

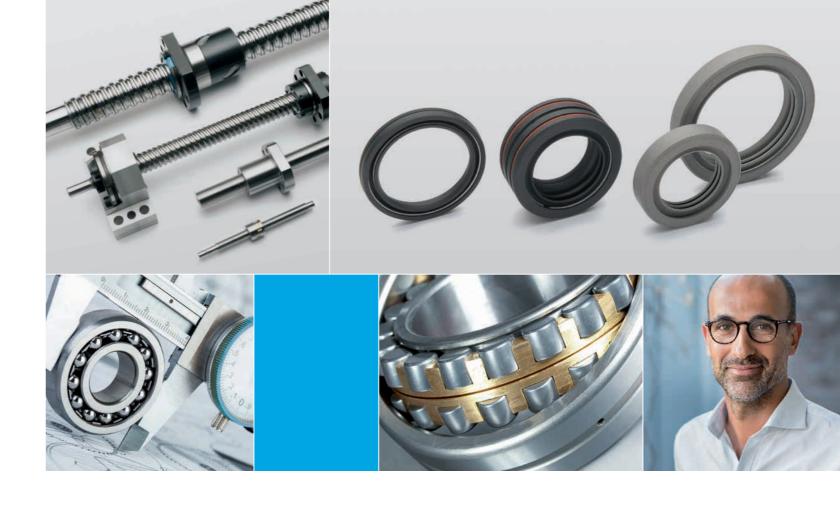




## KÜNEMUND – ALWAYS THE RIGHT SOLUTION

Friedrich Künemund founded his company as a commercial agent in Stuttgart in 1919, selling electric tools and electric motors made by reputable manufacturers to engineering companies, mainly in the Baden-Württemberg region in south west Germany. Today we are a strong group of companies with 150 experienced employees, 10 sites and 150,000 products, and a leading supplier of rolling bearings, seals and linear motion engineering to customers in Austria, Germany and Switzerland. Our businesses and divisions are fully integrated, with a pool of interdisciplinary expertise waiting to take on your engineering challenges.

We aspire to meet any need, which is why we not only supply products from almost every major manufacturer, but also have our own production facilities for tailored solutions, working in trusted partnership with our customers and suppliers. We provide end-to end customer care from a designated contact – from consultancy for co-development using your design specifications, to volume production – so that you can focus on what you do best: business.



150,000 products

#### AVAILABILITY

Thanks to our integrated operations and warehousing system, we can supply over 150,000 different items at any time.



#### E-COMMERCE/EDI

E-COMMERCE/EDI
Direct or indirect links to our
ERP system make order
processing easy, reliable
and fast.

150

#### **EMPLOYEES**

Our 150 experienced employees make customer satisfaction and high quality their top priorities. 100 years' experience

#### **EXPERTISE**

Working with us gives you the reassurance that comes with 100 years of experience and cutting-edge expertise in assembly development and manufacture.



#### A SINGLE POINT OF CONTACT

We provide everything under one roof: parts, delivery

**DIN EN ISO 9001** 

#### CERTIFICATION

All our operations have bee DIN EN ISO 9001 certified since 2001.



FULL-RANGE PROVIDER
DESIGN
PREASSEMBLY
FAILURE ANALYSIS
BALL SCREW DRIVE REPAIR SERVICE
COMMISSIONED MANUFACTURE
SPECIAL-PURPOSE SOLUTIONS
PRODUCT TRAINING

## WE ARE BOTH A TRADING COMPANY AND A MANUFACTURER

#### TRADE, CONSULTANCY AND SALES

We've got you covered: our five trading companies give you access to the full Künemund Group portfolio including engineering consultancy – everything from standardised branded products to custom manufacture. Our experts are ready and waiting to answer your questions and discuss your requirements.

#### **BRANDS**

As a full-range provider, we offer proven and innovative products from our partner companies. We supply rolling bearings from premium brands such as Schaeffler, Timken, GRW and GMN, seals and machining spindles from leading suppliers such as GMN and IMT, and linear motion engineering from Schaeffler, Ewellix and Thomson.

#### TAILORED SOLUTIONS MANUFACTURED IN-HOUSE

Künemund Group's manufacturing operations are designed to focus on your individual needs and requirements. We produce special-purpose ball bearings, high temperature rolling bearings, linear motion engineering and seals, all in-house.

#### **KÜNEMUND Sealing Technology**

Künemund Dichtungstechnik GmbH specialises in manufacturing sealing elements in PTFE and PTFE compound. We supply custom manufactured seals and sealing elements tailored to your specific application and requirements.

#### **KÜNEMUND Linear Motion Engineering**

Linear motion engineering production and preassembly. Künemund Lineartechnik not only manufactures high-grade ball screw drives and precision guide shafts to your drawings, but also supplies complete modular linear systems.

#### **ADITEC Sealing Technology**

Our Aditec Sealing Technology division is responsible for the production of high-grade mechanical seals, in some cases based on Goetze technology, and provides engineering consultancy on static and dynamic seals.

#### **COMPOUND High Temperature Rolling Bearings**

Compound GmbH manufactures high temperature systems and rolling bearings with special-purpose dry lubricants for a long, maintenance-free service life even in extreme conditions.

#### **ZWICKER Precision Bearings**

Zwicker Präzisionslager produces special-purpose ball bearings, precision-manufactured for your requirements and applications. We specialise in deep groove ball bearings with a variety of seals, cages, greases and oils. Alongside standard sizes, we supply custom dimensions, bearing pairs and complete units.

## KÜNEMUND SEALING TECHNOLOGY

#### THE RIGHT SOLUTION FOR EVERY REQUIREMENT

Our Sealing Technology division specialises in producing high-grade seals and sealing elements in PTFE and PTFE compound. Our production site in Tönisvorst near Krefeld is equipped with state-of-the-art CNC machines that can also produce specialities such as sealing rings with metal support rings, suitable for use in open installation spaces.

The problems and complexities facing different industries demand a lot of flexibility. So, in line with Künemund's fundamental philosophy, our sealing technology is based on high-level engineering expertise and customised advice that allows us to find exactly the right product for your requirements, even if that means designing it from scratch. Using the right materials, and optimising production to suit your installation space.

We have an excellent overview of best practices in a variety of sectors. With over 100 years' experience, we benefit from in-depth process and product expertise, and we know how to translate that expertise into efficient production systems, whether with products from well-known manufacturers or in a customised, industry-specific solution.





#### **SEALING TECHNOLOGY SECTORS**

- Food industry
- Packaging industry
- Pharmaceuticals and chemicals
- Pump manufacturing
- Steel industry
- Medical engineering

#### **SEALING TECHNOLOGY APPLICATIONS**

- Agitators and mixers
- Power tools
- Ship rotors
- Electric motors
- Drives
- Pumps
- Shipbuilding
- Rollers

## TECOFLON RINGS – RADIAL SHAFT SEALING RINGS IN PTFE

For over 50 years now, radial shaft seals have been successfully used to seal rotary shafts. Originally made of leather, the technology evolved into today's shaft seal versions with optimised profile design and sealing materials. Standard versions with NBR, HNBR and FKM elastomers are not always suitable for today's extreme operating conditions.

Our PTFE-based Tecoflon shaft sealing ring not only provides outstanding slip properties but is also resistant to almost any chemical, and its thermal properties are far superior to those of conventional elastomer shaft sealing rings. Moreover, it is machined and therefore customisable.

#### PRODUCT INFORMATION

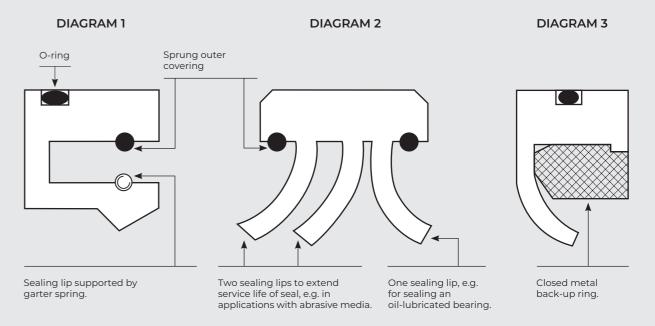
Tecoflon rings for extreme applications such as:

- High and low temperatures
- Starved lubrication or dry running
- Aggressive chemical media
- High pressures
- Food and pharma industry applications
- High circumferential speeds

The Tecoflon ring broadens the application scope for standard designs by using PTFE and special PTFE compounds.

#### **BENEFITS**

- High chemical and thermal resistance from –70°C to +260°C
- Suitable for starved lubrication and dry running
- Capable of circumferential speeds of up to 40 m/s
- Suitable for use with special materials in the pharma and food industries
- Sealing material with high wear-resistance
- Low friction and low breakaway torque after extended downtimes
- Anti-adhesive sealing material
- Suitable for unhardened shafts, depending on material
- Installation space user-definable to DIN 3760 or customer specifications
- High pressures up to 25 bar
- Excellent dry-running properties



Diagrams 1, 2 and 3 illustrate the structure of the individual components in the type 100/OR, type 431 and type 410/OR/STR Tecoflon rings.

#### **APPLICATIONS**

- Aggressive and corrosive chemicals in liquid or gas form
- Granulates, powders and fluids in the food and pharma industries
- Mineral and synthetic greases and oils
- Lubricating fluids and coolants
- Bulk materials in the construction industry
- Water and steam
- Resinous and paste-type mixtures

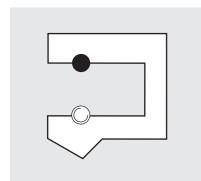
#### **APPLICATION AREAS**

- Machine tools
- Drink-filling systems
- Baking machines
- Butchery machines
- Mills
- Fans
- Compressors
- Agitators
- Feed and dosing units
- Drives
- Rotary unions
- Centrifuges

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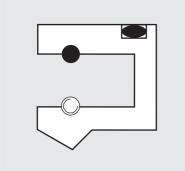
## **TYPES**

Our product range includes standard versions but also many special-purpose designs. An illustrative list of the types we supply is shown below. We would be delighted to advise you on the best solution for your application. We can also manufacture custom designs to your individual needs and specific requirements.



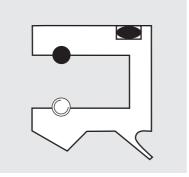
**TYPE 100** 

Sprung outer covering. Sealing lip with garter spring to absorb shaft run-out.



TYPE 100/OR

As per type 100 but with an O-ring for additional sealing on outer diameter.



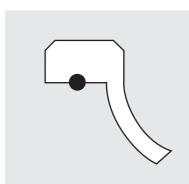
TYPE 110/OR

With additional dust lip, otherwise identical to type 100/OR.



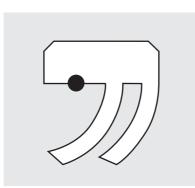
**TYPE 410** 

Standard type for small axial installation spaces.



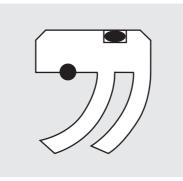
**TYPE 411** 

Cavity-free for medical engineering and food technology.



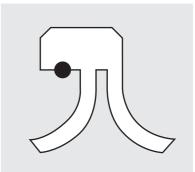
**TYPE 420** 

Two sealing lips for improved operating reliability and sealing.



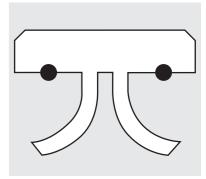
TYPE 420/OR

As per type 420 but with an O-ring for improved sealing on outer diameter.



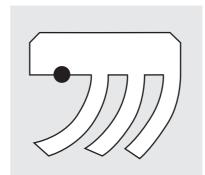
**TYPE 421** 

Opposing sealing lips.
For separating two media,
e.g. for decanters and
centrifuges.



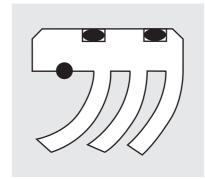
TYPE 421/I

Sealing lip arrangement as per type 421, but with inner lips that do not protrude below the seal back.



**TYPE 430** 

With three sealing lips for extreme conditions, e.g. solids mixers and sludge pumps.



TYPE 430/OR

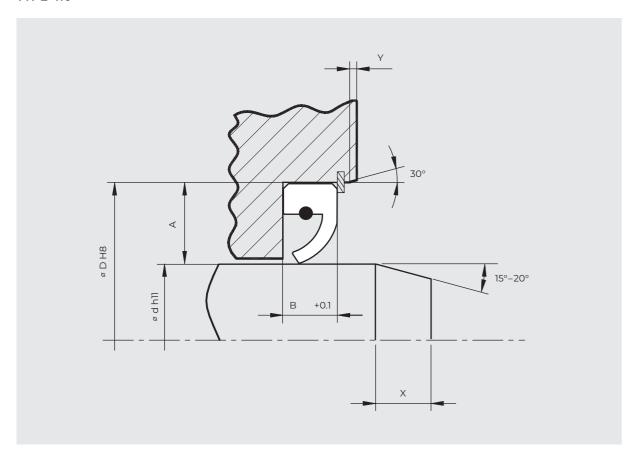
As per type 430 but with additional O-rings for improved sealing on outer diameter.

## LIST OF STANDARD SIZES IN THE 400 SERIES

#### TYPE SERIES 400 AND 400/I

Shaft Ø d		Ø D	Chamber/seal								Mounting chamfer			
			410		411			420		421				
Over	Up to		Α	В	А	В	Z	А	В	А	В	Z	Х	Υ
10	25	×	6	5	5	5	9	5	8	5	8	12	5	1
26	40	d + 2	8	6	8	6	11	8	10	8	10	15	6	1
41	120	Ø	10	8	10	8	14	10	12	10	12	18	8	1
121	260	ØD	15	10	15	10	17	15	15	15	15	22	10	1.5
261	500		20	13	20	13	22	20	20	20	20	29	12	2
501	900		25	13	25	13	23	25	21	25	21	31	15	2

#### **TYPE 410**





#### Model 500

The sealing solution for high-deflection applications:

A moveable sealing lip inside the outer casing equalises shaft deflections for a guaranteed seal even with poor roundness.

- Shaft diameters from 50 mm
- For high-speed applications
- Custom design
- Can also be combined with a static sealing lip
- Choice of various sealing materials

#### Model NSR

The labyrinth seal for extended service life:

Made up of two components, this model features a non-contact labyrinth structure, extending service life while also protecting against particle ingress in the area for sealing.

- Provides effective sealing against coarse particles
- Very long service life
- Low wear
- Also suitable for unhardened shafts
- O-rings seal housing and shaft
- Any two materials can be combined
- Deflection-absorbing solution
- Customisable design to suit your application
- Shaft diameters from 50 mm
- Not suitable for flooded applications

## SEALS FOR THE FOOD AND PHARMACEUTICAL INDUSTRIES

Sealing requirements in the food and pharma industries are highly specialised. We are proud to say that we meet them. We can provide appropriate solutions as well as expert assistance in selecting the right materials, designs and seals.

#### PRODUCT INFORMATION

- CIP (Cleaning in Place)
- SIP (Sterilization in Place)
- FDA and EC-1935/2004-compliant materials\* PTFE10, PTFE30, PTFE90
- Support rings and O-rings in FDA and/or EC 1935/2004-compliant materials

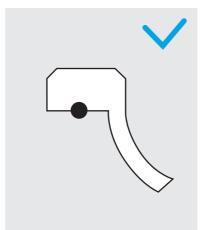
#### **BENEFITS**

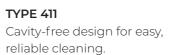
- High chemical resistance suitable for use with most cleaning agents
- Cavity-free design for easy, reliable cleaning, even with integrated seals
- Design and material can be customised for your application

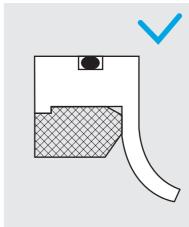


<sup>\*</sup> For more information, please see our materials overview or get in touch with us









# The version with a back-up ring allows for seal installation in open installation spaces without having to produce a new cavity.

TYPE 411/OR/STR



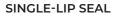
**TYPE 410** 

Conventional shaft sealing rings are breeding grounds for bacteria and residues and make equipment harder to clean.

## SEALS FOR PILLOW BLOCK HOUSINGS

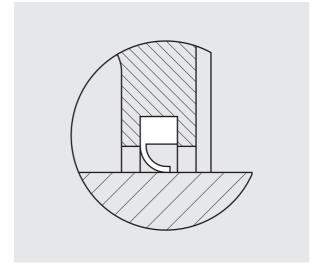
Pillow blocks are used in a wide range of applications. Accordingly, their seals have to meet various different requirements. Here at Künemund, we supply suitable solutions for most applications.

Material and design requirements in the food industry are different from those for heavy industry. In some cases the seal must carry away excess grease. In others, it must reliably prevent grease from escaping and prevent media from getting into the bearing. Please see below for a few examples. We are also happy to work with you to co-develop the perfect solution for your application.



Depending on dimensions, this seal can be used in the ring groove. The sealing lip allows excess grease to be moved out of the bearing. This design also provides reliable sealing against media from the bearing position environment.

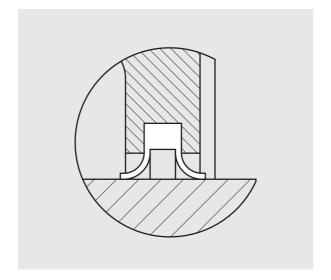
And thanks to the use of PTFE, the seal also works flawlessly without any grease or other lubricant on it (minimal lubrication of bearing).



#### **TWO-LIP SEAL**

The two sealing lips can point in the same direction, providing even more effective sealing than single-lip designs.

Alternatively they can be installed in opposing directions, reliably preventing external media from entering the bearing while also ensuring that no grease (or other lubricant) is lost.

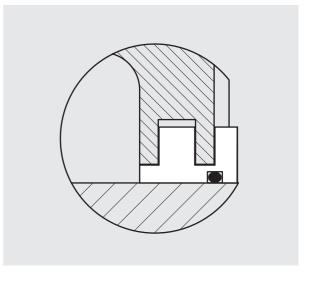




#### LABYRINTH SEAL

Our labyrinth seal is a non-contact variant, which makes it practically wear-free except at very high rotational speeds. The incorporated O-ring ensures that the labyrinth ring rotates with the shaft.

Please send us a request detailing your exact installation space and sealing requirements. We will be happy to design a suitable solution for you.



## MATERIALS

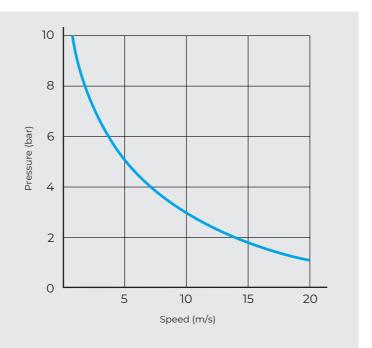
#### PROPERTIES OF PTFE WITH FILLER

Filler material	Wear	Sliding properties	Dry-running properties	Hard- ness	Extrusion stability	FDA	EC1935/ 2004	Remark
Pure PTFE	-	++	++	-	-	Yes	Yes	Suitable for food & pharma
Glass	+	++	++	+	+	Yes	Yes	Suitable for food & pharma
Coal	++	++	++	++	+	No	No	Standard material for rotary applications
Graphite	+	+++	+++	-	0	No	No	Often combined with an additional filler
MoS2	0	++++	+++	-	0	No	No	Always combined with an additional filler
Bronze	++	++	0	+	++	No	No	For hydraulics
Stainless steel	+	+	0	+	++	No	No	For water hydraulics/steam
PPSO2	+	++	++	+	+	Yes	No	Suitable for food & pharma

## PRESSURE RESISTANCE

## PRESSURE DEPENDING ON TEMPERATURE

Chart: Tecoflon ring example, type 410 at an operating temperature of 50°C



## **DESIGN INFORMATION**

#### SHAFT DESIGN

Surface quality Hardness 45 to 65 HRC

Ra = 0.2 to 0.4 μm Rz = 1 to 4 μm

At high pressures or with abrasive media and at circumferential speeds of H > 4 m/s we recommend a hardness of H > 55 HRC.

#### **DESIGN INFORMATION**

#### Housing

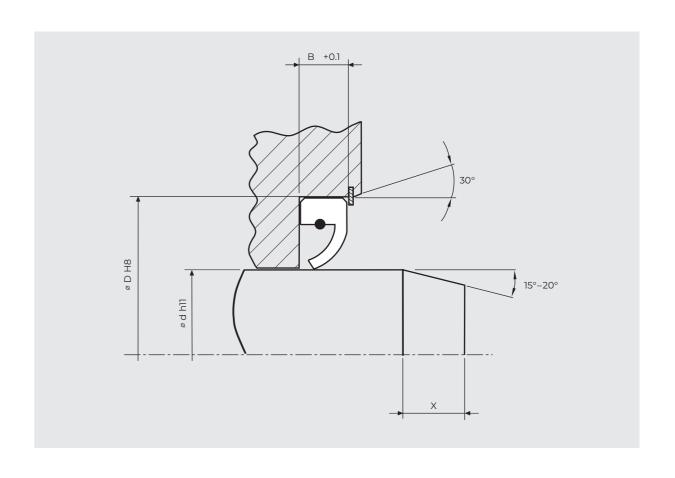
Seal chambers must be axially accessible.

The bore must be closed off by suitable means to prevent the seal from drifting out of position.

Sealing rings with a clamping ring do not require axial retention.

#### Surface roughness

Ra ≤ 1.6 µm Rz ≤ 6.3 µm

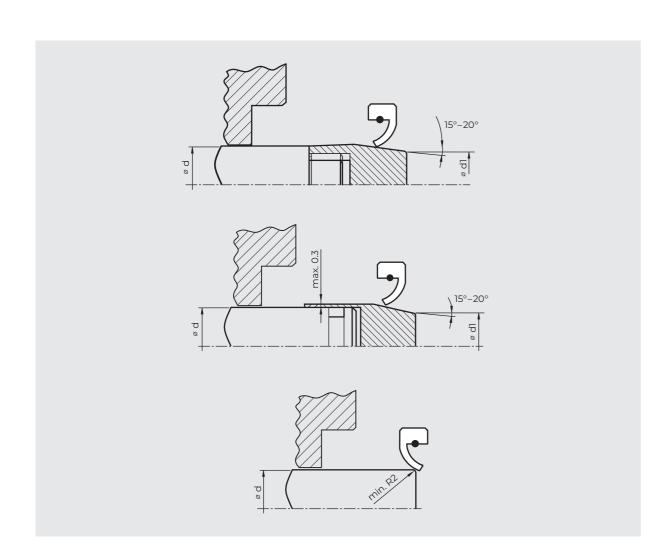


## ASSEMBLY INFORMATION

If the design specification precludes a suitable lead-in chamfer on the bearing, or if the PTFE sealing lip has to be fitted using keyways or O-ring grooves, we recommend using an assembly sleeve to protect the sealing lip. All edges on the assembly sleeve should be rounded to prevent sharp-edged transitions. The surface of the assembly sleeve should also be score-free. Before assembly, clean the installation spaces and check the seal for damage. On request, we can manufacture suitable assembly sleeves.

## Shaft Ø (mm) Assembly sleeve diameter d1 (mm)

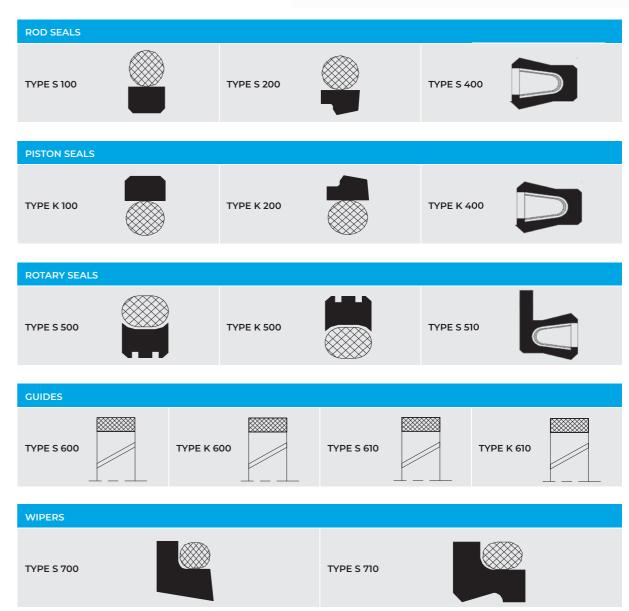
<	25	$d1 = \emptyset d - 2.5$
	26-40	$d1 = \emptyset d - 3.0$
	41-120	$d1 = \emptyset d - 4.0$
	121-260	$d1 = \emptyset d - 5.0$
	261-500	$d1 = \emptyset d - 6.0$
	501-900	$d1 = \emptyset d - 8.0$



SEALS FOR HYDRAULICS AND PNEUMATICS

Alongside radial shaft seals, Künemund Sealing Technology supplies a wide range of seals for use in hydraulic and pneumatic applications. For more details, see our Sealing Elements catalogue, ask your local contact or email us at info@tecoflon.de





## **CONTACT DETAILS**

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If you have a question about our products, services or company, please get in touch with one of our locations below.

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