PRODUCT OVERVIEW

SEALING SOLUTIONS

ULMAN
DICHTUNGSTECHNIK GMBH

The general and technical information provided in this catalog is based on previous experience and merely represents recommendations for standard applications.

For your specific application, our technical application consultants will be glad to assist you and work with you to develop a solution customized to your specific sealing requirements.
The specified product data has been determined under technically ideal laboratory conditions. These limit values may be lower in certain applications due to their dependence on the operating parameters (e.g. applied pressure, operating temperature, media contact, mating surface, friction, leakage, debris contamination, etc.). Against this background, we recommend testing the sealing solution in your specific application. ULMAN Dichtungstechnik GmbH accepts no liability for damages arising directly or indirectly in connection with the use of the data provided here.

In order to ensure the accuracy of the information provided in this catalog we we reserve the right to make changes without prior notice.

With this edition, the previous editions no longer apply.

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ABOUT US

As an internationally active full-service provider for sealing technology, the ULMAN Group has more than 50 years of experience in the industry experience. With over 1,600 long-standing customers, we, ULMAN Dichtungstechnik GmbH, based in the Swabian town of Gärtringen, are now one of the leading suppliers in Germany. In addition to our location in Gärtringen with its management, sales, purchasing, technology, development, QA, logistics, marketing and human resources department, our group of companies also includes the company's own production facility ULMAN Produktion GmbH & Co. KG in Neudenau near Heilbronn and
ULMAN Industriebedarf GmbH in Vienna.
This alliance enables us to offer a comprehensive product portfolio: Standardized O-rings, custom-fit diaphragms and a numerous of special designs.
Supplemented by stuffing box packings, pure graphite rings (packing rings), flat gaskets, metal seals, high-temperature insulation and sealing products as well as GORE® seals and our established expertise, our products are used in many sectors and industries.

You will find our seals in the following areas of application, for example:

- Automotive
- Drinking water
- Chemical
- Medicine
- Mechanical engineering
- Electronics
- Foodstuff
- Hydraulics and pneumatics
- Pumping- and valve construction
- Gas applications
- and much more.

OUR MISSION

INNOVATIVE - HIGH QUALITY PRODUCTS - OPTIMAL SOLUTIONS - RELIABLE SERVICES - ALWAYS MEETING THE HIGHEST DEMANDS OF OUR CUSTOMERS

Every day, we focus on our most important:

CORPORATE VALUES:


INNOVATION


RELIABILITY


QUALITY

INNOVATION

As a future-oriented company, our aim is to drive innovation. Our daily work consists of realizing innovative product solutions. Numerous product and material developments in our own test series and test facilities have already enabled ULMAN to boast many internationally patented developments.

RELIABILITY

We are consistently committed to optimally meeting all sealing requirements. We accompany our customers throughout the entire process, from prototype development to series production - we offer excellent availability and the best possible technical support. We embody partnership, today and in the future - with 100% passion.

QUALITY

We focus on extensive testing and continuous quality optimization so that we can keep our promise of high quality standards. Our quality management team continuously carries out internal product and process audits to ensure stable process control for all manufacturing and process steps.

WHAT SETS US APART

- **Customer proximity:** High availability and fast response times strengthen the partnership-based cooperation and satisfaction of our customers. Our comprehensive support before, during and after the project distinguishes us as a reliable service provider.

- **Technical expertise:** Developing and implementing innovative product solutions is an essential part of our activities. We hold international patents for numerous product and material developments

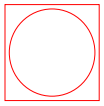
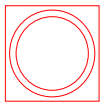
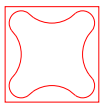
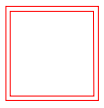
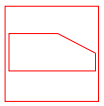
- **Material and application knowledge:** With the simulation of components in their installation position and under load, we receive valuable support in the design of seals and the most suitable materials with the help of finite element analysis (FEA)

- **Quality assurance:** Regular product and process audits guarantee continuous quality optimization. Our efficient quality management is certified according to the DIN EN ISO 9001:2015.

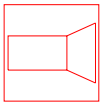
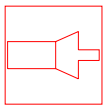
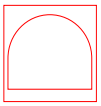
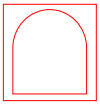
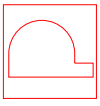
- **Environmental awareness:** Our contributions to the environment and sustainability have been confirmed with the DIN EN ISO 14001:2015 certificate. Low-paper work in the office, photovoltaic system, energy-saving lighting and energy-efficient machines and systems are just part of our commitment.

- **Logistics infrastructure:** Our AutoStore system, the heart of our logistics infrastructure, extends over two levels and can be expanded as demand increases. Energy-efficient robots and the implemented warehouse management system offer high picking reliability and speed, enabling us to achieve an OTD of > 99.5 %.

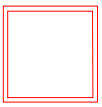
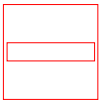
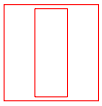
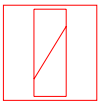
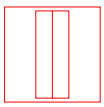
STATIC SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **O-Ring** a universal applicable sealing element, used mainly for static sealing. Tolerance and surface are according to the DIN ISO 3601.	■			■				■	■						200 MPa ≥ 5 MPa with back-up ring	-60 °C up to +320 °C	0,5 m/s (2 m/s rotatory)
 **FEP/PFA** encapsulated **O-Ring** offer the elastic properties of the elastomeric core in conjunction with the chemical resistance of the FEP.	■			■				■				■			25 MPa	-60 °C up to +200 °C	-
 **PTFE O-Ring** for static sealing and for applications where elastomers cannot be used due to the chemical or thermal requirements.	■			■							■				40 MPa	-200 °C up to +200 °C	-
 **X-Ring** a four-lip sealing element for static or radial dynamic applications. Non-twisting tendency during linear movements. Dimensions as per AS 568 (inch).	■	■		■	■	■	■	■	■						stat. 40 MPa lin. 30 MPa rotat. 15 MPa ≥ 5 MPa with back-up ring	-40 °C up to +200 °C	2 m/s
 **Square Ring** for axial static applications, twist safe assembly. Dimensions as per AS 568 (inch).	■			■				■							50 MPa	-40 °C up to +200 °C	-
 **U-Ring UH** are fluid connector seals for sealing connecting elements, these consist of a pure elastomer seal. Profile rings according to the DIN 3869.	■			■				■							100 MPa	-40 °C up to +200 °C	-

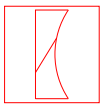
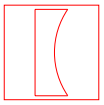
STATIC SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **U-Ring US** is a bonded seal for sealing connecting elements, which consists of a metallic ring with a moulded, trapezoidal seal made of elastomer.	■			■				■						■	100 MPa	-40 °C up to +200 °C	-
 **U-Ring UZ** is a bonded seal alike the US with a metallic ring with a moulded, trapezoidal seal made of elastomer and with a centring embossment for safe automatic assembly.	■			■				■						■	100 MPa	-40 °C up to +200 °C	-
 **M-Ring MA** is a diary pipe screw joint seal. An axial static sealing element for stainless steel fittings according to the DIN 11851 for the food industry.	■			■				■			■				16 MPa	-200 °C up to +260 °C	-
 **M-Ring MC** an axial static sealing element for stainless steel fittings likewise to the DIN 11851 for the food industry, with a raised design.	■			■				■			■				16 MPa	-200 °C up to +260 °C	-
 **M-Ring MB** an axial static sealing element for stainless steel fittings likewise to the DIN 11851 for the food industry, with an additional inner collar.	■			■				■			■				16 MPa	-200 °C up to +260 °C	-
 **M-Ring MD** an axial static sealing element for clamping connections acc. to the DIN 32676 / ISO 2852 for the food industry. Designs available with or without an outer collar.	■			■				■			■				16 MPa	-200 °C up to +260 °C	-

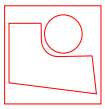
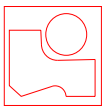
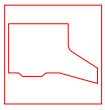
STATIC SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **M-Ring ME** is an axial static sealing element for SMS clamping connections and flanges for the food industry.	■			■				■			■				16 MPa	-200 °C up to +260 °C	-
 **Flat Gasket** an individually designed sealing element, manufactured acc. to customer specifications. Various materials available and production techniques.	■			■				■	■	■	■	■	■	■	50 MPa	-200 °C up to +500 °C	-
 **Back-up Ring BU** has a closed rectangular profile, particularly suitable for split grooves.	■		■		■	■			■		■				static 250 MPa linear 40 MPa rotatory 15 MPa	-200 °C up to +260 °C	linear 0,5 m/s rotatory 2 m/s
 **Back-up Ring BG** has a slotted rectangular profile, it is particularly suitable for closed grooves or for all groove types due to the assembly ease.	■		■		■	■					■				static 250 MPa linear 40 MPa rotatory 15 MPa	-200 °C up to +260 °C	linear 0,5 m/s rotatory 2 m/s
 **Back-up Ring BS** has a spiral profile, suitable for all groove types. At pressurization, the spiral support ring presses against the groove flank.	■		■		■	■					■				static 250 MPa linear 40 MPa rotatory 15 MPa	-200 °C up to +260 °C	linear 0,5 m/s rotatory 2 m/s
 **Back-up Ring BB** has a closed profile with a concave groove, for split grooves. It has a very good o-ring support at very high and pulsating pressures.	■		■		■	■					■				static 250 MPa linear 40 MPa rotatory 15 MPa	-200 °C up to +260 °C	linear 0,5 m/s rotatory 2 m/s

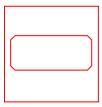
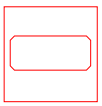
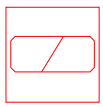
STATIC SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Back-up Ring BC** has a slotted profile with a concave groove. Suitable for closed grooves or for all installation types. Good o-ring support at high und pulsating pressures.	■		■		■	■					■				static 250 MPa linear 40 MPa rotatory 15 MPa	-200 °C up to +260 °C	linear 0,5 m/s rotatory 2 m/s
 **Back-up Ring BE** has a closed profile with a concave groove. Due to its design and elasticity, suitable for all installation types. Very good o-ring support at very high and pulsating pressures.	■		■		■			■							static 30 MPa linear 20 MPa	-30 °C up to +200 °C	0,5 m/s

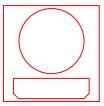
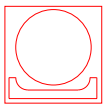
DYNAMIC SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Scraper A1** has excellent sliding properties, runs stick-slip free and with good media resistance. Ideal for small installation spaces in comparison to the A2.		■	■		■			■			■				-	-30 °C up to +200 °C	10 m/s
 **Scraper A2** excellent sliding properties, stick-slip free and with good media resistance, heavy dirt applications. Second lip wipes off residual oil film from the rod. For small installation spaces.		■	■		■			■			■				-	-30 °C up to +200 °C	10 m/s
 **Scraper A3** allied to the A2, for large installation spaces for heavy use. Excellent sliding properties, stick-slip free and with good media resistance, heavy dirt applications.		■	■		■			■			■				-	-30 °C up to +200 °C	10 m/s
 **Scraper A4** excellent abrasion resistance and high durability due to the advantages of TPU. Pressurizable, second sealing lip wipes off the residual oil film from the rod.		■	■		■				■						2 MPa	-40 °C up to +100 °C	1 m/s
 **Scraper A5** in NBR for hydraulic and pneumatic applications, FKM for high chemical resistance, TPU for mobile hydraulics. Good tight fit and wiping force. Second sealing lip for wiping residual oil film from the rod.		■	■		■			■	■						-	-40 °C up to +200 °C	1 m/s
 **Scraper A6** in NBR for hydraulic and pneumatic applications, FKM for high chemical resistance, TPU for mobile hydraulics or abrasion resistance. Studs on standard sizes on ID to safeguard function.		■	■		■			■	■						-	-40 °C up to +200 °C	1 m/s

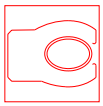
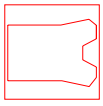
DYNAMIC SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Scraper A7** in NBR for hydraulic and pneumatic applications, FKM for a higher chemical resistance. Vulcanized metal supporting ring ensures greater stability.		■	■		■			■						■	-	-40 °C up to +200 °C	1 m/s
 **Scraper A8** in NBR for hydraulic and pneumatic applications, FKM for a higher chemical resistance, TPU for mobile hydraulics with heavy dirt or for abrasion resistance. Step on OD for better tight fit and wiping force.		■	■		■			■	■						-	-40 °C up to +200 °C	1 m/s
 **Scraper A9** in NBR for hydraulic and pneumatic use, FKM for a higher chemical resistance, TPU for mobile hydraulics with heavy dirt or abrasion resistance. Vulcanuzed metal supporting ring ensures greater stability.		■	■		■			■	■					■	-	-40 °C up to +200 °C	1 m/s
 **Guide Ring FK** prevents metallic contact between piston and bore. It absorbs all occurring lateral forces. Available in various materials and sizes.		■		■	■	■				■	■	■	■		-	-200 °C up to +260 °C	10 m/s
 **Guide Ring FS** prevents metallic contact between bore and piston. It absorbs all occurring lateral forces. Available in various materials and sizes.		■		■	■	■				■	■	■	■		-	-200 °C up to +260 °C	10 m/s
 **Guide Ring FM** can be cut to length, prevents metallic contact between piston and bore. It absorbs all occurring lateral forces. Available in various materials and sizes.		■		■	■	■				■	■	■	■		-	-200 °C up to +260 °C	10 m/s

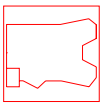
DYNAMIC SEALS / ROD SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Gleitef SG** is the standard double-acting rod seal for hydraulic and pneumatic applications. Available in various materials and sizes.		■		■	■			■			■				40 MPa	-30 °C up to +200 °C	10 m/s
 **Gleitef SF** is a double-acting rod seal for hydraulic and pneumatic applications. For small installation spaces in comparison to the SG.		■		■	■			■			■				25 MPa	-30 °C up to +200 °C	10 m/s
 **Gleitef SD** is a double-acting rod seal for hydraulic and pneumatic applications. For smallest installation spaces, equivalent to dynamic o-ring applications. Available in various materials and sizes.		■		■	■			■			■				25 MPa	-30 °C up to +200 °C	10 m/s
 **Stuftef SS** is the standard single-acting rod seal for hydraulic and pneumatic applications. Suitable for tandem arrangement.		■	■		■			■			■				40 MPa	-30 °C up to +200 °C	10 m/s
 **Stuftef SR** is a single-acting rod seal for hydraulic and pneumatic applications. The TPU has an excellent abrasion resistance, suitable for tandem arrangement.		■	■		■			■	■						25 MPa	-30 °C up to +100 °C	0,5 m/s
 **Varitef SV** is a single-acting rod seal, high temperature range and good media resistance. Sterilizable, suitable for food and medical applications.		■	■		■						■			■	35 MPa	-150 °C up to +225 °C	20 m/s

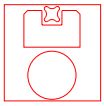
DYNAMIC SEALS / ROD SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Varitef SH** is a single-acting rod seal, high temperature range and good media resistance. Bridging of larger gaps. Sterilizable, suitable for food and medical applications.		■	■		■						■			■	35 MPa	-150 °C up to +225 °C	20 m/s
 **U-Cup N1** is a symmetric, single-acting rod seal for hydraulic and pneumatic applications. NBR for system pressures up to 15 MPa, TPU for excellent abrasion resistance up to 40 MPa.		■	■		■			■	■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **U-Cup N2** is a symmetric, single-acting rod seal for hydraulic and pneumatic applications allied to the N1. N2 has lower friction properties in comparision to the N1.		■	■		■			■	■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **U-Cup N3** asymmetric, single-acting rod seal, absorbs high shear forces, for hydraulic and pneumatic applications. NBR up to 15 MPa, TPU for excellent abrasion resistance up to 40 MPa.		■	■		■			■	■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **U-Cup N5** asymmetric, single-acting rod seal, second lip counters stick-slip effect, for hydraulic and pneumatic applications. TPU has an excellent abrasion resistance.		■	■		■				■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **U-Cup N6** symmetric, single-acting rod seal particularly for hydraulic applications with high stability against pressure peaks. TPU has an excellent abrasion resistance.		■	■		■				■						40 MPa	-30 °C up to +100 °C	0,5 m/s

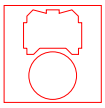
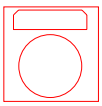
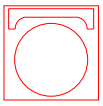
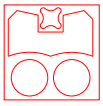
DYNAMIC SEALS / ROD SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **U-Cup N7** single-acting rod seal allied to the N6, second lip counters stick-slip effect, particularly for hydraulic applications, high stability against pressure peaks, excellent abrasion resistance.		■	■		■				■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **U-Cup N8** single-acting rod seal allied to the N7, additional back-up ring prevents gap extrusion, second lip counters stickslip effect, particularly for hydraulic applications, high stability.		■	■		■				■			■			50 MPa	-30 °C up to +100 °C	0,5 m/s

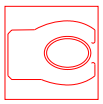
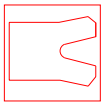
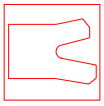
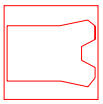
DYNAMIC SEALS / PISTON SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Gleitef KG** is the standard double-acting piston seal for hydraulic and pneumatic applications. Available in various materials and sizes.		■		■	■			■			■				40 Mpa	-30 °C up to +200 °C	10 m/s
 **Gleitef KQ** a double-acting piston seal particularly for hydraulics. X-ring on the sealing side. For small dimensions in comparison to KX. Available in various materials.		■		■	■			■			■				40 MPa	-30 °C up to +200 °C	2 m/s

DYNAMIC SEALS / PISTON SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Gleitef KW** is a double-acting piston seal particularly for hydraulic applications. Prevents blow-by effect at double-sided pressurization. TPU has an excellent abrasion resistance.		■		■	■			■	■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **Gleitef KF** is a double-acting piston seal for hydraulic and pneumatic applications. For small installation spaces in comparison to the KG. Available in various materials and sizes.		■		■	■			■			■				25 MPa	-30 °C up to +200 °C	10 m/s
 **Gleitef KD** is a double-acting piston seal for hydraulic and pneumatic applications. For smallest installation spaces, equivalent to dynamic o-ring applications. Available in various materials and sizes.		■		■	■			■			■				25 MPa	-30 °C up to +200 °C	10 m/s
 **Gleitef KX** a double-acting piston seal particularly for hydraulics, media separation and for positioning. Allied to the KW design with 2 o-rings in addition, for large dimensions.		■		■	■			■			■				40 Mpa	-30 °C up to +200 °C	3 m/s
 **Stuftef KS** is the standard single-acting piston seal for hydraulic and pneumatic applications. Suitable for tandem arrangement.		■	■		■			■			■				40 MPa	-30 °C up to +200 °C	10 m/s
 **Varitef KV** is a single-acting piston seal, high temperature range and good media resistance. Sterilizable, suitable for food and medical applications.		■	■		■						■			■	35 MPa	-150 °C up to +225 °C	20 m/s

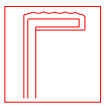
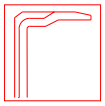
DYNAMIC SEALS / PISTON SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Varitef KH** is a single-acting rod seal, high temperature range and good media resistance. Bridging of larger gaps. Sterilizable, suitable for food and medical applications.		■	■		■						■			■	35 MPa	-150 °C up to +225 °C	20 m/s
 **U-Cup N1** is a symmetric, single-acting piston seal for hydraulic and pneumatic applications. NBR for system pressures to 15 MPa, TPU for excellent abrasion resistance up to 40 MPa.		■	■		■			■	■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **U-Cup N2** is a symmetric, single-acting piston seal for hydraulic and pneumatic applications allied to the N1. N2 has lower friction properties in comparision to the N1.		■	■		■			■	■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **U-Cup N4** asymmetric, single-acting piston seal, absorbs high shear forces, for hydraulic and pneumatic applications. NBR up to 15 MPa, TPU for excellent abrasion resistance up to 40 MPa.		■	■		■			■	■						40 MPa	-30 °C up to +100 °C	0,5 m/s
 **U-Cup N6** symmetric, single-acting piston seal particularly for hydraulic applications with high stability against pressure peaks. TPU has an excellent abrasion resistance.		■	■		■				■						40 MPa	-30 °C up to +100 °C	0,5 m/s

ROTARY SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
Tortef TW is an internal, double-acting seal for rotating and swiveling movements with high pressures. Available in various materials and sizes.		■		■		■		■			■				30 MPa	-30 °C up to +200 °C	2 m/s
Tortef TK is an external, double-acting seal for rotating and swiveling movements with high pressures. Available in various materials and sizes.		■		■		■		■			■				30 MPa	-30 °C up to +200 °C	2 m/s
 **Varitef TR** internal, single-acting seal for rotating, swiveling and linear movements. High temperature range and media resistance. Sterilizable, for food and medical applications.		■	■		■	■	■				■			■	15 MPa	-150 °C up to +225 °C	2 m/s
 **V-Ring VA** an axial high speed rotary seal, flexible, elastic properties for unpressurized applications to prevent contamination entering into the system.		■	■			■	■	■							-	-30 °C up to +200 °C	8 m/s 12 m/s with axial fixation
 **V-Ring VS** an axial high speed rotary seal, ensures a tight fit in comparision to the VA. Flexible, elastic properties, unpressurized applications, anti contaminant.		■	■			■	■	■							-	-30 °C up to +200 °C	8 m/s 12 m/s with axial fixation
 **V-Ring VL** axial high speed rotary seal, for small groove dimensions. Flexible, elastic properties, unpressurized applications, to prevent contamination entering the system.		■	■			■	■	■							-	-30 °C up to +200 °C	8 m/s 12 m/s with axial fixation
 **V-Ring VE** an axial high speed rotary seal, suitable for high loads. Clamp band for higher axial fixation. Flexible, elastic, unpressurized applications, anti contaminat.		■	■			■	■	■							-	-30 °C up to +200 °C	8 m/s 12 m/s with axial fixation

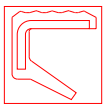
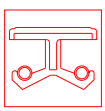
ROTARY SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Gamma Ring GA** an axial, single-acting sealing with metallic fit for a secure grip on shaft. Unpressurized applications, to prevent contamination entering the system.		■	■			■	■	■						■	-	-30 °C up to +200 °C	8 m/s
 **Gamma Ring GB** an axial sealing with metallic fit for a secure grip on shaft for unpressurized applications. Also prevents coarse contamination entering the system in comparison to the GA.		■	■			■	■	■						■	-	-30 °C up to +200 °C	8 m/s
 **Sealing Cap CV** ensures a safe sealing of shaft outlet housing bores. Metal cap with a vulcanized smooth elastomeric outer coating.	■		■					■						■	0,05 MPa	-30 °C up to +200 °C	-
 **Sealing Cap CR** ensures a safe sealing of shaft outlet housing bores. Allied to the CV, with a vulcanized waved elastomeric outer coating for a improved static sealing in the bore.	■		■					■						■	0,05 MPa	-30 °C up to +200 °C	-
 **Sealing Cap CT** safe sealing of shaft outlet housing bores, with a partially vulcanized elastomeric smooth outer coating. Metal ring interference ensures firm seat in the bore hole.	■		■					■						■	0,05 MPa	-30 °C up to +200 °C	-
 **Oil Seal RA** standard design for rotating shafts with no or minimum pressure, acc. to the DIN 3760 type A. Smooth elastomeric outer casing with a tension spring.		■	■			■	■	■						■	0,05 MPa	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RI** similar to the RA design for rotating shafts with no or minimum pressure. Waved elastomeric outer casing for installation ease and improved static tightness in the groove.		■	■			■	■	■						■	0,05 MPa	-30 °C up to +200 °C	depending on material and diameter

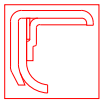
ROTARY SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Oil Seal RD** standard design for rotating shafts with no or minimum pressure, acc. to the DIN 3760 type AS. Elastomeric outer casing with additional dust lip for high outer dust content.		■	■			■	■	■						■	0.05 MPa	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RJ** for rotating shafts. Waved elastomeric outer casing for installation ease and improved static tightness with additional dust lip for high outer dust content.		■	■			■	■	■						■	0.05 MPa	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RB** standard design for rotating shafts with no or minimum pressure, acc. to the DIN 3760 type B. Tight seat due to metal outer casing for low viscosity media and gas.		■	■			■	■	■						■	0.05 MPa	-150 °C up to +225 °C	depending on material and diameter
 **Oil Seal RE** standard design for rotating shafts, acc. to the DIN 3760 type BS. Tight seat in housing for low viscosity media and gas with additional dust lip for high outer dust content.		■	■			■	■	■						■	0.05 MPa	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RC** standard design for rotating shafts with no or minimum pressure, acc. to the DIN 3760 type C. Metal outer casing with additional metal insert for rough conditions.		■	■			■	■	■						■	0.05 MPa	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RF** standard design for rotating shafts acc. to the DIN 3760 type CS. Allied to the RC design for rough conditions with additional dust lip for high outer dust content.		■	■			■	■	■						■	0.05 MPa	-30 °C up to +200 °C	depending on material and diameter

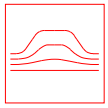
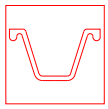
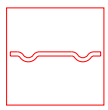
ROTARY SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Oil Seal RP** pressure-resistant design for rotating shafts. Smooth elastomeric outer casing, tension spring and with an additional dust lip for high outer dust content.		■	■			■	■	■						■	0.5 MPa	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RG** for rotating shafts without an inserted tension spring, particulary for low friction coefficient. Smooth elastomeric outer casing.		■	■			■	■	■						■	-	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RM** for rotating shafts without an inserted tension spring, allied to the RG. Waved elastomeric outer casing for installation ease and improved static tightness in the groove.		■	■			■	■	■						■	-	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RH** for rotating shafts without an inserted tension spring, particulary for low friction coefficient. Tight seat, sturdier than RN for low viscosity media and gas.		■	■			■	■	■						■	-	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RN** or rotating shafts without an inserted tension spring, particulary for low friction coefficient. Tight seat due to metal outer casing for low viscosity media and gas.		■	■			■	■	■						■	-	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RK** duo seal for shafts with two inserted tension springs for media separation. Smooth elastomeric outer casing. **Type RL** with metal outer casing for increased static tightness.		■		■		■	■	■						■	0.05 MPa	-30 °C up to +200 °C	depending on material and diameter

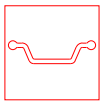
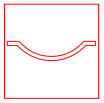
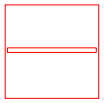
ROTARY SEALS

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Oil Seal RS** fabric-reinforced seal for rotating shafts with a tension spring. Particulary for large dimensions and assembly ease. Slotted design or groove supplement possible.		■	■			■	■	■					■	■	0.05 MPa	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RT** fabric-reinforced seal allied to the RS. Slotted design particulary for large dimensions and assembly ease. Additional dust lip for high outer dust content.		■	■			■	■	■					■	■	0.05 MPa	-30 °C up to +200 °C	depending on material and diameter
 **Oil Seal RR** pressure-resistant design for rotating shafts. PTFE sealing lip for stick-slip free running, high chemical and temperature resistance.		■	■			■	■	■			■			■	2.50 MPa	-50 °C up to +250 °C	depending on material and diameter

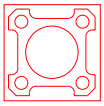
CUSTOMISED DEVELOPMENT

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal (integr. core)	Pressure	Temperature	Speed
 **Elastomer Moulded Diaphragm** customised flexible sealing components, used for sealing hermetically against two chambers. Maintenance and lubrication free and have a long service life. Thin-walled diaphragms operate almost frictionless. The application determines size and design. Diaphragms are constructed with single components and can be varied i.e. with or without fabric reinforcement, foil lamination and a metal core.		■		■	■		■	■			■	■	■	■	0.07 MPa	-50 °C up to +120 °C	depending on application design
 **Rolling Diaphragm RMG** highly flexible customerized sealing for sealing two spaces hermetically with a fabric reinforcement on the pressure side. Special designs with non-fabric reinforcement obtainable. Rolling diaphragms are particularly used in process measurement and control technology due to their advantages, has a virtually constant inherent resistance, a large stroke length and a constant effective area throughout the stroke.		■		■	■		■	■					■		0.07 MPa	-50 °C up to +80 °C	depending on application design
 **Crimped Diaphragm** one-sided pressurizing only. Suitable for medium stroke lengths which extend slightly beyond the range of flat diaphragms.		■	■		■		■	■			■			■	0.07 MPa	-50 °C up to +80 °C	depending on application design

CUSTOMISED DEVELOPMENT

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Plate Diaphragm** reciprocally pressurizable. Suitable for average stroke lengths just beyond the range of flat diaphragms.		■		■	■		■	■			■		■	■	0.07 MPa	-50 °C up to +120 °C	depending on application design
 **Spherical Diaphragm** reciprocally pressurizable. Also referred to as volume compensation diaphragm or separating diaphragm.		■		■	■		■	■				■	■		0.07 MPa	-50 °C up to +80 °C	depending on application design
 **Flat Diaphragm** reciprocally pressurizable. Suitable for small stroke lengths only.		■		■	■		■	■			■		■	■	0.07 MPa	-50 °C up to +80 °C	depending on application design
 **PTFE Composite Diaphragm** are based on individual components. They are used everywhere in toxic and aggressive chemical applications or for food stuff. High load cycles and service life due to the patented surface structure „SOF". PTFE composite diaphragms are usually equipped with a fabric reinforcement. Supporting or clamping plates can also be integrated into the diaphragm.		■		■	■		■	■			■		■	■	0.07 MPa	-50 °C up to +120 °C	depending on application design

CUSTOMISED DEVELOPMENT

Designation	Fields of Application							Materials							Max. Technical Values		
	Static	Dynamic	Single-Acting	Double-Acting	Linear	Rotatory	Oscilliating	Elastomere	Polyurethan	UHMW-PE	PTFE (with fillers)	Further Polymers	Fabric Reinforcement	Metal	Pressure	Temperature	Speed
 **Special designed moulded parts** are developed and manufactured according to customer specifications. Mainly designed as a static sealing for housings to ensure a reliable and durable sealing. These can be produced in all established elastomeric material combinations, also as a rubber to metal bonding design. These are usually per tooling either in compression or injection moulding. Other manufacturing techniques are for example mechanical processsing.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	depending on material and media	-60 °C up to +200 °C	depending on material and media
 **Profile by the meter** extruded customer-specific profile designed parts by the meter. These parts can be made with all established material combinations for a wide variety of applications. Profile parts can be supplied either glued or vulcanized. For example a glued round cord could be applicated as an o-ring.	■		■	■				■	■						depending on material and media	-60 °C up to +200 °C	depending on material and media

MATERIALS

	Designation	Elastomer Materials	Hardness Shore A	Temperature Range	
				min.	max.
Elastomer	NBR	Acrylonitrile Butadiene Rubber	30 - 90	-30°C	+100 °C
	NBR-LT	NBR-LT Acrylonitrile Butadiene Rubber with Low-Temperature Feature 30 - 90 -65 °C +100 °C	30 - 90	-65 °C	+100 °C
	HNBR	Hydrogenated Nitrile Butadiene Rubber	35 - 90	-30 °C	+150 °C
	HNBR-LT	Hydrogenated Nitrile Butadiene Rubber with Low-Temperature Feature	35 - 90	-50 °C	+150 °C
	EPDM	Eythylene Propylene Diene Rubber	40 - 90	-40 °C	+130 °C
	EPDM-PX	Peroxide Cured Eythylene Propylene Diene Rubber	40 - 90	-50 °C	+160 °C
	FKM	Fluoro Rubber	60 - 90	-20 °C	+200 °C
	FKM-GLT	Fluoro Rubber with Low-Temperature Feature	60 - 90	-40 °C	+200 °C
	FKM-LTFE	Fluoro Rubber with Low-Temperature Feature	60 - 90	-50 °C	+200 °C
	FFKM	Perfluoro Rubber	60 - 90	-15 °C	+260 °C
	ACM	Acrylic Rubber-Kautschuk	50 - 80	-20 °C	+150 °C
	AEM	Ethylene-Acrylic Rubber	50 - 80	-30 °C	+150 °C
	VMQ	Vinyl Methyl Rubber (Silicone	30 - 80	-60 °C	+200 °C
	FVMQ	Fluoro Vinyl Methyl Rubber (Fluorsilicon)	40 - 80	-60 °C	+200 °C
	CR	Chloroprene Rubber	40 - 80	-35 °C	+100 °C
	SBR	Styrene Butadiene Rubber	30 - 90	-30 °C	+70 °C

		TPU			
Thermoplastic Elastomers	TPU	Thermoplastic Polyurethane	60 - 95	-30 °C	+80 °C
	TPU72	Thermoplastic Polyurethane 72 Shore D	72 ShD	-70 °C	+130 °C
	TPU58	Thermoplastic Polyurethane 58 Shore D	58 ShD	-70 °C	+120 °C
	Highred	Polyether Based Polyurethane	95 ShD	-50 °C	+120 °C
	UHMWPE	Ultra High Molecular Weight Polyethylene	61 ShD	-200°C	+100 °C

MATERIALS

	Designation	Elastomer Materials	Hardness Shore D	Temperature Range	
				min.	max.
PTFE	P0W	PTFE virginal	56	-200 °C	+200 °C
	P0WE	PTFE gequencht	56	-200 °C	+200 °C
	PBZ	PTFE - Bronze	65	-200 °C	+200 °C
	PGF	PTFE - glass fiber + MoS_2	57	-200 °C	+200 °C
	PKG	PTFE - carbon + graphite	63	-200 °C	+200 °C
	PKF	PTFE - carbon fiber	54	-200 °C	+200 °C
	PKO	PTFE - carbon	56	-200 °C	+200 °C
	PSP	PTFE - special pigments	59	-200 °C	+200 °C
	PMF	PTFE - mineral fibre	58	-200 °C	+200 °C
	PEEK	Polyetheretherketone	80 - 90	-65 °C	+260 °C
	PEK	PTFE - Ekonol	60	-200 °C	+200 °C

COATING OVERVIEW

Finishing Coating	Standard Appearance	Alternative Colours	UV indicator	Application	Counter surface (dynamic)		Temperature area [°C]	
					Metal	Plastic	min.	max.
Long-term cleaning „LABS-free“	*matt*			· dry automatic assembly ease · painting systems				
Silicone	transparent *smooth*			· assembly ease				
Silicone-FDA	transparent *smooth*			· assembly ease · FDA				
Fluorination	*matt*			· assembly ease · light dynamic · sanitary		■		
Talcum powder	grey *rough*			· assembly ease				

COATING OVERVIEW

Finishing Coating	Standard Appearance	Alternative Colours	UV indicator	Application	Counter Surface (dynamic)		Temperature Area [°C]	
					Metal	Plastic	min.	max.
Molybdenum disulphide	grey silver *rough*			· assembly ease				
Polysiloxane	transparent *smooth*	rust red	■	· assembly ease · light dynamic		■	-40	+180
3K-Coating	transparent *smooth*			· assembly ease · automotive			-70	+180
PTFE-FDA-DVGW	milky *smooth*			· assembly ease · DVGW, NSF, FDA (drinking water, foodstuff, medicine)			-40	+200
PTFE-transparent	transparent *smooth*		■	· light dynamic · dry run		■	-40 / -70*	+150 / +250*
PTFE-Color	colored *smooth*	red, blue, yellow, grey green, white, orange, violet	■	· light dynamic · color differentiation		■	-40 / -70*	+150 / +250*
PTFE-Color-NSF	colored *smooth*	blue (further colors on request)	■	· assembly ease · NSF, FDA			-40	+200
PTFE-MS	transparent *smooth*	red, blue, yellow, grey green, white, orange, violet	■	· assembly ease · separation			-40	+180
PTFE-Black-smooth	black *smooth*	grey	■	· hydraulic · dynamic	■		-40	+100
PTFE-Black-rough	black *rough*	grey	■	· hydraulic · dynamic	■		-40	+180
PTFE-Black-conductive	black-anthracite *smooth*		■	· electrically conductive · dynamic	■		-70	+250

Do you have any questions?

We will be happy to advise and support you on a wide range of issues in the field of general and specialised sealing technology. Do not hesitate to contact us:

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