
MT 491	49046471	ECO	PA	1,40	11	0,32	±0,05	Black	-35 ... +130	Fuels, oils, greases, air (max. 130 °C)	●
MT 504	49043497	ECO	PA	1,50	30	1,00	±0,10	Black	-35 ... +130		●
MT 503	505418	FKM	PA	1,4	24	0,30	±0,03	Black	-10 ... +130	Fuels, heating and fuel gases, hydro-carbons, phenols, solvents, acids, bases	●

● Available from stock

^{a)} PA = polyamide; PES = polyester; ZW = spun rayon

^{b)} Recommended values as supplied – check for the related application necessary

^{d)} Red = fuel inside; Green = oil side

Diaphragms for Pumps and Compressors

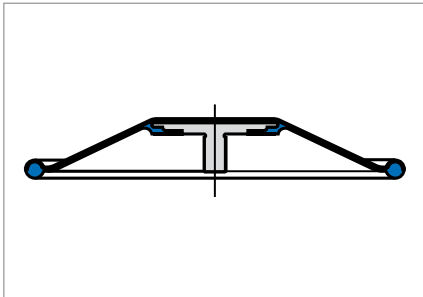


Fig. 1 Diaphragms for Pumps and Compressors

Product description

In modern pumps both pure elastomer diaphragms and elastomer combinations are utilised, namely:

- Fabric for reinforcement
- PTFE layer against chemical attack
- Metal or plastic support components for force or path transmission.

Product advantages

Diaphragms for pump applications feature:

- High media resistance through PTFE film layer
- Long-term stability through fabric reinforcement
- Simplified fitting through integrated insert
- Product-specific material customising for achieving the optimal service life.

Application

Diaphragms are used in the most varied applications in diaphragm pumps and compressors for "metering" or "conveying" fluids or gaseous media: e.g. dosing or feed pumps in laboratory technology or large feed pumps that convey mud or other fluids and gases.

Material

Elastomer	NBR, HNBR, CR, EPDM, FKM
Fabrics	PES, PA, NOMEX
Layer	PTFE and TFM
Insert	Metal (brass, steel) and plastic

Operating conditions

The media resistance is dependent on the elastomer or the PTFE film layer which has proven itself as a shield against aggressive media on the side in contact with the media.

Diaphragms for ATEX-compliant units can be manufactured with layers made from electrically conductive material.

Diaphragms for Accumulators and Bladders

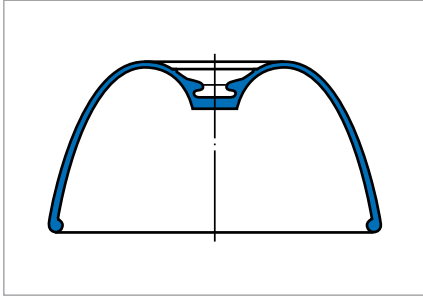


Fig. 1 Accumulator Diaphragms

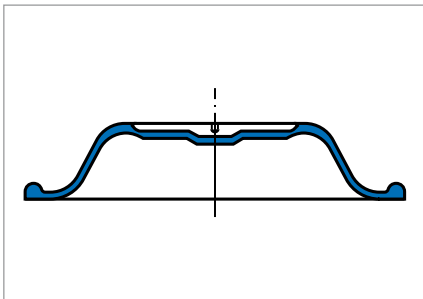


Fig. 2 Accumulator Bladders

Product advantages

Diaphragms and bladders for accumulators feature:

- Highly gas-proof elastomers
- Specially-developed elastomer mixtures fulfil the highest requirements for general industry
- Product design to customer-specific requirements.

Application

Accumulators in hydraulic circuits e.g.:

- General industry (high pressure cleaners, injection moulding machines)
- Medical technology (computer tomographs, X-ray machines)
- Aerospace industry.

Material

Elastomer	NBR, HNBR, ECO, EPDM, FKM, CIIR
Insert	Metal or plastics

Operating conditions

Media	All known hydraulic fluids and gases (nitrogen)
Temperature	-40 ... +150 °C
Pressure	up to 200 bar (pressure-balanced)

Product description

Diaphragms in accumulators consist of cold-flexible, especially gas-proof elastomers with low permeation rates. As a flexible partition in the gas chamber of the accumulator, they have the job of sealing the hydraulic fluid of the pressure circuit.

For example:

- Accumulator diaphragms
- Accumulator bladders.

Diaphragms for Industrial Valves

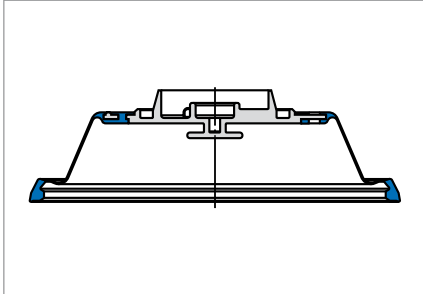


Fig. 1 Thin-walled, sensitive diaphragms

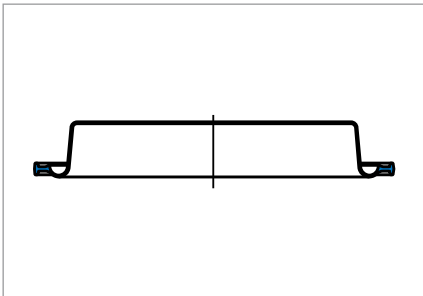


Fig. 2 Adjustment and control diaphragms

Product description

Diaphragms for industrial valves are available in the most varied forms, materials and designs:

- As high quality moulded diaphragms (in dished diaphragms, convoluted diaphragms or as flat diaphragms) with and without fabric reinforcement and/or vulcanised valve disks
- Diaphragms from only a few millimetres in diameter in microvalves, to up to 1 m large moulded diaphragms in plants and pipeline construction
- Diaphragms made of rubberised fabric present an alternative to pressed moulded diaphragms.

Product advantages

- Approved materials for use with foodstuffs and drinking water e.g. DVGW, FDA, KTW, WRAS etc.
- Product-specific material customisation to achieve an optimal function and service life.
- An assortment of elastomers and fabrics are available for the most diverse requirements with regards to pressure, temperature and medium with which practically all requirements can be fulfilled.

Application

- Adjustment and control valves in plants and pipeline construction
- Metering systems in the foodstuffs industry e.g. drink bottling plant
- Diaphragms for shut-off valves
- Thin-walled, sensitive diaphragms for adjustment and control valves, e.g. for respirators and airpacks
- Gas pressure regulators
- Pressure-controlled diaphragm controllers or pressure reducing regulators
- Diaphragms for pressure switches for water level regulation in washing machines, dishwashers, coffee machines and water heaters as well as in pneumatic applications.

Material

Elastomer	NBR, HNBR, EPDM, CR, ECO, AU, VMQ, FKM, FFKM, special silicon-based materials and TPU
Fabric reinforcement	PA, PES, Aramid (Nomex)
Coating	PTFE and TFM layer or Simriz®
Insert	Metal or plastic

Operating conditions

Media	Media resistance is dependent of the particular application e.g. milk products, hydraulic oils, water, mud, chemicals etc.
Temperature	-100 ... +220 °C
Pressure	depends on the application

Profiles, Cords and Hoses

Product overview

- Profiles
 - U-rings
 - Mating rings for U-rings
 - Hat Seals
 - X Profiles
 - Other special profiles
- Cords
 - Cord
 - Cord rings
- Hoses
 - Hoses
 - Hose rings.

Product description

Special profiles, cords or hoses are utilised whenever large sealing contact areas cannot be effectively sealed by form seals or O-rings, for example, in tunnelling machines, ships engines and hatchways. Over 3500 different profile nozzles as well as numerous materials area available. In addition, the development and production of customer-specific designs is possible, where the tool costs are very low compared to shape related components.

Product advantages

- Sealing large seal contact areas that cannot be sealed by an O-ring or a shape related component
- Customer-specific product development
- Low tool costs in comparison to shape related components
- Proprietary tool construction to ensure short supply times
- All common elastomers can be utilised
- Special materials competency
- Low number of pieces/amounts possible

- Profile rings in NBR and FKM are available with vulcanisation to butt. Advantages of batch vulcanisation:
 - Peak tensile strength values
 - Identical elastomer as connecting element provides long-lasting durability.

Application

Components manufactured from profiles perform sealing tasks in numerous industrial sectors.

- Heavy-duty mechanical engineering, e.g. tunnel driving technology, cement/rock mills

- Plant engineering, e.g. turbines, shut-off valves, process cylinders
- Prime movers, e.g. ships' engines
- Separators, e.g. filtering technology, large separators
- Mechanical engineering, e.g. industrial washing machines, rotating assemblies
- Chemical industry, e.g. bins/reaction vessels, dosing units/ dosing pumps
- Medical technology, e.g. diagnostic equipment components, dosing units
- Foodstuffs industry, e.g. industrial juice presses, separators, and butchering machines.

Material

Besides the common materials with shorter delivery times, numerous special materials are also offered. These feature outstanding quality and durability. In

the following overview, suitable materials can be selected according to their requirements.

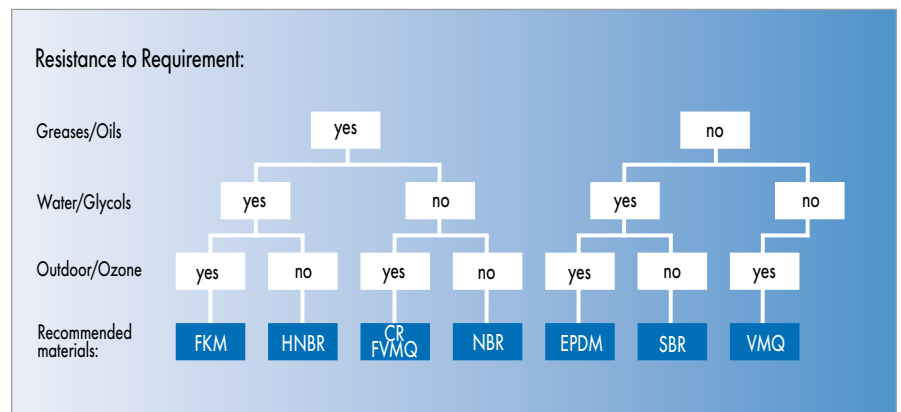


Fig.1 Material configuration

Material	Colour	Operating temperature range
50 NBR 121*	Black	-30 ... +90 °C
60 NBR 122	Black	-30 ... +90 °C
70 NBR 221	Black	-25 ... +90 °C
70 NBR 803	Grey	-25 ... +90 °C
70 NBR 173216	Black	-30 ... +70 °C
72 NBR 872	Black	-30 ... +100 °C
79 NBR 105	Black	-30 ... +90 °C
80 NBR 709*	Black	-30 ... +90 °C
85 NBR 714	Black	-20 ... +90 °C
88 NBR 101	Black	-30 ... +100 °C
39 CR 174240*	Grey	-40 ... +80 °C
55 CR 852	Black	-40 ... +110 °C
67 CR 853	Black	-40 ... +110 °C
67 CR 215595	Black	-40 ... +80 °C
58 EPDM 215550	Grey	-40 °C ... +120 °C
70 EPDM 275	Black	-40 °C ... +120 °C
70 FKM 598	Green	-15 °C ... +200 °C
70 FKM 215450	Black	-10 °C ... +200 °C
72 FKM 588	Black	-10 °C ... +200 °C
60 FVMQ 143026	Beige	-80 °C ... +175 °C
50 VMQ 570	Beige	-40 °C ... +200 °C
50 VMQ 114721	Yellow transparent	-40 °C ... +180 °C
58 VMQ 518	Red brown	-40 °C ... +200 °C
60 VMQ 114722	Yellow transparent	-40 °C ... +180 °C
70 VMQ 114723	Yellow transparent	-40 °C ... +180 °C
78 VMQ 526	Red	-40 °C ... +200 °C

* Special material on enquiry

Design notes

Tolerances

All profiles, cords and hoses are manufactured according to DIN ISO 3302-1 E2.

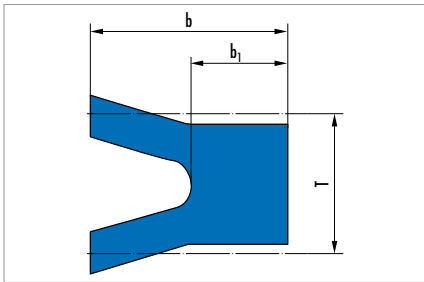
In exceptional cases, production according to E1 is also possible.

Limits for dimensions of cross sections of extruded components not supported (all dimensions in mm):

Nominal dimension		Tolerance class	
over	to	E1*	E2
0	1,5	0,15	0,25
1,5	2,5	0,20	0,35
2,5	4,0	0,25	0,40
4,0	6,3	0,35	0,50
6,3	10,0	0,40	0,70
10	16	0,50	0,80
16	25	0,70	1,00
25	40	0,80	1,30
40	63	1,00	1,60
63	100	1,30	2,00

* Sometimes possible in individual cases

U-rings



U-rings are produced, extruded and bonded to the butt for use as piston or rod seals. U-rings made of NBR and FKM are also available with vulcanisation to butt. They can be supplied at extremely short notice.

Fitting & installation

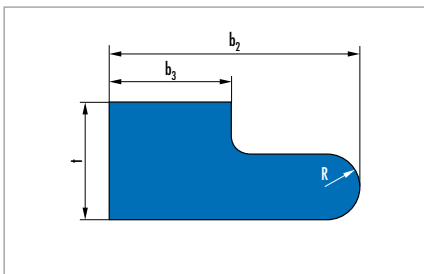
The inner diameter of the U-ring should be at least 15 times the profile cross section dimension (T).

Article list

T	b	b1	Article No.
4	8	5	DÜ 115
6	6	3	DÜ 206
6	8	5	DÜ 859
10	10	4	DÜ 175
12	12	6	DÜ 619
15	15	7,5	DÜ 155
15	18	9	DÜ 1045
20	20	10	DÜ 141
25	25	12,5	DÜ 111
30	30	15	DÜ 241

Other dimensions on enquiry.

Mating rings for U-rings

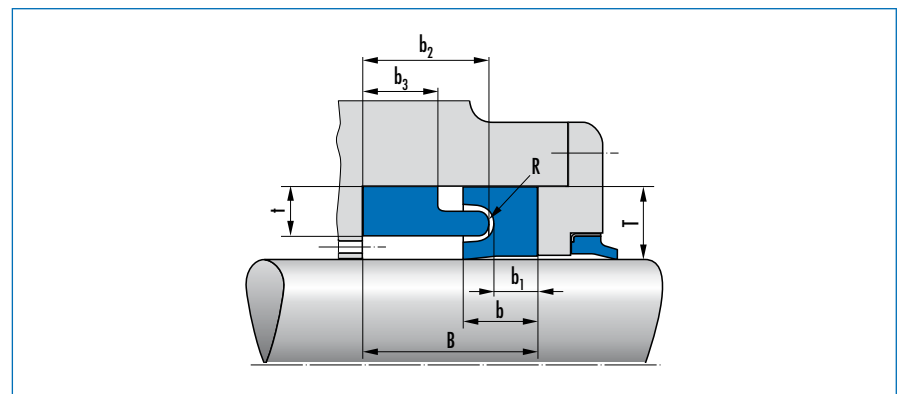


Mating rings are used for fastening and prevent axial movement of the U-rings, which can damage the sealing edges at the sealing lips. They are manufactured using extruders. The mating rings are always supplied by the metre.

Fitting notes

During fitting, the two ends are placed flush to one another. The mating rings can be seated on the U-rings with a slight axial tension.

Article list



U-ring			Mating ring				Article No.	B
T	b	b ₁	T	b ₂	b ₃	R		
10	10	4,0	6,5	20	10	1,5	DÜ 287	25
15	15	17,5	11	32	18	3	DÜ 188	39,5
20	20	10	14	30	15	4	DÜ 160	40

Other dimensions on enquiry.

Hat seals

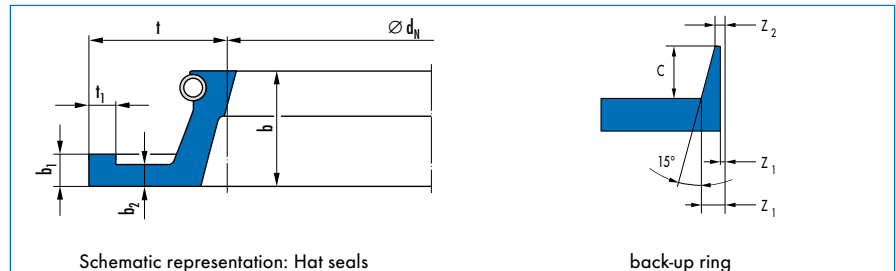
Hat seals are used for sealing axially moving rods. This design is not suitable for use on rotating shafts. The hat seals are bonded to the butt in extruded form. A support of the sealing lip by a metal back-up ring is advisable. This is not part of the Simrit range. Hat seals can be supplied at extremely short notice.

Operating conditions

Operating pressure: ≤ 10 bar

Running speed: $< 0,5$ m/s.

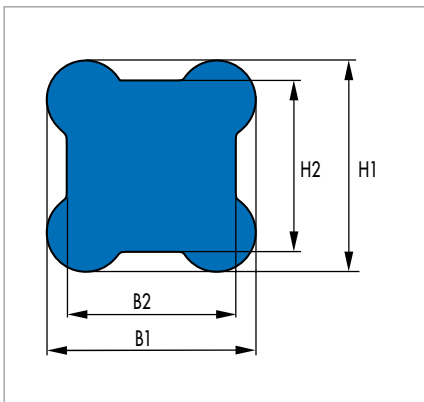
Article list



Schematic representation: Hat seals								back-up ring			Article No.
d_N	b	T	t_1	b_1	b_2	c	Z_1	Z_2	Z_3		
350 ... 500	12	17,5	3	4	2,5	5,5	0,50	1,05	2,45	DÜ 161 A	
350 ... 800	15	16	3,5	5	3	7,5	0,75	1,30	3,30	DÜ 200 A	
380 ... 800	15	20	3,5	5	3	7,5	0,75	1,30	3,30	DÜ 162 A	
450 ... 1200	18	22,5	4	5,5	3,5	8,5	0,75	1,30	3,60	DÜ 163 A	
> 500	20	25	5	6	4	11	0,75	1,15	4,10	DÜ 164 A	

Other dimensions on enquiry.

X-Profiles



X-Profiles are used for sealing rods, cylinders and housings. The lower compression required as a result of the four lip sealing profile makes them favourable to round profiles and results in cost advantages during installation. In addition, X-Profiles can easily be used in a rectangular groove thanks to their contour. The decisive advantage of the X-Profile is that the risk of tilting and twisting is minimised due to the larger bearing surface.

Article list

B1	B2	H1	H2	Article No.
6	3,5	6	3,5	DÜ 20053
6	4	6	4	DÜ 3125
8	6,4	8	6,4	DÜ 20057
10	8	10	8	DÜ 20069
13	10,4	13	10,4	DÜ 3234
16	12,8	16	12,8	DÜ 3233

Other dimensions on enquiry.

Other special profiles

Profiles can be produced and supplied as follows:

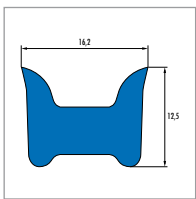
- By the metre
 - With/without integral bend
- Profile sections
 - Produced to customer requirements (up to 2000 mm without integral bend possible)
- Profile rings
 - Bonded to butt or batch vulcanised.

Profile nozzles

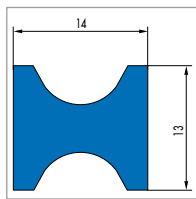
Below is a selection of the 3500 profile nozzles in stock.

Individual tools can be developed and produced for special designs on enquiry.

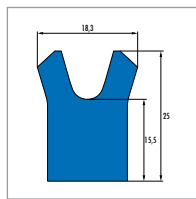
This normally takes around 4 weeks.



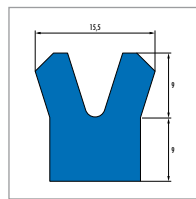
Profile 3041



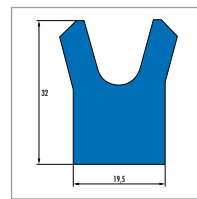
Profile 20217



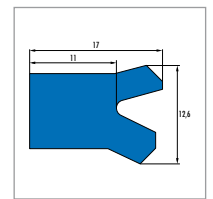
Profile 1673



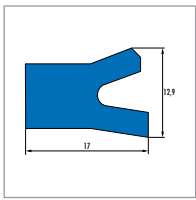
Profile 1721



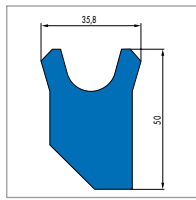
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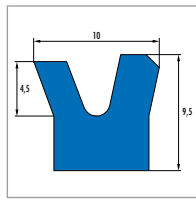
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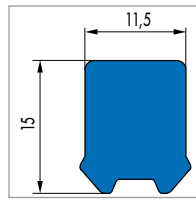
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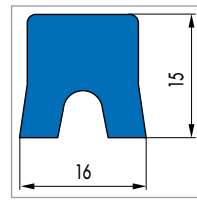
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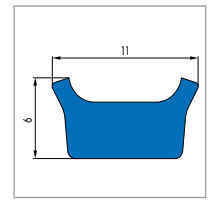
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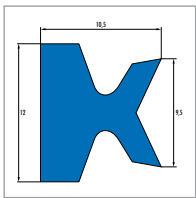
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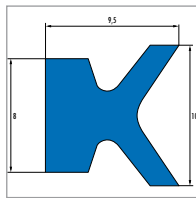
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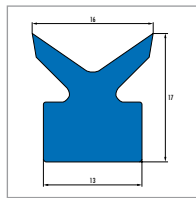
Profile 20513



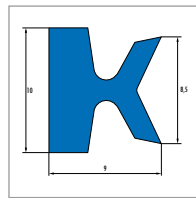
Profile 417



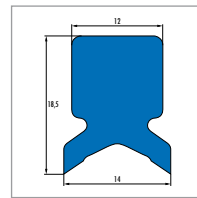
Profile 423



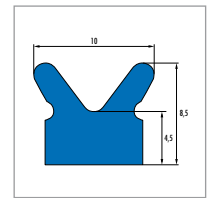
Profile 892



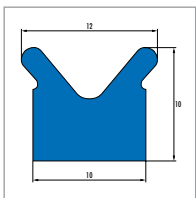
Profile 1123



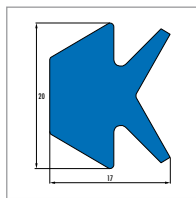
Profile 1347



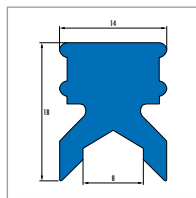
Profile 1644



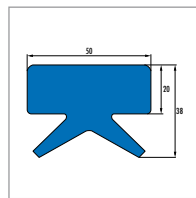
Profile 1868



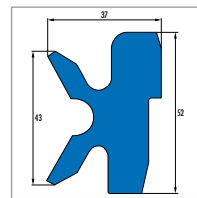
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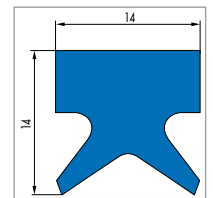
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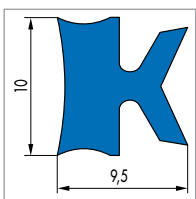
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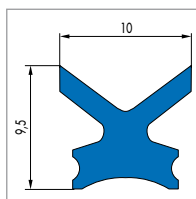
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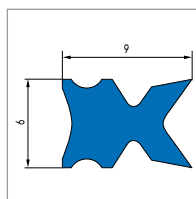
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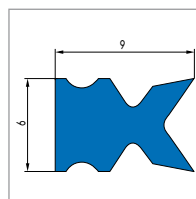
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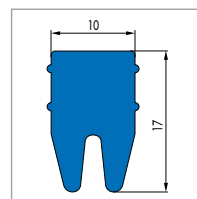
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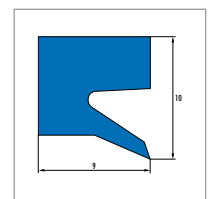
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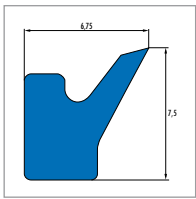
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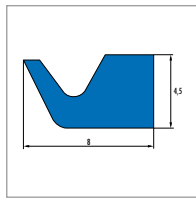
Profile 20458



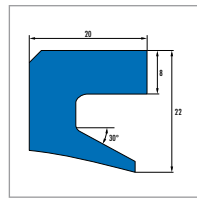
Profile 1101



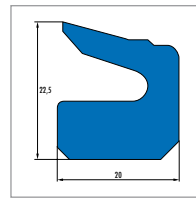
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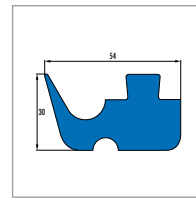
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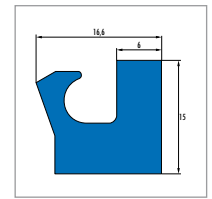
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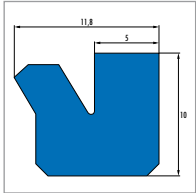
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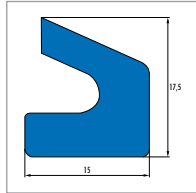
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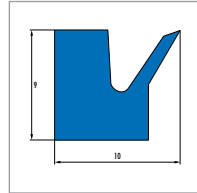
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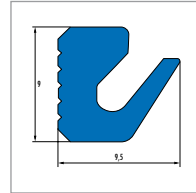
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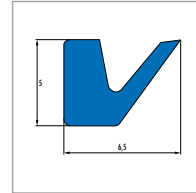
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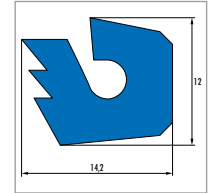
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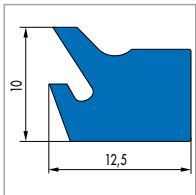
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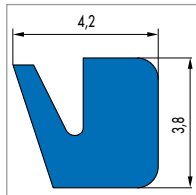
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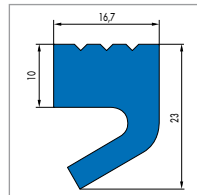
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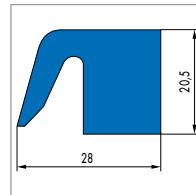
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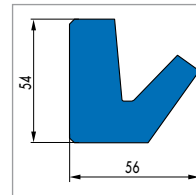
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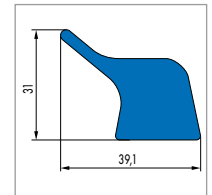
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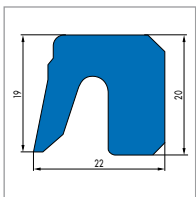
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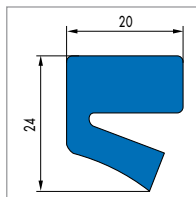
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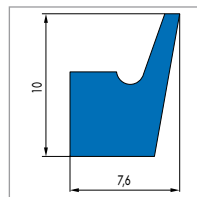
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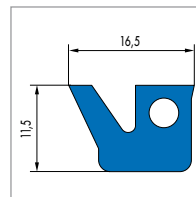
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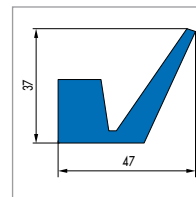
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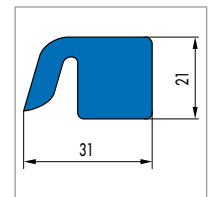
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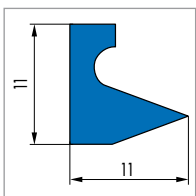
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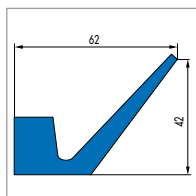
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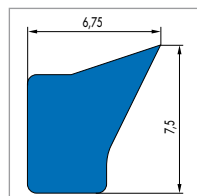
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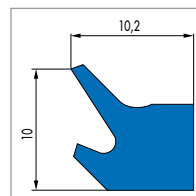
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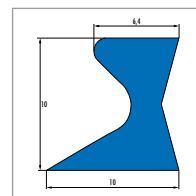
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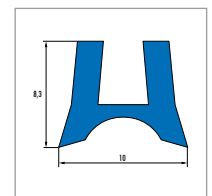
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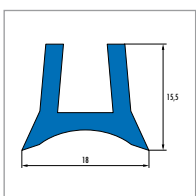
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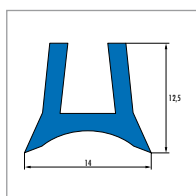
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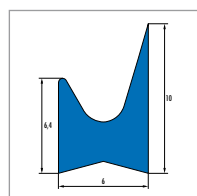
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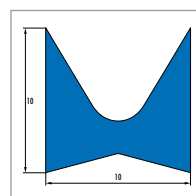
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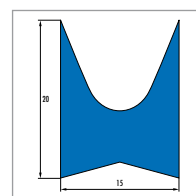
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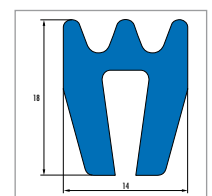
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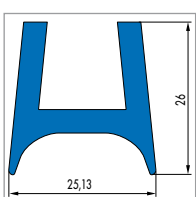
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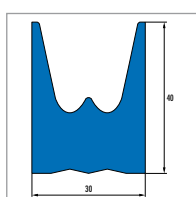
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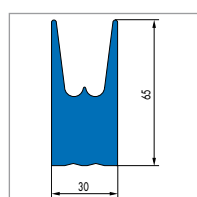
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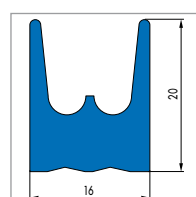
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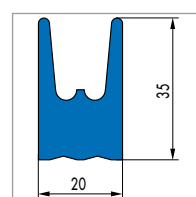
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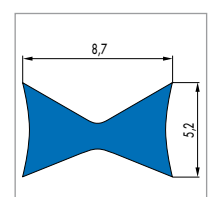
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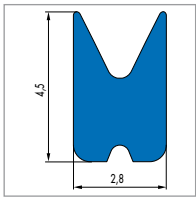
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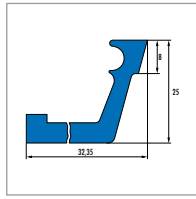
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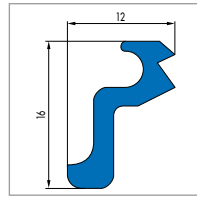
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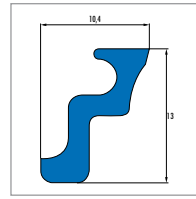
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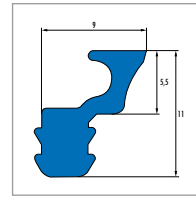
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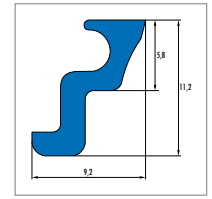
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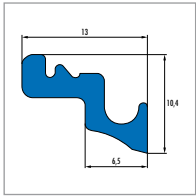
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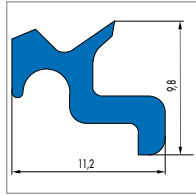
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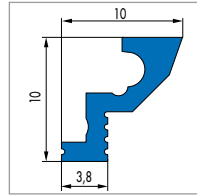
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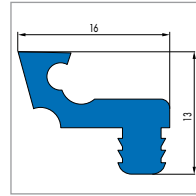
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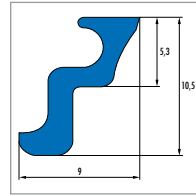
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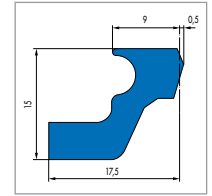
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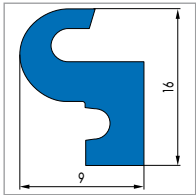
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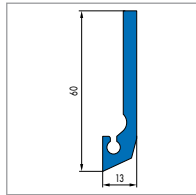
Profile 20276



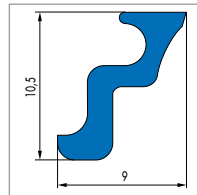
Profile 20331



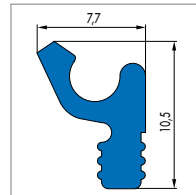
Profile 20338



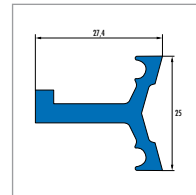
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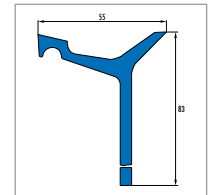
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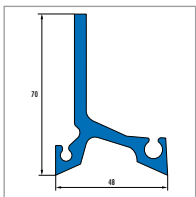
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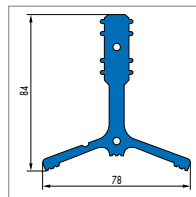
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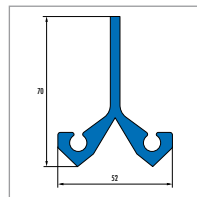
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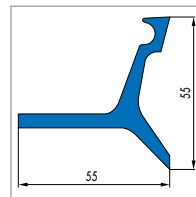
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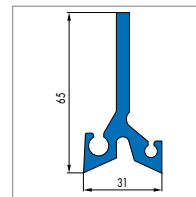
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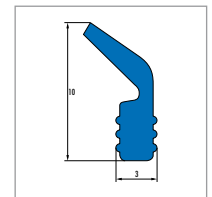
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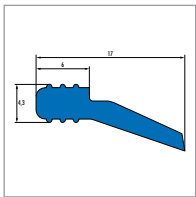
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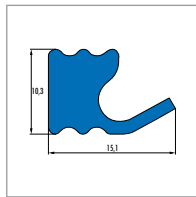
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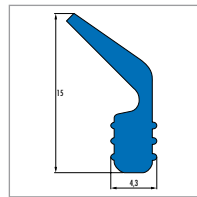
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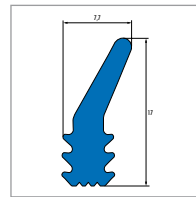
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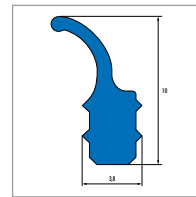
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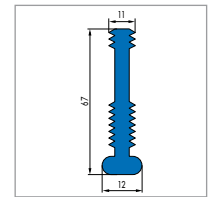
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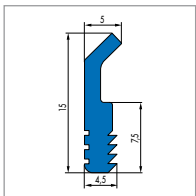
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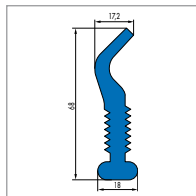
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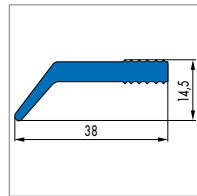
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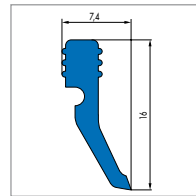
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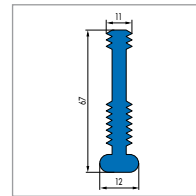
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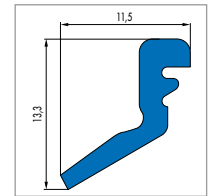
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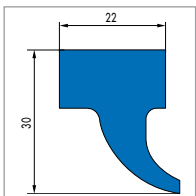
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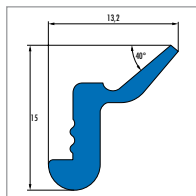
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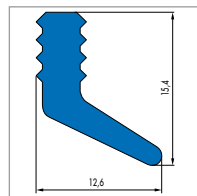
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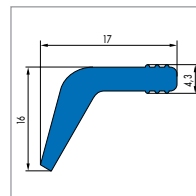
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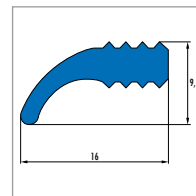
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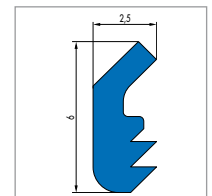
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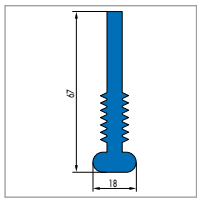
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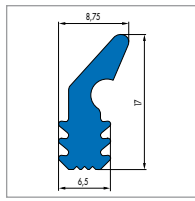
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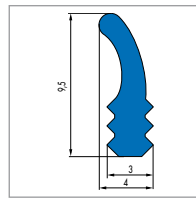
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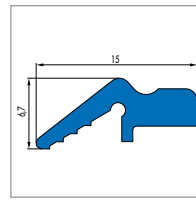
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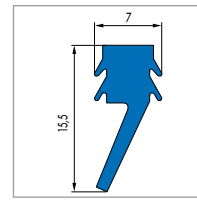
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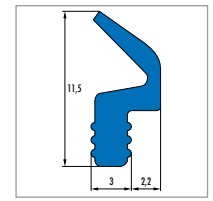
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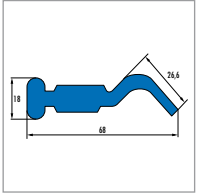
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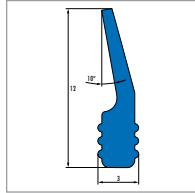
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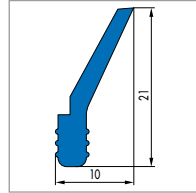
Profile 20269



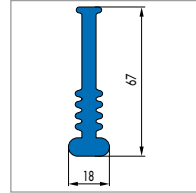
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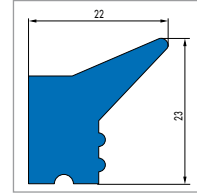
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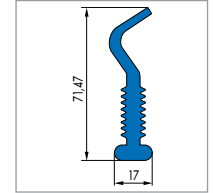
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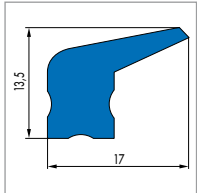
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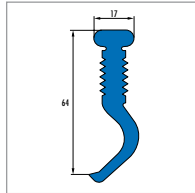
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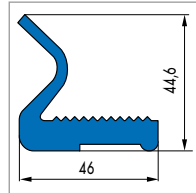
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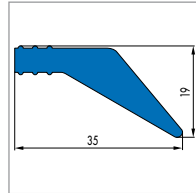
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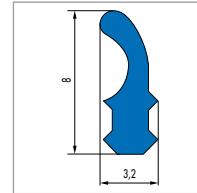
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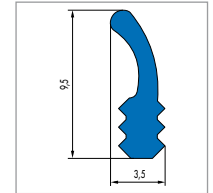
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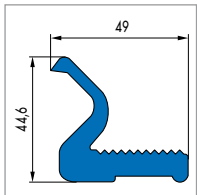
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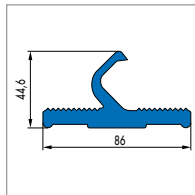
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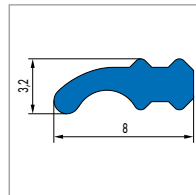
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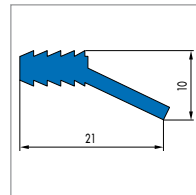
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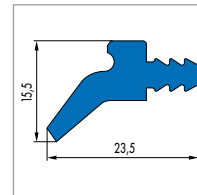
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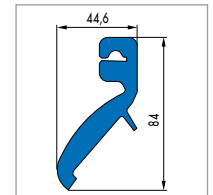
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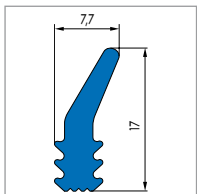
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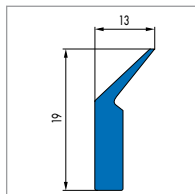
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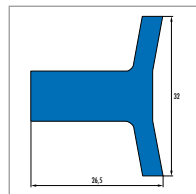
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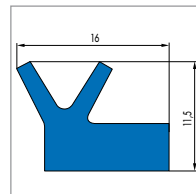
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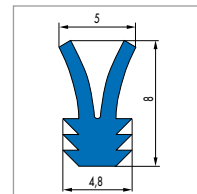
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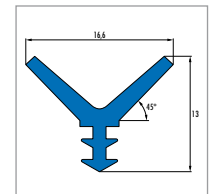
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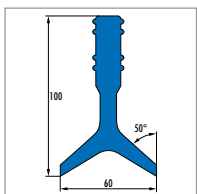
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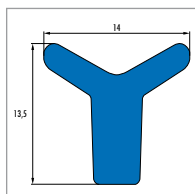
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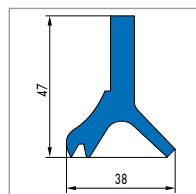
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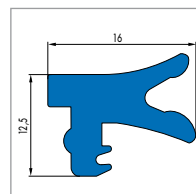
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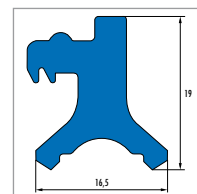
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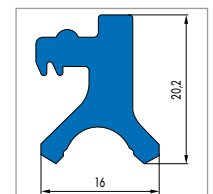
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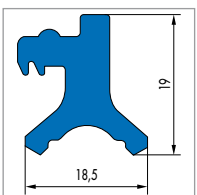
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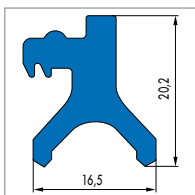
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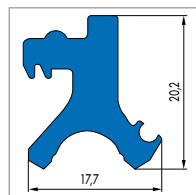
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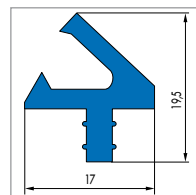
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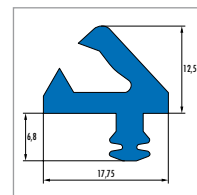
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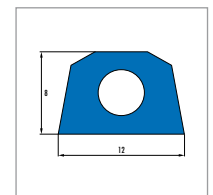
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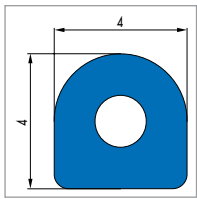
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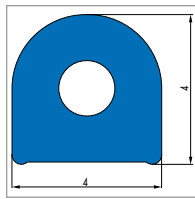
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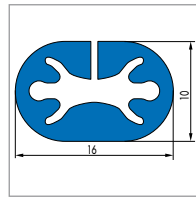
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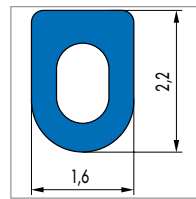
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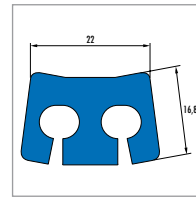
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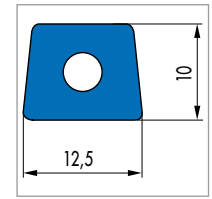
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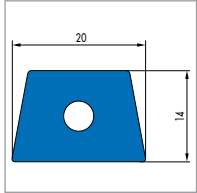
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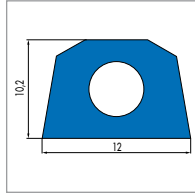
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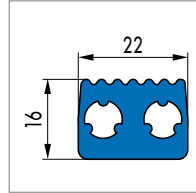
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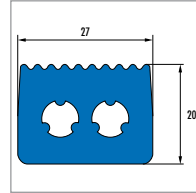
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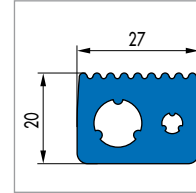
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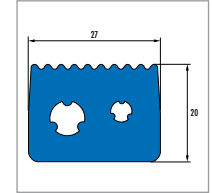
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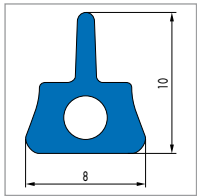
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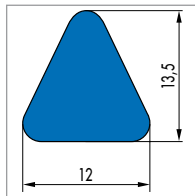
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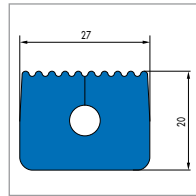
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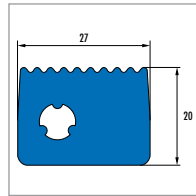
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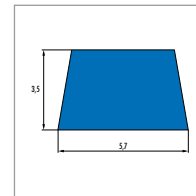
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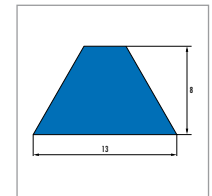
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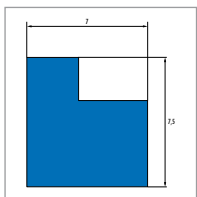
Profile 20443



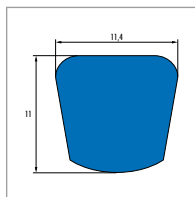
Profile 532



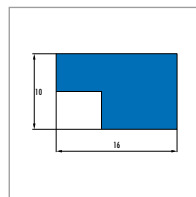
Profile 2130



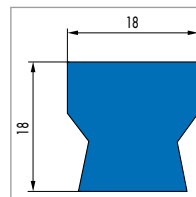
Profile 2817



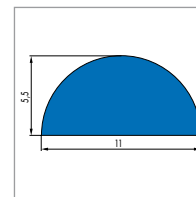
Profile 2956



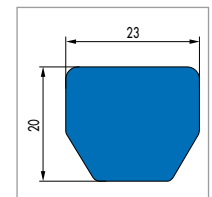
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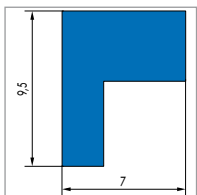
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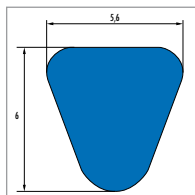
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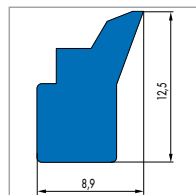
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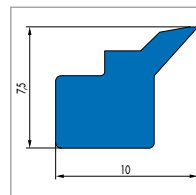
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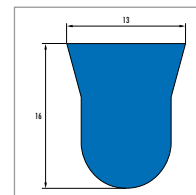
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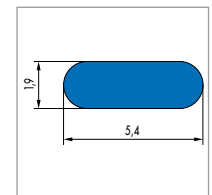
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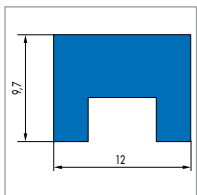
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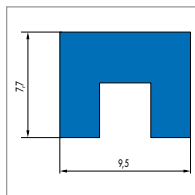
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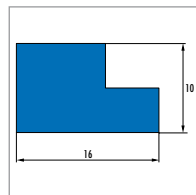
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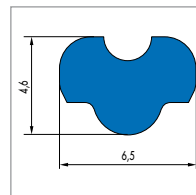
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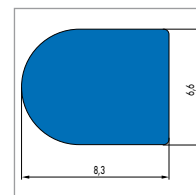
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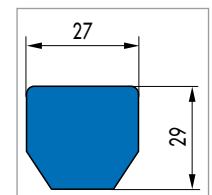
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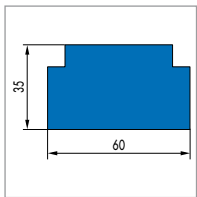
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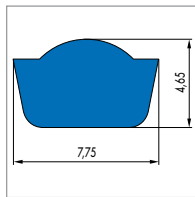
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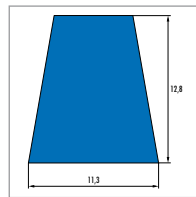
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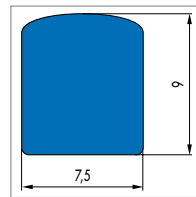
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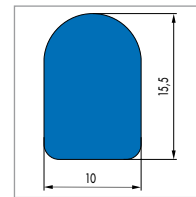
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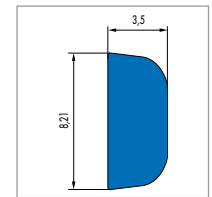
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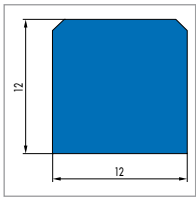
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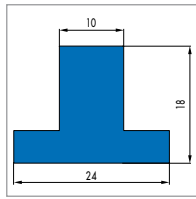
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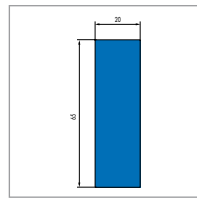
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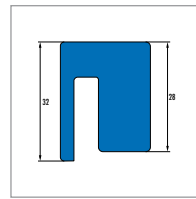
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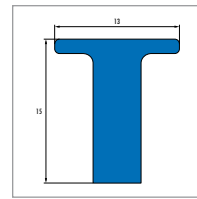
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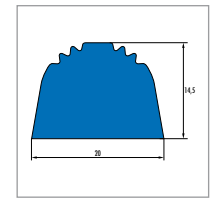
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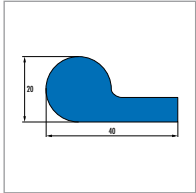
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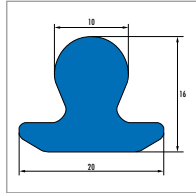
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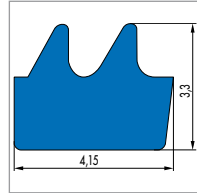
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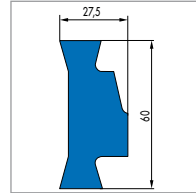
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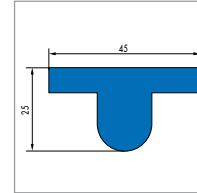
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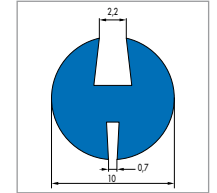
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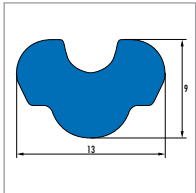
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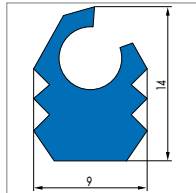
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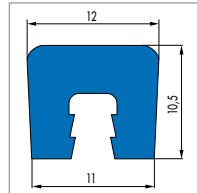
Profile 20133



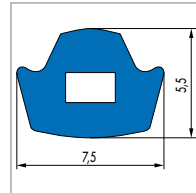
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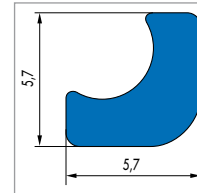
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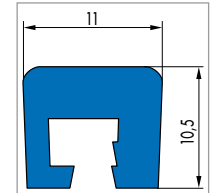
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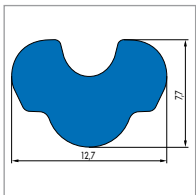
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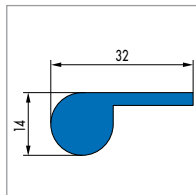
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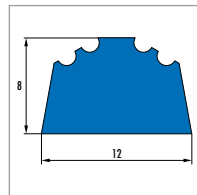
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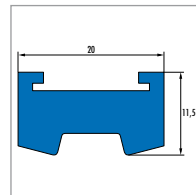
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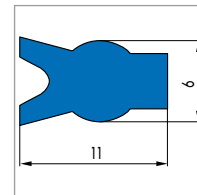
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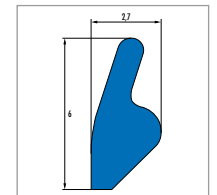
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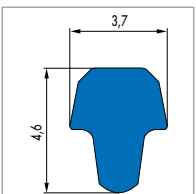
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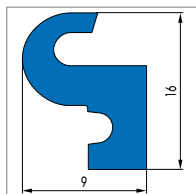
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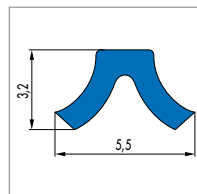
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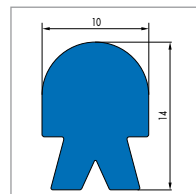
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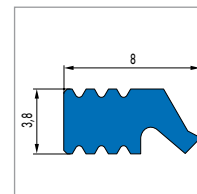
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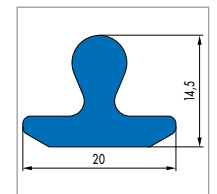
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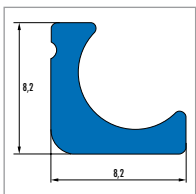
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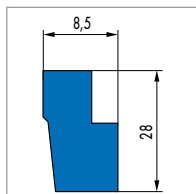
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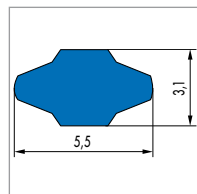
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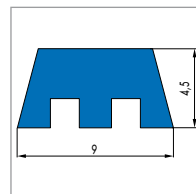
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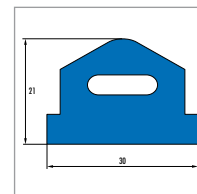
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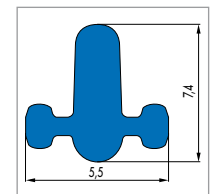
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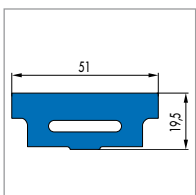
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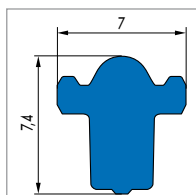
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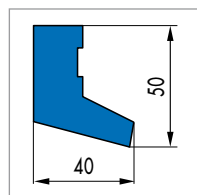
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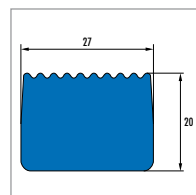
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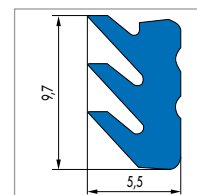
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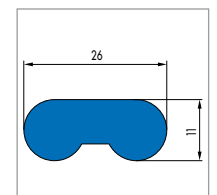
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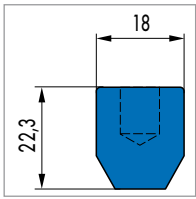
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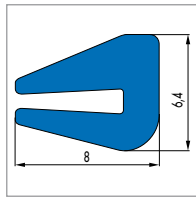
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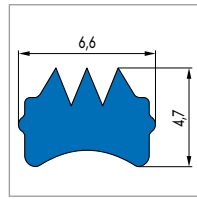
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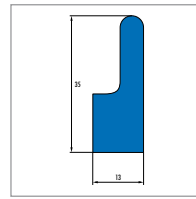
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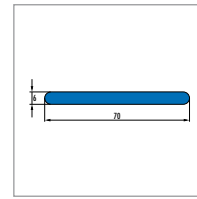
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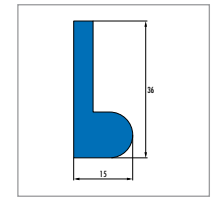
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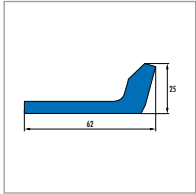
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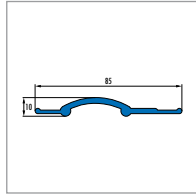
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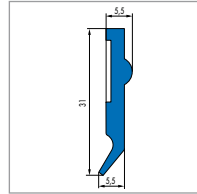
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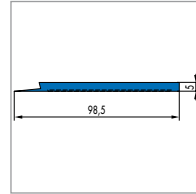
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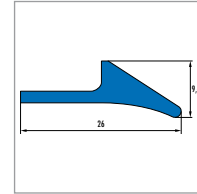
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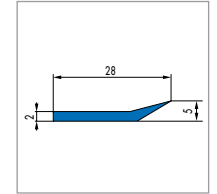
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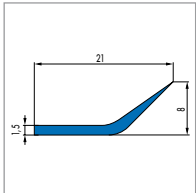
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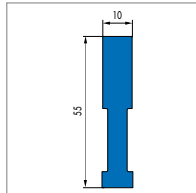
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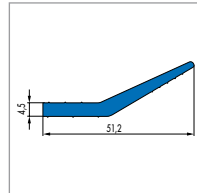
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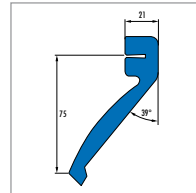
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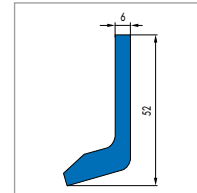
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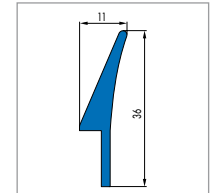
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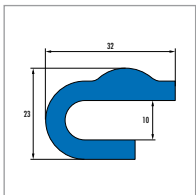
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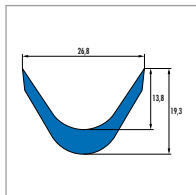
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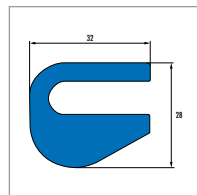
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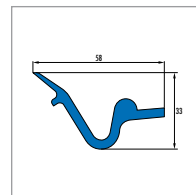
Profile 346



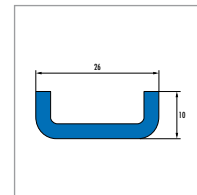
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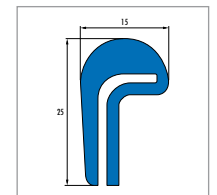
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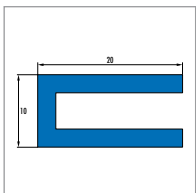
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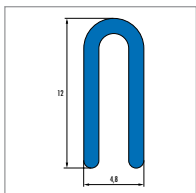
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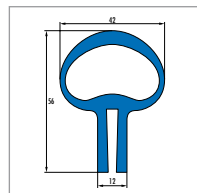
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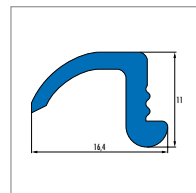
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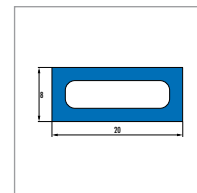
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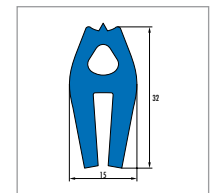
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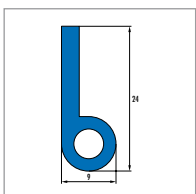
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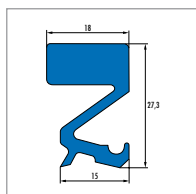
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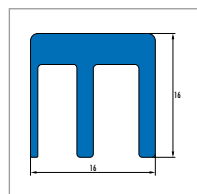
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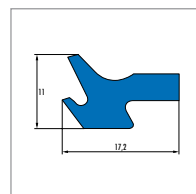
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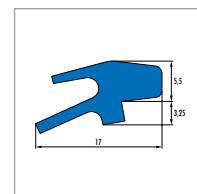
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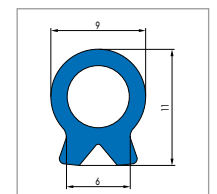
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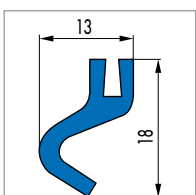
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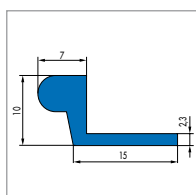
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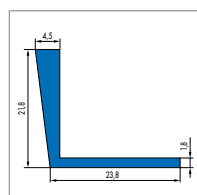
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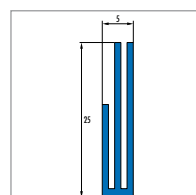
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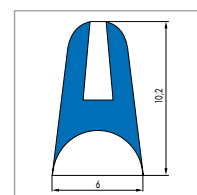
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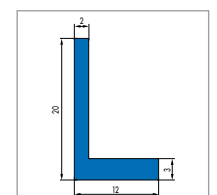
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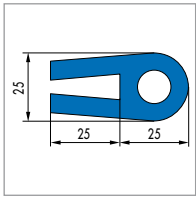
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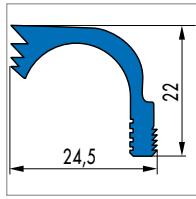
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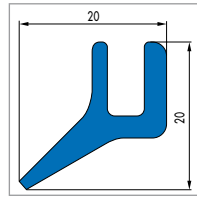
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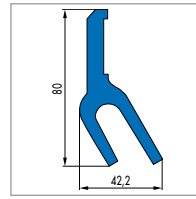
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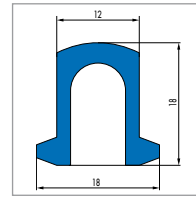
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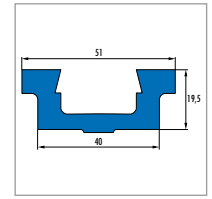
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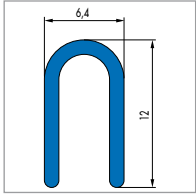
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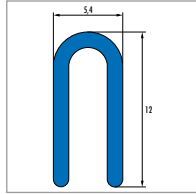
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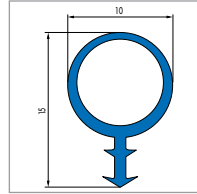
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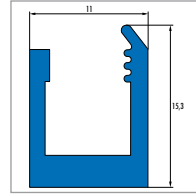
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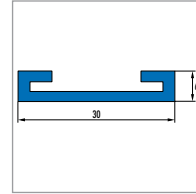
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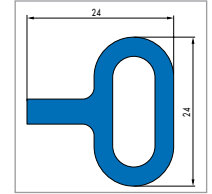
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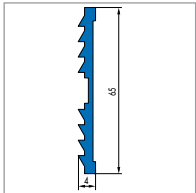
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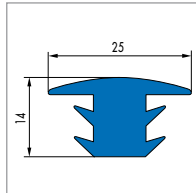
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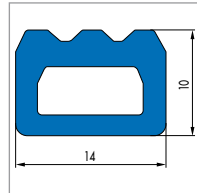
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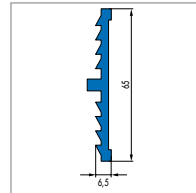
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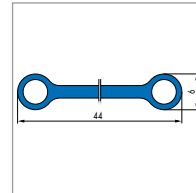
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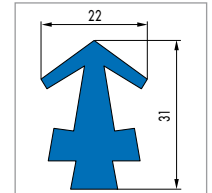
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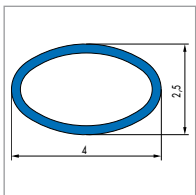
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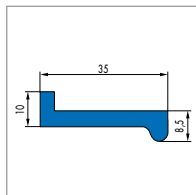
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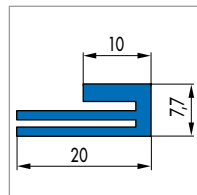
Profile 20170



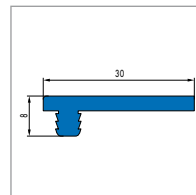
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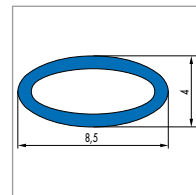
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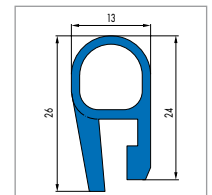
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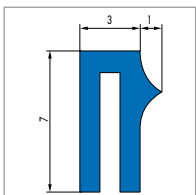
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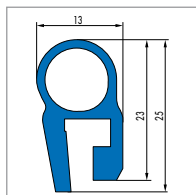
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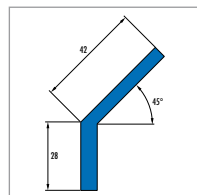
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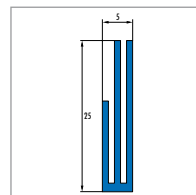
Profile 20207



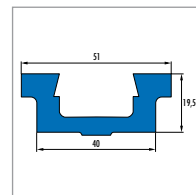
Profile 20210



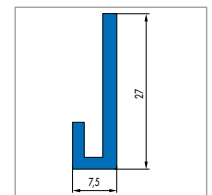
Profile 20211



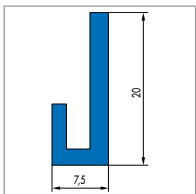
Profile 20212



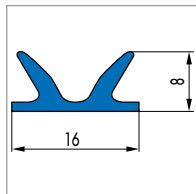
Profile 20213



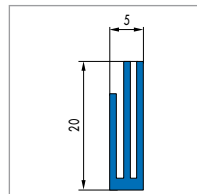
Profile 20293



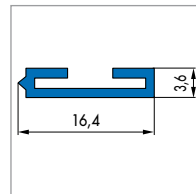
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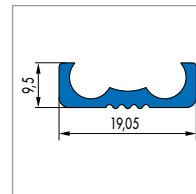
Profile 20329



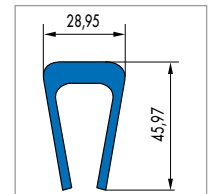
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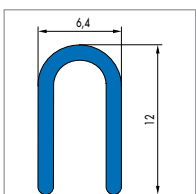
Profile 20344



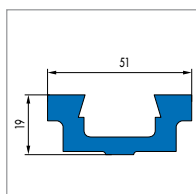
Profile 20379



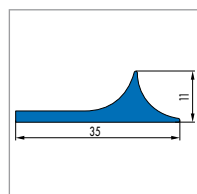
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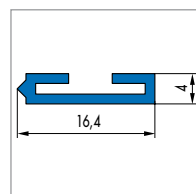
Profile 20395



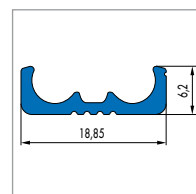
Profile 20396



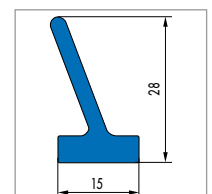
Profile 20404



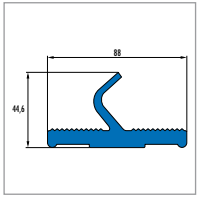
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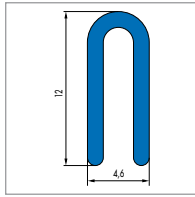
Profile 20425



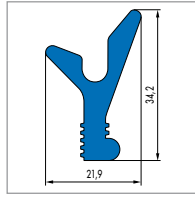
Profile 20435



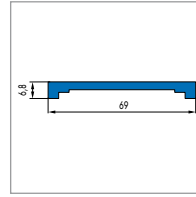
Profile 20438



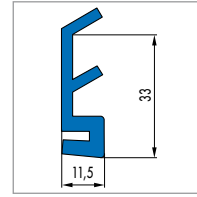
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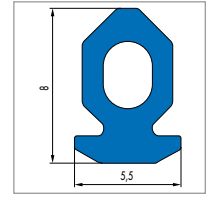
Profile 20442



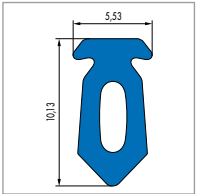
Profile 20444



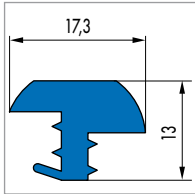
Profile 20448



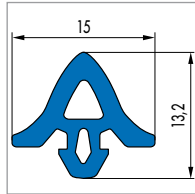
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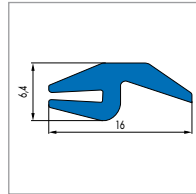
Profile 20472



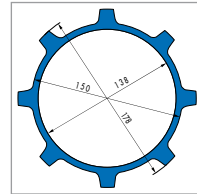
Profile 20484



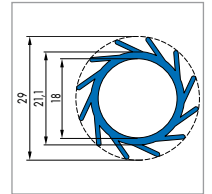
Profile 20485



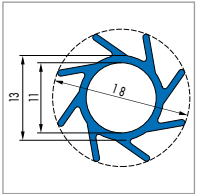
Profile 20497



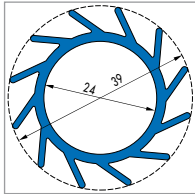
Profile 20094



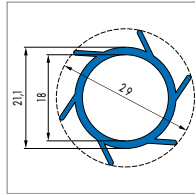
Profile 20134



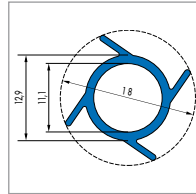
Profile 20135



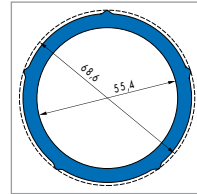
Profile 20137



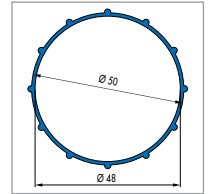
Profile 20181



Profile 20182



Profile 20189



Profile 20325

Cord

The endless, extruded cord with O-ring profile serves as base material for cord rings, among others. These are used, for example, for the sealing of larger flanges or tank lids.

Range

- By the metre:
 - From 1 to 40 mm cord diameter available
- Cord sections:
 - Produced from cord supplied by the metre
 - From 1 to 40 mm cord diameter
 - Up to 2000 mm length without integral bend possible.

Article list

The following cords with cord diameter from 1 to 12 mm are available from stock

Ø d ₂	Tolerance	Material	Article No.	
1	±0,3	72 NBR M00872	73325	●
1,5	±0,3	72 NBR M00872	71863	●
2	±0,3	72 NBR M00872	72370	●
2,5	±0,3	72 NBR M00872	72213	●
3	±0,3	72 NBR M00872	77143	●
3,5	±0,4	72 NBR M00872	73010	●
4	±0,4	72 NBR M00872	70472	●
4,5	±0,4	72 NBR M00872	73459	●
5	±0,4	72 NBR M00872	72214	●
6	±0,4	72 NBR M00872	72217	●
7	±0,5	72 NBR M00872	73399	●
8	±0,5	72 NBR M00872	72365	●
9	±0,5	72 NBR M00872	72219	●
10	±0,5	72 NBR M00872	72366	●
11	±0,6	72 NBR M00872	77126	●
12	±0,6	72 NBR M00872	74034	●

● Available from stock; Other dimensions on enquiry.

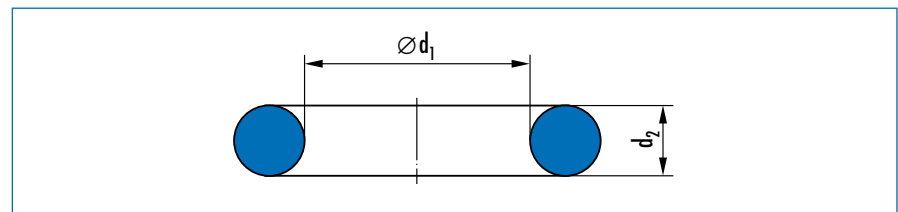
Cord rings

Cord rings are extruded cords, which are cut to the appropriate diameter and bonded or vulcanised to butt.

Range

Cord rings are produced from cord supplied by the metre. They are available with a cord diameter from 1 to 40 mm. A two-part adhesive can be used for bonding to butt. NBR and FKM product versions are available ex works with vulcanisation to butt.

Article list



d ₁	Tolerance	d ₂	Tolerance
>80 ... 120	-1	≤3	±0,3
>120 ... 180	-1,4	>3 ... 6	±0,4
>180 ... 250	-1,2	>6 ... 10	±0,5
>250 ... 315	-2,8	>10 ... 18	±0,6
>315 ... 400	-3,5	>18 ... 30	±0,8
>400 ... 500	-4,5		
>500 ... 600	-6		
>600	-1% of d ₁		

Tolerances

The range of tolerances tends towards the negative side as a certain amount of elongation of rings with a large diameter is possible at any time during installation without causing an appreciable tapering of the cross section.

Hoses

Hoses are produced from all standard elastomer materials. Hoses are "mandrel vulcanised", which means that they can be produced with precision tolerances for particular individual applications. They are processed by grinding the outside diameter.

Range

Hoses are supplied in the following designs always in agreement/on enquiry.

- By the metre
 - up to 20 mm hose inside diameter possible
- Hose sections
 - up to 2000 mm length without integral bend possible
- Hose rings
 - produced from hoses supplied by the metre
- Drive belts, press rings, clearer roller covers
 - up to 200 mm hose inside diameter possible.

Hose rings

Hose rings are rings punched from the hose and produced as hose by the metre. Hose rings made from precision hoses have absolute sharp inside and outside edges. The inside diameter is smooth and absolutely cylindrical. If necessary, a chamber and/or coloured marking is also possible.

Due to the special manufacturing process, a particularly good compression set is achieved.

Range

Hose rings are available always in agreement/on enquiry with a wall strength from 1 mm and up to an inside diameter of 200 mm.

Back-Up Ring SRA

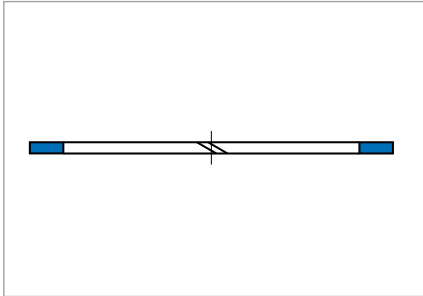


Fig. 1 Back-Up Ring SRA

Product description

Slit bearing component with rectangular cross-section for ISC O-Rings sealing on the outside.

Application

Bearing element to prevent gap extrusion of radial sealing ISC O-Rings used dynamically.

Material

Material	Code
Unfilled PTFE	PTFE00/F52800 or PTFE 177509

Product advantages

- Enlargement of the operating conditions of O-rings
- High material and product quality
- Wide selection of standard dimensions.

Operating conditions

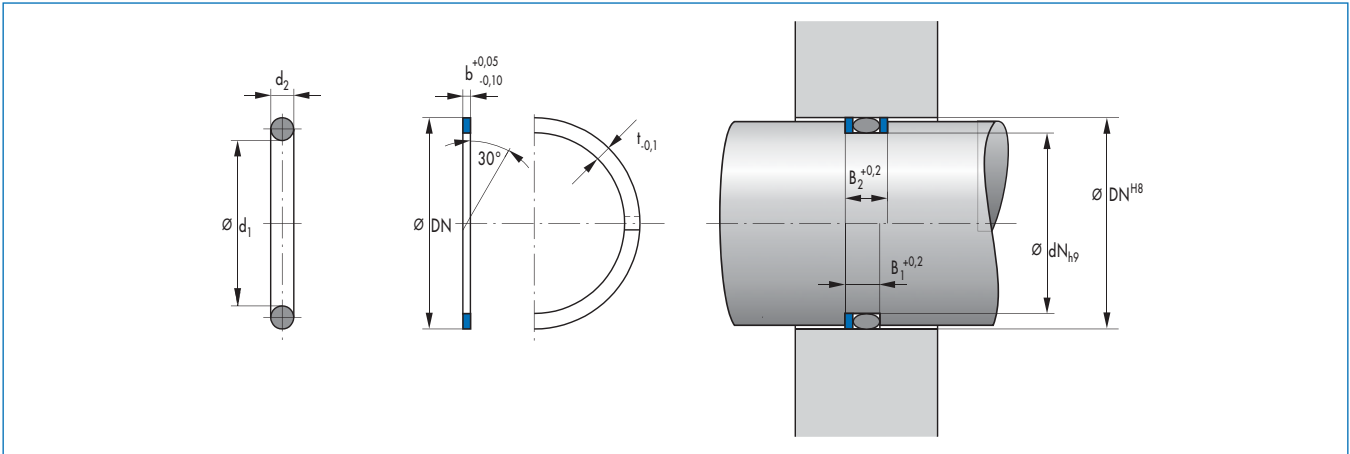
Media	Temperature
All fluids used in hydraulics	-70 ... +260 °C* (only valid for PTFE component)

* according to the O-ring material used

Fitting & installation

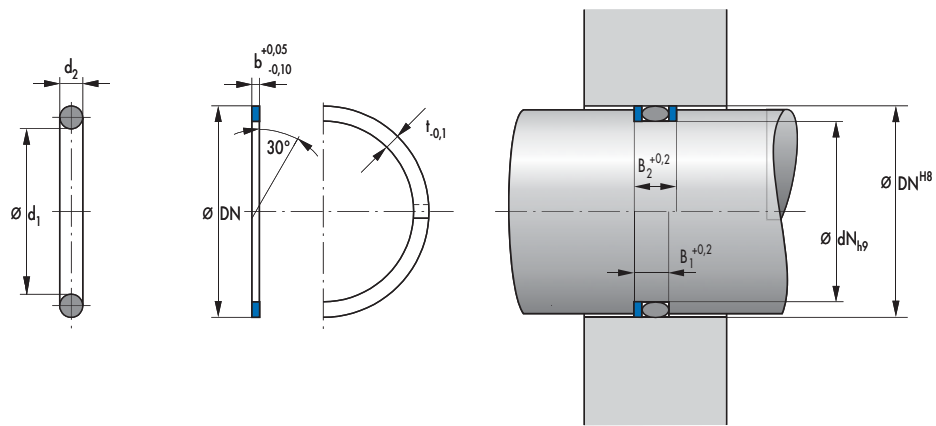
The surface finish requirements correspond to the values stipulated; → Technical Manual.
 Gap width: when using PTFE spiral back-up rings, gap widths up to 0,3 mm can be bridged at operating pressures <40 MPa (400 bar).

Article list



D_N	d_N	t	b	B_1	B_2	d_1	d_2	Material	Article No.	
8	3,9	2,05	1	3,7	4,7	3,3	2,4	PTFE F52800	39609	●
9	4,9	2,05	1	3,7	4,7	4,3	2,4	PTFE F52814	130394	●
10	5,9	2,05	1	3,7	4,7	5,3	2,4	PTFE F52803	95399	●
12	7,9	2,05	1	3,7	4,7	7,3	2,4	PTFE F52800	97614	●
13	8,9	2,05	1	3,7	4,7	8,3	2,4	PTFE F52803	97742	●
14	9,9	2,05	1	3,7	4,7	9,3	2,4	PTFE F52803	35457	○
16	11,9	2,05	1	3,7	4,7	11,3	2,4	PTFE F52803	97616	●
17	12,9	2,05	1	3,7	4,7	12,3	2,4	PTFE F52803	35463	○
18	13,9	2,05	1	3,7	4,7	13,3	2,4	PTFE F52803	35614	●
20	15,9	2,05	1	3,7	4,7	15,3	2,4	PTFE F52803	95575	●
21	16,9	2,05	1	3,7	4,7	16,3	2,4	PTFE F52803	96119	●
22	17,9	2,05	1	3,7	4,7	17,3	2,4	PTFE F52803	97011	●
23	17,8	2,6	1	4,4	5,4	17,2	3	PTFE F52803	96952	●
24	18,8	2,6	1	4,4	5,4	18,2	3	PTFE F52803	95558	●
25	19,8	2,6	1	4,4	5,4	19,2	3	PTFE F52803	94560	●
26	20,8	2,6	1	4,4	5,4	20,2	3	PTFE F52803	2114	●
27	21,8	2,6	1	4,4	5,4	21,2	3	PTFE F52800	35471	●
28	22,8	2,6	1	4,4	5,4	22,2	3	PTFE F52803	24137	●
30	24,8	2,6	1	4,4	5,4	24,2	3	PTFE F52803	97267	●
31	25,8	2,6	1	4,4	5,4	25,2	3	PTFE F52800	363047	●
32	26,8	2,6	1	4,4	5,4	26,2	3	PTFE F52803	97404	●
35	29,8	2,6	1	4,4	5,4	29,2	3	PTFE F52814	35475	●
36	30,8	2,6	1	4,4	5,4	30,2	3	PTFE F52800	99478	●
37	31,8	2,6	1	4,4	5,4	31	3	PTFE F52803	35477	○
38	32,8	2,6	1	4,4	5,4	32,2	3	PTFE F52803	35613	●
40	34,8	2,6	1	4,4	5,4	34,2	3	PTFE F52803	95677	●
41	35,8	2,6	1,5	4,4	5,4	35,2	3	PTFE F52814	422445	●
42	36,8	2,6	1,5	4,9	6,4	36,2	3	PTFE F52803	96992	●
43	37,8	2,6	1,5	4,9	6,4	37,2	3	PTFE F52800	35481	○
45	39,8	2,6	1,5	4,9	6,4	39,2	3	PTFE F52803	97606	●
46	35,8	5,1	1,5	7,9	9,4	35,2	5,7	PTFE F52814	111427	○
46	40,8	2,6	1,5	4,9	6,4	40,2	3	PTFE F52814	422447	●
47	36,8	5,1	1,5	7,9	9,4	36,2	5,7	PTFE F52814	422442	○
47	41,8	2,6	1,5	4,9	6,4	41,2	3	PTFE F52800	35484	○
48	42,8	2,6	1,5	4,9	6,4	42,2	3	PTFE F52800	35486	○

● Available from stock ○ On request: Tool is available, delivery at short notice



D_N	d_N	t	b	B_1	B_2	d_1	d_2	Material	Article No.	
49	38,8	5,1	1,5	7,9	9,4	38,2	5,7	PTFE F52814	422443	○
50	39,8	5,1	1,5	7,9	9,4	39,2	5,7	PTFE F52814	96047	●
50	44,8	2,6	1,5	4,9	6,4	44,2	3	PTFE F52803	27544	●
51	45,8	2,6	1,5	4,9	6,4	45,2	3	PTFE F52814	422448	○
52	41,8	5,1	1,5	7,9	9,4	41,2	5,7	PTFE F52800	35497	○
52	46,8	2,6	1,5	4,9	6,4	46,2	3	PTFE F52814	422449	●
55	44,8	5,1	1,5	7,9	9,4	44,2	5,7	PTFE F52803	97539	●
56	45,8	5,1	1,5	7,9	9,4	45,2	5,7	PTFE F52814	1777	○
56	50,8	2,6	1,5	4,9	6,4	50,2	3	PTFE F52814	422450	○
58	47,8	5,1	1,5	7,9	9,4	47,2	5,7	PTFE F52814	97264	○
60	49,8	5,1	1,5	7,9	9,4	49,2	5,7	PTFE F52803	96947	●
60	54,8	2,6	1,5	4,9	6,4	54,2	3	PTFE F52814	27678	●
61	55,8	2,6	1,5	4,9	6,4	55,2	3	PTFE F52814	422451	○
62	51,8	5,1	1,5	7,9	9,4	51,2	5,7	PTFE F52814	35498	○
62	56,8	2,6	1,5	4,9	6,4	56,2	3	PTFE F52814	422452	○
63	52,8	5,1	1,5	7,9	9,4	52,2	5,7	PTFE F52814	97774	●
63	57,8	2,6	1,5	4,9	6,4	57,2	3	PTFE F52814	422454	●
65	54,8	5,1	1,5	7,9	9,4	54,2	5,7	PTFE F52814	96042	●
65	59,8	2,6	1,5	4,9	6,4	59,2	3	PTFE F52814	422455	●
66	60,8	2,6	1,5	4,9	6,4	60,2	3	PTFE F52814	422456	○
68	57,8	5,1	1,5	7,9	9,4	57,2	5,7	PTFE F52814	35509	○
68	62,8	2,6	1,5	4,9	6,4	62,2	3	PTFE F52814	422457	○
70	59,8	5,1	1,5	7,9	9,4	59,2	5,7	PTFE F52803	96949	●
70	64,8	2,6	1,5	4,9	6,4	64,2	3	PTFE F52800	422458	○
72	61,8	5,1	1,5	7,9	9,4	61,2	5,7	PTFE F52814	94750	●
73	62,8	5,1	1,5	7,9	9,4	62,2	5,7	PTFE F52814	161342	○
73	67,8	2,6	1,5	4,9	6,4	67,2	3	PTFE F52814	422459	○
75	64,8	5,1	1,5	7,9	9,4	64,2	5,7	PTFE F52814	97743	●
75	69,8	2,6	1,5	4,9	6,4	69,2	3	PTFE F52814	422460	○
78	67,8	5,1	1,5	7,9	9,4	67,2	5,7	PTFE F52814	35521	○
78	67,8	5,1	1,5	7,9	9,4	67,2	5,7	PTFE F52800	352162	○
80	69,8	5,1	1,5	7,9	9,4	69,2	5,7	PTFE F52814	95730	●
80	74,8	2,6	1,5	4,9	6,4	74,2	3	PTFE F52814	383496	●
82	71,8	5,1	1,5	7,9	9,4	71,2	5,7	PTFE F52814	35528	○
83	72,8	5,1	1,5	7,9	9,4	72,2	5,7	PTFE F52814	362063	○
85	74,8	5,1	1,5	7,9	9,4	74,2	5,7	PTFE F52814	96951	●
88	77,8	5,1	1,5	7,9	9,4	77,2	5,7	PTFE F52814	422444	●

● Available from stock ○ On request: Tool is available, delivery at short notice

D _N	d _N	t	b	B ₁	B ₂	d ₁	d ₂	Material	Article No.	
90	79,8	5,1	1,5	7,9	9,4	79,2	5,7	PTFE F52814	96445	●
92	81,8	5,1	1,5	7,9	9,4	81,2	5,7	PTFE F52814	390471	○
93	82,8	5,1	1,5	7,9	9,4	82,2	5,7	PTFE F52814	35546	○
95	84,8	5,1	1,5	7,9	9,4	84,2	5,7	PTFE F52814	96048	●
98	87,8	5,1	1,5	7,9	9,4	87,2	5,7	PTFE F52814	35547	○
100	89,8	5,1	2	8,4	10,4	89,2	5,7	PTFE F52814	95670	●
103	92,8	5,1	2	8,4	10,4	92,2	5,7	PTFE F52814	434446	○
105	94,8	5,1	2	8,4	10,4	94,2	5,7	PTFE F52814	96036	○
108	97,8	5,1	2	8,4	10,4	97,2	5,7	PTFE F52814	35553	○
110	99,8	5,1	2	8,4	9,4	99,2	5,7	PTFE F52814	37395	●
115	104,8	5,1	2	8,4	10,4	104,2	5,7	PTFE F52814	97015	●
120	109,8	5,1	2	8,4	10,4	109,2	5,7	PTFE F52814	35557	●
125	114,8	5,1	2	8,4	10,4	114,2	5,7	PTFE F52814	97462	●
130	119,8	5,1	2	8,4	10,4	119,2	5,7	PTFE F52814	96744	●
135	124,8	5,1	2	8,4	10,4	124,2	5,7	PTFE F52814	422441	●
140	129,8	5,1	2	8,4	10,4	129,2	5,7	PTFE F52814	35560	●
150	139,8	5,1	2,5	8,9	11,4	139,2	5,7	PTFE F52814	97382	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Back-Up Ring SRI

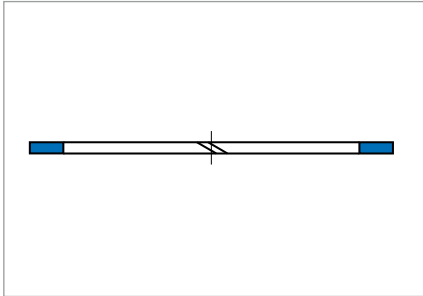


Fig. 1 Back-Up Ring SRI

Product description

Slit bearing component with rectangular cross-section for ISC O-Rings sealing on the inside.

Application

Bearing element to prevent gap extrusion of radial sealing ISC O-rings used dynamically.

Material

Material	Code
Unfilled PTFE	PTFE00/F52800 or PTFE 177509

Product advantages

- Enlargement of the operating conditions of O-rings
- High material and product quality
- Wide selection of standard dimensions.

Operating conditions

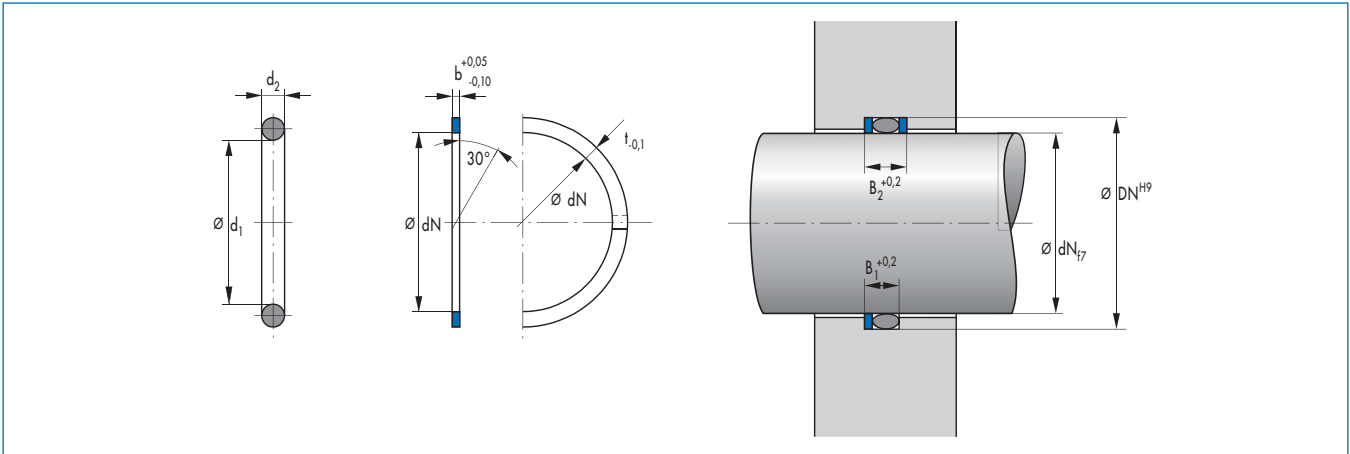
Media	Temperature
All fluids used in hydraulics	-70 ... +260 °C* (only valid for PTFE component)

* according to the O-ring material used

Fitting & installation

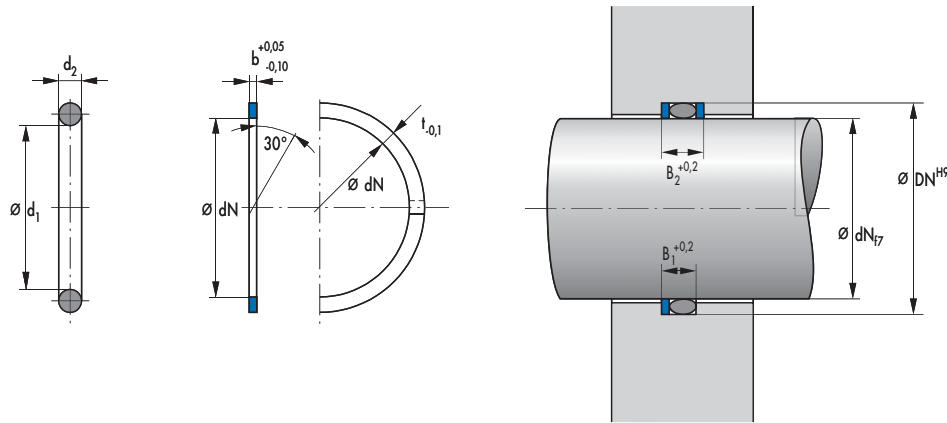
The surface finish requirements correspond to the values stipulated; → Technical Manual.
 Gap width: when using PTFE spiral back-up rings, gap widths up to 0,3 mm can be bridged at operating pressures <40 MPa (400 bar).

Article list



d_N	D_N	t	b	B_1	B_2	d_1	d_2	Material	Article No.	
6	10,2	2,1	1	3,7	4,7	6,3	2,4	PTFE 177509	49010166	○
8	12,2	2,1	1	3,7	4,7	8,3	2,4	PTFE F52803	97625	●
9	13,2	2,1	1	3,7	4,7	9,3	2,4	PTFE F52803	35563	●
10	14,2	2,1	1	3,7	4,7	10,3	2,4	PTFE F52803	97618	●
11	15,2	2,1	1	3,7	4,7	11,3	2,4	PTFE F52800	434440	●
12	16,2	2,1	1	3,7	4,7	12,3	2,4	PTFE F52803	95576	●
13	17,2	2,1	1	3,7	4,7	13,3	2,4	PTFE F52814	97738	○
14	18,2	2,1	1	3,7	4,7	14,3	2,4	PTFE F52803	97617	●
15	19,2	2,1	1	3,7	4,7	15,3	2,4	PTFE F52803	98519	●
16	20,2	2,1	1	3,7	4,7	16,3	2,4	PTFE F52803	94555	●
17	21,2	2,1	1	3,7	4,7	17,3	2,4	PTFE 177509	132836	○
17	22,2	2,6	1	4,4	5,4	17,2	3	PTFE F52814	422416	○
18	22,2	2,1	1	3,7	4,7	18,3	2,4	PTFE F52814	422415	●
18	23,2	2,6	1	4,4	5,4	18,2	3	PTFE F52814	27296	●
19	24,2	2,6	1	4,4	5,4	19,2	3	PTFE F52814	95082	●
20	25,2	2,6	1	4,4	5,4	20,2	3	PTFE F52803	96597	●
21	26,2	2,6	1	4,4	5,4	21,2	3	PTFE F52814	35579	○
22	27,2	2,6	1	4,4	5,4	22,2	3	PTFE F52803	27523	●
24	29,2	2,6	1	4,4	5,4	24,2	3	PTFE F52800	97854	●
25	30,2	2,6	1	4,4	5,4	25,2	3	PTFE F52803	97613	●
26	31,2	2,6	1	4,4	5,4	26,2	3	PTFE F52800	97857	●
29	34,2	2,6	1	4,4	5,4	29,2	3	PTFE F52803	434442	●
30	35,2	2,6	1	4,4	5,4	30,2	3	PTFE F52803	97739	●
31	36,2	2,6	1	4,4	5,4	31,2	3	PTFE F52800	434443	○
32	37,2	2,6	1	4,4	5,4	32,2	3	PTFE F52803	97610	●
34	39,2	2,6	1	4,4	5,4	34,2	3	PTFE F52814	27532	●
35	40,2	2,6	1,5	4,9	6,4	35,2	3	PTFE F52803	35592	●
36	41,2	2,6	1,5	4,9	6,4	36,2	3	PTFE F52803	96596	●
36	46,2	5,1	1,5	7,9	9,4	35,2	5,7	PTFE F52814	97326	●
37	42,2	2,6	1,5	4,9	6,4	37,2	3	PTFE F52803	97605	●
37	47,2	5,1	1,5	7,9	9,4	36,2	5,7	PTFE F52800	422433	○
38	48,2	5,1	1,5	7,9	9,4	37,2	5,7	PTFE F52800	381025	○
39	44,2	2,6	1,5	4,9	6,4	39,2	3	PTFE F52800	434444	○
40	45,2	2,6	1,5	4,9	6,4	40,2	3	PTFE F52803	97611	●
40	50,2	5,1	1,5	7,9	9,4	39,2	5,7	PTFE F52803	36772	●

● Available from stock ○ On request: Tool is available, delivery at short notice



d _N	D _N	t	b	B ₁	B ₂	d ₁	d ₂	Material	Article No.	
41	46,2	2,6	1,5	4,9	6,4	41,2	3	PTFE F52800	422417	○
42	47,2	2,6	1,5	4,9	6,4	42,2	3	PTFE F52814	422418	○
42	52,2	5,1	1,5	7,9	9,4	41,2	5,7	PTFE F52800	422434	●
44	49,2	2,6	1,5	4,9	6,4	44,2	3	PTFE F52803	35648	○
45	50,2	2,6	1,5	4,9	6,4	45,2	3	PTFE F52800	422419	●
45	55,2	5,1	1,5	7,9	9,4	44,2	5,7	PTFE F52800	97327	○
46	51,2	2,6	1,5	4,9	6,4	46,2	3	PTFE F52814	434445	●
46	56,2	5,1	1,5	7,9	9,4	45,2	5,7	PTFE F52800	422435	○
48	58,2	5,1	1,5	7,9	9,4	47,2	5,7	PTFE F52800	35663	●
49	54,2	2,6	1,5	4,9	6,4	49,2	3	PTFE F52814	422420	○
50	55,2	2,6	1,5	4,9	6,4	50,2	3	PTFE F52814	422421	●
50	60,2	5,1	1,5	7,9	9,4	49,2	5,7	PTFE F52803	96447	●
52	62,2	5,1	1,5	7,9	9,4	51,2	5,7	PTFE F52800	35667	○
53	63,2	5,1	1,5	7,9	9,4	52,2	5,7	PTFE F52800	160538	○
54	59,2	2,6	1,5	4,9	6,4	54,2	3	PTFE F52800	422422	○
55	49,8	2,6	1,5	4,9	6,4	49,2	3	PTFE F52814	434447	○
55	65,2	5,1	1,5	7,9	9,4	54,2	5,7	PTFE F52803	35713	○
56	61,2	2,6	1,5	4,9	6,4	56,2	3	PTFE F52800	422424	●
57	62,2	2,6	1,5	4,9	6,4	57,2	3	PTFE F52800	422425	○
58	68,2	5,1	1,5	7,9	9,4	57,2	5,7	PTFE F52814	381969	●
59	64,2	2,6	1,5	4,9	6,4	59,2	3	PTFE F52800	422426	○
60	65,2	2,6	1,5	4,9	6,4	60,2	3	PTFE F52814	422427	●
60	70,2	5,1	1,5	7,9	9,4	59,2	5,7	PTFE F52814	96117	●
62	67,2	2,6	1,5	4,9	6,4	62,2	3	PTFE F52814	422428	○
62	72,2	5,1	1,5	7,9	9,4	61,2	5,7	PTFE F52814	422436	○
63	73,2	5,1	1,5	7,9	9,4	62,2	5,7	PTFE F52814	35754	●
64	69,2	2,6	1,5	4,9	6,4	64,5	3	PTFE F52814	422429	○
65	75,2	5,1	1,5	7,9	9,4	64,2	5,7	PTFE F52802	35756	○
67	72,2	2,6	1,5	4,9	6,4	67,5	3	PTFE 177509	422430	○
68	78,2	5,1	1,5	7,9	9,4	67,2	5,7	PTFE F52800	434438	●
69	74,2	2,6	1,5	4,9	6,4	69,5	3	PTFE F52814	422431	○
70	80,2	5,1	1,5	7,9	9,4	69,2	5,7	PTFE F52814	35764	○
72	82,2	5,1	1,5	7,9	9,4	71,2	5,7	PTFE F52800	35777	○
73	83,2	5,1	1,5	7,9	9,4	72,2	5,7	PTFE F52800	422437	○
74	79,2	2,6	1,5	4,9	6,4	74,5	3	PTFE F52800	422432	○
75	85,2	5,1	1,5	7,9	9,4	74,2	5,7	PTFE F52800	35783	○
78	88,2	5,1	1,5	7,9	9,4	77,2	5,7	PTFE 177509	35784	○

● Available from stock ○ On request: Tool is available, delivery at short notice

d _N	D _N	t	b	B ₁	B ₂	d ₁	d ₂	Material	Article No.	
80	90,2	5,1	1,5	7,9	9,4	79,2	5,7	PTFE F52814	97732	○
100	110,2	5,1	2	8,4	10,4	99,2	5,7	PTFE F52814	35832	●
110	120,2	5,1	2	8,4	10,4	109,2	5,7	PTFE F52814	97460	○
120	130,2	5,1	2	8,4	10,4	119,2	5,7	PTFE F52814	35839	○
125	135,2	5,1	2	8,4	10,4	124,2	5,7	PTFE 177509	49036095	○
130	140,2	5,1	2	8,4	10,4	129,2	5,7	PTFE F52800	35844	●
135	145,2	5,1	2	8,4	10,4	134,2	5,7	PTFE F52800	35846	○
140	150,2	5,1	2	8,9	11,4	139,2	5,7	PTFE F52814	96466	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Spiral Back-Up Ring SPR

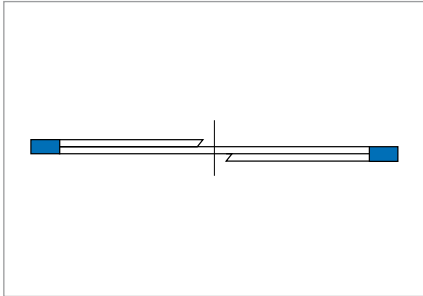


Fig. 1 Spiral Back-Up Ring SPR

Product description

Spiral-shaped split bearing component with rectangular cross section.

Product advantages

Advantage compared to conventional back-up rings:
 Even in cases where considerable temperature fluctuations occur, i.e. if there is post-shrinkage of the back-up ring, at least one turn of the spiral will be left to support the ISC O-Ring over the gap at any point around the circumference.
 Also suitable for non-standard diameters, as the ring can be shortened and thus adapted to fit.

Application

Bearing component to prevent gap extrusion of radial sealing ISC O-Rings.

Material

Material	Code
Unfilled PTFE	PTFE00/F52800 or PTFE 177509

Operating conditions

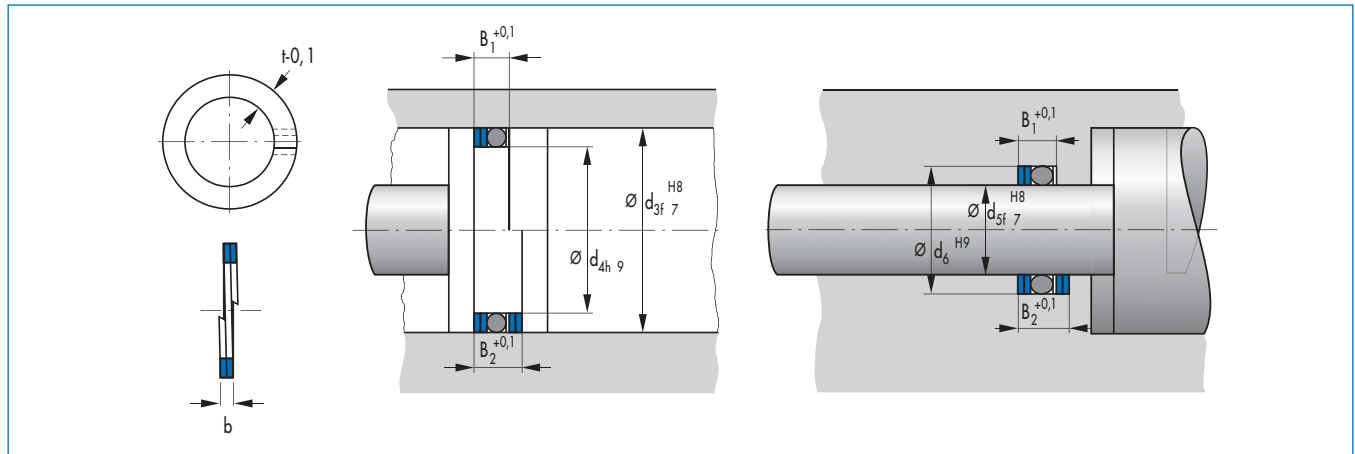
Media	Temperature
All fluids used in hydraulics	-70 ... +260 °C* (only valid for PTFE component)

* according to the O-ring material used

Fitting & installation

The surface finish requirements correspond to the values stipulated; → Technical Manual.
 Gap width: when using PTFE spiral back-up rings, operating pressures ≤40 MPa (400 bar) or gap widths up to 0,3 mm can be bridged.
 Special sizes or special materials are available on enquiry.

Article list



b	t	d ₁	d ₂	d ₅	d ₆	d ₃	d ₄	B ₁	B ₂	Material	Article No.	
1	2,1	5,3	2,4	5	9,2	10	5,9	3,7	4,7	PTFE F52800	158335	○
1	2,1	7,3	2,4	7	11,2	12	7,9	3,7	4,7	PTFE F52800	97187	○
1	2,1	10,3	2,4	10	14,2	15	10,9	3,7	4,7	PTFE F52803	95619	○
1	2,1	12,3	2,4	12	16,2	17	12,9	3,7	4,7	PTFE F52814	97195	○
1	2,1	13,3	2,4	13	17,2	18	13,9	3,7	4,7	PTFE F52803	94965	●
1	2,1	14,3	2,4	14	18,2	19	14,9	3,7	4,7	PTFE F52803	94967	○
1	2,1	15,3	2,4	15	19,2	20	15,9	3,7	4,7	PTFE F52800	97088	●
1	2,1	16,3	2,4	16	20,2	21	16,9	3,7	4,7	PTFE F52803	97192	●
1	2,1	17,3	2,4	17	21,2	22	17,9	3,7	4,7	PTFE F52803	97066	●
1	2,1	18,3	2,4	18	22,2	23	18,9	3,7	4,7	PTFE F52803	94972	●
1	2,1	20,3	2,4	20	24,2	25	20,9	3,7	4,7	PTFE F52803	98356	○
1	2,1	22,3	2,4	22	26,2	27	22,9	3,7	4,7	PTFE F52800	97347	○
1	2,1	23,3	2,4	23	27,2	27	23,9	3,7	4,7	PTFE F52800	365310	○
1	2,1	25,3	2,4	25	29,2	30	25,9	3,7	4,7	PTFE F52803	97282	●
1	2,6	18,2	3	18	23,2	24	18,8	4,4	5,4	PTFE F52803	94971	●
1	2,6	19	3	19	24,2	25	19,8	4,4	5,4	PTFE F52803	94973	●
1	2,6	20,2	3	20	25,2	26	20,8	4,4	5,4	PTFE F52800	97194	○
1	2,6	21,2	3	21	26,2	27	21,8	4,4	5,4	PTFE F52800	98611	○
1	2,6	22	3	22	27,2	28	22,8	4,4	5,4	PTFE F52814	97193	●
1	2,6	24,2	3	24	29,2	30	24,8	4,4	5,4	PTFE F52814	97086	●
1	2,6	26,2	3	26	31,2	32	26,8	4,4	5,4	PTFE F52803	94975	●
1	2,6	29	3	29	34,2	35	29,8	4,4	5,4	PTFE F52803	98083	○
1	2,6	30,2	3	30	35,2	36	30,8	4,4	5,4	PTFE F52814	97040	●
1	2,6	31,2	3	31	36,2	37	31,8	4,4	5,4	PTFE F52814	97012	○
1	2,6	34,2	3	34	39,2	40	34,8	4,4	5,4	PTFE F52803	94978	●
1	2,6	42,2	3	42	47,2	48	42,8	4,4	5,4	PTFE F52803	96973	○
1	2,6	49,2	5,7	50	60,2	60	49,8	4,4	5,4	PTFE F52803	97102	○
1	2,6	60,2	3	60	65,2	66	60,8	4,4	5,4	PTFE F52800	98144	○
1,5	2,6	35,2	3	35	40,2	41	35,8	4,9	6,4	PTFE F52803	97461	●
1,5	2,6	37,2	3	37	42,2	43	37,8	4,9	6,4	PTFE F52803	94980	○
1,5	2,6	44	3	44	49,2	50	44,8	4,9	6,4	PTFE F52803	98308	●
1,5	2,6	45,2	3	45	50,2	51	45,8	4,9	6,4	PTFE F52800	393118	○
1,5	2,6	46,2	3	46	51,2	52	46,8	4,9	6,4	PTFE F52800	160727	○
1,5	2,6	50,2	3	50	55,2	56	50,8	4,9	6,4	PTFE 177509	98084	○
1,5	2,6	74,5	3	74,3	79,5	80,3	75,1	4,9	6,4	PTFE F52803	413108	○

● Available from stock ○ On request: Tool is available, delivery at short notice

b	t	d ₁	d ₂	d ₅	d ₆	d ₃	d ₄	B ₁	B ₂	Material	Article No.	
1,5	5,1	44,2	5,7	45	55,2	55	44,8	7,9	9,4	PTFE F52800	94985	○
1,5	5,1	52,2	5,7	53	63,2	63	52,8	7,9	9,4	PTFE F52800	97535	○
1,5	5,1	54,2	5,7	55	65,2	65	54,8	7,9	9,4	PTFE F52803	97236	○
1,5	5,1	57,2	5,7	58	68,2	68	57,8	7,9	9,4	PTFE F52814	97279	○
1,5	5,1	59,2	5,7	60	70,2	70	59,8	7,9	9,4	PTFE F52814	97668	●
1,5	5,1	62,2	5,7	63	73,2	73	62,8	7,9	9,4	PTFE F52800	95376	○
1,5	5,1	64,2	5,7	65	75,2	75	64,8	7,9	9,4	PTFE F52800	94990	○
1,5	5,1	69,2	5,7	70	80,2	80	69,8	7,9	9,4	PTFE F52800	97688	○
1,5	5,1	74,2	5,7	75	85,2	85	74,8	7,9	9,4	PTFE F52800	382286	○
1,5	5,1	77,2	5,7	78	88,2	88	77,8	7,9	9,4	PTFE F52814	388230	○
2	5,1	89	5	90	100,2	100	89,8	8,4	10,4	PTFE F52814	97671	○
2	5,1	99,2	5,7	100	110,2	110	99,8	8,4	10,4	PTFE F52800	98224	○
2	5,1	114,2	5,7	115	125,2	125	114,8	8,4	10,4	PTFE F52800	371750	○
2	5,1	124,2	5,7	125	135,2	135	124,8	8,4	10,4	PTFE F52814	94994	○
3	5,1	189,2	5,7	190	200,2	200	189,8	9,4	12,4	PTFE F52814	94996	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Usit Rings U, UA, USF

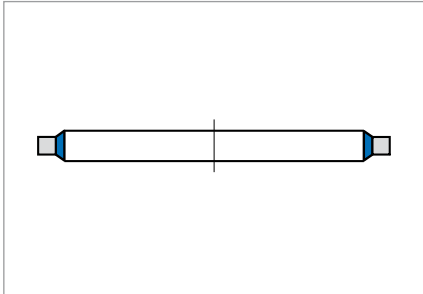


Fig. 1 Usit Ring U

Product description

Metal gasket with internally (U) or externally (UA) vulcanised, trapezoidal, rubber-elastic sealing bead for static sealing of

- Threaded fittings
- Flange connections
- (USF) with centring diaphragm.

Product advantages

- Easy fitting
- Force-fit connections
- Secure, self-reinforced sealing
- Suitable for high pressures.

Application

Sealing of threaded fittings and flange connections e.g. in mechanical engineering.

Material

Metal ring	Steel SPCC Steel SPCC-1B Stainless steel (SUS 304)
Sealing bead	NBR rubber 72 NBR 99041 FKM rubber 75 FKM 99104 Other materials are available on enquiry from special production.
Surface protection metal ring	SPCC/NBR zinc chrome plated (CR VI free coating) SPCC-1B/NBR zinc chrome plated (CR VI free coating) SPCC/FKM phosphated SPCC-1B/FKM phosphated

Operating conditions

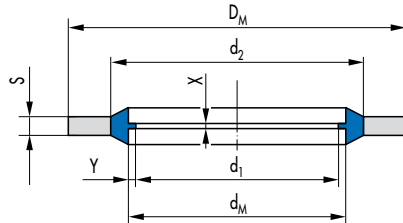
NBR	
Media	Mineral oils (as per DIN 51524), hydraulic fluids HFA, HFB, HFC (as per VDMA 24320)
Temperature	-30 ... +100 °C
FKM	
Media	Hot air (+250 °C) Mineral oils (as per DIN 51524, +150 °C) Hydraulic fluids (as per VDMA 24320, +150 °C)
Operating pressure	<100 MPa (installation in counter bore) <40 MPa (installation without counter bore for Ø <40 mm; only USF) <25 MPa (installation without counter bore for Ø <40 mm)

Design notes

Installation

Surface	Flat surfaces	$R_{max} \leq 15 \mu m$ $R_a \leq 3 \mu m$
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Tolerances on finished parts



	D_M	D_M		s
≤ 28	+0,15/-0,10	+0,10/-0,20	1,0	+0,08/-0,15
28 ... 50	+0,20/-0,10	+0,10/-0,30	1,5	+0,13/-0,20
> 50	+0,25/-0,10	+0,10/-0,40	2,0	+0,13/-0,20
			3,0	+0,20/-0,25
			3,5	+0,20/-0,30

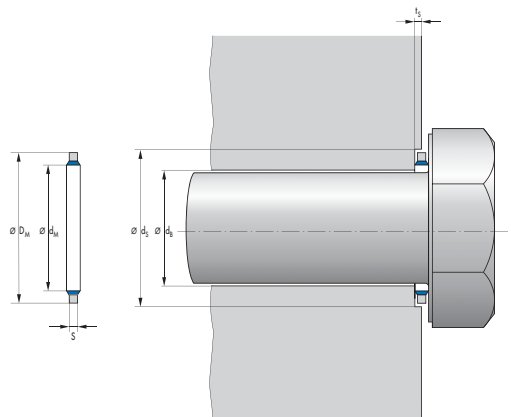
Article list U

$t_s = 0,5 \dots 1$

$d_s = (DM+0,5) H13$

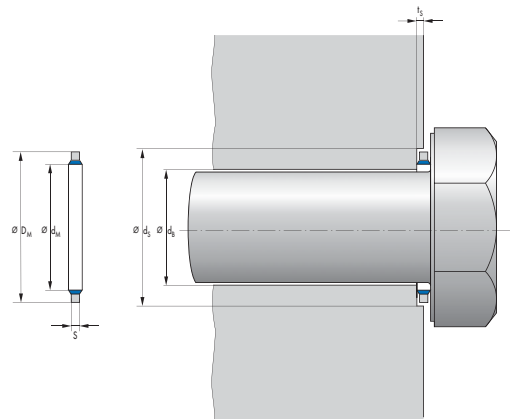
up to $D_M = 40$:

Centering (t_s/d_s) mandatory!



d_M	D_M	S	Steel	for metric threads	D_g	Material	Article No.	
3,8	7,6	1	SPCC	3	3,1	72 NBR M99041	452098	●
3,8	7,6	1	SUS 304	3	3,1	72 NBR M99041	461069	●
3,8	7,6	1	SPCC	3	3,1	75 FKM M99104	452213	●
4,1	7,2	1	SPCC	3	3,2	72 NBR M99041	371997	●
4,5	7	1	SUS 304	3	3,6	72 NBR M99041	434169	●
4,5	7	1	SPCC	3	3,6	72 NBR M99041	371998	●
4,5	7	1	SUS 304	3	3,6	75 FKM M99104	452204	●
4,5	7	1	SPCC	3	3,6	75 FKM M99104	452214	●
4,9	8,6	1	SPCC	4	4	72 NBR M99041	452099	●
4,9	8,6	1	SUS 304	4	4	72 NBR M99041	452112	●
4,9	8,6	1	SPCC	4	4	75 FKM M99104	452215	●
5,7	9	1	SPCC	4	4,8	72 NBR M99041	371208	●
5,7	9	1	SUS 304	4	4,8	72 NBR M99041	452113	●
5,7	10	1	SPCC	4	4,8	72 NBR M99041	371209	●
5,7	10	1	SUS 304	4	4,8	70 EPDM M99057	506650	○
6,2	9,2	1	SPCC	5	5,3	72 NBR M99041	371210	●
6,2	9,2	1	SUS 304	5	5,3	72 NBR M99041	461071	●
6,2	9,2	1	SPCC	5	5,3	75 FKM M99104	452218	●
6,7	10	1	SPCC	5	5,8	72 NBR M99041	371211	●
6,7	10	1	SPCC-1B	5	5,8	72 NBR M99041	452170	●
6,7	10	1	SPCC-1B	5	5,8	75 FKM M99104	452107	●
6,7	11	1	SPCC	5	5,8	72 NBR M99041	371212	●
6,7	11	1	SUS 304	5	5,8	72 NBR M99041	452114	●
6,7	11	1	SPCC-1B	5	5,8	75 FKM M99104	452207	●
6,7	11	2,5	SPCC	5	5,8	72 NBR M99041	371213	●
6,7	11	2,5	SPCC	5	5,8	75 FKM M99104	522083	○
6,7	12,5	1,5	SPCC	5	5,8	70 ACM M99046	389409	○
7,1	12	1	SPCC	6	6,2	72 NBR M99041	371214	●
7,3	10,2	1	SPCC	6	6,4	72 NBR M99041	371216	●

● Available from stock ○ On request: Tool is available, delivery at short notice

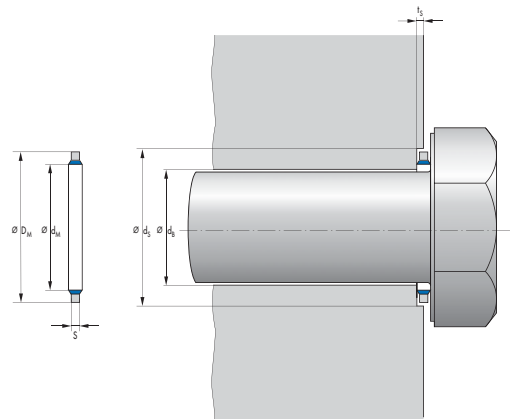


d_M	D_M	S	Steel	for metric threads	D_g	Material	Article No.	
7,7	15	1	SPCC	6	6,8	72 NBR M99041	453891	○
8,5	13,4	1	SPCC	7	7,6	72 NBR M99041	371220	●
8,5	13,4	1	SUS 304	7	7,6	72 NBR M99041	452118	●
8,5	13,4	1	SPCC-1B	7	7,6	75 FKM M99104	452208	●
8,7	13	1	SPCC	7	7,8	72 NBR M99041	371221	●
8,7	13	1	SUS 304	7	7,8	72 NBR M99041	452119	●
8,7	13	1	SPCC-1B	7	7,8	72 NBR M99041	452177	●
8,7	13	1	SPCC	7	7,8	72 NBR M99041	452787	○
8,7	13	1	SPCC-1B	7	7,8	75 FKM M99104	451198	●
8,7	14	1	SPCC	7	7,8	72 NBR M99041	371222	●
8,7	14	1	SUS 304	7	7,8	72 NBR M99041	452121	●
8,7	14	1	SPCC-1B	7	7,8	72 NBR M99041	452196	●
8,7	14	1	SUS 304	7	7,8	75 FKM M99104	452205	●
8,7	16	1	SPCC	7	7,8	72 NBR M99041	371224	●
9,3	13,3	1	SPCC	8	8,4	72 NBR M99041	371225	●
9,3	13,3	1	SUS 304	8	8,4	72 NBR M99041	452122	●
9,3	13,3	1	SPCC-1B	8	8,4	72 NBR M99041	452197	●
9,3	13,3	1	SPCC-1B	8	8,4	75 FKM M99104	452210	●
9,3	14,6	1	SPCC	8	8,4	72 NBR M99041	452100	●
9,3	14,6	1	SUS 304	8	8,4	72 NBR M99041	452123	●
9,3	14,6	1	SPCC-1B	8	8,4	72 NBR M99041	452200	●
10,35	16	2	SPCC	8	9,4	72 NBR M99041	371226	●
10,35	16	2	SUS 304	8	9,4	72 NBR M99041	461072	●
10,7	16	1,5	SPCC	8	9,8	72 NBR M99041	371229	●
10,7	16	1,5	SUS 304	8	9,8	72 NBR M99041	452124	●
10,7	16	1,5	SPCC-1B	8	9,8	72 NBR M99041	452201	●
10,7	18	1,5	SPCC	8	9,8	72 NBR M99041	371230	○
11,4	16,3	1,5	SPCC	10	10,5	72 NBR M99041	371233	●
11,4	16,3	1,5	SPCC-1B	10	10,5	72 NBR M99041	461574	●
11,4	16,3	1,5	SPCC-1B	10	10,5	75 FKM M99104	461581	●
11,5	17,6	1,5	SPCC	10	10,5	72 NBR M99041	460307	●
11,8	18,5	1,5	SPCC	10	10,8	72 NBR M99041	372000	●
11,8	19,1	1,5	SPCC	10	10,8	72 NBR M99041	452103	●
11,8	19,1	1,5	SPCC-1B	10	10,8	72 NBR M99041	452202	●
12,7	18	1,5	SPCC	10	11,7	72 NBR M99041	371235	●
12,7	18	1,5	SUS 304	10	11,7	72 NBR M99041	452153	●

● Available from stock ○ On request: Tool is available, delivery at short notice

d _M	D _M	S	Steel	for metric threads	D _g	Material	Article No.	
12,7	18	1,5	SPCC-1B	10	11,7	72 NBR M99041	452203	●
12,7	18	1,5	MSBL	10	11,7	72 NBR M99041	468861	○
12,7	18	1,5	SPCC	10	11,7	75 FKM M99104	452220	●
12,7	20	1,5	SPCC	10	11,7	72 NBR M99041	371236	●
13,7	20	1,5	SPCC	12	12,7	72 NBR M99041	371237	●
13,7	20	1,5	SUS 304	12	12,7	72 NBR M99041	452154	●
13,7	20	1,5	SPCC	12	12,7	75 FKM M99104	452221	●
13,7	22	1,5	SPCC	12	12,7	72 NBR M99041	371238	●
14	18,7	1,5	SPCC	12	13	72 NBR M99041	371240	●
14	18,7	1,5	SPCC-1B	12	13	72 NBR M99041	461582	●
14,7	22	1,5	SPCC	12	13,7	72 NBR M99041	371241	●
14,7	22	1,5	SUS 304	12	13,7	72 NBR M99041	452156	●
14,7	22	1,5	SPCC	12	13,7	75 FKM M99104	452222	●
14,86	22,29	2,1	SPCC	12	13,86	72 NBR M99041	427277	●
16	22,7	1,5	SPCC	14	15	72 NBR M99041	371243	●
16,7	24	1,5	SPCC	14	15,7	72 NBR M99041	371244	●
16,7	24	1,5	SUS 304	14	15,7	72 NBR M99041	452157	●
16,7	24	1,5	SPCC-1B	14	15,7	72 NBR M99041	461584	●
17,4	24	1,5	SPCC	14	16,4	72 NBR M99041	371245	●
17,4	24	1,5	SUS 304	14	16,4	72 NBR M99041	461073	●
17,4	24	1,5	SPCC	14	16,4	75 FKM M99104	452223	●
18	24,7	1,5	SPCC	16	17	72 NBR M99041	372004	●
18	24,7	1,5	SUS 304	16	17	72 NBR M99041	452125	●
18	24,7	1,5	SUS 304	16	17	75 FKM M99104	452206	●
18,7	26	1,5	SPCC	16	17,7	72 NBR M99041	371246	●
19,7	26	1,5	SPCC	16	18,7	72 NBR M99041	452104	●
19,7	26	1,5	SPCC-1B	16	18,7	75 FKM M99104	452212	○
19,7	26	1,5	SPCC-1B	16	18,7	75 FKM M99104	468671	○
20,7	28	1,5	SPCC	16	19,6	72 NBR M99041	371248	●
20,7	28	1,5	SPCC	16	19,6	75 FKM M99104	452219	●
20,7	28	2,5	SUS 304	16	19,6	72 NBR M99041	452126	●
21,5	28,7	2,5	SPCC	18	20,4	72 NBR M99041	371249	●
22,5	28	1,5	SPCC	20	21,26	72 NBR M99041	372006	●
22,5	28	1,5	SUS 304	20	21,3	75 FKM M99104	461077	●
22,7	30	2	SPCC	20	21,46	72 NBR M99041	371250	●
22,7	30	2	SUS 304	20	21,46	72 NBR M99041	452127	●
22,7	30	3	SPCC	20	21,46	72 NBR M99041	372007	●
24,7	32	2	SPCC	20	23,46	72 NBR M99041	371251	●
26,7	35	2	SPCC	22	24,5	72 NBR M99041	371262	●
27	36	2	SPCC	24	25	72 NBR M99041	371263	●
27,2	36	2	SUS 304	24	25	72 NBR M99041	461080	●
28	35	2	SPCC	24	25,8	72 NBR M99041	400740	●
28,7	37	2	SPCC	24	25,7	72 NBR M99041	371264	●
28,7	37	2	SUS 304	24	25,7	72 NBR M99041	461082	●
31	39	2	SPCC	27	28	72 NBR M99041	371266	●
31	39	2	SPCC	27	28	75 FKM M99104	437799	●
33,7	42	2	SPCC	27	30	72 NBR M99041	371268	●
33,7	42	2	SPCC-1B	27	30	72 NBR M99041	437793	○
34,3	43	2	SPCC	27	30,6	72 NBR M99041	371269	●

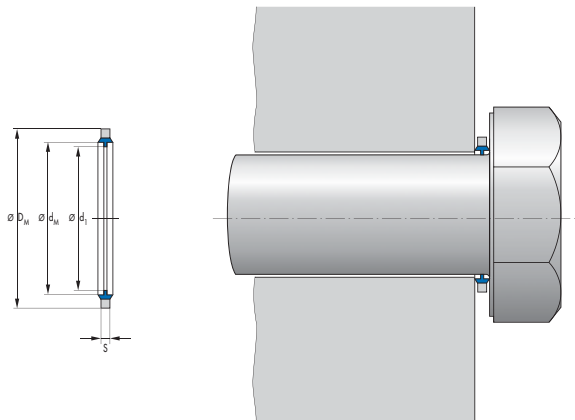
● Available from stock ○ On request: Tool is available, delivery at short notice



d_M	D_M	S	Steel	for metric threads	D_g	Material	Article No.	
36,7	46	2	SPCC	30	30,7	72 NBR M99041	371270	●
40	51	2,5	SPCC	27	34	72 NBR M99041	461083	●
40	51	2,5	SUS 304	27	34	72 NBR M99041	461084	○
42,7	53	3	SPCC	36	36,7	72 NBR M99041	371272	●
42,7	53	3	SUS 304	36	36,7	75 FKM M99104	523373	○
48,7	59	3	SPCC	36	42,7	72 NBR M99041	371273	●
52	60	3	SPCC	40	46	72 NBR M99041	371274	●
53,3	64,5	3	SPCC	42	47,3	72 NBR M99041	371275	●
60,7	73	3	SPCC	48	54,7	72 NBR M99041	371252	○

● Available from stock ○ On request: Tool is available, delivery at short notice

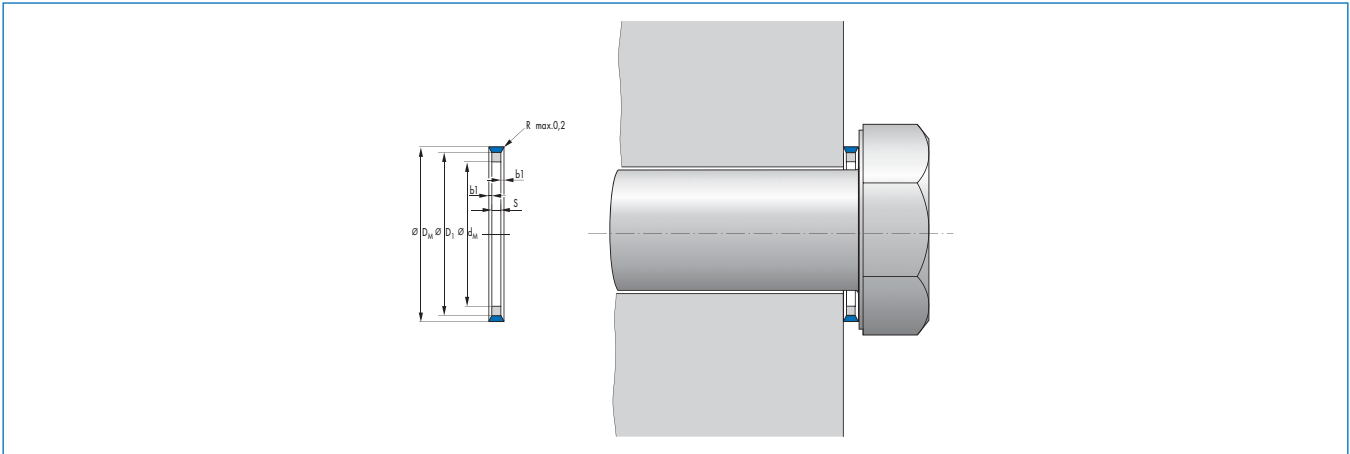
Article list USF



d_M	D_M	S	d_1	Steel	for metric threads	Material	Article No.	
3,8	6	1	3	SPCC	3	72 NBR M99041	453886	●
4,3	6	1	3,5	SPCC	3,5	72 NBR M99041	453887	●
5,4	8	1	4	SPCC	4	72 NBR M99041	453888	●
5,8	9	1	5	SPCC	5	72 NBR M99041	453889	●
7,4	10	1	6	SPCC	6	72 NBR M99041	453890	●
8,4	13	1,5	8	SPCC	8	75 FKM M99104	468543	○
10,7	16	1,5	10	SPCC	10	72 NBR M99041	459746	●
17,4	24	1,5	14	SPCC	14	75 FKM M99104	467330	○
28,7	36,5	2	25	SPCC	25	72 NBR M99041	452106	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Article list UA



d_M	D_M	S	Stahl	für metrische Gewinde	Material	Article No.	
10	16	1,5	SPCC	8	72 NBR M99041	372001	●
12	18	1,5	SPCC	10	72 NBR M99041	372003	●
12	18	1,5	SUS 304	10	72 NBR M99041	461075	●
13,3	21,6	1,5	SPCC	12	72 NBR M99041	460346	●
14,2	24	2	SPCC	14	72 NBR M99041	388328	●
16	22	1,5	SPCC	14	72 NBR M99041	372005	●
20,5	28	2	SPCC-1B	18	72 NBR M99041	461585	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Sheets and Rolls

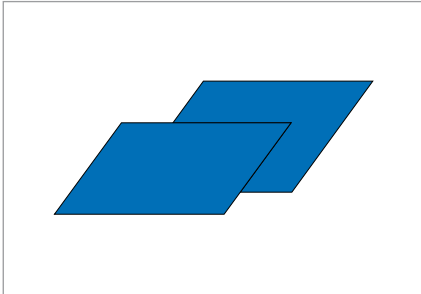


Fig. 1 Sheets and Rolls

Product description

Sheets can be manufactured as pure elastomer sheets, as fabric reinforcement, as well as PTFE layers or inserts. In the majority of cases they are further processed to flat diaphragm or other shaped parts.

Product advantages

By means of the selection of elastomer, fabric and PTFE layer, the characteristic properties of the sheets can be individually adjusted to suit the required application. The fabric sheets for the fabric reinforced sheets include various synthetic fabric types.

Materials for diaphragms → Technical Manual.

For sheets with a PTFE layer or insert, the PTFE layers are available in a thickness between 0,1 mm and 1 mm.

- Elastomer only sheets:
 - pressed smooth on both sides
 - smallest sheet thickness: 0,5 mm

Thinner sheets are possible on enquiry depending on the material.

- Sheets with fabric layer:
 - one side pressed smooth, opposite side fabric
 - smallest sheet thickness: 0,5 mm + fabric thickness

- Sheets with fabric insert
 - pressed smooth on both sides
 - smallest sheet thickness: 2 x 0,5 mm + fabric thickness
- Sheets with PTFE layer
 - one side pressed smooth, opposite side PTFE fabric
 - smallest sheet thickness: 0,5 mm + PTFE layer
- Sheets with PTFE insert
 - pressed smooth on both sides
 - smallest sheet thickness: 2 x 0,5 mm + PTFE thickness.

The surface quality of the rubber surfaces can be changed by grinding or other suitable methods. Sheets are available in other variants on enquiry.

Operating conditions

Media	depending on the material configuration
Temperature	depending on material between -50 °C and +200 °C
Sheets with fabric layer	are used for increased pressure load on one side
Sheets with fabric insert	are used if there is a raised pressure load on both sides
Sheets with PTFE layer	are used when very high chemical resistance is required, when the surface must be smooth and repel foreign substances, when low coefficients of friction are necessary
Sheets with PTFE insert	are used in special applications

Application

Parts manufactured from sheets are used in almost all sectors of industry, e. g. machine and aircraft manufacture.

Material

All current elastomeric materials are processed by Simrit. The choice depends on the related application.

Design notes

Tolerances for sheet goods

Thickness tolerance of pressed sheets

Material	Sheets 300 x 300 mm Sheets 350 x 350 mm		Sheets 500 x 500 mm Sheets 490 x 490 mm	
	without fabric	with fabric and/ or PTFE layer	without fabric	with fabric and/ or PTFE layer
NBR, SBR, CR, VMQ, FVMQ	±0,10	±0,15	±0,15	±0,20
EBDM, HNBR, FKM	±0,15	±0,20	±0,20	±0,25

Material	Sheets 200 x 200 mm	
	without fabric	with fabric and/or PTFE layer
Simriz	±0,10	not available

Thickness tolerance for continuously manufactured rolls

Thickness [mm]	Both sides smooth	One side ground	With fabric layer	With fabric insert	With PTFE layer
0,5 to 2,0	±0,15	±0,10			
>1,0 to 3,0			±0,25	±0,25	±0,25
>2,0 to 3,0	±0,20	±0,15			

Range

Manufacture and sheet dimensions

Moulded sheets can be supplied in the sizes

- 200 x 200 mm (Simriz)
- 300 x 300 mm
- 350 x 350 mm
- 490 x 490 mm
- 500 x 500 mm

available in the thickness 0,5 to 6 mm in graduations of 0,1 mm.

	Thickness [mm]
Pure elastomer sheets	0,5 – 6
Sheets with fabric layer	0,8* – 6
Sheets with fabric insert	1,2* – 6
Sheets with PTFE layer	0,8* – 6

* Minimum thickness depending on fabric and PTFE layer thickness

Manufacture of rolls

Continuous production is possible for

- Order quantities >30 m
- Roll width up to 500 mm
- Roll thickness up to 3 mm.

For Shore hardness below 50, grinding is only possible in special cases.

When sheets are ground or shot blasted, the surface quality is heavily dependent on Shore hardness and on the base material.

Sheets and Rolls are not held in stock.

Pre-Selection Packings Standard range

Results from current material research, contemporary design technology and modern manufacturing methods with certified quality assurance form the basis of the Merkel range for a clearly structured, complete standard range of packings. Environmental protection, minimisation of work place load and higher reliability are also in the foreground for packings for valves, rotary pumps, high-pressure plunger pumps etc. Improved sealing performance with as far as possible universal use and longer service life are essential aspects.

Note:

The parameters given are maximum values. They relate to the limits for the carrier materials and impregnation. The temperature operating limit can be affected by the related pressure level. The pressure/temperature ratio is, however, also largely dependent on the medium. The simultaneous occurrence of maximum loads may require load reduction measures in some circumstances.

Article No.	Code	Pressure* [bar]			Speed [m/s]		Temperature [°C]	pH value
		Rotary pumps	Plunger pumps	Valves	Rotary pumps	Plunger pumps		
4586	Ramilon	40	1000*		12,5	2	-30 ... +120	5 ... 11
6204	Arostat			200			-50 ... +250	1 ... 13
6211	Arochem II							
6215	Arolan II	25		100	26		-50 ... +280	1 ... 13
6216	Arochem S	25	250*		25	2	-50 ... +280	1 ... 13
6303	Unistat		800*	250		2	-200 ... +280	0 ... 14
6313	Unichem	15			8		-100 ... +250	0 ... 14
6323	Unival	25		250	20		-100 ... +280	0 ... 14
6375	Alchem		500*	250		2	-200 ... +280	0 ... 14
6501	Grafiflex			1000			-200 ... +550 ¹⁾ -200 ... +700 ²⁾ -200 ... +2500 ³⁾	0 ... 14
	Grafiflex Cover Seal			1000			-200 ... +550 ¹⁾ -200 ... +700 ²⁾ -200 ... +2500 ³⁾	0 ... 14
6550	Carbosteam			300			-30 ... +400 ¹⁾ -30 ... +550 ²⁾	0 ... 14
6560	G-Spezial			450			-200 ... +450 ¹⁾ -200 ... +550 ²⁾	0 ... 14
6565	G-Spezial S			450			-200 ... +450 ¹⁾ -200 ... +550 ²⁾	0 ... 14
6588	Uniflex	25			25		-50 ... +280	1 ... 13
6742	Kombilon	25			20		-100 ... +280	0 ... 14
7000	Univerdit	25*		160*	6		-30 ... +250	0 ... 14

¹⁾ the majority of media and air ²⁾ steam ³⁾ inert gas * installation with end rings

Ordering note:

Standard packings are supplied by the kilo. The content of the boxes in kg in each case is given in the dimension lists in the kg/box column. Packing can also be supplied as rings; on request.

Merkel Acrylon 6130

Product description

Merkel Acrylon is manufactured from acrylic yarn and impregnated with a special PTFE dispersion. This minimises the friction and increases the cross sectional density.

Merkel Acrylon also contains silicon oil to ensure good sliding qualities.

Product advantages

- Long service life
- High density and low frictional resistance
- Light running properties.

Application

Rotary and plunger pumps.

Operating conditions

Rotary pump

Operating pressure	Temperature	Speed	pH value
20 bar	-50 ... +150 °C	12 m/s	2 ... 12

Plunger pumps

Operating pressure	Temperature	Speed	pH value
100 bar	-50 ... +150 °C	12 m/s	2 ... 12

Media

Cold water, drinking water, salt water, warm water, aqueous solutions containing solid particles, oils, greases, solvents, foodstuffs.

Article list

mm	inch	g/m	m/kg	kg/carton
3	1/8	12	85,5	1
4		20	50	1
	3/16	29	34,7	1
5		31	32	1
6		45	22,2	1
	1/4	51	19,5	2
8		80	12,5	2
9,53	3/8	113	8,9	2
10		125	8	2
12		180	5,6	3
12,7	1/2	202	5	3
14	9/16	245	4,1	3
15		281	3,6	3
16	5/8	320	3,1	3
18		405	2,5	3
19	3/4	451	2,2	3
20		500	2	5
22	7/8	605	1,7	5
25	1	750	1,3	10

Merkel Alchem 6375

Product description

Merkel Alchem is made from pure PTFE yarns and is additionally impregnated with PTFE. This guarantees excellent chemical resistance. The high cross sectional density and the tight braid structure ensure a very good sealing behaviour. The packing has a good form stability and a low shrinkage behaviour. Alchem is thus also well suited for plunger pumps.

A special type, Merkel Alchem ST, is available for gaseous oxygen, drinking water and for the food processing industry.

Product advantages

- Very low leak rates
- Very low shrinkage behaviour
- No danger of colour contamination.

Application

Plunger pumps, valves.

Operating conditions

Plunger pumps

Operating pressure	Temperature	Speed	pH value
500 bar*	-200 ... +280 °C	2 m/s	0 ... 14

* installation with end rings

Valves

Operating pressure	Temperature	pH value
250 bar	-200 ... +280 °C	0 ... 14

Media

All chemicals including concentrated hot acids and alkalis.

Exceptions: molten alkali metals, fluorine and some fluorine compounds.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		16	63,5	1	PT BRSPR-	24107749	○
4	5/32	28	35,7	1	PT BRSPR-	24107750	○
5	1/8	44	22,9	1	PT BRSPR-	24107751	○
6	15/64	63	15,9	1	PT BRSPR-	24107752	○
6,35	1/4	71	14,2	1	PT BRSPR-	24115712	○
7		86	11,7	2	PT BRSPR-	24115189	○
8	5/16	112	8,9	2	PT BRSPR-	24107753	○
9		142	7,1	2	PT BRSPR-	24117945	○
9,53	3/8	159	6,3	2	PT BRSPR-	24117570	○
10		175	5,7	2	PT BRSPR-	24107754	○
11	7/16	212	4,7	3	PT BRSPR-	24190337	○
12		252	4	3	PT BRSPR-	24107755	○
12,7	1/2	282	3,5	3	PT BRSPR-	24107756	○
14	9/16	343	2,9	3	PT BRSPR-	24116248	○
15		394	2,5	3	PT BRSPR-	24116340	○
16	5/8	448	2,2	3	PT BRSPR-	24107757	○
18		567	1,8	3	PT BRSPR-	24117869	○
19	3/4	632	1,6	3	PT BRSPR-	24192581	○
20		700	1,4	5	PT BRSPR-	24115579	○
22	7/8	847	1,2	5	PT BRSPR-	24115580	○
24		1008	1	5	PT BRSPR-	24234789	○
25	1	1094	0,9	10	PT BRSPR-	24121883	○
30		1575	0,6	10	PT BRSPR-	24122771	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Alchem ST 6377

Product description

Merkel Alchem ST is manufactured from pure PTFE yarns that guarantee an exceptional chemical resistance. The high density and tight braid structure of the packing ensures a good leakage behaviour. Merkel Alchem ST is suitable for all chemical applications and has approval for the use with gaseous oxygen. The material was analysed by the BAM (Bundesanstalt für Materialprüfung - German Federal Institute for Material Testing) and can be used in valves up to the following parameters without consideration. Maximum temperature up to 60 °C and maximum oxygen pressure up to 25 bar. The material is also suitable for contact with foodstuffs. Testing through FMPA (Forschungs- und Materialprüfanstalt Baden-Württemberg, Stuttgart - Research and Testing Institute Baden-Württemberg, Stuttgart).

Product advantages

- High chemical resistance
- Good leakage behaviour.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
250 bar	-200 ... +280 °C	0 ... 14

Media

All chemicals including concentrated hot acids and alkalis.

Exceptions: molten alkali metals, fluorine and some fluorine compounds.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		16	63,5	1		49017946	<input type="radio"/>
4	5/32	28	35,7	1	PTGR	24111114	<input type="radio"/>
5	1/8	44	22,9	1	PTGR	24116068	<input type="radio"/>
6	15/64	63	15,9	1	PTGR	24116067	<input type="radio"/>
7		86	11,7	2		526687	<input type="radio"/>
8	5/16	112	8,9	2	PTGR	24116069	<input type="radio"/>
10		175	5,7	2	PTGR	24115316	<input type="radio"/>
12		252	4	3	PTGR	24116376	<input type="radio"/>
14	9/16	343	2,9	3	PTGR	24139484	<input type="radio"/>
15		394	2,5	3	PTGR	24265121	<input type="radio"/>
16	5/8	448	2,2	3	PTGR	24121419	<input type="radio"/>
18		567	1,8	3	PTGR	24333999	<input type="radio"/>
20		700	1,4	5	PTGR	24110945	<input type="radio"/>
22	7/8	847	1,2	5	PTGR	24122311	<input type="radio"/>
25	1	1094	0,9	10	PTGR	24135147	<input type="radio"/>
30		1575	0,6	10	PTGR	24314430	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Aquastar Hell 4315

Product description

Made from fine DIAPLEX® cotton thread braided rotary pump packing impregnated with a universally resistant mineral grease.

For all simple rotary applications with drinking water, sea water and lightly acidic and alkaline sewage.

Product advantages

- Cost-effective for simple applications
- Prevents overheating during critical running-in phase
- Protects the shaft.

Application

Rotary pumps.

Operating conditions

Operating pressure	Temperature	Speed	pH value
16 bar	-30 ... +100 °C	6 m/s	6 ... 9

Media

Cold and warm water, air, etc.

Article list

mm	inch	g/m	m/kg	kg/box	Article No.	
3		9	105,8	1	49054334	<input type="radio"/>
4		17	59,5	1	24110955	<input type="radio"/>
5	1/8	26	38,1	1	24124147	<input type="radio"/>
6		38	26,5	1	24110954	<input type="radio"/>
6,35	1/4	42	23,6	1	24126289	<input type="radio"/>
7		51	19,4	2	49054335	<input type="radio"/>
8	5/16	67	14,9	2	24114707	<input type="radio"/>
9,53	3/8	95	10,5	2	528806	<input type="radio"/>
10		105	9,5	2	49007463	<input type="radio"/>
11		127	7,9	3	24197544	<input type="radio"/>
12		151	6,6	3	24114708	<input type="radio"/>
12,7	1/2	169	5,9	3	24126240	<input type="radio"/>
14	9/16	206	4,9	3	24120013	<input type="radio"/>
16	5/8	269	3,7	3	49007185	<input type="radio"/>
19	3/4	379	2,6	3	24189000	<input type="radio"/>
20		420	2,4	5	24117968	<input type="radio"/>
22	7/8	508	2	5	24120684	<input type="radio"/>
24		605	1,7	5	49054336	<input type="radio"/>
25	1	656	1,5	10	24122764	<input type="radio"/>
30		945	1,1	10	49054337	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Arochem 6212

Product description

Merkel Arochem is the graphite-free version of our aramide/PTFE combination braid with good gliding PTFE silk on the contact area and high-strength aramide yarn on the edges.

The good sliding properties of the PTFE, the high tensile strength and the extremely low tendency towards gap extrusion of the stabile aramide yarns are the basis for successful use in plunger pumps. Arochem has also established itself for the sealing of mixers, kneaders and soot blowers. The normal chambering of PTFE silk packings at high pressures and limit temperatures is not applicable. Due to the good chemical resistance of the PTFE silk and the aramide yarns, this yellow/white packing has a wide range of application.

Product advantages

- Stabilised packing with long service life
- Protects the shaft
- No possible discoloration of the medium.

Application

All water pump applications.

Operating conditions

Operating pressure	Temperature	Speed	pH value
500 bar	-50 ... +280 °C	2 m/s	2 ... 13

Media

Cold and hot water, steam, organic solvents and chemical materials, oils, greases, diluted acids and alkalis.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
5	1/8	35	29	1	AMPT DI1SPR	24194102	○
6	15/64	50	20,1	1	AMPT DI1SPR	24195255	○
6,35	1/4	56	18	1	AMPT DI1SPR	24194967	○
7		68	14,8	2	AMPT DI1SPR	49054340	○
8	5/16	88	11,3	2	AMPT DI1SPR	24193782	○
9,53	3/8	125	8	2	AMPT DI1SPR	24194969	○
10		138	7,2	2	AMPT DI1SPR	24193783	○
12		199	5	3	AMPT DI1SPR	24192058	○
12,7	1/2	223	4,5	3	AMPT DI1SPR	24194972	○
14	9/16	270	3,7	3	AMPT DI1SPR	24193332	○
15		311	3,2	3	AMPT DI1SPR	24339561	○
16	5/8	353	2,8	3	AMPT DI1SPR	24193379	○
19	3/4	498	2	3	AMPT DI1SPR	24208701	○
20		552	1,8	5	AMPT DI1SPR	24193309	○
22	7/8	668	1,5	5	AMPT DI1SPR	24193310	○
24		795	1,3	5	AMPT DI1SPR	24240664	○
25	1	863	1,2	10	AMPT DI1SPR	24195258	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Arochem II 6211

Product description

Merkel Arochem II combination braid consists of aramide and PTFE graphite compound yarn. The DIAPLEX® braiding makes this packing especially stable. Merkel Arochem II is particularly suitable for the sealing of plungers and low speed shafts. The graphite-filled PTFE yarn on the contact area has very good sliding properties and protects the plunger or shaft surface. The stable braided aramide yarn at the packing edges protects against gap extrusion and ensures a long service life. Merkel Arochem II is thus especially suitable for difficult sealing cases such as bridging large gaps and with abrasive media. In high pressure plunger pumps in end ring installation with pretensioned packing sets especially long service life with constant sealing effect is achieved.

Product advantages

- Low frictional heat
- Protects the shaft
- Resistant to abrasive media particles.

Application

Pumps.

Operating conditions

Operating pressure	Temperature	Speed	pH value
500 bar*	-50 ... +280 °C	2 m/s	1 ... 13

* installation with end rings

Media

Cold and hot water, organic solvents and chemical materials, oils, greases, diluted acids and alkalis.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
5	1/8	35	28,6	1	AMPT	24221129	<input type="radio"/>
6	15/64	50	19,8	1	AMPT	24172914	<input type="radio"/>
6,35	1/4	56	17,7	1	AMPT	24231386	<input type="radio"/>
8	5/16	90	11,2	2	AMPT	24199446	<input type="radio"/>
9		113	8,8	2	AMPT	49054339	<input type="radio"/>
9,53	3/8	127	7,9	2	AMPT	24224147	<input type="radio"/>
10		140	7,1	2	AMPT	24182169	<input type="radio"/>
11	7/16	169	5,9	3	AMPT	24199679	<input type="radio"/>
12		202	5	3	AMPT	24199680	<input type="radio"/>
12,7	1/2	226	4,4	3	AMPT	24248392	<input type="radio"/>
14	9/16	274	3,6	3	AMPT	24235239	<input type="radio"/>
15		315	3,2	3	AMPT	24258461	<input type="radio"/>
16	5/8	358	2,8	3	AMPT	24199447	<input type="radio"/>
18		454	2,2	3	AMPT	24235240	<input type="radio"/>
20		560	1,8	5	AMPT	24235241	<input type="radio"/>
22	7/8	678	1,5	5	AMPT	24231940	<input type="radio"/>
24		806	1,2	5	AMPT	24243942	<input type="radio"/>
25	1	875	1,1	10	AMPT	24242722	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Arochem S 6216

Product description

Merkel Arochem S combines the advantages of two highly developed yarn materials for the sealing of high-speed shafts.

The special running properties of thermally-resistant PTFE-graphite compound yarns guarantees shaft protection and allows for brief dry running without damage. The wear-resistant aramide yarn edges prevent extrusion and protects against abrasive media. Merkel Arochem S contains a universally stable silicone-free running-in lubricant. This ensures sufficient lubrication during the critical running-in phase.

Product advantages

- Smooth sliding, low friction
- Prevents extrusion, extremely wear-resistant
- Ideally suited for high pressures, no extruding into the sealing gap.

Application

Rotary pump, plunger pumps.

Operating conditions

Rotary pump

Operating pressure	Temperature	Speed	pH value
25 bar	-50 ... +280 °C	25 m/s	1 ... 13

Plunger pumps

Operating pressure	Temperature	Speed	pH value
250 bar*	-50 ... +280 °C	2 m/s	1 ... 13

* installation with end rings

Media

Hot water, salt solutions, alkalis, organic solvents, hydro-carbons, medium concentration acids.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
5	1/8	38	26,7	1	AMPT BRPE-1	24258231	<input type="radio"/>
6	15/64	54	18,5	1	AMPT BRPE-1	24233069	<input type="radio"/>
6,35	1/4	60	16,5	1	AMPT BRPE-1	24251376	<input type="radio"/>
7		74	13,6	2	AMPT BRPE-1	24294237	<input type="radio"/>
8	5/16	96	10,4	2	AMPT BRPE-1	24232488	<input type="radio"/>
9		122	8,2	2	AMPT BRPE-1	24294238	<input type="radio"/>
9,53	3/8	136	7,3	2	AMPT BRPE-1	24242764	<input type="radio"/>
10		150	6,7	2	AMPT BRPE-1	24232489	<input type="radio"/>
11,11	7/16	182	5,5	3	AMPT BRPE-1	24263151	<input type="radio"/>
12		216	4,6	3	AMPT BRPE-1	24232490	<input type="radio"/>
12,7	1/2	242	4,1	3	AMPT BRPE-1	24237883	<input type="radio"/>
14	9/16	294	3,4	3	AMPT BRPE-1	24233070	<input type="radio"/>
15		338	3	3	AMPT BRPE-1	24234711	<input type="radio"/>
16	5/8	384	2,6	3	AMPT BRPE-1	24233071	<input type="radio"/>
18		486	2,1	3	AMPT BRPE-1	24239422	<input type="radio"/>
19	3/4	542	1,8	3	AMPT BRPE-1	24242763	<input type="radio"/>
20		600	1,7	5	AMPT BRPE-1	24232491	<input type="radio"/>
22	7/8	726	1,4	5	AMPT BRPE-1	24250804	<input type="radio"/>
24		864	1,2	5	AMPT BRPE-1	24260239	<input type="radio"/>
25	1	938	1,1	10	AMPT BRPE-1	24232492	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Aroflex 6226

Product description

Merkel Aroflex is a grease-impregnated pump packing. Light running properties and stability at high temperatures ensure a high performance and long service life.

The impregnation of the tear-resistant aramide-based yarn with a sealed grease/graphite impregnation guarantees a high running property of this packing. The high melting point of the impregnation protects the packing against bleeding and makes Merkel Aroflex a reliable packing at high temperatures.

Product advantages

- Very good sealing against abrasive media
- Good cross sectional density and low friction
- No loss of volume at high temperatures.

Application

Rotary pumps.

Operating conditions

Operating pressure	Temperature	Speed	pH value
16 bar	-10 ... +150 °C	10 m/s	2 ... 13

Media

Cold and hot water, slop, contaminated water with dirt, thread and cloth particles, sugared water, molasses, salt solutions, diluted acids and alkalis.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
4	5/32	17	59,5	1	AST BR617-	24299255	<input type="radio"/>
5	1/8	26	38,1	1	AST BR617-	24261997	<input type="radio"/>
6	15/64	38	26,5	1	AST BR617-	24226693	<input type="radio"/>
8	5/16	67	14,9	2	AST BR617-	24226694	<input type="radio"/>
9		85	11,8	2	AST BR617-	49007484	<input type="radio"/>
9,53	3/8	95	10,5	2	AST BR617-	24336183	<input type="radio"/>
10		105	9,5	2	AST BR617-	24226695	<input type="radio"/>
12		151	6,6	3	AST BR617-	24226696	<input type="radio"/>
12,7	1/2	169	5,9	3	AST BR617-	24266778	<input type="radio"/>
14	9/16	206	4,9	3	AST BR617-	24226697	<input type="radio"/>
15		236	4,2	3	AST BR617-	24230212	<input type="radio"/>
16	5/8	269	3,7	3	AST BR617-	24226698	<input type="radio"/>
18		340	2,9	3	AST BR617-	24297843	<input type="radio"/>
19	3/4	379	2,6	3	AST BR617-	24291247	<input type="radio"/>
20		420	2,4	5	AST BR617-	24226699	<input type="radio"/>
22	7/8	508	2	5	AST BR617-	24299254	<input type="radio"/>
25	1	656	1,5	10	AST BR617-	24226700	<input type="radio"/>
30		945	1,1	10	AST BR617-	24265294	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Arolan 6210

Product description

Merkel Arolan made from highly wear-resistant aramide yarn has already proven itself in the most diverse applications. Especially where hardening, crystallising or abrasive media can have a damaging effect on the packing, Arolan offers a long-lasting resistance. Proven application areas are refiners, material, juice and mud pumps, but also plunger pumps, paddle dryers and agitators.

A strong adhesion of the PTFE to the smooth yarn is achieved by a special pre-treatment process. PTFE optimises the sliding properties and closes the creep paths in the braid, the adhesion of the yarns to each other is improved. A physiologically harmless running-in lubricant supports the sealing effect at low gland packing tension.

Product advantages

- Very long service life, even with very abrasive media
- Easy handling
- Easy running properties
- Ideal for application with shaft deflection.

Application

Rotary and plunger pumps.

Operating conditions

Rotary pumps

Operating pressure	Temperature	Speed	pH value
25 bar	-50 ... +280 °C	26 m/s	1 ... 13

Plunger pumps

Operating pressure	Temperature	Speed	pH value
200 bar	-50 ... +280 °C	2 m/s	1 ... 13

Media

Cold and hot water, salt solutions, organic solvents, hydro-carbons, oils, greases, diluted acids and alkalis, steam up to 180 °C.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		12	85,5	1	AM BRSPR-	24144638	<input type="radio"/>
4	5/32	21	48,1	1	AM BRSPR-	24186914	<input type="radio"/>
5	1/8	33	30,8	1	AM BRSPR-	24138655	<input type="radio"/>
6	15/64	47	21,4	1	AM BRSPR-	24132013	<input type="radio"/>
6,35	1/4	52	19,1	1	AM BRSPR-	24146095	<input type="radio"/>
7		64	15,7	2	AM BRSPR-	24208084	<input type="radio"/>
8	5/16	83	12	2	AM BRSPR-	24132014	<input type="radio"/>
9		105	9,5	2	AM BRSPR-	24376144	<input type="radio"/>
9,53	3/8	118	8,5	2	AM BRSPR-	24146094	<input type="radio"/>
10		130	7,7	2	AM BRSPR-	24132015	<input type="radio"/>
11	7/16	157	6,4	3	AM BRSPR-	24142267	<input type="radio"/>
12		187	5,3	3	AM BRSPR-	24134416	<input type="radio"/>
12,7	1/2	210	4,8	3	AM BRSPR-	24146093	<input type="radio"/>
14	9/16	255	3,9	3	AM BRSPR-	24137179	<input type="radio"/>
15		293	3,4	3	AM BRSPR-	24135593	<input type="radio"/>
16	5/8	333	3	3	AM BRSPR-	24132141	<input type="radio"/>
18		421	2,4	3	AM BRSPR-	24149493	<input type="radio"/>
19	3/4	469	2,1	3	AM BRSPR-	24140184	<input type="radio"/>
20		520	1,9	5	AM BRSPR-	24134382	<input type="radio"/>
22	7/8	629	1,6	5	AM BRSPR-	24177314	<input type="radio"/>
24		749	1,3	5	AM BRSPR-	528293	<input type="radio"/>
25	1	813	1,2	10	AM BRSPR-	24142223	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Arolan II 6215

Product description

Merkel Arolan II consists of highly wear-resistant aramide yarn as well as a special PTFE impregnation and a universally stable running-in lubricant. The high wear resistance paired with a wide thermal and chemical operating range makes Merkel Arolan II a universal packing for many branches of industry.

Product advantages

- For sealing of abrasive media
- Very long service life
- Ideal for application with shaft deflection.

Application

Rotary pumps, valves.

Operating conditions

Rotary pump

Operating pressure	Temperature	Speed	pH value
25 bar	-50 ... +280 °C	26 m/s	1 ... 13

Valves

Operating pressure	Temperature	pH value
100 bar	-50 ... +280 °C	1 ... 13

Media

Cold and hot water, salt solutions, organic solvents, hydro-carbons, oils, greases, diluted acids and alkalis.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		12	84,2	1	AMST BR618-	24195260	○
4	5/32	21	47,3	1	AMST BR618-	24181505	○
5	1/8	33	30,3	1	AMST BR618-	24181506	○
6	15/64	48	21	1	AMST BR618-	24172093	○
6,35	1/4	53	18,8	1	AMST BR618-	24180316	○
7		65	15,5	2	AMST BR618-	24185892	○
8	5/16	84	11,8	2	AMST BR618-	24175041	○
9		107	9,4	2	AMST BR618-	24194109	○
9,53	3/8	120	8,3	2	AMST BR618-	24175049	○
10		132	7,6	2	AMST BR618-	24177176	○
11	7/16	160	6,3	3	AMST BR618-	24191488	○
12		190	5,3	3	AMST BR618-	24175522	○
12,7	1/2	213	4,7	3	AMST BR618-	24175051	○
14	9/16	259	3,9	3	AMST BR618-	24170381	○
15		297	3,4	3	AMST BR618-	24175638	○
16	5/8	338	3	3	AMST BR618-	24181718	○
18		428	2,3	3	AMST BR618-	24180328	○
19	3/4	477	2,1	3	AMST BR618-	24178406	○
20		528	1,9	5	AMST BR618-	24174987	○
22	7/8	639	1,6	5	AMST BR618-	24188238	○
24		760	1,3	5	AMST BR618-	24233373	○
25	1	825	1,2	10	AMST BR618-	24181719	○
30		1188	0,8	10	AMST BR618-	24175005	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Arostat 6204

Product description

Merkel Arostat is manufactured from a wear-resistant and flexible aramide yarn. The packing has a multi-stage PTFE impregnation.

This results in a very tight and elastic structure which makes Merkel Arostat ideal for static covers and housing seals.

Product advantages

- Resistance even against very abrasive media
- High cross sectional density and low leakage
- Low maintenance.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
200 bar	-50 ... +250 °C	1 ... 13

Media

Cold and hot water, steam up to 180 °C, salt solutions, organic solvents, hydro-carbons, oils, greases, diluted acids and alkalis.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		10	101	1	AST BR618-	24246907	○
4	5/32	18	56,8	1	AST BR618-	24216841	○
5	1/8	28	36,4	1	AST BR618-	24198908	○
6	15/64	40	25,3	1	AST BR618-	24198907	○
6,35	1/4	44	22,5	1	AST BR618-	24353539	○
7		54	18,6	2	AST BR618-	24302201	○
8	5/16	70	14,2	2	AST BR618-	24198906	○
9		89	11,2	2	AST BR618-	24335330	○
10		110	9,1	2	AST BR618-	24198042	○
12		158	6,3	3	AST BR618-	24291198	○
12,7	1/2	177	5,6	3	AST BR618-	24353564	○
14	9/16	216	4,6	3	AST BR618-	24224826	○
15		248	4	3	AST BR618-	24233204	○
16	5/8	282	3,6	3	AST BR618-	24199444	○
18		356	2,8	3	AST BR618-	24291163	○
19	3/4	397	2,5	3	AST BR618-	24262740	○
20		440	2,3	5	AST BR618-	24250751	○
22	7/8	532	1,9	5	AST BR618-	24261064	○
24		634	1,6	5	AST BR618-	49054338	○
25	1	688	1,5	10	AST BR618-	24232513	○
30		990	1	10	AST BR618-	24327547	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Carboflex 6587

Product description

Merkel Carboflex behaves with good volume stability and almost universal chemical resistance. The low elongation coefficient, a small friction value and the ability to overcome the critical running-in phase prevents sudden, uncontrolled production of heat at high sliding speeds. The impregnation selected to suit the carbon fibres as well as the specially selected lubricant benefits the running-in process.

Product advantages

- Good chemical resistance
- Good heat dissipation
- Low friction.

Application

Pumps.

Operating conditions

Operating pressure	Temperature	Speed	pH value
25 bar	-60 ... +300 °C	25 m/s	0 ... 14

Media

Acids, alkalis, hydro-carbon, boiler feed water, gases, steam, etc.

Exceptions: strongly oxidising salt solutions, concentrated sulphuric acid, nitric acid.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
6	15/64	49	20,6	1	CA BR621-	24183632	<input type="radio"/>
8	5/16	86	11,6	2	CA BR621-	24195275	<input type="radio"/>
9,5	3/8	123	8,2	2	CA BR621-	529376	<input type="radio"/>
10		135	7,4	2	CA BR621-	24149151	<input type="radio"/>
12		194	5,1	3	CA BR621-	24182525	<input type="radio"/>
12,7	1/2	218	4,6	3	CA BR621-	24149869	<input type="radio"/>
14	9/16	265	3,8	3	CA BR621-	24195271	<input type="radio"/>
15		304	3,3	3	CA BR621-	24377979	<input type="radio"/>
16	5/8	346	2,9	3	CA BR621-	24195272	<input type="radio"/>
18		437	2,3	3	CA BR621-	24367033	<input type="radio"/>
19	3/4	487	2,1	3	CA BR621-	24182526	<input type="radio"/>
20		540	1,9	5	CA BR621-	24188842	<input type="radio"/>
25	1	844	1,2	10	CA BR621-	24370376	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Carbosteam® 6550

Product description

Merkel Carbosteam is braided from flexible carbon yarns with a special graphite impregnation. Due to its excellent temperature stability, the packing is especially used in high-temperature steam applications.

Due to its high pressure and extrusion resistance, Merkel Carbosteam is ideal as end ring in conjunction with Grafiflex.

Product advantages

- Very high temperature resistance
- Low friction, long service life
- Suitable as extrusion protection and wiper in combination with Merkel Graffiflex and Merkel G-Spezial.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
300 bar	-30 ... +400 °C ¹⁾	0 ... 14
	-30 ... +550 °C ²⁾	

¹⁾ the majority of media and air

²⁾ steam

Media

Hot water, steam, acids and alkalis.

Exceptions: strongly oxidising acids such as hot sulphuric and nitric acid.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		10	101	1	CA BR627-	24199354	<input type="radio"/>
4	5/32	18	56,8	1	CA BR627-	24196161	<input type="radio"/>
5	1/8	28	36,4	1	CA BR627-	24191670	<input type="radio"/>
6	15/64	40	25,3	1	CA BR627-	24196568	<input type="radio"/>
6,35	1/4	44	22,5	1	CA BR627-	24199357	<input type="radio"/>
7		54	18,6	2	CA BR627-	24199358	<input type="radio"/>
8	5/16	70	14,2	2	CA BR627-	24191671	<input type="radio"/>
9		89	11,2	2	CA BR627-	24258233	<input type="radio"/>
9,53	3/8	100	10	2	CA BR627-	24199361	<input type="radio"/>
10		110	9,1	2	CA BR627-	24191672	<input type="radio"/>
11	7/16	133	7,5	3	CA BR627-	24290114	<input type="radio"/>
12		158	6,3	3	CA BR627-	24190391	<input type="radio"/>
12,7	1/2	177	5,6	3	CA BR627-	24199363	<input type="radio"/>
14	9/16	216	4,6	3	CA BR627-	24197176	<input type="radio"/>
15		248	4	3	CA BR627-	24216138	<input type="radio"/>
16	5/8	282	3,6	3	CA BR627-	24195492	<input type="radio"/>
18		356	2,8	3	CA BR627-	24199366	<input type="radio"/>
19	3/4	397	2,5	3	CA BR627-	24315375	<input type="radio"/>
20		440	2,3	5	CA BR627-	24199368	<input type="radio"/>
22	7/8	532	1,9	5	CA BR627-	24290307	<input type="radio"/>
24		634	1,6	5	CA BR627-	24328260	<input type="radio"/>
25	1	688	1,5	10	CA BR627-	24199373	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Carbosteam® S 6555

Product description

Merkel Carbosteam S consists of a flexible graphite core with a wear-resistant carbon yarn jacket. Besides the good elasticity and large cross sectional density, this packing has a continuous volume stability. The jacket is sealed and heat-resistant. The graphite-filled impregnation facilitates fitting and the sliding behaviour on the spindle is optimised.

The content of soluble chloride for this packing is below 50 ppm.

Merkel Carbosteam S is used in particular in power generation and is used in all industries where high temperatures and aggressive media are used.

Product advantages

- High temperature resistant and good heat dissipation
- Low leakage
- Can be used as end ring for extrusion protection and as wiper with Merkel Grafiflex or Merkel G-Spezial.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
300 bar	-30 ... +400 °C ¹⁾	0 ... 14
	-30 ... +550 °C ²⁾	

¹⁾ the majority of media and air

²⁾ steam

Media

Hot water, steam, gases, oils, solvents, acids and alkalis.

Exceptions: strongly oxidising acids such as hot sulphuric and nitric acid.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
5	1/8	28	36,4	1	CA DI627-	24308013	<input type="radio"/>
6	15/64	40	25,3	1	CA DI627-	24300900	<input type="radio"/>
6,35	1/4	44	22,5	1	CA DI627-	24308916	<input type="radio"/>
7		54	18,6	2	CA DI627-	24308917	<input type="radio"/>
8	5/16	70	14,2	2	CA DI627-	24300901	<input type="radio"/>
9		89	11,2	2	CA DI627-	24308919	<input type="radio"/>
9,53	3/8	100	10	2	CA DI627-	24308920	<input type="radio"/>
10		110	9,1	2	CA DI627-	24300902	<input type="radio"/>
11	7/16	133	7,5	3	CA DI627-	24312692	<input type="radio"/>
12		158	6,3	3	CA DI627-	24300903	<input type="radio"/>
12,7	1/2	177	5,6	3	CA DI627-	24308752	<input type="radio"/>
14	9/16	216	4,6	3	CA DI627-	24308012	<input type="radio"/>
15		248	4	3	CA DI627-	24308922	<input type="radio"/>
16	5/8	282	3,6	3	CA DI627-	24308014	<input type="radio"/>
18		356	2,8	3	CA DI627-	24308015	<input type="radio"/>
19	3/4	397	2,5	3	CA DI627-	24311826	<input type="radio"/>
20		440	2,3	5	CA DI627-	24308924	<input type="radio"/>
22	7/8	532	1,9	5	CA DI627-	24370429	<input type="radio"/>
25	1	688	1,5	10	CA DI627-	49005117	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Cerampack 6450

Product description

Merkel Cerampack is a glass fibre packing with a special graphite impregnation. It is particularly suitable for static sealing in high-temperature applications. The graphite impregnation increases the cross-sectional density and improves the elasticity.

Typical operating conditions are for the sealing of boilers, oven doors, flaps and covers. The packing is also suitable for the thermal isolation of piping.

Product advantages

- Very low leakage values
- Prevents overheating during critical running-in phase
- Excellent sealing behaviour, especially with low-pressure valves.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
10 bar	-50 ... +550 °C	5 ... 9

Media

Water, steam, oil, neutral and dry gases.

Article list

mm	inch	g/m	m/kg	kg/carton
3	1/8	12	85,47	1
4		21	48,08	1
5	3/16	33	30,77	1
6		47	23,15	1
	1/4	52	20,67	1
8	5/16	83	13,02	2
	3/8	117	9,23	2
10		130	8,33	2
12		187	5,79	3
	1/2	210	5,17	3
14	9/16	255	4,25	3
15		293	3,7	3
16	5/8	333	3,26	3
18		421	2,57	3
19	3/4	469	2,31	3
20		520	2,08	5
22	7/8	629	1,72	5
25	1	813	1,33	10

Merkel Cerampack HT 6451

Product description

Merkel Cerampack HT is a glass fibre packing with a cross-sectionally sealed PTFE impregnation. It is particularly suitable for static sealing of covers, doors or housings. The packing is also suitable for valve applications.

Product advantages

- Very high sealing effect
- Good spring back
- Good media resistance.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
100 bar	-50 ... +280 °C	2 ... 12

Media

Water, steam, oil, neutral and dry gases.

Article list

mm	inch	g/m	m/kg	kg/carton
3	1/8	14	71,4	1
4		24	41,2	1
5	3/16	38	26,3	1
6		54	18,5	1
	1/4	61	16,3	1
8	5/16	96	10,4	2
	3/8	136	7,4	2
10		150	6,7	2
12		216	4,6	3
	1/2	242	4,1	3
14	9/16	294	3,4	3
15		338	3	3
16	5/8	384	2,6	3
18		486	2,1	3
19	3/4	542	1,8	3
20		600	1,7	5
22	7/8	726	1,4	5
25	1	938	1,1	10

Merkel Endless Packing Rings

Product description

Simrit manufactures endless packing rings in a whole variety of materials and dimensions.

The sealing rings consist of a concentric hose braid and an optional elastomer core.

The elastomer core guarantees a constant sealing force over the entire service life. This is ideal for static cover seals with a high number of open/close cycles. The outer braid provides good wear protection and protects against attacks by chemicals.

Endless packing rings can also be used for many applications with minor active movements.

Various yarn, core and impregnation combinations offer the ideal seal for a whole variety of applications.

Product advantages

- Low leakage
- Increased elasticity and spring back
- Good chemical resistance.

Application

Cover and housing seals, tank covers, manholes, filters, dryers, chemical mixer housings, rotary valves, rotary furnaces.

Material

Yarn	Yarn or elastomer core	Impregnation
Ramie, aramide, PTFE, PTFE/ graphite compounds, carbon	NR, EPDM, MVQ	PTFE, graphite

Operating conditions

Operating pressure	Temperature	Speed	pH value
10 bar*	-30 ... +550 °C*	2 m/s*	0 ... 14*

* depending on material combination

Merkel Flexalon 6250

Product description

Merkel Flexalon is a universal packing for the paper industry. But it is also suitable for the foodstuff industry, chemical and sewage treatment plants. Besides being used for rotary pumps, the packing can also be used in for mixers, kneaders, and refiners.

Merkel Flexalon is manufactured from a white, elastic synthetic yarn based on Meta Aramide. The packing thus offers a good resistance to abrasive media in contrast to PTFE products. But in comparison to Para Aramide packings, Merkel Flexalon protects the shaft significantly more.

The leakage is minimised through a high density and flexible braid structure. The silicone-free running-in lubricant ensures a trouble-free running-in. The white yarn and the impregnation prevents a colour contamination of the medium.

The Fraunhofer Institute for Process Technology and Packaging in Freising has certified the packing for use in food processing machines as per FDA US 21 CFR 170.3 (i) and Article 3 of the EU Regulation 1935/2004.

Product advantages

- Extrusion-resistant but protects the shaft
- Low maintenance
- Low leakage.

Application

Rotary pumps.

Operating conditions

Operating pressure	Temperature	Speed	pH value
25 bar	-50 ... +250 °C	25 m/s	1 ... 13

Media

Cold and hot water, salt solutions, organic solvents, hydro-carbons, oils, greases, diluted acids and alkalis, steam up to 180 °C.

Article list

mm	inch	g/m	m/kg	kg/box	Article No.	
3		12	82,3	1	49007606	○
4	5/32	22	46,3	1	49007607	○
5	1/8	34	29,6	1	533642	○
6	15/64	49	20,6	1	533643	○
6,35	1/4	54	18,4	1	49007608	○
7		66	15,1	2	49007609	○
8	5/16	86	11,6	2	533644	○
9		109	9,1	2	49007610	○
9,53	3/8	123	8,2	2	49007623	○
10		135	7,4	2	533645	○
11	7/16	163	6,1	3	49007631	○
12		194	5,1	3	533646	○
12,7	1/2	218	4,6	3	49007635	○
14	9/16	265	3,8	3	533647	○
16	5/8	346	2,9	3	533648	○
18		437	2,3	3	533649	○
19	3/4	487	2,1	3	49054442	○
20		540	1,9	5	533650	○
22	7/8	653	1,5	5	49007633	○
24		778	1,3	5	49007632	○
25	1	844	1,2	10	533651	○
30		1215	0,8	10	49054443	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Grafolan 6575

Product description

Merkel Grafolan consists of graphite yarn which is created through an energy-intensive thermal transformation process. It features high chemical resistance and temperature stability. An added lubricant ensures good running-in behaviour at all speeds. Merkel Grafolan is used in many areas of chemistry – in pumps, agitators and paddle dryers – as well as in feed water pumps for energy production. Compression-moulded rings from Merkel Grafolan 6576 (without additional lubricant) are supplied.

Product advantages

- High temperature resistant
- Also seals for slight shaft deflection
- Good heat dissipation.

Application

Rotary pumps, valves.

Operating conditions

Rotary pumps

Operating pressure	Temperature	Speed	pH value
300 bar	-60 ... +300 °C	25 m/s	0 ... 14

Valves

Operating pressure	Temperature	pH value
320 bar	-60 ... +300 °C	0 ... 14

Media

Acids, alkalis, hydro-carbon, boiler feed water, gases, steam, etc.

Exceptions: strongly oxidising salt solutions, concentrated sulphuric acid, nitric acid.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
4	5/32	21	48,1	1	GR BRSPR-	24119697	○
5	1/8	33	30,8	1	GR BRSPR-	24116375	○
6	15/64	47	21,4	1	GR BRSPR-	24107758	○
6,35	1/4	52	19,1	1	GR BRSPR-	24315127	○
7		64	15,7	2	GR BRSPR-	24117806	○
8	5/16	83	12	2	GR BRSPR-	24107759	○
9		105	9,5	2	GR BRSPR-	24130389	○
10		130	7,7	2	GR BRSPR-	24107760	○
11	7/16	157	6,4	3	GR BRSPR-	24173214	○
12		187	5,3	3	GR BRSPR-	24107761	○
12,7	1/2	210	4,8	3	GR BRSPR-	24121864	○
14	9/16	255	3,9	3	GR BRSPR-	24128908	○
15		293	3,4	3	GR BRSPR-	24123425	○
16	5/8	333	3	3	GR BRSPR-	24107762	○
18		421	2,4	3	GR BRSPR-	24132365	○
19	3/4	469	2,1	3	GR BRSPR-	24120309	○
20		520	1,9	5	GR BRSPR-	24107763	○
22	7/8	629	1,6	5	GR BRSPR-	24126630	○
24		749	1,3	5	GR BRSPR-	24119335	○
25	1	813	1,2	10	GR BRSPR-	24149515	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Grafolan HT 6570

Product description

Merkel Grafolan HT is a valve packing for the highest temperature loads in the area of chemical applications and energy generation. The special high-temperature impregnation ensures the necessary cross-sectional density, benefits the friction behaviour and stabilises the DIAPLEX® braid lattice.

Product advantages

- High temperature resistant
- Low leakage and low friction
- Bridges even large gaps.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
300 bar	-30 ... +450 °C ¹⁾	0 ... 14
	-30 ... +600 °C ²⁾	
	-30 ... +2000 °C ³⁾	

¹⁾ the majority of media and air

²⁾ steam

³⁾ inert gas

Media

Hot water, steam, hot air, acids and alkalis.

Exceptions: strongly oxidising acids such as sulphuric and nitric acid.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		10	96,6	1	GR DI627-	49054421	<input type="radio"/>
4	5/32	18	54,3	1	GR DI627-	49002524	<input type="radio"/>
5	1/8	29	34,8	1	GR DI627-	49054422	<input type="radio"/>
6	15/64	41	24,2	1	GR DI627-	24349304	<input type="radio"/>
6,35	1/4	10	96,6	1	GR DI627-	49054423	<input type="radio"/>
7		56	17,7	2	GR DI627-	49054424	<input type="radio"/>
8	5/16	74	13,6	2	GR DI627-	24345292	<input type="radio"/>
9		93	10,7	2	GR DI627-	49054425	<input type="radio"/>
9,53	3/8	104	9,6	2	GR DI627-	49054426	<input type="radio"/>
10		115	8,7	2	GR DI627-	24338054	<input type="radio"/>
11		139	7,2	3	GR DI627-	49054427	<input type="radio"/>
12		166	6	3	GR DI627-	24345293	<input type="radio"/>
12,7	1/2	185	5,4	3	GR DI627-	49054428	<input type="radio"/>
15		259	3,9	3	GR DI627-	49005417	<input type="radio"/>
20		460	2,2	5	GR DI627-	49054429	<input type="radio"/>
22	7/8	557	1,8	5	GR DI627-	49054430	<input type="radio"/>
24		662	1,5	5	GR DI627-	49054431	<input type="radio"/>
25	1	719	1,4	10	GR DI627-	49054432	<input type="radio"/>
30		1035	1	10	GR DI627-	49054433	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel G-Spezial 6560

Product description

Merkel G-Spezial is made of temperature resistant, flexible braided graphite yarns each of which is reinforced with a very thin Inconel wire. This highly pressure-resistant braided packing has the same excellent sealing effect as pure graphite rings wound from strip material. Merkel G-Spezial is especially suitable for fast repair service applications. For gaps greater than 0,2 mm, the use of Merkel Carbosteam 6550 is recommended as extrusion protection.

Also available as Merkel G-Spezial I 6569 with corrosion inhibitor.

Product advantages

- High temperature and chemical resistance
- Very low leakage
- High pressure resistance
- Fast repair for a whole variety of valve dimensions.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
450 bar	-200 ... +450 °C ¹⁾	0 ... 14
	-200 ... +550 °C ²⁾	

¹⁾ the majority of media and air

²⁾ steam

Media

Hot water, steam, gases, oils, acids and alkalis. Exceptions: strongly oxidising acids such as sulphuric and nitric acid in high concentrations.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		11	92,6	1	GRIN	49000781	<input type="radio"/>
4	5/32	19	52,1	1	GRIN	24356667	<input type="radio"/>
5	1/8	30	33,3	1	GRIN	24356668	<input type="radio"/>
6	15/64	43	23,1	1	GRIN	24356669	<input type="radio"/>
6,35	1/4	48	20,7	1	GRIN	24377809	<input type="radio"/>
7		59	17	2	GRIN	49054400	<input type="radio"/>
8	5/16	77	13	2	GRIN	24356670	<input type="radio"/>
9		97	10,3	2	GRIN	49054401	<input type="radio"/>
9,53	3/8	109	9,2	2	GRIN	24377978	<input type="radio"/>
10		120	8,3	2	GRIN	24356671	<input type="radio"/>
11	7/16	145	6,9	3	GRIN	49007451	<input type="radio"/>
12		173	5,8	3	GRIN	24356672	<input type="radio"/>
12,7	1/2	194	5,2	3	GRIN	24356673	<input type="radio"/>
14	9/16	235	4,3	3	GRIN	24356674	<input type="radio"/>
15		270	3,7	3	GRIN	24356675	<input type="radio"/>
16	5/8	307	3,3	3	GRIN	24356676	<input type="radio"/>
18		389	2,6	3	GRIN	24356677	<input type="radio"/>
19	3/4	433	2,3	3	GRIN	24356678	<input type="radio"/>
20		480	2,1	5	GRIN	24356679	<input type="radio"/>
22	7/8	581	1,7	5	GRIN	24373834	<input type="radio"/>
24		691	1,4	5	GRIN	24373835	<input type="radio"/>
25	1	750	1,3	10	GRIN	24373836	<input type="radio"/>
30		1080	0,9	10	GRIN	49007131	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel G-Spezial I 6569

Product description

Merkel G-Spezial I is made of temperature resistant, flexible braided graphite yarns each of which is reinforced with a very thin Inconel wire. The packing is additionally treated with a corrosion inhibitor. This highly pressure-resistant braided packing has the same excellent sealing effect as pure graphite rings wound from strip material and has the added advantage for variable use in the area of repair and service.

Merkel G-Spezial I has a fire test approval according to API 589 Rev. 2.

For gaps greater than 0,2 mm, the use of Merkel Carbosteam 6550 as extrusion protection is recommended.

Product advantages

- High temperature and chemical resistance
- Very low leakage
- High pressure resistance
- Fast repair for a whole variety of valve dimensions.

Application

Universal repair packing for all valve applications.

Operating conditions

Operating pressure	Temperature	pH value
450 bar	-200 ... +450 °C ¹⁾	1 ... 14
	-200 ... +550 °C ²⁾	

¹⁾ the majority of media and air

²⁾ steam

Media

Hot water, steam, gases, oils, acids and alkalis. Exceptions: strongly oxidising acids such as sulphuric and nitric acid in high concentrations.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
4	5/32	19	52,1	1	GRIN	528189	<input type="radio"/>
5	1/8	30	33,3	1	GRIN	49010247	<input type="radio"/>
6	15/64	43	23,1	1	GRIN	528190	<input type="radio"/>
6,35	1/4	48	20,7	1		49016326	<input type="radio"/>
7	5/16	59	17	2	GRIN	49010248	<input type="radio"/>
8	5/16	77	13	2	GRIN	526654	<input type="radio"/>
9	5/16	97	10,3	2	GRIN	49010249	<input type="radio"/>
9,53	3/8	109	9,2	2		49016327	<input type="radio"/>
10		120	8,3	2	GRIN	526468	<input type="radio"/>
11		145	6,9	3		49054434	<input type="radio"/>
12	5/16	173	5,8	3	GRIN	49010250	<input type="radio"/>
12,7	1/2	194	5,2	3		49016328	<input type="radio"/>
15		270	3,7	3		49016329	<input type="radio"/>
18		389	2,6	3		49016330	<input type="radio"/>
19	3/4	433	2,3	3		49016331	<input type="radio"/>
20	5/16	480	2,1	5	GRIN	49010261	<input type="radio"/>
22	7/8	581	1,7	5		49016372	<input type="radio"/>
25	1	750	1,3	10		49016373	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel G-Spezial S 6565

Product description

Merkel G-Spezial S is braided from pure, expanded graphite yarns and can be used in pumps and valves. The packing combines all the advantages of the expanded graphite such as high temperature stability and high cross-sectional density. The rings made from Merkel G-Spezial S can simply be cut from the roll for application cases where fast repair is required.

Can be used in combination with end rings from Merkel Carbosteam 6550 for high-pressure valve applications.

Product advantages

- Very high temperature and chemical resistance
- Excellent sealing effect and constant elasticity
- Fast repair for a whole variety of valve dimensions.

Application

Valves, rotary pumps.

Operating conditions

Valves

Operating pressure	Temperature	pH value
250 bar	-200 ... +450 °C ¹⁾	0 ... 14
	-200 ... +550 °C ²⁾	

¹⁾ the majority of media and air

²⁾ steam

Rotary pumps

Operating pressure	Temperature	Speed	pH value
250 bar	-200 ... +550 °C	25 m/s	0 ... 14

Media

Hot water, steam, gases, oils, acids and alkalis. Exceptions: strongly oxidising acids such as sulphuric and nitric acid in high concentrations.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		10	96,6	1	GRIN	49054412	<input type="radio"/>
4	5/32	18	54,3	1		527400	<input type="radio"/>
5	1/8	29	34,8	1		49001846	<input type="radio"/>
6	15/64	41	24,2	1		527397	<input type="radio"/>
6,35	1/4	46	21,6	1	GRIN	529142	<input type="radio"/>
7		56	17,7	2	GRIN	49054413	<input type="radio"/>
8	5/16	74	13,6	2	GRIN	527398	<input type="radio"/>
9		93	10,7	2	GRIN	49054414	<input type="radio"/>
9,53	3/8	104	9,6	2	GRIN	49054415	<input type="radio"/>
10		115	8,7	2	GRIN	527399	<input type="radio"/>
11	7/16	139	7,2	3	GRIN	49007311	<input type="radio"/>
12		166	6	3	GRIN	527640	<input type="radio"/>
12,7	1/2	185	5,4	3	GRIN	529143	<input type="radio"/>
14	9/16	225	4,4	3	GRIN	527641	<input type="radio"/>
16	5/8	294	3,4	3	GRIN	527642	<input type="radio"/>
18		373	2,7	3		527643	<input type="radio"/>
19	3/4	415	2,4	3	GRIN	49054416	<input type="radio"/>
20		460	2,2	5		527644	<input type="radio"/>
22	7/8	557	1,8	5	GRIN	49054417	<input type="radio"/>
24		662	1,5	5	GRIN	49054418	<input type="radio"/>
25	1	719	1,4	10	GRIN	49054419	<input type="radio"/>
30		1035	1	10	GRIN	49054420	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Compound Packing HT 7102

Product description

Merkel Compound Packing made from thread-stabilised graphite compound for the sealing of butterfly valve stems in exhaust gas valves.

The packing consists of natural graphite and binders that are attached to the graphite threads in a special process. Through this design, a good packable sealing compound is created for the new packing and for the repair operation.

Product advantages

- High temperature resistance
- Good thermal conductivity
- Can compensate slight shaft defects.

Application

Exhaust gas valves.

Operating conditions

Operating pressure	Temperature	pH value
100 bar*	-30 ... +450 °C	0 ... 14

* installation with end rings

Media

Exhaust.

Merkel Kombilon 6742

Product description

Merkel Kombilon consists of an elastic combination braid made from carbon and PTFE yarns. The packing is impregnated with a special PTFE compound and running-in lubricant. The specific composition of Merkel Kombilon ensures very low frictional forces and a high elasticity. This makes the packing especially suitable for mixers and agitators.

The packing maintains its elasticity even after prolonged operation and under high contact pressure. The specially processed carbon yarn is very flexible and protects the shaft particularly well.

Product advantages

- Low leakage rates even with slight shaft deflection
- Long service life
- Excellent performance even at high temperatures.

Application

Rotary pumps, valves.

Operating conditions

Rotary pumps

Operating pressure	Temperature	Speed	pH value
25 bar	-100 ... +280 °C	20 m/s	0 ... 14

Valves

Operating pressure	Temperature	pH value
160 bar	-100 ... +280 °C	0 ... 14

Media

Alkalis, all forms of solvents, alcohols, ketones, esters, oils, acids, hot water, boiler lye, brine, ammonia. Exceptions: strongly oxidising acids.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
4	5/32	26	37,9	1	CAOX BR618-	24293761	<input type="radio"/>
5	1/8	41	24,2	1	CAOX BR618-	24293762	<input type="radio"/>
6	15/64	59	16,8	1	CAOX BR618-	24293763	<input type="radio"/>
6,35	1/4	67	15	1	CAOX BR618-	24327565	<input type="radio"/>
7		81	12,4	2	CAOX BR618-	24312009	<input type="radio"/>
8	5/16	106	9,5	2	CAOX BR618-	24293764	<input type="radio"/>
9,53	3/8	150	6,7	2	CAOX BR618-	24312110	<input type="radio"/>
10		165	6,1	2	CAOX BR618-	24293765	<input type="radio"/>
11	7/16	200	5	3	CAOX BR618-	24327512	<input type="radio"/>
12		238	4,2	3	CAOX BR618-	24293766	<input type="radio"/>
12,7	1/2	266	3,8	3	CAOX BR618-	24302371	<input type="radio"/>
14	9/16	323	3,1	3	CAOX BR618-	24292346	<input type="radio"/>
15		371	2,7	3	CAOX BR618-	24314668	<input type="radio"/>
16	5/8	422	2,4	3	CAOX BR618-	24293767	<input type="radio"/>
18		535	1,9	3	CAOX BR618-	24301906	<input type="radio"/>
19	3/4	596	1,7	3	CAOX BR618-	24337151	<input type="radio"/>
20		660	1,5	5	CAOX BR618-	24293768	<input type="radio"/>
22,23	7/8	799	1,3	5	CAOX BR618-	24308384	<input type="radio"/>
24		950	1,1	5	CAOX BR618-	24356245	<input type="radio"/>
25	1	1031	1	10	CAOX BR618-	24299492	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Ramiflex 4510

Product description

Merkel Ramiflex is a braided pump packing made from a very stable, flexible and tear-resistant ramie yarn DIA-PLEX® and impregnated with a bright red special grease. Ramie is many times more tear-resistant than cotton and rot-resistant.

The packing has very good running properties and is extremely wear-resistant in abrasive media such as mud, crystallised suspensions and sewage.

Ramiflex is thus particularly suitable for application in shipping (stern tube and bilge pump sealing).

Product advantages

- Very wear-resistant
- Long service life and better sealing behaviour
- Protects the shaft.

Application

Rotary and plunger pumps.

Operating conditions

Rotary pumps

Operating pressure	Temperature	Speed	pH value
16 bar	-0 ... +120 °C	10 m/s	6 ... 9

Plunger pumps

Operating pressure	Temperature	Speed	pH value
100 bar	-0 ... +120 °C	1 m/s	6 ... 9

Media

Cold and warm water, air, etc.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
6	15/64	45	22,2	1	RA BR616-	24107601	<input type="radio"/>
8	5/16	80	12,5	2	RA BR616-	24107602	<input type="radio"/>
10		125	8	2	RA BR616-	24107603	<input type="radio"/>
12		180	5,6	3	RA BR616-	24107604	<input type="radio"/>
14	9/16	245	4,1	3	RA BR616-	24107605	<input type="radio"/>
16	5/8	320	3,1	3	RA BR616-	24107606	<input type="radio"/>
20		500	2	5	RA BR616-	24107607	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Ramilon 4586

Product description

Merkel Ramilon is braided from ramie yarn, an extremely tear-resistant and water-resistant natural fibre yarn. The packing contain a high degree of PTFE due to a multi-impregnation process. This guarantees a high cross sectional density and low frictional values. Merkel Ramilon is also used in plunger pumps for high pressure water applications.

The packing materials are FDA approved for use in the food processing industry.

Product advantages

- Long service life
- Does not swell or rot
- Excellent pressure-resistance.

Application

Rotary pumps, refiners, mills, plunger pumps, stern tube applications.

Operating conditions

Rotary pump

Operating pressure	Temperature	Speed	pH value
40 bar	-40 ... +120 °C	12,5 m/s	5 ... 11

Plunger pumps

Operating pressure	Temperature	Speed	pH value
1000 bar*	-40 ... +120 °C	2 m/s*	5 ... 11

* installation with end rings

Media

Cold water, drinking water, salt water, warm water, aqueous solutions containing solid particles, oils, greases, solvents, foodstuffs.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		12	85,5	1	RA BR618-	24115932	○
4	5/32	21	48,1	1	RA BR618-	24107608	○
5	1/8	33	30,8	1	RA BR618-	24107609	○
6	15/64	47	21,4	1	RA BR618-	24107610	○
6,35	1/4	52	19,1	1	RA BR618-	24121704	○
7		64	15,7	2	RA BR618-	24107611	○
8	5/16	83	12	2	RA BR618-	24107612	○
9		105	9,5	2	RA BR618-	24110987	○
9,53	3/8	118	8,5	2	RA BR618-	24119759	○
10		130	7,7	2	RA BR618-	24107613	○
11	7/16	157,3	6,4	3	RA BR618-	24122554	●
12		187	5,3	3	RA BR618-	24107614	○
12,7	1/2	210	4,8	3	RA BR618-	24107615	○
14	9/16	255	3,9	3	RA BR618-	24107616	○
15		293	3,4	3	RA BR618-	24107617	○
16	5/8	333	3	3	RA BR618-	24107618	○
18		421	2,4	3	RA BR618-	24107619	○
19	3/4	469	2,1	3	RA BR618-	24117489	○
20		520	1,9	5	RA BR618-	24107620	○
22	7/8	629	1,6	5	RA BR618-	24107621	○
24		749	1,3	5	RA BR618-	24116057	○
25	1	813	1,2	10	RA BR618-	24113360	○
30		1170	0,9	10	RA BR618-	24113361	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Special Carbon Packing 6540

Product description

The base material for these special packings is carbon yarns that are combined with lead braiding and impregnated with a graphite-containing mineral grease. The packing protects the shaft and is used wherever ridged shafts endanger the packing material. The interlaced lead braiding provides a smoothing of the shaft surface.

The special carbon yarn packing has already proven itself for years in power plant use for the sealing of air and gas preheaters. In this application, the packing primarily serves to shield the shaft bearings from dust and flue ash. The packing is, however, also suitable for the sealing of acid and alkali pumps.

Product advantages

- Also suitable for shafts with ridges
- Protects the shaft and has good heat dissipation
- Seals dust and flue ash in particular.

Application

Sealing of air and gas preheaters.

Operating conditions

Operating pressure	Temperature	Speed	pH value
16 bar	-50 ... +160 °C	20 m/s	0 ... 14

Media

Cold and hot water, steam, gases, oils, solvents, acids and alkalis.

Exceptions: concentrated sulphuric and nitric acids.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
6		70	14,2	1	CA BR617-	49054399	<input type="radio"/>
8	5/16	125	8	2	CA BR617-	24370199	<input type="radio"/>
10		195	5,1	2	CA BR617-	24237220	<input type="radio"/>
12		281	3,6	3	CA BR617-	24359976	<input type="radio"/>
15		439	2,3	3	CA BR617-	24350300	<input type="radio"/>
16	5/8	499	2	3	CA BR617-	24233656	<input type="radio"/>
20		780	1,3	5	CA BR617-	24251851	<input type="radio"/>
25	1	1219	0,8	10	CA BR617-	24233657	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Cover Lid Seal Type 6324

Product description

The Merkel Cover Lid Seal Type 6324 consists of a concentric hose braid and an optional elastomer core.

The elastomer core guarantees a constant sealing force over the entire service life. This is ideal for static cover seals with a high number of open/close cycles. The outer braid provides good wear protection and protects against attacks by chemicals.

Product advantages

- Low leakage
- Increased elasticity and spring back
- Good chemical resistance.

Application

Cover and housing seals, tank covers, manholes, filters, dryers, chemical mixer housings, rotary valves, rotary furnaces.

Material

Yarn	Elastomer core	Impregnation
PTFE	EPDM, MVQ	PTFE

Operating conditions

Operating pressure	Temperature	Speed	pH value
10 bar	-30 ... +250 °C	2 m/s*	0 ... 14

* depending on material combination

Merkel Thermaflex 6400

Product description

Merkel Thermaflex 6400 is especially suited for static sealing at very high temperatures.

The packing has outstanding thermal isolation properties, good electrical isolation ability and a high resistance to radiation.

Product advantages

- Ideal for high-temperature sealing.

Application

Static high-temperature applications.

Operating conditions

Operating pressure	Temperature	pH value
10 bar	-0 ... +1100 °C	2 ... 12

Media

Nitrous gases, inert gases, exhaust gases, acids, diluted alkalis.
Exceptions: steam, fluorine, hydrofluoric acid.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		9	111,1	1	MF	24147022	<input type="radio"/>
4		16	62,5	1	MF	24108419	<input type="radio"/>
5		25	40	1	MF	24108420	<input type="radio"/>
6	15/64	36	27,8	1	MF	24108421	<input type="radio"/>
6,35	1/4	40,3	24,8	1	MF	24360455	<input type="radio"/>
8	5/16	64	15,6	2	MF	24108422	<input type="radio"/>
9,53	3/8	90,8	11	2	MF	24142277	<input type="radio"/>
10		100	10	2	MF	24108423	<input type="radio"/>
12		144	6,9	3	MF	24108424	<input type="radio"/>
12,7	1/2	161,3	6,2	3	MF	24123438	<input type="radio"/>
14		196	5,1	3	MF	24130395	<input type="radio"/>
15		225	4,4	3	MF	24121461	<input type="radio"/>
16	5/8	256	3,9	3	MF	24115699	<input type="radio"/>
18		324	3,1	3	MF	49054547	<input type="radio"/>
19	3/4	343	2,9	3	MF	24328937	<input type="radio"/>
20		380	2,6	5	MF	24123496	<input type="radio"/>
22		484	2,1	5	MF	49054548	<input type="radio"/>
25	1	593,8	1,7	10	MF	24111123	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Unichem 6313

Product description

Merkel Unichem is braided from pure PTFE yarns and impregnated with a running-in lubricant. The packing has a very dense structure and is yet soft and flexible. Sealing can be achieved with a minimum amount of gland pressure. Merkel Unichem features very good friction behaviour.

Merkel Unichem is available as a flat strip for static sealing*.

* dimensions on enquiry

Product advantages

- Excellent sealing behaviour with minimum gland pressures
- Very low leak rate
- Suitable for all chemical applications.

Application

Rotary pumps.

Operating conditions

Operating pressure	Temperature	Speed	pH value
15 bar	-100 ... +250 °C	8 m/s	0 ... 14

Media

All chemicals including concentrated hot acids and alkalis.

Exceptions: molten alkali metals, fluorine and some fluorine compounds.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		15	64,6	1	PT	24107742	○
4	5/32	28	36,3	1	PT	24107743	○
5	1/8	43	23,3	1	PT	24107744	○
6	15/64	62	16,1	1	PT	24107745	○
6,35	1/4	69	14,4	1	PT	24124436	○
7		84	11,9	2	PT	24119168	○
8	5/16	110	9,1	2	PT	24107746	○
9		139	7,2	2	PT	24117703	○
9,53	3/8	156	6,4	2	PT	24121470	○
10		172	5,8	2	PT	24107747	○
11	7/16	208	4,8	3	PT	24131792	○
12		248	4	3	PT	24107748	○
12,7	1/2	277	3,6	3	PT	24120009	○
14	9/16	337	3	3	PT	24116266	○
15		387	2,6	3	PT	24117707	○
16	5/8	440	2,3	3	PT	24116267	○
18		557	1,8	3	PT	24115577	○
19	3/4	621	1,6	3	PT	24266456	○
20		688	1,5	5	PT	24115575	○
22	7/8	832	1,2	5	PT	24115576	○
24		991	1	5	PT	24229471	○
25	1	1075	0,9	10	PT	24120976	○
30		1548	0,6	10	PT	24123100	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Unichem FDA 6315

Product description

Merkel Unichem FDA is braided from pure, extruded PTFE yarns with a special filler and silicone oil. The packing has a very dense structure and is yet soft and flexible. The packing has excellent oil absorption properties and can thus be used universally for pumps, valves or static seals.

Merkel Unichem FDA fulfils the FDA regulations and is thus especially suited for the foodstuffs and pharmaceuticals industries.

Product advantages

- Flexible and protects the shaft
- To be used universally
- FDA-compliant.

Application

Pumps and valves in the chemicals and foodstuffs industry.

Operating conditions

Pumps

Operating pressure	Temperature	Speed	pH value
25 bar	-100 ... +280 °C	15 m/s	0 ... 14

Valves

Operating pressure	Temperature	pH value
100 bar	-100 ... +280 °C	0 ... 14

Media

All chemicals including concentrated hot acids and alkalis.

Exceptions: molten alkali metals, fluorine and some fluorine compounds.

Article list

mm	inch	g/m	m/kg	kg/box	Article No.	
6		61	16,3	1	49015078	<input type="radio"/>
6,35	1/4	69	14,6	1	49054569	<input type="radio"/>
8	5/16	149	6,7	2	49054549	<input type="radio"/>
9,53	3/8	109	9,2	2	49054570	<input type="radio"/>
10		170	5,9	2	49054550	<input type="radio"/>
12		245	4,1	3	49054551	<input type="radio"/>
12,7	1/2	274	3,7	3	49054571	<input type="radio"/>
14	9/16	333	3	3	49054562	<input type="radio"/>
15		383	2,6	3	49054563	<input type="radio"/>
16	5/8	435	2,3	3	49054564	<input type="radio"/>
18		551	1,8	3	49054565	<input type="radio"/>
19	3/4	614	1,6	3	49054566	<input type="radio"/>
20		680	1,5	5	49054567	<input type="radio"/>
25	1	1063	0,9	10	49054568	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Uniflex 6588

Product description

Merkel Uniflex is manufactured from a special flexible yarn with a high carbon content, and a PTFE-graphite impregnation as well as a running-in lubricant. The packing is very flexible and extrusion-resistant. The impregnation maintains an excellent bond to the braid over the complete life of the packing. The good temperature and volume stability of the packing provides superior sealing behaviour even with minimal gland pressures. Thus, Merkel Uniflex can sometimes also be used for dry running.

Product advantages

- Suitable for dry running
- Superior sealing performance
- Flexible and wear-resistant.

Application

Rotary pumps.

Operating conditions

Operating pressure	Temperature	Speed	pH value
25 bar	-50 ... +280 °C	25 m/s	1 ... 13

Media

Cold and hot water, steam, aqueous solutions, diluted acids and alkalis.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		12	84,2	1	CAOX BR624-	49054435	○
4		21	47,3	1	CAOX BR624-	49054436	○
5	1/8	33	30,3	1	CAOX BR624-	529561	○
6	15/64	48	21	1	CAOX BR624-	24374614	○
6,35	1/4	53	18,8	1	CAOX BR624-	24374615	○
7		65	15,5	2	CAOX BR624-	49054437	○
8	5/16	84	11,8	2	CAOX BR624-	24374616	○
9		107	9,4	2	CAOX BR624-	49054438	○
9,53	3/8	120	8,3	2	CAOX BR624-	24374617	○
10		132	7,6	2	CAOX BR624-	24374618	○
11		160	6,3	3	CAOX BR624-	49054439	○
12		190	5,3	3	CAOX BR624-	24374619	○
12,7	1/2	213	4,7	3	CAOX BR624-	24374620	○
14	9/16	259	3,9	3	CAOX BR624-	24374621	○
15		297	3,4	3	CAOX BR624-	24374622	○
16	5/8	338	3	3	CAOX BR624-	24374623	○
18		428	2,3	3	CAOX BR624-	24374624	○
19	3/4	477	2,1	3	CAOX BR624-	24374625	○
20		528	1,9	5	CAOX BR624-	24374626	○
22	7/8	639	1,6	5	CAOX BR624-	525082	○
24		760	1,3	5	CAOX BR624-	49054440	○
25	1	825	1,2	10	CAOX BR624-	24374627	○
30		1188	0,8	10	CAOX BR624-	49054441	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Unimix 7105

Product description

Merkel Unimix 7105 is a newly developed, injectable fibre compound consisting of PTFE fibres and particles as well as a high-performance lubricant.

With end rings made from Merkel Arolan 6215 or Merkel Unichem 6313, this packing is ideal for use against abrasive media and also for run-in shafts.

Due to the injectability, it is also possible to refill the packing mass during pump operation and thus avoid down-times.

Compared to other compounds, Merkel Unimix 7105 is resistant over the entire pH range from 0 to 14 and due to the shorter fibre lengths, more homogenous and simple to inject.

When delivered, the density of the compound is approx. 1,5 g/cm³ (1 kg ≈ 0,65 l).

Product advantages

- Good chemical resistance
- Low leakage
- No down-times.

Application

Abrasive media in pumps and mixer applications.

Operating conditions

Pumps

Operating pressure	Temperature	Speed	pH value
25 bar	-100 ... +250 °C	10 m/s	0 ... 14

Valves

Operating pressure	Temperature	Speed	pH value
75 bar	-100 ... +250 °C	10 m/s	0 ... 14

Media

Cold and hot water, solutions containing particles, oils, greases, solvents.

Fitting & installation

For optimal installation, we recommend the Merkel Injection Pump 7515. Please request it from us.

Article list

kg/box	Material	Article No.	
1	UNIM	49054405	<input type="radio"/>
5	UNIM	49054406	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Unimix 7106

Product description

Merkel Unimix 7106 is a newly developed, injectable fibre compound consisting of PTFE fibres and particles as well as a high-performance lubricant.

With end rings made from Merkel Arolan 6215 or Merkel Unichem 6313, this packing is ideal for use against abrasive media and also for run-in shafts.

Due to the injectability, it is also possible to refill the packing mass during pump operation and thus avoid down-times.

Compared to other compounds, Merkel Unimix 7106 is resistant over the entire pH range from 0 to 14 and due to the shorter fibre lengths, more homogenous and simple to inject.

When delivered, the density of the compound is approx. 1,4 g/cm³ (1 kg ≈ 0,7 l).

Product advantages

- Good chemical resistance
- Low leakage
- No down-times.

Application

Abrasive media in pumps and mixer applications.

Operating conditions

Pumps

Operating pressure	Temperature	Speed	pH value
25 bar	-100 ... +250 °C	10 m/s	0 ... 14

Valves

Operating pressure	Temperature	Speed	pH value
75 bar	-100 ... +250 °C	10 m/s	0 ... 14

Media

Cold and hot water, solutions containing particles, oils, greases, solvents.

Fitting & installation

For optimal installation, we recommend the Merkel injection pump 7515. Please request it from us.

Article list

kg/box	Material	Article No.	
1	UNIM	49054407	<input type="radio"/>
5	UNIM	49054408	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Unistat 6303

Product description

Merkel Unistat 6303 is braided from a graphite-filled PTFE yarn. The high graphite content ensures good heat dissipation and the PTFE material ensures excellent friction behaviour. The dense and pressure-resistant structure makes the packing especially suitable for plunger pump applications. Due to its chemical resistance, Merkel Unistat 6303 is universally suitable for applications in the chemicals industry.

The packing material is approved for use in the food processing industry.

Product advantages

- High chemical and pressure resistance
- Excellent heat dissipation
- Low leakage.

Application

Plunger pumps, valves.

Operating conditions

Plunger pumps

Operating pressure	Temperature	Speed	pH value
800 bar*	-200 ... +280 °C	2 m/s	0 ... 14

Valves

Operating pressure	Temperature	pH value
250 bar	-200 ... +280 °C	0 ... 14

* installation with end rings

Media

Steam, condensation, alkalis, solvents, almost all acids. Exceptions: highly concentrated nitric acid, oleum. Suitable for use with gaseous oxygen (65 bar to 40 °C/50 bar to 200 °C). Tested by the BAM (Federal Institute for Research and Material Testing).

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		13	76,6	1	PTGR	24192301	<input type="radio"/>
4	5/32	23	43,1	1	PTGR	24195261	<input type="radio"/>
5	1/8	36	27,6	1	PTGR	24192302	<input type="radio"/>
6	15/64	52	19,2	1	PTGR	24127129	<input type="radio"/>
6,35	1/4	58	17,1	1	PTGR	24353543	<input type="radio"/>
7		71	14,1	2	PTGR	24121619	<input type="radio"/>
8	5/16	93	10,8	2	PTGR	24183946	<input type="radio"/>
9		117	8,5	2	PTGR	24262744	<input type="radio"/>
9,53	3/8	132	7,6	2	PTGR	24147002	<input type="radio"/>
10		145	6,9	2	PTGR	24183126	<input type="radio"/>
11	7/16	175	5,7	3	PTGR	24194991	<input type="radio"/>
12		209	4,8	3	PTGR	24187294	<input type="radio"/>
12,7	1/2	234	4,3	3	PTGR	24147003	<input type="radio"/>
14	9/16	284	3,5	3	PTGR	24195262	<input type="radio"/>
15		326	3,1	3	PTGR	24235919	<input type="radio"/>
16	5/8	371	2,7	3	PTGR	24191302	<input type="radio"/>
18		470	2,1	3	PTGR	24195263	<input type="radio"/>
19	3/4	523	1,9	3	PTGR	24193673	<input type="radio"/>
20		580	1,7	5	PTGR	24195264	<input type="radio"/>
22	7/8	702	1,4	5	PTGR	24191529	<input type="radio"/>
24		835	1,2	5	PTGR	24248693	<input type="radio"/>
25	1	906	1,1	10	PTGR	24188161	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Unival 6323

Product description

Merkel Unival 6323 consists of graphite-filled, oiled PTFE yarn. Due to a special braid structure the advantages that this material offers (low thermal expansion and excellent heat conduction) are optimally exploited.

Merkel Unival 6323 is a very flexible packing and seals reliably with a minimum of gland pressure, even against thin liquid media that have a tendency to creep. It can also withstand dry friction up to a certain limit. The materials used are approved for use in food processing industry (MPA).

Product advantages

- Ability to run at high speeds
- Longer service life
- Low leakage with a minimum of gland pressure.

Application

Rotary pumps, valves.

Operating conditions

Rotary pump

Operating pressure	Temperature	Speed	pH value
25 bar	-100 ... +280 °C	20 m/s	0 ... 14

Valves

Operating pressure	Temperature	pH value
250 bar*	-100 ... +280 °C	0 ... 14

* installation with end rings

Media

Alkalis, solvents, bitumen, almost all acids.

Exceptions: highly concentrated nitric acid, oleum.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		14	70,3	1	PTGR	24230131	<input type="radio"/>
4	5/32	25	39,6	1	PTGR	24191207	<input type="radio"/>
5	1/8	40	25,3	1	PTGR	24187457	<input type="radio"/>
6	15/64	57	17,6	1	PTGR	24186270	<input type="radio"/>
7		77	12,9	2	PTGR	24195267	<input type="radio"/>
8	5/16	101	9,9	2	PTGR	24186511	<input type="radio"/>
9,53	3/8	143	7	2	PTGR	24188537	<input type="radio"/>
10		158	6,3	2	PTGR	24186500	<input type="radio"/>
11	7/16	191	5,2	3	PTGR	24214130	<input type="radio"/>
12		228	4,4	3	PTGR	24186161	<input type="radio"/>
12,7	1/2	255	3,9	3	PTGR	24193723	<input type="radio"/>
14	9/16	310	3,2	3	PTGR	24187392	<input type="radio"/>
15		356	2,8	3	PTGR	24186570	<input type="radio"/>
16	5/8	404	2,5	3	PTGR	24188237	<input type="radio"/>
18		512	2	3	PTGR	24193023	<input type="radio"/>
19	3/4	570	1,8	3	PTGR	24199600	<input type="radio"/>
20		632	1,6	5	PTGR	24186633	<input type="radio"/>
22	7/8	765	1,3	5	PTGR	24191064	<input type="radio"/>
25	1	988	1	10	PTGR	24186194	<input type="radio"/>
30		1422	0,7	10	PTGR	24191062	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Unival GFO® 6329

Product description

Due to a special braid structure of Merkel Unival GFO® 6329, the advantages that this material offers (low thermal expansion and excellent heat conduction) are optimally exploited.

The very flexible packing seals reliably with a minimum of gland pressure, even against thin liquid media that have a tendency to creep. Merkel Unival GFO® can also withstand dry friction up to a certain limit.

The packing material is approved for use in the food processing industry (FMFA, Stuttgart).

Product advantages

- Low maintenance
- Long service life, even at higher speeds
- Very low leakage without too strong a tightening of the packing.

Application

Rotary pumps, valves.

Operating conditions

Rotary pump

Operating pressure	Temperature	Speed	pH value
25 bar	-100 ... +280 °C	25 m/s	0 ... 14

Valves

Operating pressure	Temperature	pH value
250 bar	-100 ... +280 °C	0 ... 14

Media

Alkalis, solvents, bitumen, almost all acids.

Exceptions: highly concentrated nitric acid, oleum.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		14	70,3	1		24376573	<input type="radio"/>
4	5/32	25	39,6	1		24376574	<input type="radio"/>
5	1/8	40	25,3	1		24376575	<input type="radio"/>
6	15/64	57	17,6	1		24376576	<input type="radio"/>
6,35	1/4	64	15,7	1		49054393	<input type="radio"/>
7		77	12,9	2		24376577	<input type="radio"/>
8	5/16	101	9,9	2		24376578	<input type="radio"/>
9		128	7,8	2		24376579	<input type="radio"/>
9,35	3/8	143	7	2		49054394	<input type="radio"/>
10		158	6,3	2		24376580	<input type="radio"/>
11	7/16	191	5,2	3	PTGR	24380308	<input type="radio"/>
12		228	4,4	3	PTGR	24376581	<input type="radio"/>
12,7	1/2	255	3,9	3		24376582	<input type="radio"/>
14	9/16	310	3,2	3	PTGR	24380309	<input type="radio"/>
15		356	2,8	3	PTGR	49007164	<input type="radio"/>
16	5/8	404	2,5	3	PTGR	24376584	<input type="radio"/>
19	3/4	570	1,8	3	PTGR	24376586	<input type="radio"/>
20		632	1,6	5		24376587	<input type="radio"/>
22	7/8	765	1,3	5	PTGR	24290155	<input type="radio"/>
24		910	1,1	5		49054395	<input type="radio"/>
25	1	988	1	10	PTGR	24376588	<input type="radio"/>
30		1422	0,7	10		49054396	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Unival II 6326

Product description

Merkel Unival II consists of graphite-impregnated PTFE yarn. Due to its special braid structure, the advantages that this material offers (low thermal expansion and excellent heat conduction) are optimally exploited.

Merkel Unival II is a very flexible packing and seals reliably with a minimum of gland pressure, even against thin liquid media that have a tendency to creep. It can also withstand dry friction up to a certain limit. Merkel Unival II combines all the advantages of a low priced packing, that withstands all chemically and dynamically demanding conditions in pumps, mixers, kneaders, agitators and dryers.

Product advantages

- Low maintenance
- Long service life, even at higher speeds
- Cost-effective and universally applicable.

Application

Rotary pumps, valves.

Operating conditions

Rotary pump

Operating pressure	Temperature	Speed	pH value
25 bar	-100 ... +280 °C	15 m/s	0 ... 14

Valves

Operating pressure	Temperature	pH value
250 bar	-100 ... +280 °C	0 ... 14

Media

Alkalis, solvents, bitumen, almost all acids.

Exceptions: highly concentrated nitric acid, oleum.

Article list

mm	inch	g/m	m/kg	kg/box	Article No.	
3		15	67,3	1	524768	<input type="radio"/>
4	5/32	26	37,9	1	524769	<input type="radio"/>
5	1/8	41	24,2	1	24380835	<input type="radio"/>
6		59	16,8	1	24377765	<input type="radio"/>
6,35	1/4	67	15	1	24380836	<input type="radio"/>
7		81	12,4	2	49054357	<input type="radio"/>
8	5/16	106	9,5	2	24377766	<input type="radio"/>
9		134	7,5	2	49054329	<input type="radio"/>
9,53	3/8	150	6,7	2	24380837	<input type="radio"/>
11		200	5	3	49054330	<input type="radio"/>
12,7	1/2	266	3,8	3	24377769	<input type="radio"/>
15		371	2,7	3	24377771	<input type="radio"/>
16	5/8	422	2,4	3	24377772	<input type="radio"/>
18		535	1,9	3	24377773	<input type="radio"/>
19	3/4	596	1,7	3	24377774	<input type="radio"/>
20		660	1,5	5	24377775	<input type="radio"/>
22	7/8	799	1,3	5	24377776	<input type="radio"/>
24		950	1,1	5	49054331	<input type="radio"/>
25	1	1031	1	10	24377777	<input type="radio"/>
30		1485	0,7	10	49054392	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Univerdit® 7000

Product description

The packing material is approved for use in the food processing industry. Compact extruded packing made of PTFE graphite compound. Merkel Univerdit has extremely good resistance to gas permeation and has the ability to embed abrasive particles. Univerdit remains self-lubricating even during extended periods of operation and therefore reduces friction on shafts and spindles. Generally, Univerdit must always be installed with end rings*.

* End-ring selection is dependent on application parameters.

Product advantages

- Resistance to gas permeation
- Easy installation and long service life
- Ideal for sealing abrasive media
- Can run "dry" in some applications.

Application

Rotary pumps, valves.

Operating conditions

Rotary pump

Operating pressure	Temperature	Speed	pH value
25 bar*	-30 ... +250 °C	6 m/s	0 ... 14

Valves

Operating pressure	Temperature	pH value
160 bar*	-30 ... +250 °C	0 ... 14

* installation with end rings

Media

Alkalis, all forms of solvents, alcohols, ketones, esters, oils, acids, hot water, boiler lye, brine, ammonia. Exceptions: strongly oxidising acids.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
3		16	61,7	1	PTEX	24139912	<input type="radio"/>
4	5/32	29	34,7	1	PTEX	24115567	<input type="radio"/>
5	1/8	45	22,2	1	PTEX	24107764	<input type="radio"/>
6	15/64	65	15,4	1	PTEX	24107765	<input type="radio"/>
6,35	1/4	73	13,8	1	PTEX	24121706	<input type="radio"/>
7		88	11,3	2	PTEX	24117801	<input type="radio"/>
8	5/16	115	8,7	2	PTEX	24107766	<input type="radio"/>
9		146	6,9	2	PTEX	24116687	<input type="radio"/>
9,53	3/8	163	6,1	2	PTEX	24117922	<input type="radio"/>
10		180	5,6	2	PTEX	24107767	<input type="radio"/>
11	7/16	218	4,6	3	PTEX	24122555	<input type="radio"/>
12		259	3,9	3	PTEX	24107768	<input type="radio"/>
12,7	1/2	290	3,4	3	PTEX	24117923	<input type="radio"/>
14	9/16	353	2,8	3	PTEX	24107770	<input type="radio"/>
15		405	2,5	3	PTEX	24120253	<input type="radio"/>
16	5/8	461	2,2	3	PTEX	24107771	<input type="radio"/>
18		583	1,7	3	PTEX	24115709	<input type="radio"/>
19	3/4	650	1,5	3	PTEX	24120998	<input type="radio"/>
20		720	1,4	5	PTEX	24107772	<input type="radio"/>
22	7/8	871	1,1	5	PTEX	24141641	<input type="radio"/>
24		1037	1	5	PTEX	24134067	<input type="radio"/>
25	1	1125	0,9	10	PTEX	24116047	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Varilon SG 6224

Product description

Varilon SG consists of a DIAPLEX® combination braid made from PTFE graphite compound and aramide yarns. The packing is additionally impregnated with PTFE and provided with a running-in lubricant.

Varilon SG is particularly suited for the sealing of fast-running shafts. The high PTFE graphite content provides the packing with very good running properties and a high heat dissipation ability. The aramide yarn gives the packing a high rigidity.

The special design allows the packing to predominantly run on the PTFE graphite compound yarn after shaft-side installation. This protects the shaft and ensures a longer service life.

Product advantages

- Also suitable for media with abrasive particles
- Good running behaviour, low friction power
- Prevents overheating during critical running-in phase.

Application

Plunger and rotary pumps.

Operating conditions

Operating pressure	Temperature	Speed	pH value
25 bar	-50 ... +280 °C	20 m/s	1 ... 13

Media

Hot water, alkalis, organic solvents, salt solutions, hydro-carbons, oils, greases, medium concentration acids.

Article list

mm	inch	g/m	m/kg	kg/box	Material	Article No.	
4	5/32	24	41,1	1	AMPT BRSPR-	24375384	<input type="radio"/>
5	1/8	38	26,3	1	AMPT BRSPR-	49054341	<input type="radio"/>
6	15/64	55	18,3	1	AMPT BRSPR-	24372756	<input type="radio"/>
6,35	1/4	61	16,3	1	AMPT BRSPR-	49054352	<input type="radio"/>
8	5/16	97	10,3	2	AMPT BRSPR-	24372757	<input type="radio"/>
9,53	3/8	138	7,2	2	AMPT BRSPR-	49054353	<input type="radio"/>
10		152	6,6	2	AMPT BRSPR-	24372758	<input type="radio"/>
11		184	5,4	3	AMPT BRSPR-	49054354	<input type="radio"/>
12		219	4,6	3	AMPT BRSPR-	24259991	<input type="radio"/>
12,7	1/2	245	4,1	3	AMPT BRSPR-	24374006	<input type="radio"/>
20		608	1,6	5	AMPT BRSPR-	24372763	<input type="radio"/>
22	7/8	736	1,4	5	AMPT BRSPR-	49054355	<input type="radio"/>
24		876	1,1	5	AMPT BRSPR-	49054356	<input type="radio"/>
25	1	950	1,1	10	AMPT BRSPR-	24372764	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Packing Cutter

Product description

The universal packing cutter was designed for the practical cutting of packings from the roll. With the help of this cutter, packings can be cut accurately and correctly to suit the application. The measuring scale is in inches and millimetres. The scale corresponds to the shaft or spindle diameter. The packing cross-section is taken into account by adjusting the slide. The slide stop and cutting guide are designed for the optimal cut at 45°.

Product advantages

- Robust plastic with lateral fastening lugs
- For radial inclined cuts of 45° in the shaft and spindle range of Ø 5 to 120 mm and 2 to 20 mm packing cross-section
- Special design for shaft/spindle area; Ø to 320 mm
- A clamping device for holding the packing to the cutting guide
- Cross-section scale on a lockable aluminium slide with packing stop
- Finger guard
- Practical quality knife as an accessory (can be ordered as replacement knife 7513).

Article list

Packing Cutter	Article No.
Ø ... 120 mm	7505-24-118583
Ø ... 320 mm	7505-24-142428
Replacement knife	7513-24-122885

Packing Extractor

Product description

A clean housing is important for the sealing properties of a new packing. For this reason used seals must be carefully and completely removed from the sealing box. Packing extractors were developed for the rapid and careful removal of packings. The forged, helical-shaped tips are firmly joined to the extractor shaft. With their large pitch, they can easily be screwed into all types of braided and fabric packings. With the flexible and powerful shaft, even difficult to access packing gland boxes are easy to reach. The T-bar handle is designed for the tensile load and sits easily in the hand. Packing extractors sets are supplied in a practical case. Each set contains each size of steel extractor: 22 cm, 33 cm, 44 cm long for packing boxes from 6 mm, 10 mm and 13 mm width. For the installation of packings, metal ring segments can be screwed onto the extractors and in this way they become the ideal tool for pushing the packing rings evenly into the housing without damage.

Fitting & installation

Metal ring segment pressure pieces with tube-shaped shoulder and internal thread, to attach to size 0 to 3 packing extractors.

Ring segments	
Size	Article No.
3	7511 - 24 - 107988
2	7511 - 24 - 107989
1	7511 - 24 - 107990
0	7511 - 24 - 107991

Article list

Packing extractor set comprising one each packing extractors in the sizes 1, 2 and 3 in a case	Article No. 7512 24 - 107983
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Packing extractors – individual			
Size	Length	for packings from	Article No.
3	22 cm	6 mm	7500 - 24107984
2	33 cm	10 mm	7500 - 24107985
1	44 cm	13 mm	7500 - 24107986
0	50 cm	16 mm	7500 - 24107987

Chevron Seal Set made of PTFE

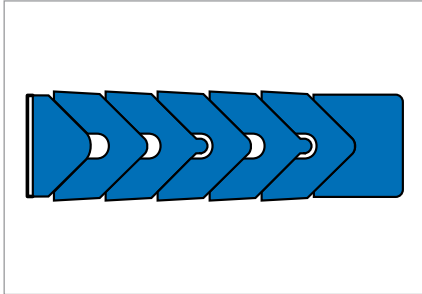


Fig. 1 Chevron Seal Set made of PTFE

Product description

- Proven sealing systems for piston rods, plungers, spindles and slowly rotating shafts
- Sets consisting of pressure ring, chevron seals, back-up ring
- The number of chevron seals in a sealing set depends on the pressure and temperature in the operating range.

Product advantages

- Universal chemical resistance
- High temperature resistance
- Very high resistance to pressure
- Good sliding and lubricating properties
- High wear resistance and dimensional stability
- Very high protection against extrusion.

Application

- Chemistry
 - Pharmaceuticals
 - Measuring and control systems
 - General mechanical engineering
 - Foodstuffs industry
 - Iron and steel industry
- e.g. regulation and shut-off valves, plunger pumps, metering systems, agitators, hydraulic cylinders, rotary joints.

Materials

- PTFE/PTFE compound
- PTFE impregnated plastic fabric.

Operating conditions

Material	PTFE/PTFE compound	PTFE impregnated fabric
Pressure	30 MPa	70 MPa
Linear velocity		
– Continuous operation	0,5 m/s	0,5 m/s
– Intermittent operation	1,2 m/s	0,8 m/s
Temperature	–200 ... +260 °C	–200 ... +260 °C

All operating parameters given are maximum values. Simultaneously occurring maximum loads may require design measures in some circumstances. Please consult our technical advisory service.

Design notes

The dimensions of the housings are given in the lists of dimensions. The housing and the rod or shaft should have lead-in chamfers so that the sealing edges of

the seals are not damaged during fitting. The fits and surface qualities of the metal parts as well as the guide affect the function and service life of the seal sets.

Tolerances

Plunger Ø d	Recommended fit	Housing Ø D
... 80	H9/f8	H8
>80 ... 120	H8/f8	
>120 ... 200	H8/f7	

Surface quality

Surface roughness	ISO roughness parameter	Mean roughness R_a
Contact area	4	0,2
Housing outside Ø	6*	0,8
Housing front faces	8	3,2

* Minimum requirement

Fitting notes

Chevron seal sets made of PTFE PTFE chevron seals have relatively high thermal expansion. The seal set must therefore be elastically retained under load by a spring component. The spring force depends on the type and dimensions of the seal profile. For the profile 9409 a pre-load of 0,2 N/mm² is necessary. For the profiles 9403 and 9406 the pre-load from the spring must be 0,8 N/mm², also for smaller dimensions beyond this figure. The information on the spring forces apply for standard applications.

PTFE impregnated fabric Chevron Seal Set

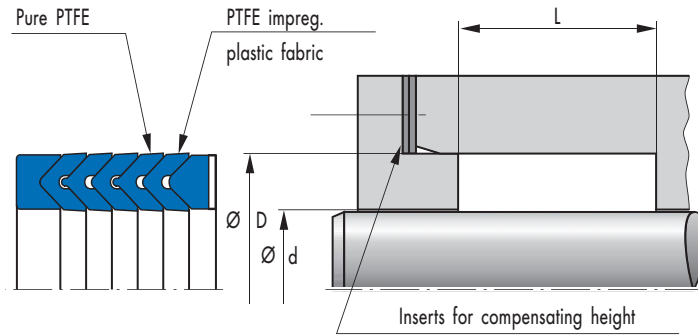
These sets are intended for adjustable housings. As a rule the seal sets are installed without additional spring components.

Recommended Dimensions of the Chevron Seal Sets made of pure PTFE and PTFE Compound

Profile 9409 (single seal)					Profile 9403 (single seal)					Profile 9406 (single seal)										
Article list					0971					0987	0986	0985					0980	0979	0978	0977
B	E	K	M _{min}	L*	E	K	M _{min}	L*				E	K	M _{min}	L*					
				3				3	4	5					2	3	4	5		
4	2,7	2,7	4	15	2,4	2,4	3,5	14	16	18	2,6	2,4	3,5	12	14	17	19			
5	3,4	3,4	4,6	19	3	2,4	4	16	19	22	3,3	3	4	14	17	21	24			
6	4,1	4,1	5	22	3,5	3,5	4,4	19	22	26	3,9	3,5	4,4	16	20	24	28			
7,5	5,1	5,1	5,6	26	4	4	5,1	22	26	30	4,9	4	5,1	19	24	29	34			
10	6,8	6,8	7	35	5	5	6,1	27	32	37	6,5	5	6,1	25	31	38	44			
12,5	8,5	8,5	8,2	43	6	6	7,2	32	38	44	8,1	6	7,2	30	38	46	54			
15	10,2	10,2	9,7	51	7,5	7,5	8,1	39	46	54	9,8	7,5	8,1	36	45	55	65			

* for number of seals.

Article list



d	D	L	Material	Article No.	
20	32	27	MAI-C9T003	24293250	○
22	34	27	MAI-C9T003	24293251	○
25	40	27	MAI-C9T003	24293252	○
28	43	27	MAI-C9T003	24293253	○
30	45	27	MAI-C9T003	24293254	○
32	47	27	MAI-C9T003	24293255	○
35	50	27	MAI-C9T003	24293256	○
36	51	27	MAI-C9T003	24293257	○
40	55	27	MAI-C9T003	24293258	○
45	65	31	MAI-C9T003	24293259	○
50	70	31	MAI-C9T003	24293260	○
55	75	45	MAI-C9T003	24293261	○
56	76	45	MAI-C9T003	24293262	○
60	80	45	MAI-C9T003	24293263	○
65	85	45	MAI-C9T003	24293265	○
70	90	45	MAI-C9T003	24293266	○
75	95	45	MAI-C9T003	24293267	○
80	100	45	MAI-C9T003	24293268	○
85	105	45	MAI-C9T003	24293269	○
90	110	45	MAI-C9T003	24293270	○
100	120	45	MAI-C9T003	24293271	○
125	150	52	MAI-C9T003	24293273	○
140	165	52	MAI-C9T003	24293274	○
150	180	67	MAI-C9T003	24293275	○
160	190	67	MAI-C9T003	24293276	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Packing Ring TFW made of PTFE

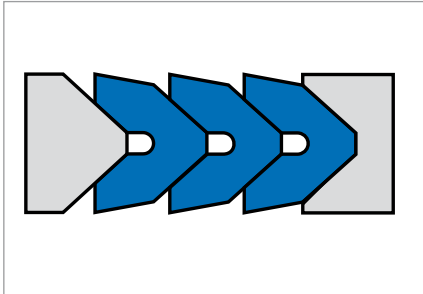


Fig. 1 Merkel Packing Ring TFW made of PTFE

Product description

V-shape sealing ring made of PTFE for making up packings, comprising:

- 1 saddle ring TFS
- 3 to 5 angled rings TFW
- 1 mating ring TFG.

Note:

Only TFW rings are available from stock. Complete packings are only available on request.

Product advantages

Packing rings TFW feature very good chemical and thermal resistance, low friction and favourable breakaway forces even after long periods of down-time.

Application

Packing rings TFW are suitable for axially operated valve spindles, rods and plungers, as well as slowly turning shafts.

Material

Saddle ring	Angled ring	Mating ring
PTFE on request Metal (customer solution)	PTFE 15/F52902 (graphite-filled PTFE)	PTFE on request Metal (customer solution)

→ Technical Manual.

Operating conditions

Pressure	Temperature
31,5 MPa	-200 ... +220 °C

Running speed	on axial movement	on rotary movement
Continuous operation	approx. 0,5 m/s	approx. 0,2 m/s
Intermittent operation	approx. 1,5 m/s	approx. 0,4 m/s

Fitting & installation

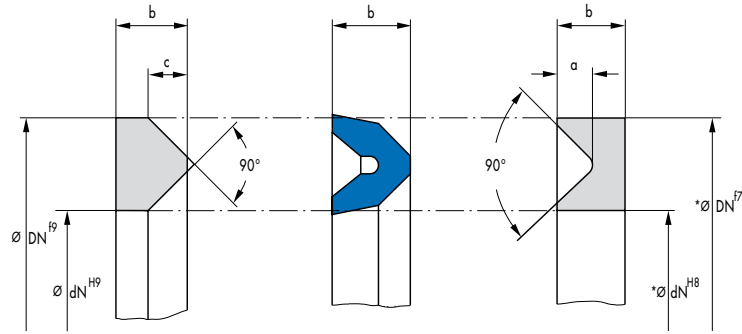
With fluctuating operating temperatures or when sealing a rotating shaft, the packing is to be pre-loaded with 1,5 to 2 N/mm² on the pressure side using a spring. If the spring must be installed on the non-pressurised side then its pre-load is to be matched to the maximum

pressure that occurs. If metal saddle and mating rings are manufactured by the customer, the dimensions are to be taken from the table. The number of PTFE angled rings depends on the pressure of the medium.

We recommend:

p ≤ 3 MPa	p > 3 ... 10 MPa	p > 10 MPa
3 TFW	4 TFW	5 TFW

List of dimensions



* = tolerances only apply for metal design

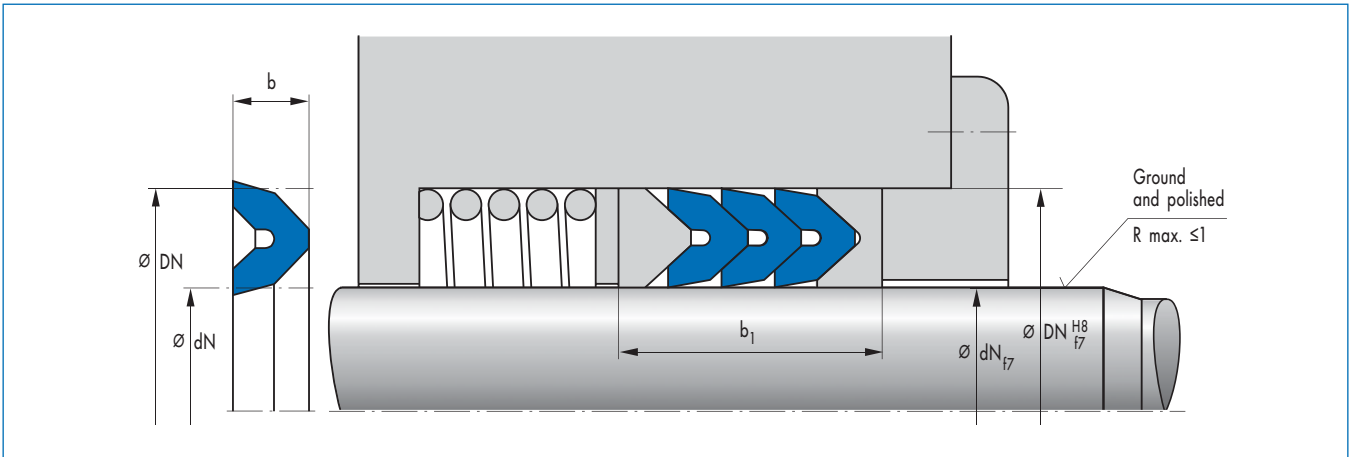
Ø Difference DN-dN	Mating ring TFG ¹⁾		Angled ring TFW	Saddle ring TFS ¹⁾		Packing height	
	b	a	b	b	c	b ₁ ²⁾	Δh ³⁾
8	4,0	1,4	3,8	4,0	1,7	15,3	2,9
10	4,5	1,8	4,8	4,5	2,1	17,8	3,6
12	5,0	2,1	5,8	5,0	2,5	20,3	4,2
15	6,0	2,6	7,0	6,0	3,1	23,5	4,7
20	7,5	3,4	9,3	7,5	4,3	29,6	6,0
25	9,0	4,5	11,2	9,0	5,4	33,7	6,8
30	10,5	5,5	13,0	10,5	6,3	38,4	7,7

¹⁾ TFS/TFG available on request

²⁾ Height with 3 TFW

³⁾ Height increase for each additional angled ring TFW

Article list



d_N	D_N	b	Material	Article No.	
5	17	5,8	PTFE F52902	96598	●
6	14	3,8	PTFE F52902	97294	●
6	18	5,8	PTFE F52902	97913	●
8	16	3,8	PTFE F52902	88	●
8	20	5,8	PTFE F52902	35714	●
10	18	3,8	PTFE F52902	97384	●
10	22	5,8	PTFE F52902	110099	○
12	20	3,8	PTFE F52902	94496	●
12	24	5,8	PTFE F52902	35209	●
13	25	5,8	PTFE F52902	97392	●
15	27	5,8	PTFE F52902	38486	●
16	24	3,8	PTFE F52902	97393	○
16	28	5,8	PTFE F52902	96617	●
20	28	3,8	PTFE F52902	92	●
20	32	5,8	PTFE F52902	95	●
22	34	5,8	PTFE F52902	98944	●
22	34	5,8	PTFE F52902	49019518	○
23	35	5,8	PTFE F52902	38931	○
25	37	5,8	PTFE F52902	98945	●
26	41	7	PTFE F52902	147	○
30	42	5,8	PTFE F52902	99578	○
30	50	9,3	PTFE F52902	35699	●
34	46	5,8	PTFE F52902	39032	○
35	47	5,8	PTFE F52902	39047	●
35	50	7	PTFE F52902	39060	●
36	48	5,8	PTFE F52902	36086	●
38	58	9,3	PTFE F52902	39074	●
40	52	5,8	PTFE F52902	39160	●
40	65	11,2	PTFE F52902	39171	○
45	60	7	PTFE F52902	34161	●
45	65	9,3	PTFE F52902	182	○
48	68	9,3	PTFE F52902	39313	○
50	62	5,8	PTFE F52902	39315	○
50	70	9,3	PTFE F52902	186	○
50	80	13	PTFE F52902	266	○

● Available from stock ○ On request: Tool is available, delivery at short notice

d _N	D _N	b	Material	Article No.	
52	64	5,8	PTFE F52902	39318	○
55	67	5,8	PTFE F52902	208	○
60	80	9,3	PTFE F52902	34245	●
60	85	11,2	PTFE F52902	39326	○
65	85	9,3	PTFE F52902	12462	○
65	90	11,2	PTFE F52902	110662	●
70	82	5,8	PTFE F52902	39330	○
85	105	9,3	PTFE F52902	37457	●
100	125	11,2	PTFE F52902	99462	○
115	135	9,3	PTFE F52902	236	○
130	155	11,2	PTFE F52902	34138	○

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Grafiflex® 6501

Product description

Merkel Grafiflex is characterised by the highest level of chemical resistance and temperature resistance as well as an excellent sealing effect and persistent elasticity. Regardless of temperature cycle, there is no cold flow, shrinkage or ageing of the material. Merkel Grafiflex meets the purity requirements for seals in nuclear power station valves (content of soluble chlorides <20 ppm).

Merkel Grafiflex rings

Compression moulded Merkel Grafiflex rings are supplied with a density between 1,4 and 1,85 g/cm³.

Merkel Grafiflex Strip

Merkel Grafiflex Strip with crosshatch surface pattern is used to make rings in the event of repairs. The Grafiflex material is approved for use with gaseous oxygen, drinking water and for the food processing industry. Like Grafiflex 6509, it is also available with corrosion inhibitor.

For reworked valves with large gap dimensions, the use of Merkel Grafiflex with Merkel Carbosteam 6550 endrings is recommended.

Product advantages

- Very high temperature and chemical resistance
- Excellent sealing effect and constant elasticity
- Fast delivery times without additional tool costs.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
1000 bar	-200 ... +450 °C ¹⁾	0 ... 14
	-200 ... +700 °C ²⁾	
	-200 ... +2500 °C ³⁾	

¹⁾ the majority of media and air

²⁾ steam

³⁾ inert gas

Media

Hot water, feed water, steam, heat transfer oil, hydro-carbons and many other media. Exceptions: strongly oxidising media.

Merkel Grafiflex® Cover Seal

Product description

Merkel Grafiflex cover seals are supplied as pre-pressed rings and are proven in self-sealing covers, e.g. in large valves and in high-pressure water pre-heaters.

Product advantages

Merkel Grafiflex stays elastic even with continually varying temperature and pressure up to 200 N/mm² surface pressure. It correctly bridges gap widths on large, self-sealing covers up 0,3 mm. Larger gaps are controlled by Merkel Grafiflex using springs made of material 1.4571 integrated into the corners of the packing rings by pressing.

Application

Valves.

Operating conditions

Operating pressure	Temperature	pH value
1000 bar	-200 ... +550 °C ¹⁾	0 ... 14
	-200 ... +700 °C ²⁾	
	-200 ... +2500 °C ³⁾	

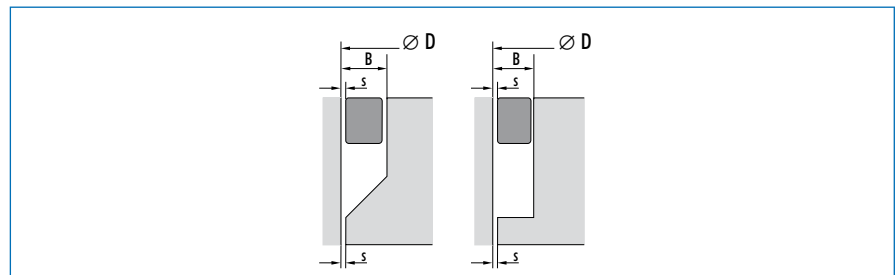
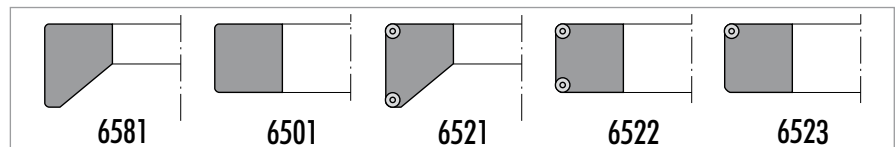
¹⁾ the majority of media and air

²⁾ steam

³⁾ inert gas

Media

Hot water, feed water, steam, heat transfer oil, hydro-carbons and many other media. Exceptions: strongly oxidising media.



Ø D	B	S (centr.)
350	20	0,8
350	>20	1,2
>350	20	0,8
>350	25	1,2
>350	>25	1,5

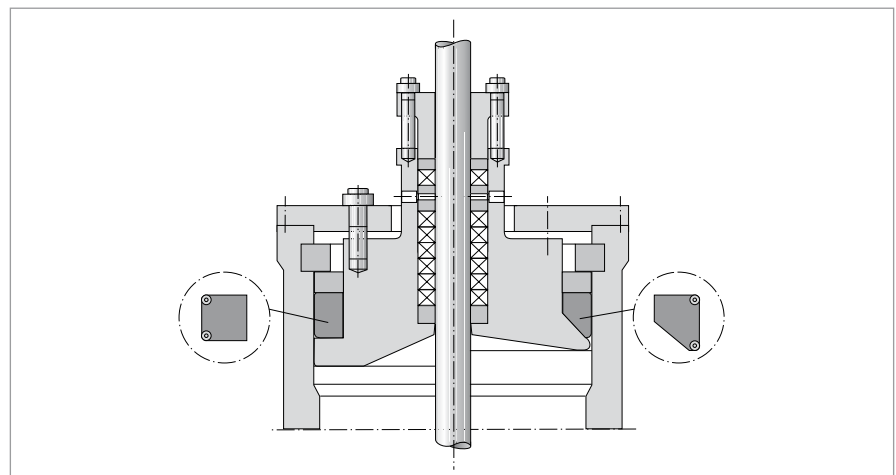


Fig. 1

Sealing Cover GA, GSA

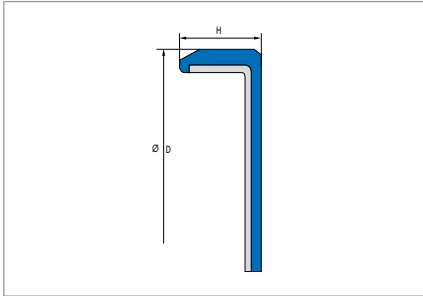


Fig. 1 Sealing Cover GA

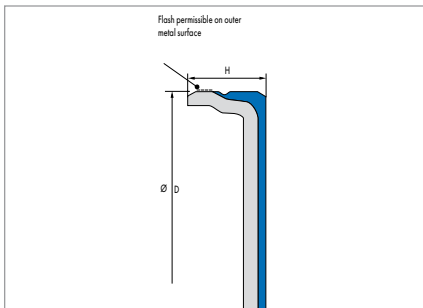


Fig. 2 Sealing Cover GSA

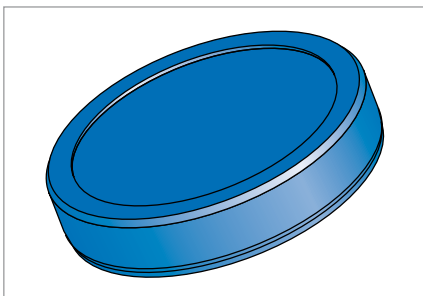


Fig. 3 Sealing Cover GA – Top view

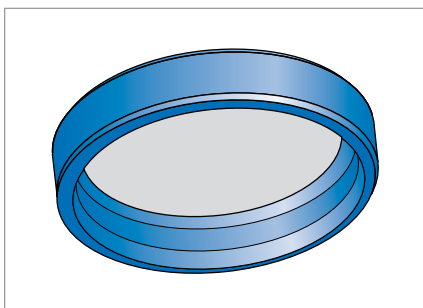


Fig. 4 Sealing Cover GA – Bottom view

Product description

- GA (normal design, rubber outside): sealing cover with vulcanised metal inserts made of sheet steel
- GSA (special design, rubber/steel outside): sealing cover with vulcanised metal inserts made of sheet steel with metal seat (H8).

Product advantages

- Secure sealing to the housing bore, even with increased roughness of the bore, higher thermal expansion and split housings
- Very stable construction
- Can be painted
- Variety of standard versions.

Material

Sealing cover for the static sealing of boreholes in housings with press fitting e.g. shaft pass through walls in gearbox housings.

Material

Acrylonitrile-butadiene rubber

Designation	75 NBR 99004
Colour	Black
Hardness	approx. 75 Shore A
Metal insert	unalloyed steel DIN EN 10139 (DIN 1624)

Sealing covers made of other materials and in other dimensions available on enquiry.

Operating conditions

Media	All common mineral oils
Temperature	-40 ... +100 °C

Fitting & installation

Design of locating bore

Tolerance	ISO H8
Roughness type GA	R _{max} ≤ 25 µm R _a = 1,6 ... 6,3 µm R _z = 10 ... 25 µm
Roughness type GSA	R _{max} ≤ 16 µm R _a = 0,8 ... 3,2 µm R _z = 6,3 ... 16 µm

Article list

D	H	Material	Type	Article No.	
19	7	75 NBR M99004	GA	506544	●
22	4	75 NBR M99004	GA	456944	●
22	5	75 NBR M99004	GSA	506567	●
22	8	75 NBR M99004	GA	426125	○
24	7	75 NBR M99004	GA	421453	○
28	4	75 NBR M99004	GA	506547	●
28	7	75 NBR M99004	GA	506548	○
28	7	75 NBR M99004	GSA	506568	●
30	5	75 NBR M99004	GA	506549	●
30	8	75 NBR M99004	GSA	506685	●
32	7	75 NBR M99004	GA	506550	●
35	7	75 NBR M99004	GA	450889	●
35	8	75 NBR M99004	GSA	506569	●
37	5	75 NBR M99004	GA	506551	●
37	7	75 NBR M99004	GSA	506570	●
40	7	75 NBR M99004	GA	452807	●
42	7	75 NBR M99004	GSA	506572	●
42	9,5	75 NBR M99004	GSA	506686	●
45	7	75 NBR M99004	GA	506552	●
47	7	75 NBR M99004	GA	506554	●
47	7	75 NBR M99004	GSA	506573	●
47	10	75 NBR M99004	GSA	506687	●
52	7	75 NBR M99004	GA	414626	●
52	7	75 NBR M99004	GSA	506574	●
52	10	75 NBR M99004	GSA	506575	●
55	10	75 NBR M99004	GA	450892	○
55	10	75 NBR M99004	GSA	503418	●
62	7	75 NBR M99004	GA	506556	●
62	8	75 NBR M99004	GSA	440418	●
62	10	75 NBR M99004	GA	506558	○
72	9	75 NBR M99004	GSA	506576	●
72	10	75 NBR M99004	GA	506559	●
80	10	75 NBR M99004	GA	506561	●
80	12	75 NBR M99004	GSA	506577	●
85	10	75 NBR M99004	GA	506562	●
90	10	75 NBR M99004	GA	506563	●
90	12	75 NBR M99004	GSA	506578	●
100	10	75 NBR M99004	GA	506564	●
100	12	75 NBR M99004	GSA	506579	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Flex-O-Form S

Product description

Seal according to DIN 28091-TF-Z-O. Merkel Gasket Flex-O-Form S, a modified, light PTFE material with low content of a mineral filler, is used in chemically and thermally critical cases on flange and pipe connections.

Product advantages

- Best sealing values even with temperature change
- Good adaptability even on very rough sealing surfaces
- High chemical resistance (low filler content)
- High thermal resistance
- Good resetting ability
- Anti-adhesive
- Good sealing effect even at surface pressure beyond 12 N/mm² due to the homogeneity of the material.

Application

Flanges, pipe connections and boilers in the chemicals industry, foodstuffs industry, plant engineering and armament manufacture, tower cover seals, gauge-glass fittings.

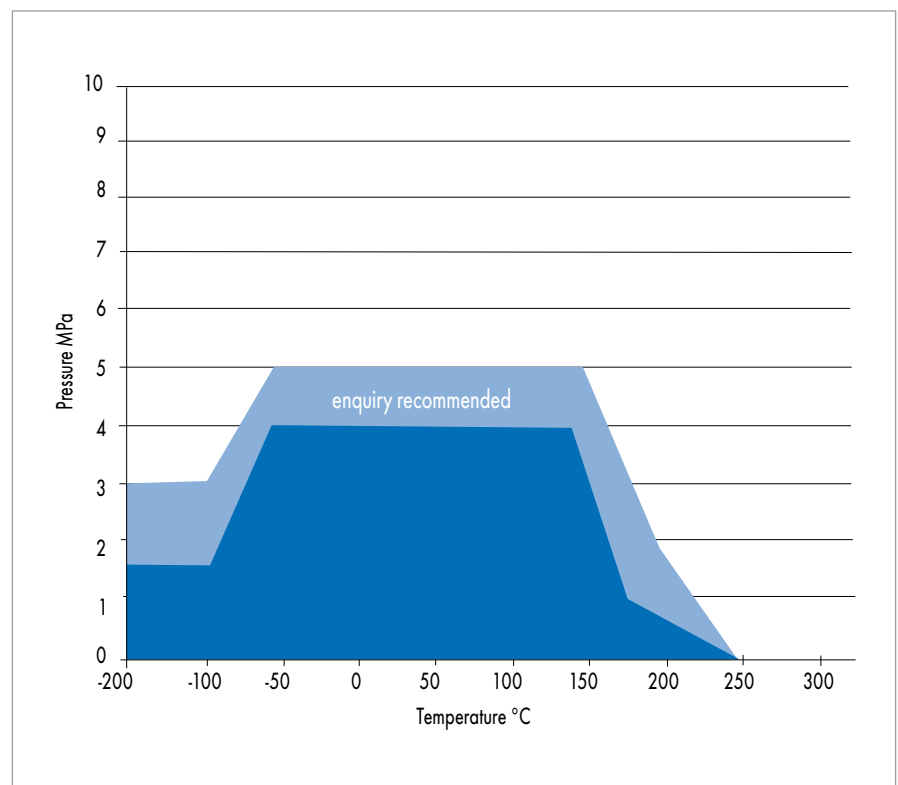
Material

Material	PTFE
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Operating conditions

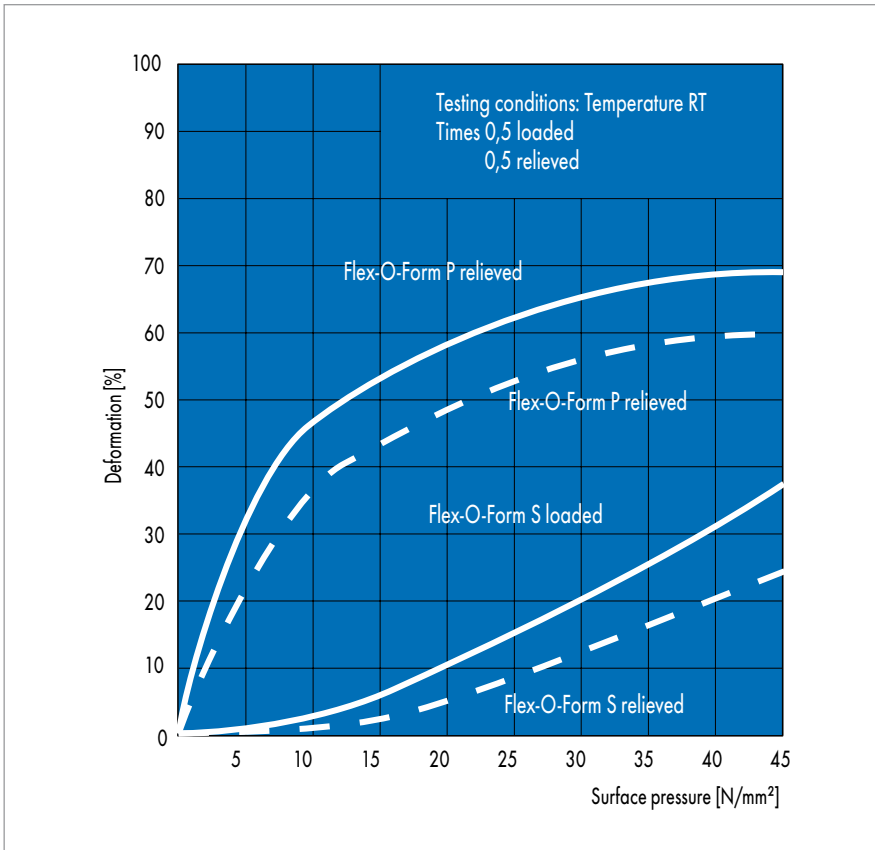
Seal characteristics according to DIN 28091, Part 3

Characteristic values	Value
Density	2,2 g/cm ³
Cold buckling value E KSW	12,6%
Cold resilience value E KRW	3,8%
Warm settling value E WSW	46,2%
Thermal resilience value E WRW	8,4%
Resilience R	0,159 mm
Spec. leak rate 8 λ	<10 ... 4 mg/s



Design notes

Deformation and resetting ability



Merkel Flex-O-Form S is suitable for a separating processing through jet cutting up to 3 mm plate thickness.

Merkel Flex-O-Form P

Product description

Seal according to DIN 28091-TF-C-O. Merkel Flex-O-Form P, a modified, dark grey PTFE material with a low degree of a special graphite as filler is used in chemically and thermally critical cases on flange and pipe connections as well as housings and as frame seal.

Product advantages

- Very good adaptability on uneven surfaces and flanges
- High compressibility and pressure resistance
- Good resetting ability
- Best sealing values even with temperature change
- High chemical resistance (low filler content)
- High thermal resistance
- Anti-adhesive
- Electroconductive.

Application

Flanges, pipe connections, boilers and large heat exchangers (Ø >2 m) in the chemicals industry, plant engineering and armament manufacture, glass seals of lamps in industrial ovens, valves on tank cars.

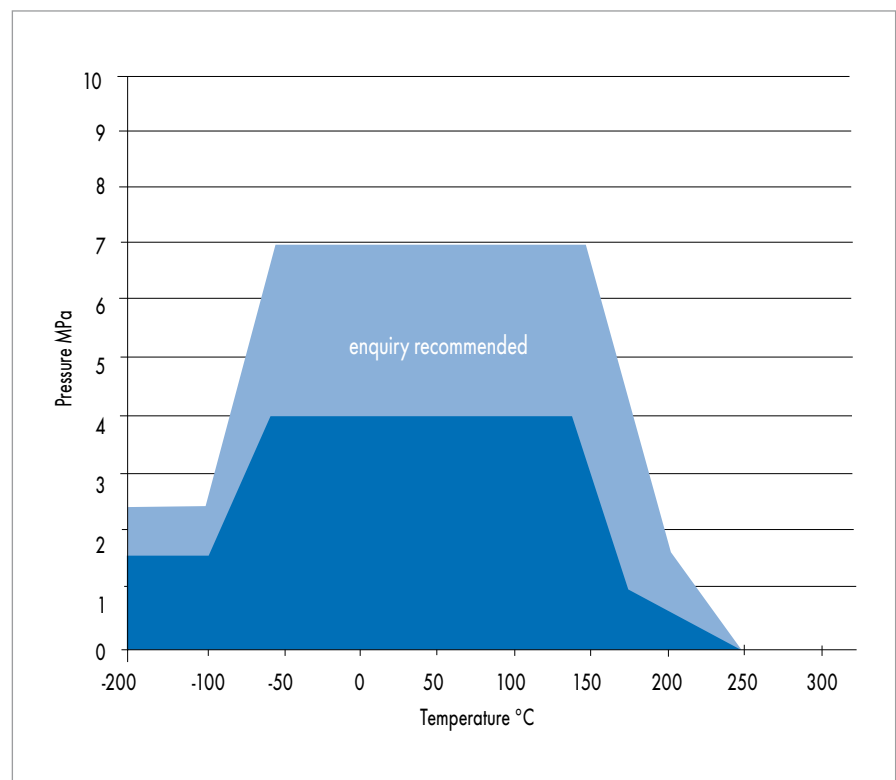
Material

Material	PTFE
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Operating conditions

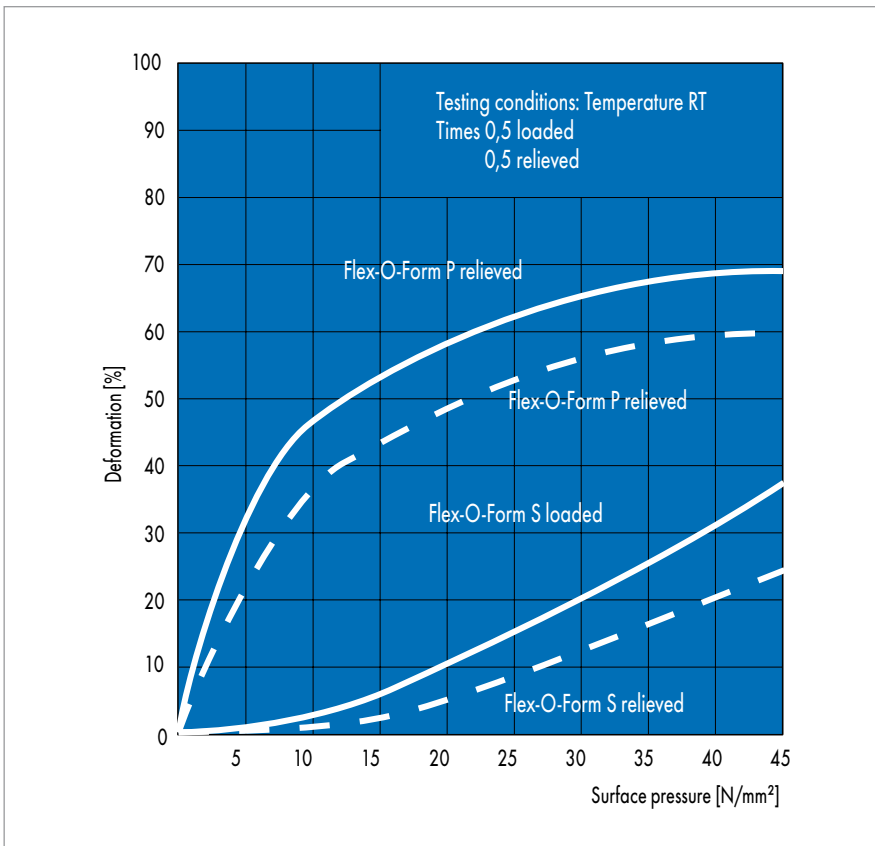
Seal characteristics according to DIN 28091, Part 3

Characteristic values	Value
Density	1,2 g/cm ³
Cold buckling value E KSW	57%
Cold resilience value E KRW	4,1%
Warm settling value E WSW	15,2%
Thermal resilience value E WRW	3,0%
Resilience R	0,064 mm
Spec. leak rate λ	<10 ... 4 mg/s m



Design notes

Deformation and resetting ability



Merkel Flex-O-Form P has a very good adaptability. It has a good resetting ability (difference between full and dotted line) after a strong deformation of the seal. Merkel Flex-O-Form P is suitable for a separating processing through jet cutting up to 4 mm plate thickness.

Merkel Flex-O-Dit

Product description

Merkel Flex-O-Dit is a durable, resistant flat gasket strip from the roll. It consists of 100% PTFE and is manufactured in a special process by forming of the fibre structure.

Product advantages

- High chemical and thermal resistance
- Good plastic deformability
- Great adaptability to surface structures
- High pressure resistance
- No cold flow
- Self-adhesive and manageable
- Cost-effective stockkeeping.

Application

Flanges, covers, housing connections, pipes, special valves.

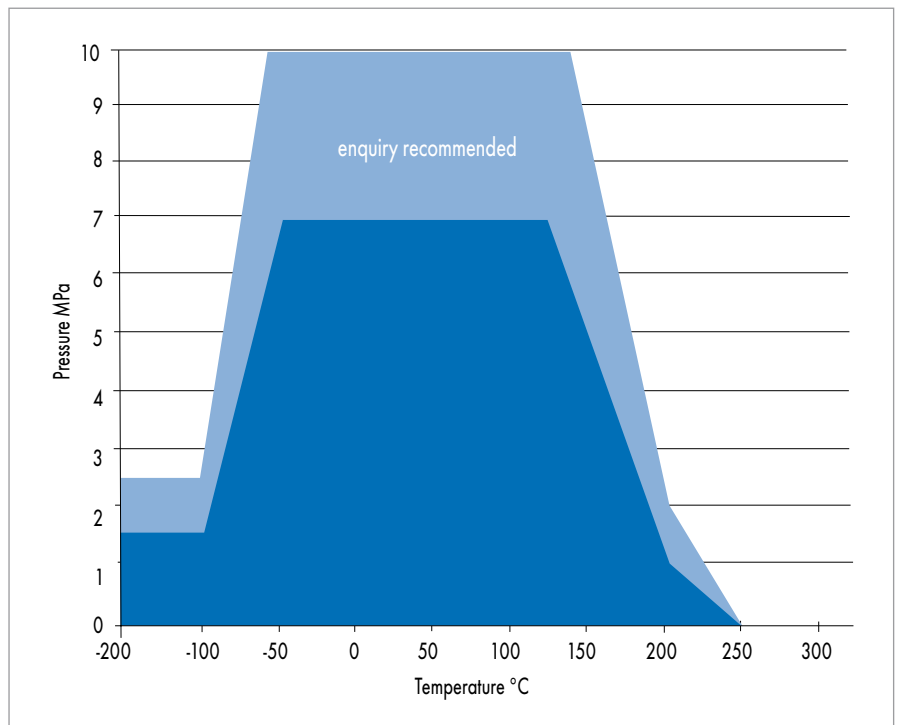
Material

Material	PTFE
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Operating conditions

Media	Pressure	Temperature	pH value
All media, Exceptions: molten alkali metals, elementary fluorine	20 MPa*	Oil hydraulics -240 ... +260 °C	0 ... 1

* depending on temperature and installation conditions



Fitting & installation

The sealing surfaces must be clean, grease-free and dry. The width of the sealing strip is to be determined according to the flange nominal maxima. Remove the protective film of the adhesive strip for installing. Adhere the sealing

strip within the hole circle and press lightly. Place the ends in front of a pin in a crossed overlapped arrangement, not joined to butt. Place only one ring in each case.

Article list

Strip width	Strip length	Strip thickness	Material	Article No.	
3	30000	1,5	PTFE V070	24203759	<input type="radio"/>
5	20000	2	PTFE V070	24217108	<input type="radio"/>
14	5000	5	PTFE V070	24217111	<input type="radio"/>
17	5000	6	PTFE V070	24217112	<input type="radio"/>
20	5000	7	PTFE V070	24211402	<input type="radio"/>

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel Triboflon

Product description

Merkel Triboflon Sealing and Lubricating Paste is universally applicable and can best be used as fitting aid for threaded connections, in the food processing industry, as lubricant between metal bodies, for sealing of fine threads, valves and other moving parts made of glass, ceramic and metal.

Product advantages

- Very good resistance to ageing
- Universal chemical resistance
- Very good adhesion to metal surfaces
- Not volatilisation
- High viscosity, colourless, odourless, water soluble.

Material

Merkel Triboflon Sealing and Lubricating paste is a mixture of polytetrafluoroethylene (PTFE) and perfluoropolyether (PFPE).

Operating conditions

Media	Temperature
Acids, alkalis, solvents and gases	-30 ... + 300 °C

Fitting notes

Surfaces must be clean and free from grease and oil. Please request our general fitting notes.

Article list

In bundles each	Article No.
100 g	9857-157.708
1000 g	9857-154.179

Forseal FOI made of PTFE

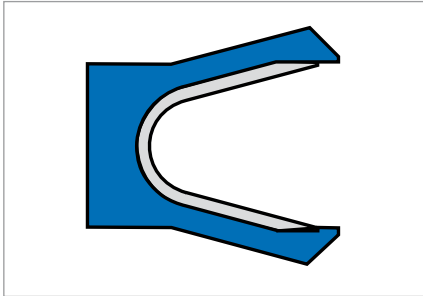


Fig. 1 Forseal FOI made of PTFE

Product description

Single acting, U-ring type PTFE seal with metal tension spring.

Product advantages

Axially moving rod seal, interchangeable for O-ring housings (ARP568, MIL-P-5514)

- Extremely media and temperature resistant
- Good dry running properties
- Low static and dynamic friction values.

Application

Hot water valves, accumulators, hydraulic and pneumatic cylinders as well as applications in food processing, medical and chemical technology.

Design notes

Beside the default dimensions, all special dimensions considering the U-ring profiles are available on request without surcharge for the tool. Dimensions available from Ø 5 mm (rod) to approx. 2000 mm. In general, installation is only possible in split, axially accessible grooves. Installation in half-open grooves possible in exceptional cases. → Technical Manual.

Material

Material	Code	Tension spring
Carbon-filled PTFE	PTFE 10/F56110	Standard stainless steel (part no. 1.4310)

Operating conditions

Material	PTFE 10/F56110 + 1.4310
Temperature range in °C	
Hydraulic fluids, oil, water, steam, air, solvents, pharmaceutical goods, foodstuffs or all media that do not attack PTFE and stainless steel	-200 ... +260
Pressure p in MPa	30
Running speed v in m/s	15

Material	PTFE 10/F56110 + spring Hastelloy C276 (Not available ex-works)
Temperature range in °C	
Aggressive acids and alkalis	-200 ... +260
Pressure p in MPa	30
Running speed v in m/s	15

Rotary and pivoting motions possible. No rotation. → Technical Manual.

Surface quality

Sealing surfaces, dynamic/static: → Fig. 2

Lead-in chamfers: $R_a < 1,6 \mu\text{m}$

Sides of groove: $R_a < 2,5 \mu\text{m}$

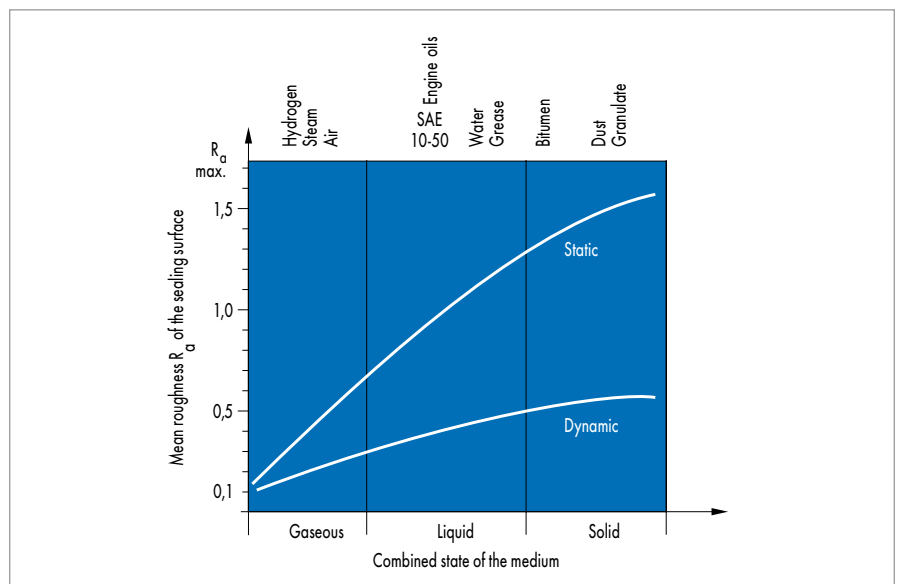
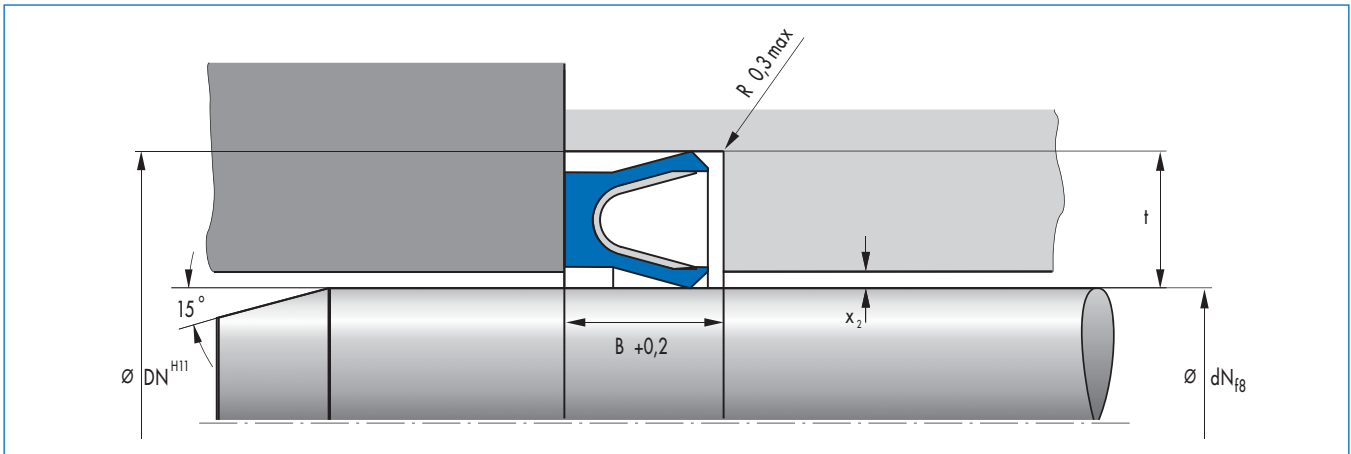


Fig. 2 Surface recommendation for sealing surfaces

Article list



d _N	D _N	h	t	x ₂ max	interchangeable for O-ring	B+0,2	Material	Article No.	
5	7,9	2,1	1,45	0,07	1,78	2,4	PTFE F56110	422362	●
6	8,9	2,1	1,45	0,07	1,78	2,4	PTFE F56110	469398	●
8	10,9	2,1	1,45	0,07	1,78	2,4	PTFE F56110	435977	●
10	12,9	2,1	1,45	0,07	1,78	2,4	PTFE F56110	435975	●
10	14,5	3,2	2,25	0,08	2,62	2,4	PTFE F56110	366345	●
12	16,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	164660	●
14	18,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	366346	●
16	20,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	422359	●
18	22,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	365876	●
20	24,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	366348	●
22	28,2	4,3	3,1	0,1	3,53	4,8	PTFE F56110	422373	●
25	31,2	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366349	●
28	34,2	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366350	●
28	34,2	4,3	3,1	0,1	3,53	4,8	PTFE F56110	49029924	○
30	36,2	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366351	●
32	38,2	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366352	●
36	42,2	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366353	●
40	46,2	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366354	●
45	54,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366355	●
48	57,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	389790	○
50	59,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366356	●
55	64,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	379672	○
56	65,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	434452	●
60	69,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366357	●
63	72,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366358	●
63	72,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	433995	○
65	74,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	382322	●
70	79,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366359	●
72	81,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	433998	○
80	89,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366360	●
90	99,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	162680	○
90	99,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	386511	●
100	109,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366361	●
125	137,2	9	6,1	0,15	7	9,5	PTFE F56110	160404	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Forseal FOA made of PTFE

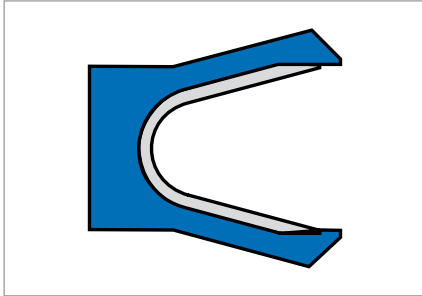


Fig. 1 Forseal FOA made of PTFE

Product description

Single acting, U-ring type PTFE seal with metal tension spring.

Product advantages

Axially moving piston seal, interchangeable for O-ring housings (ARP568, MIL-P-5514)

- Extremely resistant to media and temperature
- Good dry running properties
- Low static and dynamic friction values.

Application

Hot water valves, accumulators, hydraulic and pneumatic cylinders as well as applications in food processing, medical and chemical technology.

Design notes

Beside the default dimensions, all special dimensions considering the U-ring profiles are available on request without surcharge for the tool. Dimensions available from Ø 10 (piston) to approx. 2000 mm. In general, installation is only possible in split, axially accessible grooves. Installation in half-open grooves possible in exceptional cases. → Technical Manual.

Material

Material	Code	Tension spring
PTFE carbon-filled	PTFE 10/F56110	stainless steel (Material No. 1.4310)

Operating conditions

Material	PTFE 10/F56110 + 1.4310
	Temperature range in °C
Hydraulic oils, oil, water, steam, air, solvents, pharmaceutical goods, foodstuffs or all media that do not attack PTFE and stainless steel	-200 ... +260
Pressure p in MPa	30
Running speed v in m/s	15

Material	PTFE 10/F56110 +spring Hastelloy C276 (Not available ex-works)
	Temperature range in °C
Aggressive acids and alkalis	-200 ... +260
Pressure p in MPa	30
Running speed v in m/s	15

Turning-pivoting movements possible. No rotation. → Technical Manual.

Surface quality

Sealing surfaces, dynamic/static: → Fig. 2

Lead-in chamfers: $R_a < 1,6 \mu\text{m}$

Sides of groove: $R_a < 2,5 \mu\text{m}$

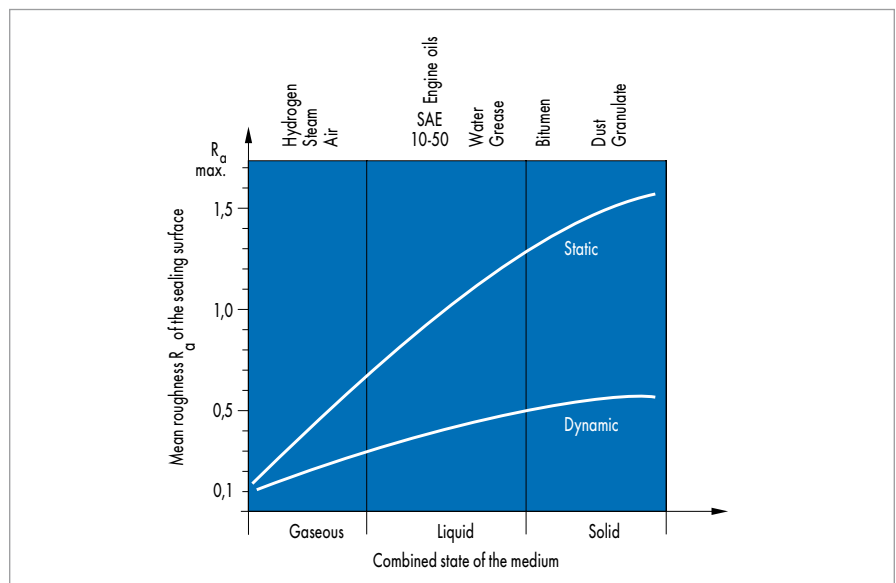
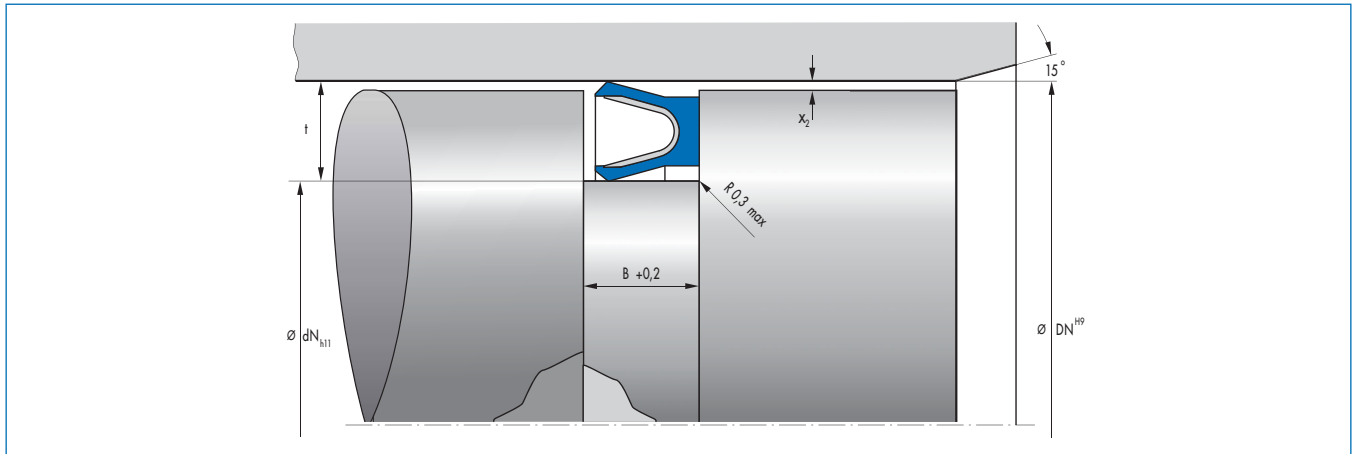


Fig. 2 Surface recommendation for sealing surfaces

Article list



D _N	d _N	h	t	x _{2 max}	interchangeable for O-ring	B + 0,2	Material	Article No.	
10	7,1	2,1	1,45	0,07	1,78	2,4	PTFE F56110	422091	●
12	9,1	2,1	1,45	0,07	1,78	2,4	PTFE F56110	435978	●
14	9,5	2,1	1,45	0,07	1,78	2,4	PTFE F56110	417777	○
16	11,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	372523	●
18	13,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	397780	●
20	15,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	366331	●
24	19,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	525886	○
25	20,5	3,2	2,25	0,08	2,62	3,6	PTFE F56110	366333	●
28	21,8	4,3	3,1	0,1	3,53	4,8	PTFE F56110	390784	●
30	23,8	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366335	●
32	25,8	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366336	●
35	28,8	4,3	3,1	0,1	3,53	4,8	PTFE F56110	371930	●
40	33,8	4,3	3,1	0,1	3,53	4,8	PTFE F56110	366337	●
42	35,8	4,3	3,1	0,1	3,53	4,8	PTFE F56110	434448	●
45	38,8	4,3	3,1	0,1	3,53	4,8	PTFE F56110	371448	●
48	38,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	422093	○
50	40,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366338	●
55	45,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	422322	●
56	46,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	422323	●
60	50,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366339	●
63	53,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366340	●
65	74,4	6,6	4,7	0,12	5,33	7,1	PTFE F56110	371445	●
70	60,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366341	●
75	65,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	422325	●
80	70,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366342	●
85	75,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	422327	○
90	80,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	422328	●
95	85,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	389792	●
100	90,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	366343	●
110	100	6,6	4,7	0,12	5,33	7,1	PTFE F56110	422331	●
120	110,6	6,6	4,7	0,12	5,33	7,1	PTFE F56110	162774	○
125	115	6,6	4,7	0,12	5,33	7,1	PTFE F56110	422333	●
130	117	9	6,1	0,15	7	9,5	PTFE F56110	434449	○
140	127	9	6,1	0,15	7	9,5	PTFE F56110	434451	●
150	137	9	6,1	0,15	7	9,5	PTFE F56110	373520	●
160	147,8	9	6,1	0,15	7	9,5	PTFE F56110	165069	●

● Available from stock ○ On request: Tool is available, delivery at short notice

D _N	d _N	h	t	x _{2 max}	interchangeable for O-ring	B+0,2	Material	Article No.	
170	157	9	6,1	0,15	7	9,5	PTFE F56110	422332	●
180	167	9	6,1	0,15	7	9,5	PTFE F56110	422335	●
190	177	9	6,1	0,15	7	9,5	PTFE F56110	405589	●
200	187	9	6,1	0,15	7	9,5	PTFE F56110	378166	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Merkel U-Rings made of PTFE

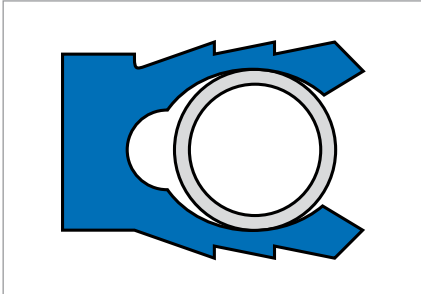


Fig. 1 Merkel U-Rings made of PTFE

Product description

- One-sided with pressure applied to seal
- Metal spring is used as pre-load component for the sealing lips
- System pressure overrides the pre-load during operation.

Product advantages

- Small housing
- Suitable for high pressures and vacuum
- Suitable for stroke, rotary, pivoting movements and for static applications
- Universal chemical resistance
- Large temperature range
- Good dry running properties
- Low friction forces
- Free of stick-slip
- Resistant to ageing
- Permanently elastic due to metal spring.

Application

Fittings manufacture, general chemistry, mechanical engineering, foodstuffs industry, pharmaceuticals, petrochemicals.

- e.g. ball cocks, flanges/covers, rotary joints and manifolds, hot water and steam valves, valve journals, control shafts, reciprocating pumps, bearings.

Material

The mechanical properties such as pressure resistance and resistance to abrasion, thermal expansion etc. can be improved for specific applications through the addition of fillers.

The most important materials are:

- PTFE/carbon
- PTFE/carbon fibre
- PTFE/ glass/MoS₂
- PTFE/ekonol
- PTFE/aramide
- UH MW PE

Spring materials: 1.4310 (AISI 301), 2.4711, elgiloy.

Operating conditions

Material	PTFE
Pressure p* in MPa	dynamic <45, static <120
Temperature range in °C	-200 ... +260
Sliding speed v in m/s	reciprocating <10, rotating <2,5

* From 25 MPa the usage of back-up rings can be necessary (depending on gap width, temperature, pressure, material). Also gaps caused by the expansion of the components can make the usage of back-up rings necessary. Please consult our advisory service.

Surface quality

Sealing surfaces, dynamic/static: → Fig. 2

Lead-in chamfers: $R_a < 1,6 \mu\text{m}$

Groove flanks: $R_a < 2,5 \mu\text{m}$

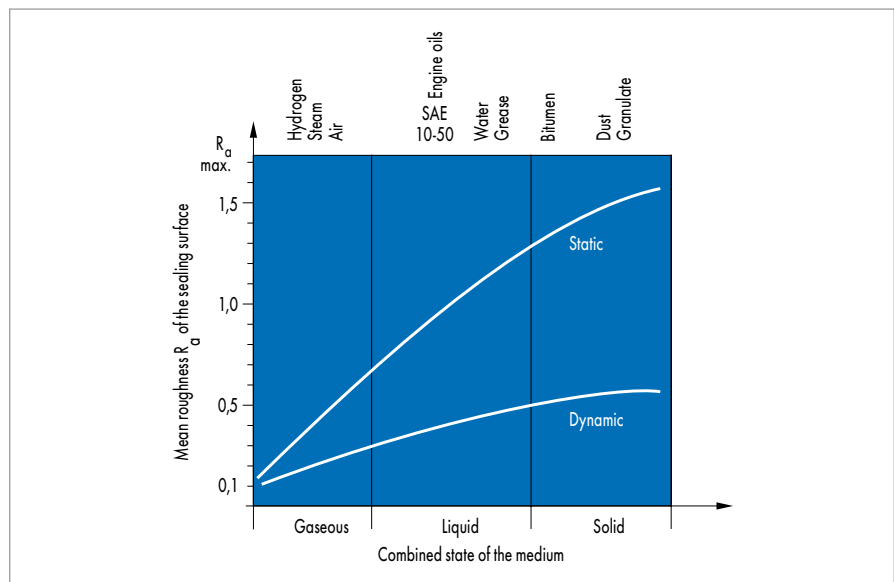


Fig. 2 Surface recommendation for sealing surfaces.

Fitting & installation

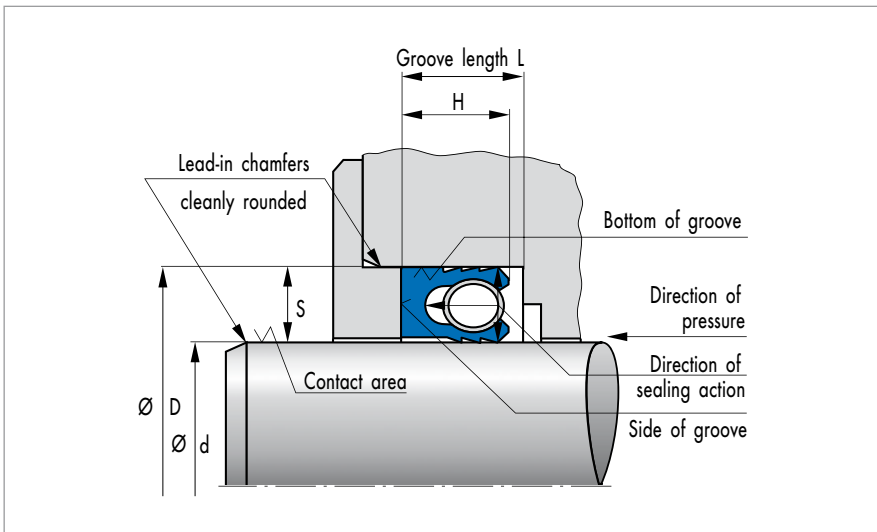


Fig. 3 Terms for the housings

Installation preferably in axially accessible grooves.

- If it is necessary to clip or snap, e.g., into half open housings, please consult us
- Provide lead-in chamfers on rods and housings
- Avoid sharp edges
- The housings must be clean and free of foreign bodies.

U-Ring NRVI (Type 9492 with V-shaped spring)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

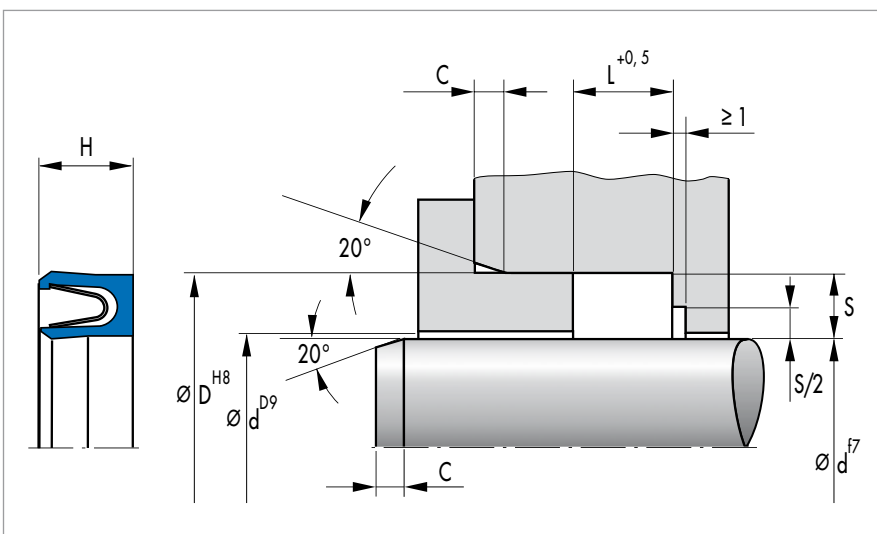


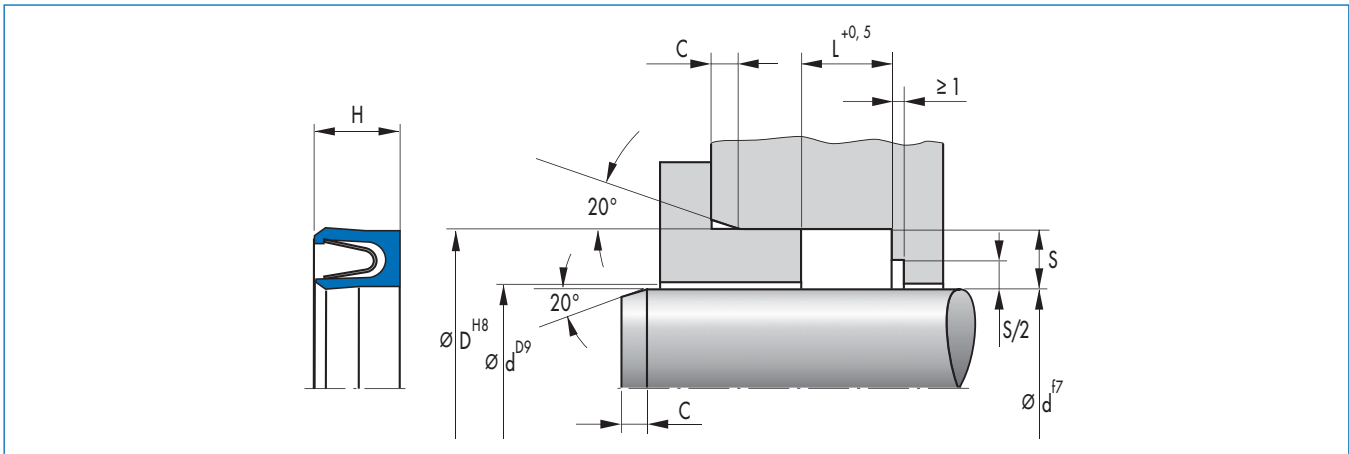
Fig. 4 Installation example

Sizing recommendation

This sizing recommendation is an addition to the article list. It is only used if the article list does not contain a suitable size.

Available dimension range d		S	H	L	C
from	to				
>10	20	2,25	3,10	3,60	>1,0
>20	40	3,10	4,30	4,80	>1,2
>40	150	4,70	6,50	7,10	>1,5
>150	2000	6,10	8,50	9,50	>2,0

Article list U-Ring NRVI (Type 9492 with V-Shaped spring)



d	D	S	H	L	Material	Article No.	
10	14,5	2,25	3,1	3,6	PTFE K270	24316031	○
12	16,5	2,25	3,1	3,6	PTFE K270	24316032	○
14	18,5	2,25	3,1	3,6	PTFE K270	24316033	○
15	19,5	2,25	3,1	3,6	PTFE K270	24316034	○
16	20,5	2,25	3,1	3,6	PTFE K270	24316035	○
18	22,5	2,25	3,1	3,6	PTFE K270	24267665	○
20	24,5	2,25	3,1	3,6	PTFE K270	24316036	○
22	28,2	3,1	4,3	4,8	PTFE K270	24316011	○
25	31,2	3,1	4,3	4,8	PTFE K270	24316012	○
28	34,2	3,1	4,3	4,8	PTFE K270	24316013	○
30	36,2	3,1	4,3	4,8	PTFE K270	24316014	○
32	38,2	3,1	4,3	4,8	PTFE K270	24316015	○
35	41,2	3,1	4,3	4,8	PTFE K270	24316016	○
36	42,2	3,1	4,3	4,8	PTFE K270	24316017	○
40	46,2	3,1	4,3	4,8	PTFE K270	24316018	○
42	51,4	4,7	6,5	7,1	PTFE K270	24315981	○
45	54,4	4,7	6,5	7,1	PTFE K270	24315982	○
50	59,4	4,7	6,5	7,1	PTFE K202	24315479	○
55	64,4	4,7	6,5	7,1	PTFE K270	24315983	○
56	65,4	4,7	6,5	7,1	PTFE K270	24315984	○
60	69,4	4,7	6,5	7,1	PTFE K270	24315985	○
63	72,4	4,7	6,5	7,1	PTFE K270	24315986	○
65	74,4	4,7	6,5	7,1	PTFE K270	24315987	○
70	79,4	4,7	6,5	7,1	PTFE K270	24315988	○
75	84,4	4,7	6,5	7,1	PTFE K270	24315989	○
80	89,4	4,7	6,5	7,1	PTFE K270	24315990	○
85	94,4	4,7	6,5	7,1	PTFE K270	24315973	○
90	99,4	4,7	6,5	7,1	PTFE K270	24315974	○
100	109,4	4,7	6,5	7,1	PTFE K270	24315975	○
110	119,4	4,7	6,5	7,1	PTFE K270	24315976	○
115	124,4	4,7	6,5	7,1	PTFE K270	24315977	○
125	134,4	4,7	6,5	7,1	PTFE K270	24315978	○
140	149,4	4,7	6,5	7,1	PTFE K202	24315979	○
150	159,4	4,7	6,5	7,1	PTFE K270	24315980	○
160	172,2	6,1	8,5	9,5	PTFE K270	24315967	○
180	192,2	6,1	8,5	9,5	PTFE K270	24315968	○

● Available from stock ○ On request: Tool is available, delivery at short notice

d	D	S	H	L	Material	Article No.	
200	212,2	6,1	8,5	9,5	PTFE K270	24315969	<input type="radio"/>

Available from stock
 On request: Tool is available, delivery at short notice

U-Ring NRVA (Type 9490 with V-shaped spring)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

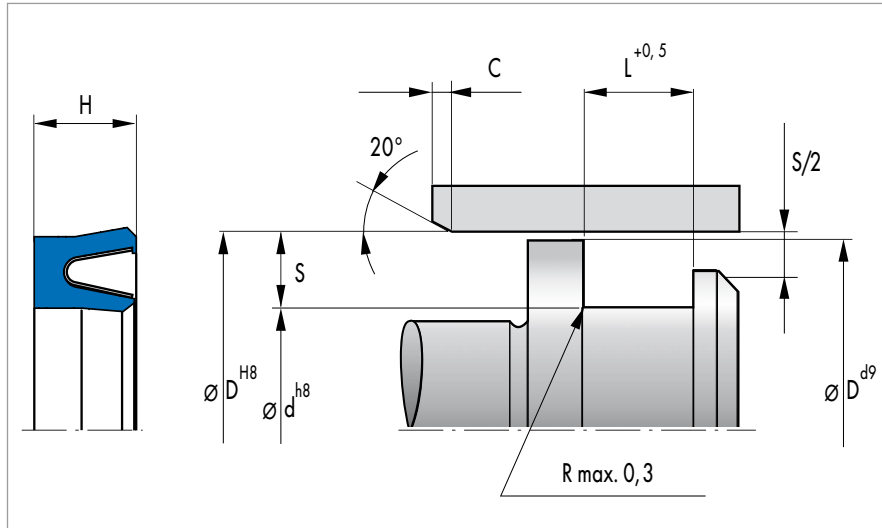


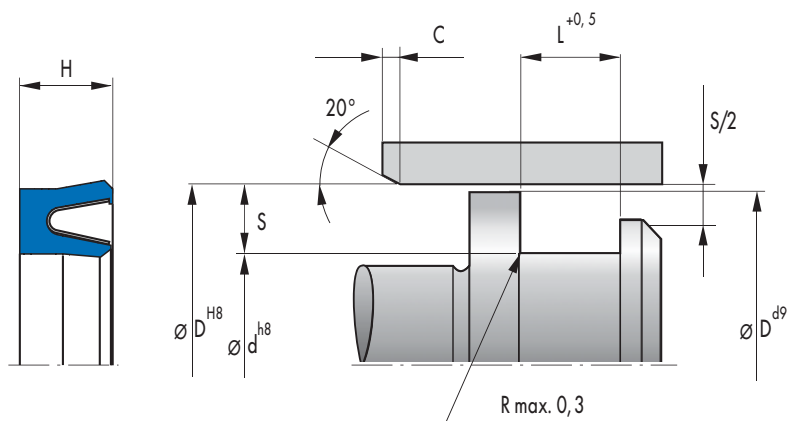
Fig. 5 Installation example

Sizing recommendation

This sizing recommendation is an addition to the article list. It is only used if the article list does not contain a suitable size.

Available dimension range d		S	H	L	C
from	to				
>15	25	2,25	3,10	3,60	≥1,0
>25	45	3,10	4,30	4,80	≥1,2
>45	155	4,70	6,50	7,10	≥1,5
>155	2000	6,10	8,50	9,50	≥2,0

Article list U-Ring NRVA (Type 9490 with V-shaped spring)



d	D	S	H	L	Material	Article No.	
10,5	15	2,25	3,1	3,6	PTFE K202	24297797	○
11,5	16	2,25	3,1	3,6	PTFE K202	24315800	○
13,5	18	2,25	3,1	3,6	PTFE K202	24315802	○
15,5	20	2,25	3,1	3,6	PTFE K202	24315803	○
17,5	22	2,25	3,1	3,6	PTFE K202	24315804	○
20,5	25	2,25	3,1	3,6	PTFE K202	24315805	○
21,8	28	3,1	4,3	4,8	PTFE K202	24315868	○
23,8	30	3,1	4,3	4,8	PTFE K202	24315869	○
25,8	32	3,1	4,3	4,8	PTFE K202	24315783	○
28,8	35	3,1	4,3	4,8	PTFE K202	24315870	○
29,8	36	3,1	4,3	4,8	PTFE K270	24315871	○
33,8	40	3,1	4,3	4,8	PTFE K270	24315872	○
35,8	42	3,1	4,3	4,8	PTFE K202	24315873	○
38,8	45	3,1	4,3	4,8	PTFE K270	24315874	○
40,6	50	4,7	6,5	7,1	PTFE K270	24315816	○
45,6	55	4,7	6,5	7,1	PTFE K270	24315817	○
46,6	56	4,7	6,5	7,1	PTFE K270	24315818	○
50,6	60	4,7	6,5	7,1	PTFE K270	24315819	○
53,6	63	4,7	6,5	7,1	PTFE K270	24315820	○
55,6	65	4,7	6,5	7,1	PTFE K270	24315821	○
60,6	70	4,7	6,5	7,1	PTFE K270	24315822	○
65,6	75	4,7	6,5	7,1	PTFE K270	24315823	○
70,6	80	4,7	6,5	7,1	PTFE K270	24315824	○
75,6	85	4,7	6,5	7,1	PTFE K270	24306946	○
80,6	90	4,7	6,5	7,1	PTFE K270	24315825	○
90,6	100	4,7	6,5	7,1	PTFE K270	24315826	○
100,6	110	4,7	6,5	7,1	PTFE K270	24315827	○
105,6	115	4,7	6,5	7,1	PTFE K270	24315828	○
115,6	125	4,7	6,5	7,1	PTFE K270	24315829	○
130,6	140	4,7	6,5	7,1	PTFE K270	24315830	○
140,6	150	4,7	6,5	7,1	PTFE K270	24315831	○
147,8	160	6,1	8,5	9,5	PTFE K270	24315908	○
167,8	180	6,1	8,5	9,5	PTFE K270	24315910	○
187,8	200	6,1	8,5	9,5	PTFE K202	24315911	○

● Available from stock ○ On request: Tool is available, delivery at short notice

U-Ring NRVFA (Type 9494 with V-shaped spring – external pressure)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

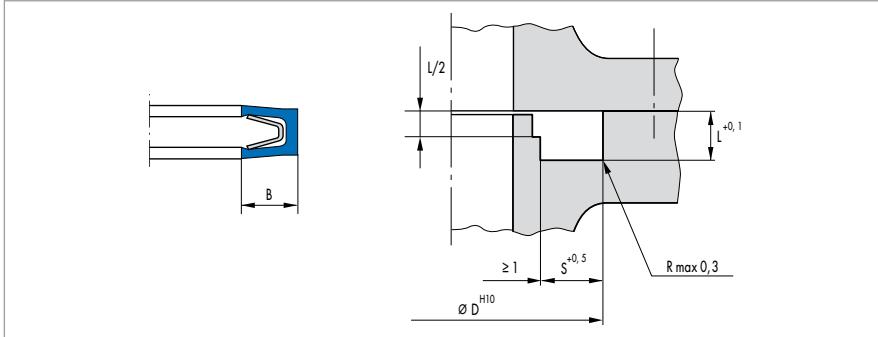


Fig. 6 Installation example

Sizing recommendation

Available dimension range d		B	L	S
from	to			
30	150	3,1	2,25	3,6
50	500	4,3	3,10	4,8
70	1000	6,5	4,70	7,1
100	1400	8,5	6,10	9,5

U-Ring NRVFI (Type 9493 with V-shaped spring – internal pressure)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

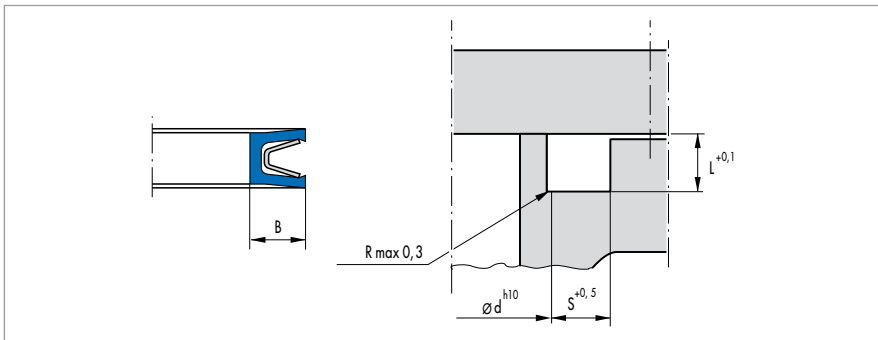


Fig. 7 Installation example

Sizing recommendation

Available dimension range d		B	L	S
from	to			
40	250	3,1	2,25	3,6
50	500	4,3	3,10	4,8
70	1000	6,5	4,70	7,1
100	1400	8,5	6,10	9,5

U-Ring NRVR (Type 9489 with V-shaped spring)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

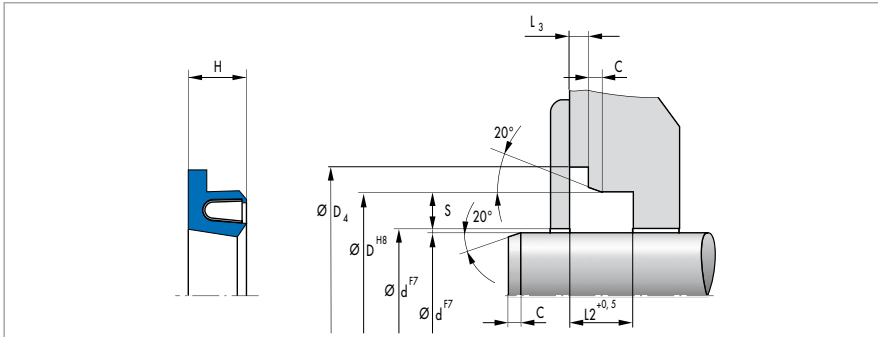


Fig. 8 Installation example

Sizing recommendation

Available dimension range d		S	H	D4	L2	L3 - 0,1	C
from	to						
10	20	2,50	3,1	d+9,0+0,15	3,6	0,85	1,0
>20	40	3,50	4,3	d+12,5+0,2	4,8	1,35	1,2
>40	200	5,25	6,5	d+17,5+0,3	1,8	7,80	1,5

U-Ring NRUF1 (Type 9487 with U-shaped spring – internal pressure)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

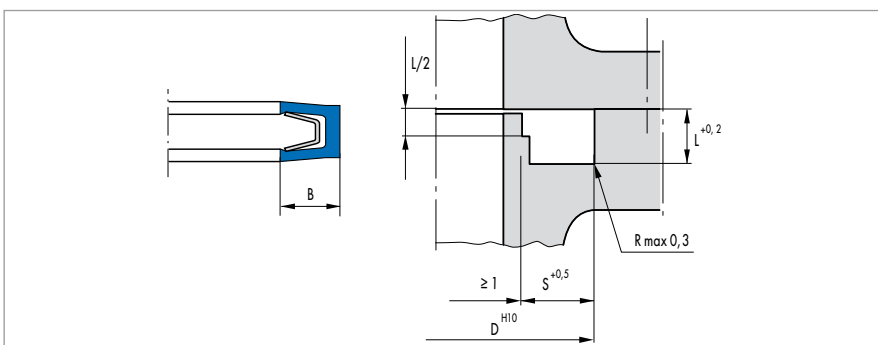


Fig. 9 Installation example

Sizing recommendation

Available dimension range d		B	L*		S
from	to		from	to	
60	1400	11,5	10,0	13,0	B+0,5
75	1400	14,5	12,0	15,0	B+0,5
100	1400	17,0	14,0	18,0	B+1,0
150	1400	20,0	17,5	21,0	B+1,0

* Use of medium heights are to be used as a matter of preference.

U-Ring NRUFA (Type 9486 with U-shaped spring – external pressure)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

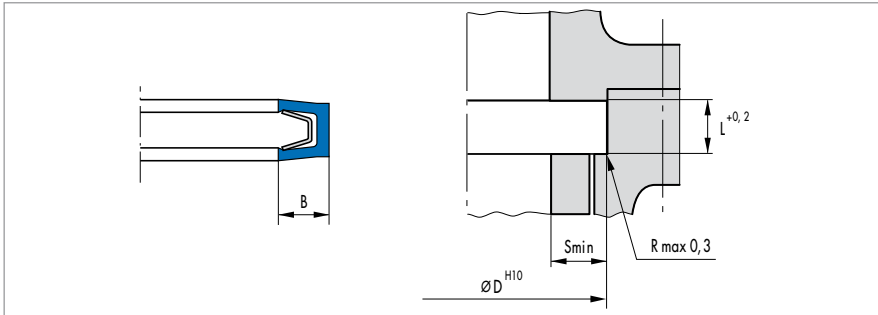


Fig. 10 Installation example

Sizing recommendation

Available dimension range d		B	L*		S
from	to		from	to	
60	1400	11,5	10,0	13,0	B+0,5
75	1400	14,5	12,0	15,0	B+0,5
100	1400	17,0	14,0	18,0	B+1,0
150	1400	20,0	17,5	21,0	B+1,0

* Use of medium heights are to be used as a matter of preference.

U-Ring NRUFI (Type 9499 with closed U-shaped spring – internal pressure)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

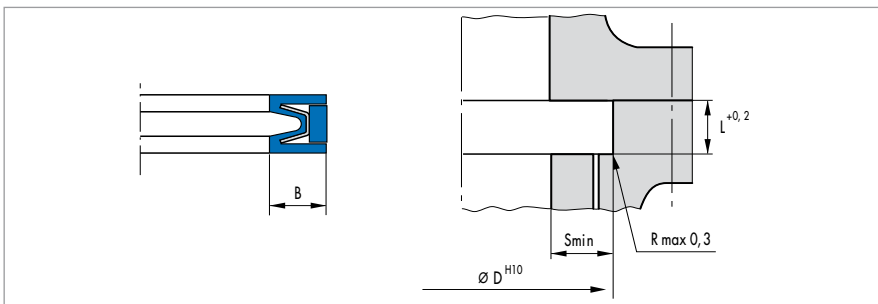


Fig. 11 Installation example

Sizing recommendation

Available dimension range d		B	L*		S
from	to		from	to	
60	1400	11,5	10,0	13,0	B+0,5
75	1400	14,5	12,0	15,0	B+0,5
100	1400	17,0	14,0	18,0	B+1,0
150	1400	20,0	17,5	21,0	B+1,0

* Use of medium heights are to be used as a matter of preference.

U-Ring NRRI (Type 9442 with round spring)

Standard material	Spring material
PTFE carbon/PTFE glass/MoS ₂	1.4310 (AISI 301)

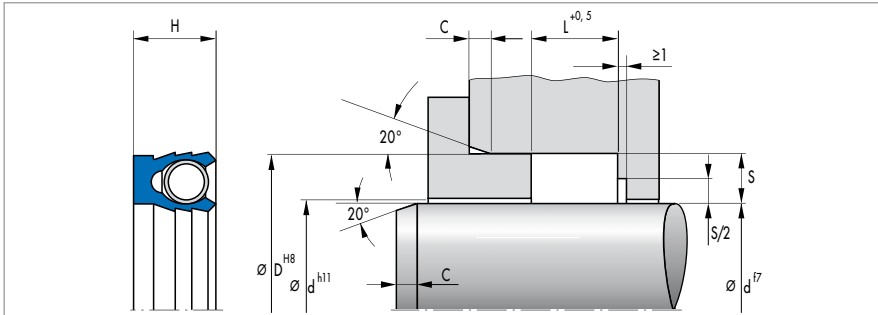


Fig. 12 Installation example

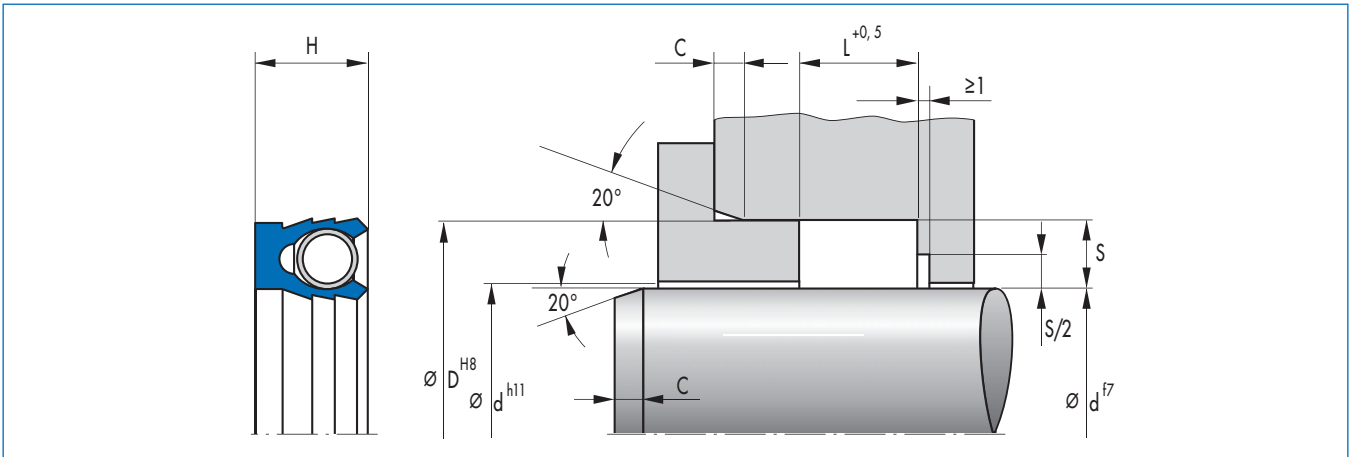
Sizing recommendation

This sizing recommendation is an addition to the article list. It is only used if the article list does not contain a suitable size.

Available dimension range d		S	H	L	C
from	to				
10	70	3,0*	4,2	4,7	>2
12	100	4,0*	5,0	5,5	>2
12	200	5,0*	7,5	8,0	>3
20	300	6,0	8,0	8,5	>3
40	500	7,5	11,0	11,5	>3
50	1000	10,0	15,0	15,5	>4
70	1400	12,5	18,0	18,5	>4
100	1400	15,0	22,5	23,0	>5
100	2000	20,0	30,0	30,5	>6

* for a profile dimension ≤5 mm one sealing edge

Article list U-Ring NRRI (Type 9442 with round spring)



d	D	S	H	L	Material	Article No.	
12	20	4	5	5,5	PTFE GM201	24168696	○
12	20	4	5	5,5	PTFE K202	24315601	○
12	22	5	7,5	8	PTFE GM201	24151581	○
12	22	5	7,5	8	PTFE K202	24161103	○
14	22	4	5	5,5	PTFE K202	24161326	○
14	22	4	5	5,5	PTFE GM201	24164130	○
16	24	4	5	5,5	PTFE K202	24159482	○
16	24	4	5	5,5	PTFE GM201	24233728	○
18	28	5	7,5	8	PTFE GM201	24314093	○
18	28	5	7,5	8	PTFE K270	24315599	○
20	28	4	5	5,5	PTFE K202	24203310	○
20	28	4	5	5,5	PTFE GM201	24216344	○
20	30	5	7,5	8	PTFE GM201	24156032	○
20	30	5	7,5	8	PTFE K270	24168974	○
20	32	6	8	8,5	PTFE GM201	24314101	○
20	32	6	8	8,5	PTFE K202	24315614	○
22	32	5	7,5	8	PTFE GM201	24151794	○
22	32	5	7,5	8	PTFE K202	24315572	○
25	35	5	7,5	8	PTFE K270	24266496	○
25	35	5	7,5	8	PTFE GM201	24314095	○
28	38	5	7,5	8	PTFE GM201	24204174	○
28	38	5	7,5	8	PTFE K202	24315573	○
28	43	7,5	11	11,5	PTFE K270	24291760	○
28	43	7,5	11	11,5	PTFE GM201	24314130	○
32	42	5	7,5	8	PTFE GM201	24314097	○
32	42	5	7,5	8	PTFE K202	24315574	○
36	46	5	7,5	8	PTFE GM201	24314098	○
36	46	5	7,5	8	PTFE K202	24315575	○
40	50	5	7,5	8	PTFE GM201	24203543	○
40	50	5	7,5	8	PTFE K270	24292110	○
40	55	7,5	11	11,5	PTFE GM201	24202938	○
40	55	7,5	11	11,5	PTFE K202	24291467	○
45	55	5	7,5	8	PTFE GM201	24151825	○
45	55	5	7,5	8	PTFE K202	24267237	○
50	60	5	7,5	8	PTFE GM201	24168144	○

● Available from stock ○ On request: Tool is available, delivery at short notice

d	D	S	H	L	Material	Article No.	
50	60	5	7,5	8	PTFE K270	24296137	○
50	65	7,5	11	11,5	PTFE GM201	24151830	○
50	65	7,5	11	11,5	PTFE K202	24240928	○
56	71	7,5	11	11,5	PTFE GM201	24314132	○
56	71	7,5	11	11,5	PTFE K202	24315646	○
56	76	10	15	15,5	PTFE GM201	24314195	○
56	76	10	15	15,5	PTFE K202	24315674	○
63	78	7,5	11	11,5	PTFE GM201	24314134	○
63	78	7,5	11	11,5	PTFE K202	24315647	○
70	85	7,5	11	11,5	PTFE GM201	24314136	○
70	85	7,5	11	11,5	PTFE K202	24315648	○
70	90	10	15	15,5	PTFE GM201	24167957	○
70	90	10	15	15,5	PTFE K202	24315675	○
80	95	7,5	11	11,5	PTFE GM201	24314140	○
80	95	7,5	11	11,5	PTFE K202	24315650	○
80	100	10	15	15,5	PTFE K202	24168519	○
80	100	10	15	15,5	PTFE GM201	24203458	○
90	105	7,5	11	11,5	PTFE GM201	24314142	○
90	105	7,5	11	11,5	PTFE K270	24315651	○
90	110	10	15	15,5	PTFE K202	24155751	○
90	110	10	15	15,5	PTFE GM201	24204970	○
100	120	10	15	15,5	PTFE K202	24168754	○
100	120	10	15	15,5	PTFE GM201	24217881	○
110	130	10	15	15,5	PTFE GM201	24163084	○
110	130	10	15	15,5	PTFE K208	24233246	○
125	145	10	15	15,5	PTFE GM201	24232697	○
125	145	10	15	15,5	PTFE K202	24315676	○
125	150	12,5	18	18,5	PTFE GM201	24314200	○
125	150	12,5	18	18,5	PTFE K202	24315688	○
140	160	10	15	15,5	PTFE GM201	24314198	○
140	160	10	15	15,5	PTFE K202	24315677	○
160	185	12,5	18	18,5	PTFE GM201	24314201	○
160	185	12,5	18	18,5	PTFE K202	24315689	○
160	190	15	22,5	23	PTFE GM201	24155969	○
160	190	15	22,5	23	PTFE K202	24315696	○
180	205	12,5	18	18,5	PTFE GM201	24314202	○
180	205	12,5	18	18,5	PTFE K202	24315690	○
180	210	15	22,5	23	PTFE GM201	24314213	○
180	210	15	22,5	23	PTFE K202	24315697	○
200	225	12,5	18	18,5	PTFE GM201	24314203	○
200	225	12,5	18	18,5	PTFE K202	24315691	○
200	230	15	22,5	23	PTFE GM201	24314214	○
200	230	15	22,5	23	PTFE K202	24315698	○
220	250	15	22,5	23	PTFE GM201	24314215	○
220	250	15	22,5	23	PTFE K202	24315699	○
250	280	15	22,5	23	PTFE GM201	24314216	○
250	280	15	22,5	23	PTFE K202	24315700	○
280	310	15	22,5	23	PTFE GM201	24314217	○
280	310	15	22,5	23	PTFE K202	24315701	○

● Available from stock ○ On request: Tool is available, delivery at short notice

U-Ring NRRR (Type 9474 with round spring)

Standard material	Spring material
PTFE carbon/PTFE glass/MoS ₂	1.4310 (AISI 301)

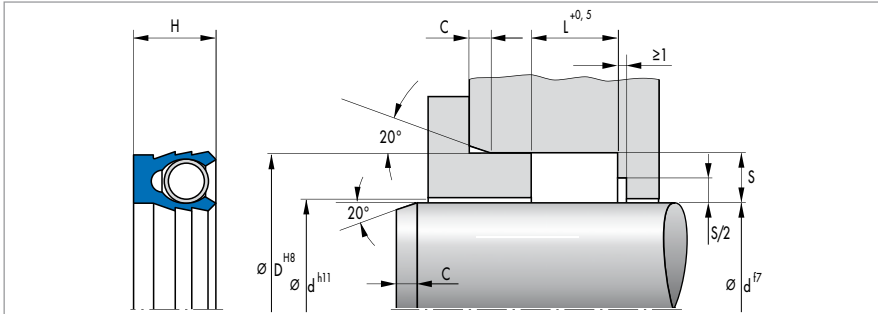


Fig. 13 Installation example

Sizing recommendation

This sizing recommendation is an addition to the article list. It is only used if the article list does not contain a suitable size.

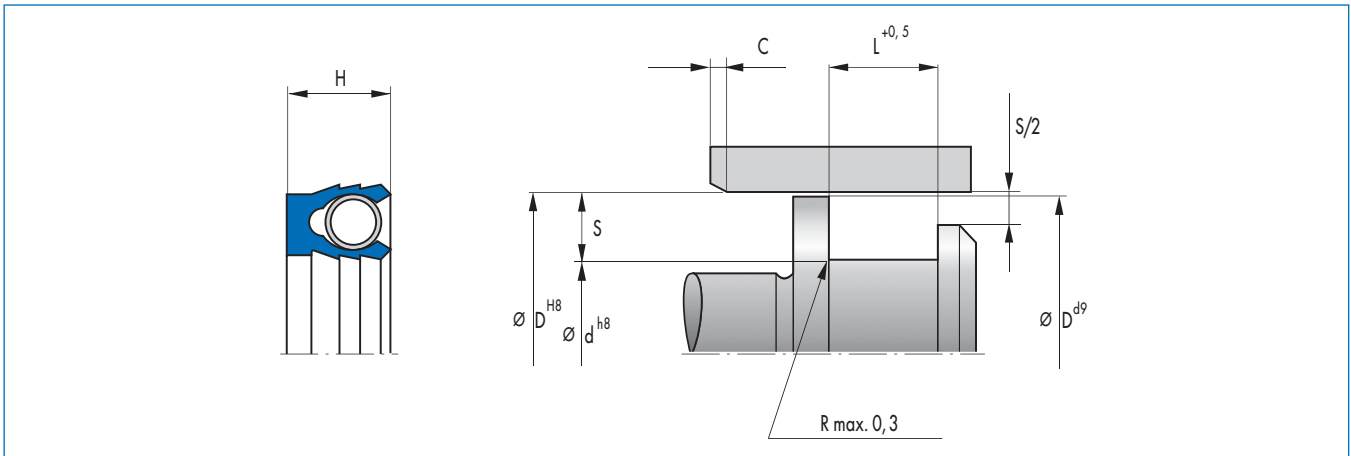
Available dimension range d		S	H	L	C
from	to				
16	70	3,0*	4,2	4,7	>2
23	100	4,0*	5,0	5,5	>2
30	200	5,0*	7,5	8,0	>3
42	300	6,0	8,0	8,5	>3
55	500	7,5	11,0	11,5	>3
70	1000	10,0	15,0	15,5	>4
95	1400	12,5	18,0	18,5	>4
130	1400	15,0	22,5	23,0	>5
140	2000	20,0	30,0	30,5	>6

* for a profile dimension ≤5 mm one sealing edge

Article list NRRR (Type 9474)

d	D	S	H	L	Article No.	
					PTFE carbon/ 1.4310	PTFE glass/ MoS ₂ 1.4310
40	50	5,0	7,5	8,0	24316338	24314272
48	63	7,5	11,0	11,5	24316376	24314273
60	80	10,0	15,0	15,5	24316379	24314269
80	100	10,0	15,0	15,5	24316380	24312040
100	125	12,5	18,0	18,5	24316340	24314275
135	160	12,5	18,0	18,5	24316341	24314276
170	200	15,0	22,5	23,0	24316344	24314277
195	225	15,0	22,5	23,0	24316345	24314278
220	250	15,0	22,5	23,0	24316346	24314279
250	280	15,0	22,5	23,0	24316347	24314280
290	320	15,0	22,5	23,0	24316348	24314281

Article list U-Ring NRRR (Type 9474 with round spring)



d	D	S	H	L	Material	Article No.	
40	50	5	7,5	8	PTFE GM201	24314272	○
40	50	5	7,5	8	PTFE K202	24316338	○
48	63	7,5	11	11,5	PTFE GM201	24314273	○
48	63	7,5	11	11,5	PTFE K202	24316376	○
60	80	10	15	15,5	PTFE GM201	24314269	○
60	80	10	15	15,5	PTFE K202	24316379	○
80	100	10	15	15,5	PTFE GM201	24312040	○
80	100	10	15	15,5	PTFE K270	24316380	○
100	125	12,5	18	18,5	PTFE GM201	24314275	○
100	125	12,5	18	18,5	PTFE K202	24316340	○
135	160	12,5	18	18,5	PTFE GM201	24314276	○
135	160	12,5	18	18,5	PTFE K202	24316341	○
170	200	15	22,5	23	PTFE GM201	24314277	○
170	200	15	22,5	23	PTFE K202	24316344	○
195	225	15	22,5	23	PTFE GM201	24314278	○
195	225	15	22,5	23	PTFE K202	24316345	○
220	250	15	22,5	23	PTFE GM201	24314279	○
220	250	15	22,5	23	PTFE K202	24316346	○
250	280	15	22,5	23	PTFE GM201	24314280	○
250	280	15	22,5	23	PTFE K202	24316347	○
290	320	15	22,5	23	PTFE GM201	24314281	○
290	320	15	22,5	23	PTFE K270	24316348	○

● Available from stock ○ On request: Tool is available, delivery at short notice

U-Ring NRRFI (Type 9459 with round spring – internal pressure)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

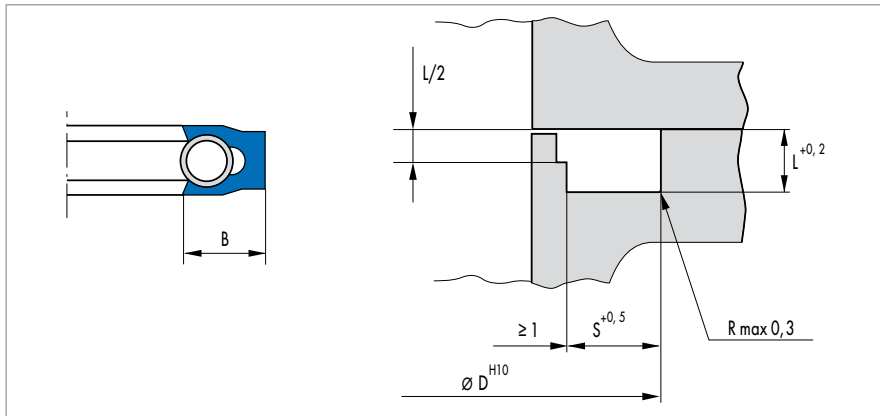


Fig. 14 Installation example

Sizing recommendation

Available dimension range d		B	L	S
from	to			
25	70	4,2	3,0	4,7
30	100	5,0	4,0	5,5
50	200	7,5	5,0	8,0
60	300	8,0	6,0	8,5
80	500	11,0	7,5	11,5
100	1000	15,0	10,0	15,5
150	1400	18,0	12,5	18,5
250	1400	22,5	15,0	23,0
500	1400	30,0	20,0	30,5

U-Ring NRRFA (Type 9485 with round spring – external pressure)

Standard material	Spring material
PTFE carbon	1.4310 (AISI 301)

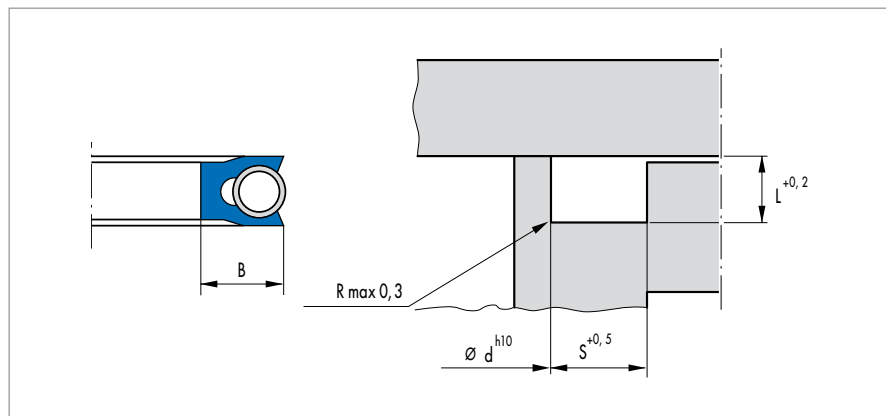


Fig. 15 Installation example

Sizing recommendation

Available dimension range d		B	L	S
from	to			
15	70	4,2	3,0	4,7
20	100	5,0	4,0	5,5
35	200	7,5	5,0	8,0
45	300	8,0	6,0	8,5
60	500	11,0	7,5	11,5
70	1000	15,0	10,0	15,5
115	1400	18,0	12,5	18,5
200	1400	22,5	15,0	23,0
440	1400	30,0	20,0	30,5

Grippers GR2

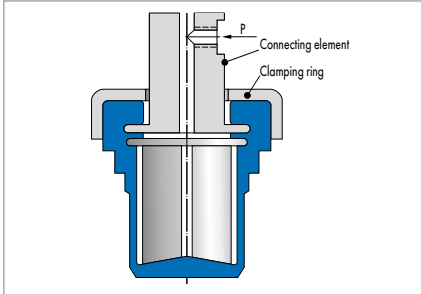


Fig. 1 Grippers

Product description

The precision grippers from Simrit are used for extremely sensitive goods.

Product advantages

For the automation in series production, installation and materials/packaging handling equipment, the increased use of systems is required whose individual elements have a great degree of flexibility. Simrit has developed pneumatic grippers that fulfil the requirements for flexible, universal applicability very well.

- Very easy installation
- Numerous application possibilities
- High product quality.

Application

Pneumatically operated grippers are used in the automation handling technology: for handling of sensitive goods made of ceramic, elastomer, metal in the area of machine coating and installation support.

Material

The grippers are manufactured from wear-resistant elastomers that are adapted to the application requirements like temperature resistance, surface finish for various materials.

Elastomer part	NBR
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Operating conditions

Media	Mineral oils and greases, selected acids and bases, aqueous solutions
Temperature range	-30 ... +100 °C

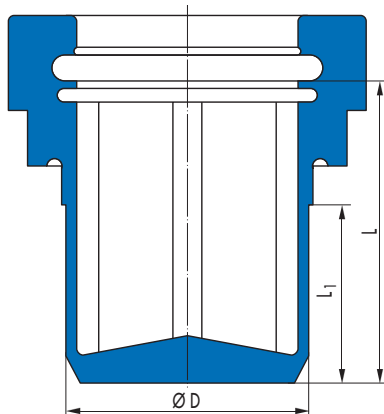
Design notes

The associated tensioning elements are different depending on the application and should therefore be manufactured by the user.

Fitting & installation

The grippers are simply snapped on as connecting element and held in place with a lip ring.

Article list



Working area [mm]	Retention force				Dimensions [mm]			Code	Article No.	
	d _{min}		d _{max}		D	L	L ₁			
	F [N]	p [bar]	F [N]	p [bar]						
5 ... 9	28	2,5	20	2,5	5	22	13	GR2-100	140686	●
9 ... 12	55	2,5	52	2,5	9	22	13	GR2-101	140687	●
12 ... 15	15	2,5	68	2,5	12	22	13	GR2-102	140688	●
18 ... 22	85	2,0	80	2,0	18	22	13	GR2-103	140689	●
18 ... 22	72	2,0	68	2,0	15	22	13	GR2-104	140690	●

● Available from stock ○ On request: Tool is available, delivery at short notice

Customer-specific gripper designs available on request.

Adherent Suction Caps GR4

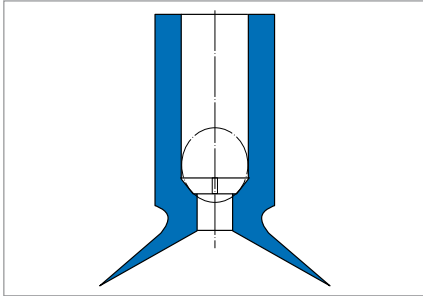


Fig. 1 Adherent Suction Caps GR4

Product description

Adherent suction caps can be used whenever workpieces have a smooth and airtight gripping surface. Through the geometry of the adherent suction cap, even products with curved surfaces can be gripped. Adherent suction caps remove the need for a vacuum system. Adherent suction caps are only pressed onto the surface. Placing the handled good simply requires a compressed air release impulse on the ball valve. This ensures a quick disconnection of the handled good. Without the ball valve, adherent suction caps can be operated as vacuum suction.

Product advantages

For the automation in series production, installation and materials/packaging handling equipment, the increased use of systems is required whose individual elements have a great degree of flexibility. Simrit has developed pneumatic suction cups that fulfil the requirements for flexible, universal applicability very well.

- No additional mounting elements required
- Numerous application possibilities
- High product quality.

Application

Pneumatically operated suction cups are used in the automated handling technology: for handling of workpieces with smooth and airtight surfaces.

Material

The suction cups are manufactured from wear-resistant elastomers that are adapted to the application requirements like temperature resistance, surface finish for various materials.

Elastomer part	SBR
----------------	-----

Operating conditions

Media	Water, alcohols, selected acids and bases
Temperature range	-30 ... +100 °C

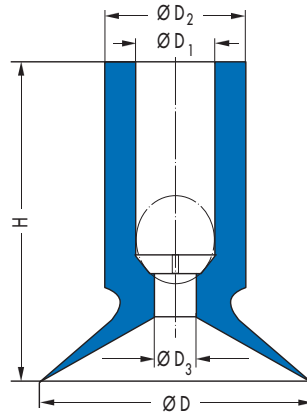
Design notes

The associated tensioning elements are different depending on the application and should therefore be manufactured by the user.

Fitting & installation

Adherent suction cups require no additional mounting elements: simply fit onto the pipe with a bead and where necessary, the attachment of a hose clamp.

Article list



Retention force* F [N]	Dimensions [mm]					Compressed air release impulse [bar]	Code	Article No.	
	D	H	D ₁	D ₂	D ₃				
3,0	6,3	12	2	4	0,5	1,0 ... 1,4	GR4-011	140810	●
4,5	10,0	13,5	3	5	2,0	1,0 ... 1,4	GR4-001	124894	●
10,0	16,0	20	5	8	3,0	1,0 ... 1,4	GR4-002	124895	●
30,0	25,0	31	8	12	4,0	1,0 ... 1,4	GR4-003	124896	●
60,0	40,0	46	12	20	6,0	1,0 ... 1,4	GR4-004	124897	●
140,0	63,0	61	20	32	8,0	1,0 ... 1,4	GR4-005	124898	●

● Available from stock ○ On request: Tool is available, delivery at short notice

* Running surface ground $R_{\max} \leq 5 \mu\text{m}$

Customer-specific suction cap designs available on request.

Vacuum Suction Caps GR4A, GR4J

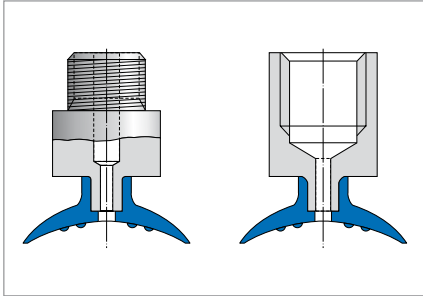


Fig. 1 Vacuum Suction Caps

Product description

Vacuum suction caps, in contrast to adherent suction caps, are supplied with suction via vacuum systems. They are suitable for use on less smooth to "rough" and even porous workpiece gripping surfaces.

The retention force is dependent on the surface quality of the handled good and the performance of the vacuum pump. Distribution over multiple suction caps is recommended to increase operational safety.

Product advantages

For the automation in series production, installation and materials/packaging handling equipment, the increased use of systems is required whose individual elements have a great degree of flexibility. Simrit has developed pneumatic suction caps that fulfil the requirements for flexible, universal applicability very well.

- Vulcanised mounting elements for quick and easy fitting
- Numerous application possibilities
- High product quality.

Application

Pneumatically-operated suction caps are used in automated handling technology.

- Handling of workpieces with smooth and airtight surfaces.

Material

The suction caps are manufactured from wear-resistant elastomers that are adapted to the application requirements like temperature resistance, surface finish for various materials.

Elastomer part	SBR
Connecting element	Steel, vulcanised with inner or outer threads

Operating conditions

Media	Water, alcohols, selected acids and bases
Temperature range	-30 ... +100 °C

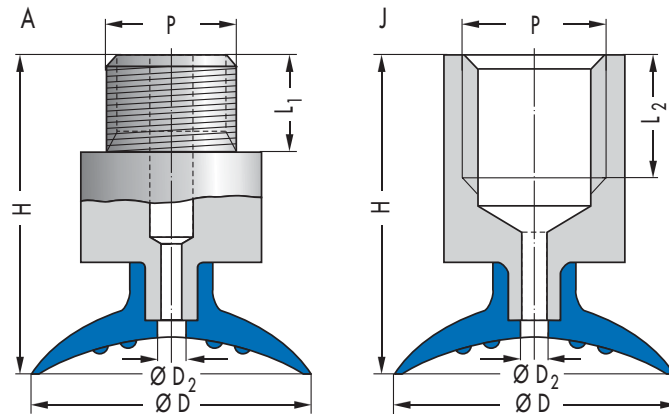
Design notes

The associated tensioning elements are different depending on the application and should therefore be manufactured by the user.

Fitting & installation

Vulcanised mounting elements.

Article list



Retention force at 25% vacuum [N]	Dimensions [mm]						Code	Article No.	
	D ₁	D ₂	H	P	L ₂	L ₁			
7,8	20	2,0	25	R 1/8"	10	7	GR4J-103 GR4A-103	151697 151700	● ○
35,0	30	4,5	30	R 1/8"	10	7	GR4J-105 GR4A-105	301982 301981	○ ○
43,0	50	4,5	33	R 1/8"	10	7	GR4J-107 GR4A-107	151704 151705	○ ○
160,0	80	7,0	47	R 1/4"	10	9	GR4J-109 GR4A-109	301985 301983	● ●
173,0	100	7,0	50	R 1/4"	10	9	GR4J-110 GR4A-110	151706 151707	● ●

● Available from stock ○ On request: Tool is available, delivery at short notice

Customer-specific suction cap designs available on request.

Plug & Seal Plug Connections

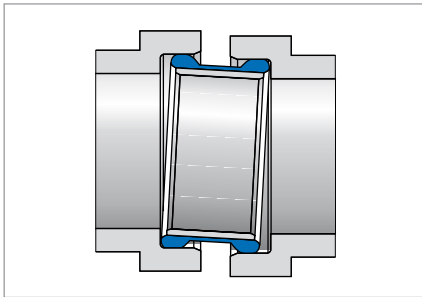


Fig. 1 Plug & Seal Plug Connections

Product description

Plug & Seal Plug Connections are pipe sections with a rubberised outer surface with sealing beads and stop dampers. They are used to establish a tight connection between two housings or units - and for secure transport of media such as oils, water or air.

As well as standard design Plug & Seal products, Simrit also offers individual solutions tailored to specific customer applications.

Product advantages

- Reliable sealing even under high pressures
- Simple, secure and cost-effective installation
- Acoustic and mechanical decoupling
- Reduced amount of maintenance through improved durability
- Compensation of middle offset
- Large tolerances in installation permissible
- Lower logistical complexity
- Integration of multiple functions into one component
- Low total costs.

Application

- Water and oil circulation or ventilation systems for combustion engines
- Engine auxiliaries, such as compressors, turbochargers or intake manifolds
- Manual and automatic transmissions
- Valves and pipe systems
- Heating and climate-control systems of plants and buildings.

Material

Tube	Precision steel (min. St 35, phosphatised) Aluminium, plastic on enquiry
Seal	EPDM, FKM rubber AEM, ACM, NBR, HNBR, VMQ on enquiry

Operating conditions

Operating pressure	max. 10 bar
---------------------------	-------------

Higher pressures on enquiry.

Elastomer	Media	Temperature	Possible Applications
EPDM	Not oil-resistant	-40 ... +140 °C	Cooling water, brake fluid, aqueous media
FKM	Oil-resistant	-10 ... +220 °C	Charge air with oil components, cooling water, fuels such as diesel, biodiesel, petrol
VMQ	Oil-resistant	-40 ... +220 °C	Charge air with oil components, intake air
AEM	Oil-resistant	-25 ... +150 °C	Charge air with oil components, engine oil
ACM	Oil-resistant	-25 ... +150 °C	Engine oil
NBR	Oil-resistant	-30 ... +90 °C	Gear oil
HNBR	Oil-resistant	-30 ... +140 °C	Gear oil, engine oil, diesel fuel

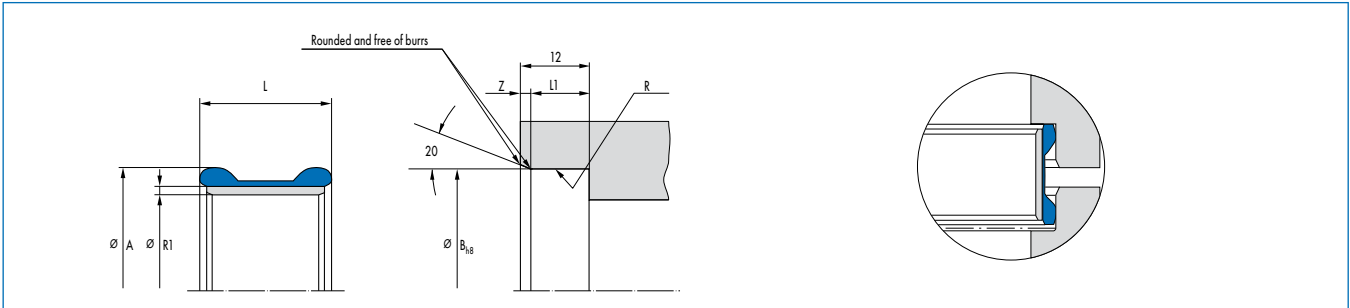
Fitting & installation

Specifications for finish of housing:

- Surface roughness R:
 - Static pressures $R_{max} < 16 \mu m$,
 - Pulsating pressures $R_{max} < 6 \mu m$
- Tolerance ISO H8
- Recommended lead-in chamfers:
 - Chamfer min. 20°,
 - Chamfer length (a) ca. 2 mm,
 - Edges free of burrs and rounded
- Depth of housing (t1): $\geq 7 \text{ mm}$
- Max. axial offset by consultation.

Article list

Wall thickness of support component (b):
 1,0 mm (Plug & Seal for 15, 20, 25 mm locating bore)
 1,5 mm (Plug & Seal for 30, 40 mm locating bore).



A ^{a)} (outside Ø) [mm]	B ^{b)} (locating bore to H8) [mm]	R' ¹ (pipe inside Ø) [mm]	L (Plug & Seal length) [mm]					
15,5	15	10	20	25	30	40	50	60
20,7	20	14	20	25	30	40	50	60
25,9	25	18	20	25	30	40	50	60
30,9	30	22	20	25	30	40	50	60
40,9	40	32	20	25	30	40	50	60

a) Minimum compression of 15%

b) Recommended values, depending on elastomer support material: steel (bonded)

Plug & Seal catalog program under construction, delivery time on enquiry, various materials combinations possible.

Sealing Plates/Rubberised Sheet Seals

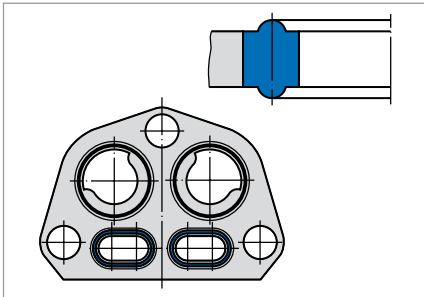


Fig. 1 Sealing Plates/Rubberised Sheet Seals

Product description

Sealing plates/rubberised sheet seals join multiple, often varying sealing contact areas with each other. In principle, sealing plates consist of a support component (e.g. punched metal plate) with vulcanised sealing lips. Multiple sealing components (e.g. O-rings) are combined in one single component. The support component design guarantees a defined compression of the sealing bead, nearly independently of the tightening torque of the connecting screws.

Product advantages

- Cost reduction of the entire system:
 - Simple and secure installation
 - No grooves are necessary for the installation of seals
 - System simplification through component reduction (amongst others low logistical costs)
 - Automatisation of the installation possible
- Increased system reliability:
 - Clearly defined seal compression
 - High sealing pressures
 - Simple installation checking possible (seal present/not present)
 - Stiff sealing element (simple, automated installation possible).

Application

Hydraulic systems, engines and gearboxes, auxiliary units.

Material

Elastomer part	NBR, EPDM, FKM, HNBR, VMQ
Support component	Aluminium, steel, brass, plastic

Other materials on enquiry.

The support component and elastomer materials must always be selected according to the operating conditions.

Operating conditions

Media	Hydraulic media, mineral oils, fuels
Temperature	-40 ... +180 °C
Pressure	max. 250 ... 400 bar, in exceptional cases ... 800 bar

Fitting & installation

Fitting is done between two flat surfaces with defined roughness (recommended max. R_z 16).

Surface Treatment RFN (Reduced Friction by Nanotechnology)

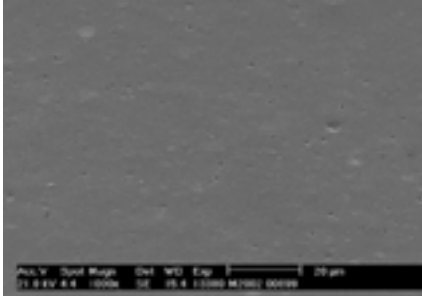


Fig. 1 Without Surface Treatment RFN

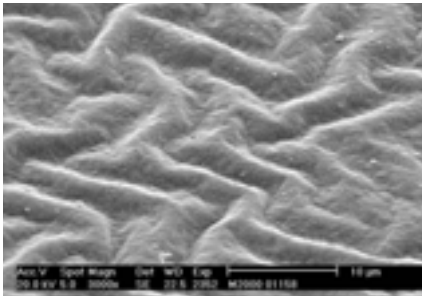


Fig. 2 With Surface Treatment RFN

Product description

Components made of elastomer materials have a functionally determined degree of deformability, but also in many cases a distinctive coefficient of friction. This friction can be of functional advantage, however, it is hindering for the automated installation as well as for dynamic loading of the elastomer component.

The contact surface, thus the part geometry, roughness and topology, the contact pressure, the mechanical and technological material properties (hardness, module, damping), the surface chemistry, the lubricating medium and the counteracting surface all have a direct influence on the amount of friction.

The Surface Treatment RFN (Reduced Friction by Nanotechnology) allows Simrit to offer an innovative method for the reduction of friction and adhesion for elastomer components. Through the use of nano-scaled materials, elastomer materials are modified in such a way as to not only significantly reduce the friction but also this friction optimisation remains constant over the entire service life of the component.

Product advantages

- Reduction of friction and adhesion
- Improved media resistance
- Increase of the service life
- Identical mechanical-technological properties and resistance
- Reduction of the permeation, barrier effect
- Optimised wetting behaviour
- FDA-compliant
- Environmentally-friendly and process safe operation.

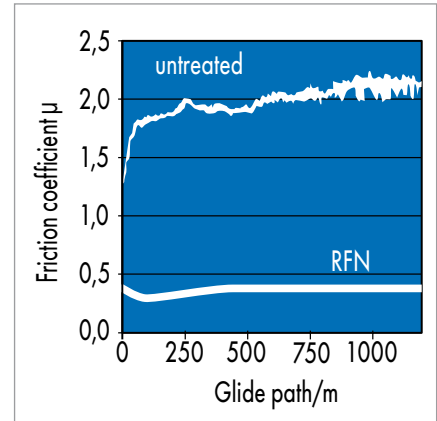


Fig. 3 Nearly constant coefficient of friction over the entire service life of the component through RFN

Application

Reduction of friction and adhesion on elastomer composite parts and precision mouldings.

Material

The possibilities and results of a RFN surface treatment, amongst others, are dependent on the component geometry, the material as well as the surface finish. The treatment possibilities as well as sample treatments can be individually clarified on enquiry and on short notice.

Micro- resp. Miniature Parts/Simriz® Precision Mouldings and Composite Parts

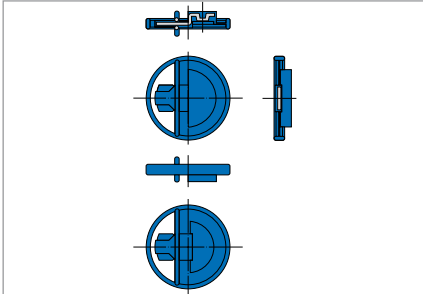


Fig. 1 Micro- resp. Miniature Parts/Simriz Precision Mouldings and Composite Parts

Product description

Micro and miniature elastomer composite parts and moulded parts developed for the individual customer application. Can be manufactured in a great variety of materials and designs. In particular, composite parts made from Simriz (FFKM) and special and support components are used for very high media resistant requirements. Additional advantages are multifunctional properties of the miniature parts e.g. sealing, damping or magnetic control.

Product advantages

- Made-to-measure miniature parts/ sealing components in wide material and design variety
- High product quality through special manufacturing process
- Numerous application possibilities
- Very high media and temperature resistance with the use of Simriz materials
- High fitting reliability and resilience.

Application

Fluid control systems in medicine, analysis and biotechnology, solenoid valves, process technology, hydraulics and pneumatics.

Material

Elastomer part	Simriz, FKM, NBR
Support component	Stainless steel, steel, brass, PEEK

Other materials on enquiry.

The circuit board materials and elastomer materials must always be selected according to the operating conditions.

Operating conditions

Media	Mineral oils, hydraulic fluids, CIP/SIP cleaning media
Temperature	max. 260 °C (Simriz)

Seal with Flexible Printed Circuit Board

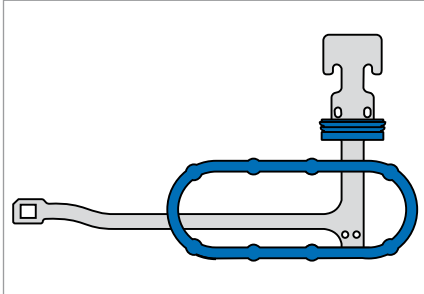


Fig. 1 Seal with Flexible Printed Circuit Board

Product description

New possibilities are created by flexible circuit paths, in combination with an elastomer seal. The sensor, electrical conductor, seal, support and connecting element can be integrated into one module. The wide selection of available variants with different materials leads to fascinating new solutions. Manifold variation possibilities arise from:

- The combination of different flexible circuit paths and sealing materials
- The connection of sensors for the measuring of pressure, temperature or other physical or even chemical parameters
- Different plug connections and various support materials.

Product advantages

- Versatile product variants through the integration of signal transmission, sensor and plug
- Versatile applications through variable material combinations
- Optimisation potential even with existing sealing solutions through the embedding of the flexible circuit path into the sealing layer

- Constructive simplification of sealing solutions with added "signal transmission" function, separate cabling no longer necessary
- The reduction of parts minimises the costs for procurement, testing, storage, handing and installation (reduction of the process costs).

Application

Engine and transmission applications e.g. fuel-injection systems, engine management systems, solenoids, water metres, hydraulic and pneumatic systems.

Material

Elastomer part	FKM, NBR
Flexible circuit board	Pyralux

Other materials on enquiry.

The circuit board materials and elastomer materials must always be selected according to the operating conditions.

Operating conditions

Media	Engine oils and gear oils, diesel fuel, motor fuel, mineral oils, engine compartment area
Continuous temperature	max. 135 ... 150 °C

Butterfly Valve Seal

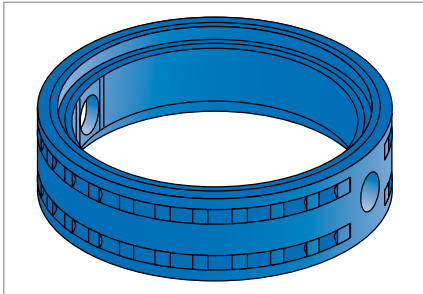


Fig. 1 Butterfly Valve Seal

Product description

Butterfly valve seals are utilised as seal in thousands of butterfly valves in the process control of plants and systems. The elastomer moulded ring is compressed radially during the closing procedure and thus seals high and low viscosity media. The decisive factor for the correct function of the seal is a low friction and a low compression set of the butterfly valve seal as well as the high-temperature and media resistance explicitly also in cleaning media (CIP – Cleaning In Place/SIP – Sterilisation In Place).

Product advantages

- Outstanding operational performance
 - High reliability
 - Optimised service life
 - Low friction torque when operated
 - Very good sealing behaviour
- Broad range of applications
 - Resistance within a wide temperature range
 - Broad range of materials matched to the most diverse applications

- Guarantee of a maximum of switching cycles
- Outstanding actuation properties
- Application in many media with the corresponding approvals
- High chemical resistance
 - Reliable use in CIP/SIP media.

Application

Butterfly valves in process control plants and systems. Process plants in the beverage industry, dairy farming and the chemicals and pharmaceuticals industries.

Material

The preferred materials used are FDA, BGA and USP Class VI certified or ATEX certified elastomer mixtures based on VMQ, EPDM, FKM and NBR. In addition, special high-performance elastomers from Simriz can be offered for individual customer applications. The butterfly valve seal material must always be selected in accordance with the operating conditions.

Operating conditions

	EPDM	VMQ	HNBR	FKM
Lower temperature	-40 °C	-40 °C	-20 °C	-20 °C
Upper temp. duration	140 °C	110 °C	140 °C	160 °C
Upper temp. short	160 °C	120 °C	150 °C	180 °C
DVR	+++	+++	+	+
Sliding property	+++	+	+	+
Aqueous media	+++	+++	+	+
Steam	+++	0	+	+
CIP/SIP	+++	++	+	+
Dairy products	0 ... +	+	+++	+++
Hydro-carbon aliph.	-	+	++	+++
Hydro-carbon arom.	-	-	++	+++
Essential oils/citrus juices	0	0	+	+
Hot worts	++	-	++	-

+++ very good, ++ recommendable, + applicable, 0 limited use, - unsuitable.

Rubberised Sprockets

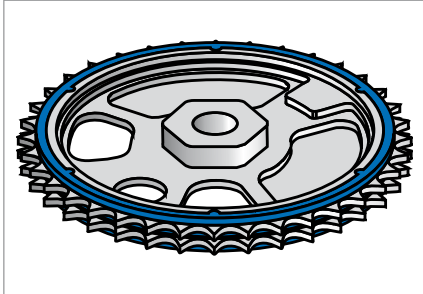


Fig. 1 Rubberised Sprockets

Product description

In the engine area chains and sprockets wheels are used to drive crankshafts and camshafts as well as auxiliary units. The advantages of chain drives are the long service life and low maintenance requirements. However, conventional chain drives tend to be relatively noisy. As a result Simrit has developed rubberised steel or sintered sprockets for high-speed chain drives. Defined elastomer pads on both sides of the sprockets make the system run more smoothly. The damping effect comes from the fact that the chain enters the elastomer before it reaches the metal sprocket surface. This effectively damps noises caused by vibrations in the chain.

Product advantages

- Long-life designs with maximum friction resistance and quiet chain running with high degree of expertise in elastomer combinations and specially developed HNBR elastomers
- Noise levels significantly reduced at medium r.p.m. by approximately 1 to 3 dB (A).

Application

- Engines with chain drives
- Steel or sintered sprockets for high-speed chain drives.

Material

Elastomer	HNBR
Sprocket	steel

Operating conditions

Media	Engine oil
Temperature	-25 ... +140 °C

Belt Pulley with Elastomer Track

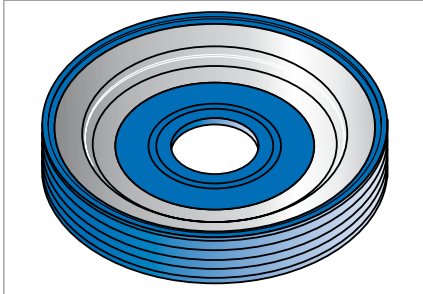


Fig. 1 Belt Pulley with Elastomer Track

Product description

The belt pulley with elastomer track is used to damp vibration and noise. Drive pulleys and drive belts are used for power transmission in motorcycles in some cases. These drive pulleys begin to vibrate at specific speed ranges and generate noise. To solve the problem Simrit has developed a drive pulley with vulcanised, defined elastomer pads. This damps the vibrations of the pulley and reduces noise.

Product advantages

- Long-life designs with a high degree of expertise in elastomer combinations and specially developed HNBR elastomers
- Significant reduction of vibrations and noise.

Application

- Spur gear drive of auxiliary units in diesel engines, spur gear of an air compressor
- Engines for construction machinery, tractors and other agricultural machinery.

Material

Elastomer	HNBR
Pulley	steel

Operating conditions

Media	Engine oil
Temperature	-25 ... +140 °C

Decoupled Chain Gear

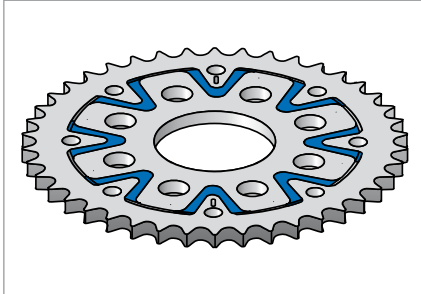


Fig. 1 Decoupled Chain Gear

Product description

In the field of engines chains and sprocket are frequently used to drive crankshafts and camshafts as well as auxiliary units. The gear teeth a contact conditions in the chain drive are similar to the geared drive. The chain links grip so deeply into the spaces between the teeth that both edges are in contact with them.

In the chain drive vibrations occur when the load on the chain is relieved. Simrit has developed a deflection wheel in the reference case that decouples the shaft from the gear wheel to prevent transmission of vibrations by bonding elastomer between the inside component attached to the shaft and the outer gear wheel. Vibrations and noise can be significantly reduced. Because the elastomer is incompressible, there is still a reliable power transmission.

Product advantages

- Significant noise reduction by approximately 1 to 3dB (A)
- Long-life designs with a high degree of expertise in elastomer combinations and specially developed HNBR elastomers.

Application

- Deflection wheel for chain drive of a diesel engine
- Steel or sintered sprockets for high-speed chain drives
- Medium and large diesel engines with sprocket/spur gear drive for construction machinery, tractors and other agricultural machinery.

Material

Elastomer	HNBR
Sprocket	steel

Operating conditions

Media	Engine oil
Temperature	-25 ... +140 °C
Pressure	max. 3 bar

Decoupled Gears

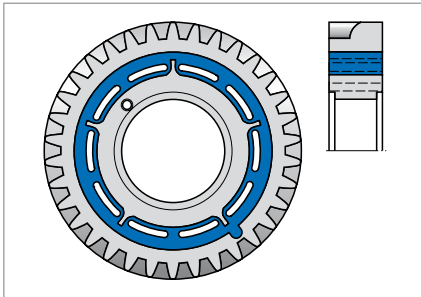


Fig. 1 Decoupled Gears

Product description

Spur gears are used to drive the camshafts and auxiliary units for diesel engines. The auxiliary units develop unwanted vibrations that cause noise and affect the smoothness. Solution: the gears are separated radially, joined by an elastomer component again and thus decoupled. Vibrations and noise can be significantly reduced.

Product advantages

- Noise reduction by approximately 1 to 3dB (A)
- Long-life designs with a high degree of expertise in elastomer combinations and specially developed HNBR elastomers.

Application

- Gears for spur gear drives
- Camshaft gear
- Medium and large diesel engines with spur gear drive for construction machinery, tractors and other agricultural machinery.

Material

Elastomer	HNBR
Spur gear	steel

Operating conditions

Media	Engine oil
Temperature	-25 ... +140 °C
Pressure	max. 3 bar

Decoupling Elements

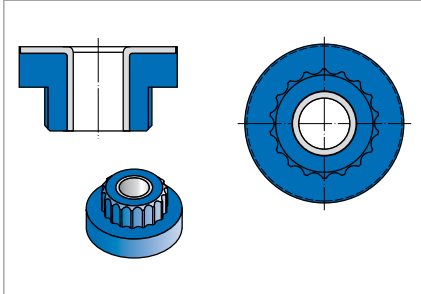


Fig. 1 Decoupling Elements

Product description

Various elastomer-metal design components are used to reduce vibrations and noise in the area of engines and auxiliary units. These components are used amongst others on the resilient attachment as well as sealing of metal components on the oil sump, the cylinder head cover on the engine block and injector valves. One example in the engine controller of commercial vehicles, which is attached to the vehicle with screws. Elastomer composite components are used for resilient vibration-decoupling attachment.

Product advantages

- Decoupling of structure-borne noise and vibrations
- Reduced components by use of elastomer composite components
- Application-specific design with a wide range of elastomers.

Application

- Resilient attachment as well as sealing of metal components on the oil sump, cylinder head cover on the engine block, injector valves
- Attachment of engine controller (electronic)
- Engines and auxiliary units for construction machinery, tractors and other agricultural machinery.

Material

Composite component of metal and elastomer (with/without bond)

Elastomer	VMQ with low hardness (Shore)
Support component	steel

Operating conditions

Media	Engine oil, spray
Temperature	-25 ... +140 °C

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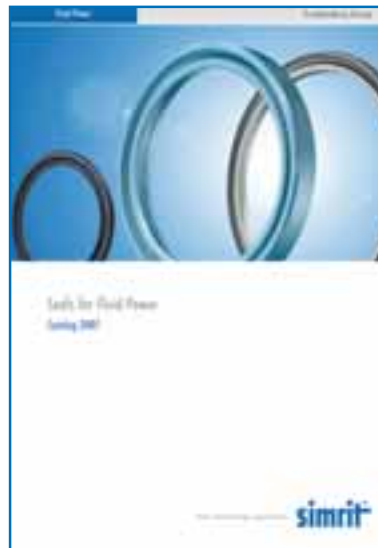
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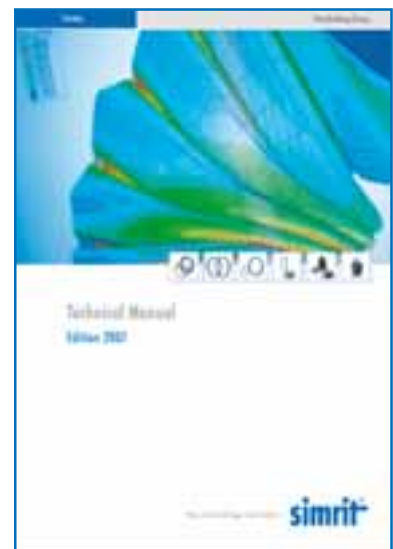
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