

Zurcon® Buffer Seal





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With 50 years of experience, Trelleborg Sealing Solutions engineers support customers with design, prototyping, production, test and installation using state-of-the-art design tools. An international network of over 70 facilities worldwide includes 30 manufacturing sites, strategically positioned research and development centers, including materials and development laboratories and locations specializing in design and applications.

Developing and formulating materials in-house, we utilize the resource of our material database, including over 2,000 proprietary compounds and a range of unique products.

Trelleborg Sealing Solutions fulfills challenging service requirements, supplying standard parts in volume or a single custom-manufactured component, through our integrated logistical support, which effectively delivers over 40,000 sealing products to customers worldwide.

Facilities are certified to ISO 9001:2000 and ISO/TS 16949:2002. Trelleborg Sealing Solutions is backed by the experiences and resources of one of the world's foremost experts in polymer technology: the Trelleborg Group.

ISO 9001:2000

ISO/TS 16949:2002

The information in this brochure is intended to be for general reference purposes only and is not intended to be a specific recommendation for any individual application. The application limits for pressure, temperature, speed and media given are maximum values determined in laboratory conditions. In application, due to the interaction of operating parameters, maximum values may not be achieved. It is vital therefore, that customers satisfy themselves as to the suitability of product and material for each of their individual applications. Any reliance on information is therefore at the user's own risk. In no event will Trelleborg Sealing Solutions be liable for any loss, damage, claim or expense directly or indirectly arising or resulting from the use of any information provided in this brochure. While every effort is made to ensure the accuracy of information contained herewith, Trelleborg Sealing Solutions cannot warrant the accuracy or completeness of information.

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Zurcon® Buffer Seal

Introduction

In heavy duty applications, leak free performance and high service life cannot be assured by a single sealing element; therefore, specially developed "system seals" are arranged in series, building a "tandem configuration".

Each sealing element in a system has its specific function and their interaction needs to be secured to get a redundant sealing system. The primary seal in Zurcon® material has an excellent wear and extrusion resistance under extreme working conditions. It allows a fine lubrication film passing this first barrier, ensuring the necessary lubrication of the secondary sealing element for long service life.

The "tandem arrangement" requires an outstanding back-pumping ability of the primary seal and the secondary seal, if a double acting scraper is installed.

Description

The single-acting Zurcon® Buffer Seal is designed as a heavy duty primary rod seal. The design of the product incorporates a combination of a Zurcon® sealing ring long with a Back-up ring.

By utilizing two materials, the performance of the product is enhanced and life is extended. The Zurcon® Buffer Seal is designed in such a way that sealing performance is not compromised under system pressure extremes. At low system pressure, the resilience of the Zurcon® material allows for effective sealing. At high system pressure, the Back-up ring is designed to contract into the extrusion gap, protecting the Zurcon® Seal ring.

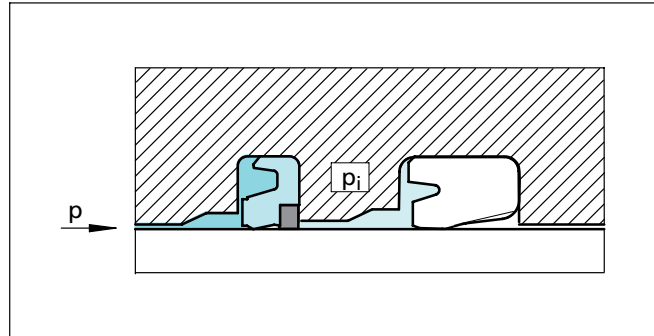


Figure 1 Tandem configuration

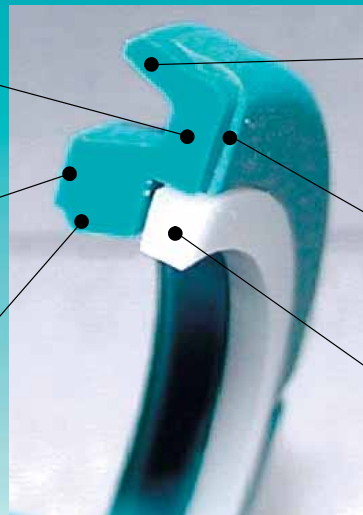
Characteristics

Zurcon® Sealing Ring

- High abrasion resistance
- Low compression set

Radial slots to avoid risk of "blow-by"

Dynamic lip designed to work at high pressure minimizing the friction and ensuring back pumping



High flexible static lip optimised to relieve the inter-stage pressure

Radial channels to facilitate back pumping and pressure relieving capability

Solid POM anti-extrusion ring



Friction

The Zurcon® Buffer Seal with its special U shape and its rounded dynamic lip is able to guarantee an optimal pressure distribution and a constant lubrication of the rod across the entire pressure range.

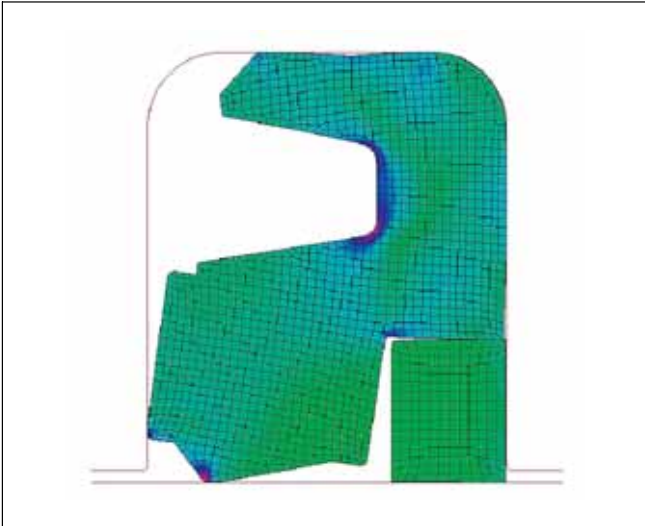


Figure 2 Zurcon® Buffer Seal un-pressurized

At un-pressurized condition head-on slots on dynamic lip assure a right positioning avoiding any risk of blow-by. The Zurcon® Buffer Seal is ready for a fast activation protecting the secondary seal from the peak of pressure.

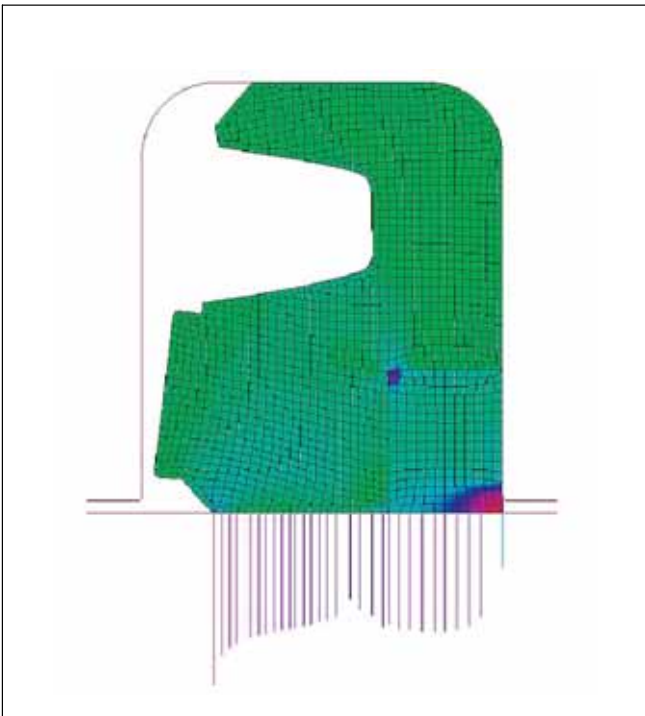


Figure 3 Pressure distribution at 40 MPa (5800 psi)

Pressure relief

In a tandem configuration the Zurcon® Buffer Seal must assure a quick and complete pressure relief in order to reduce friction and wear of the secondary seal increasing the life and overall sealing performance. The relief mechanism is activated by the special seal design through its thin, short and flexible static lip. The radial channels on the back side offer the fluid a direct stream up to both lips. A minimum difference between the pressure trapped and the pressure in the chamber is able to deflect the seal and recover the same pressure level.

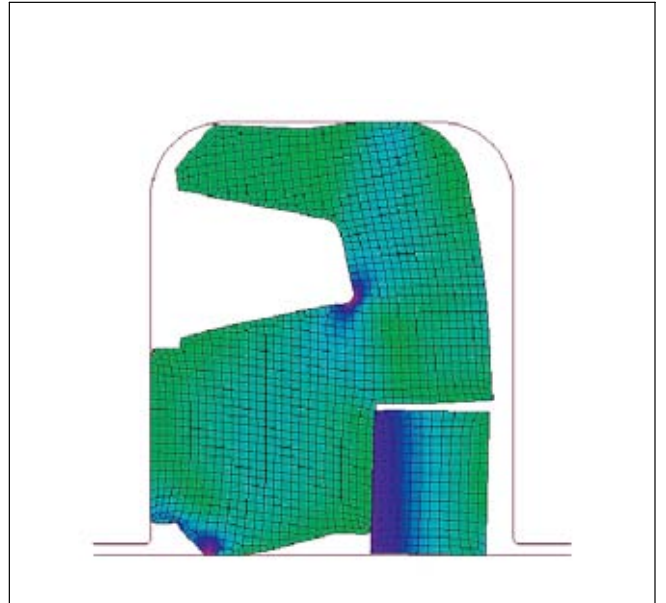


Figure 4 Pressure relief with a back pressure bigger of 0.5 MPa (72.5 psi)

Advantages

- Manufactured from Zurcon® and high-performance materials
- Conforms to ISO 7425/2 groove standards
- Suitable also for Stepseal® groove
- Excellent back-pumping over entire pressure range
- Resistant against high temperature and pressure
- Special design of dynamic seal lip for superior performance
- Designed with radial relief notches to prevent pressure trapping
- Superior wear and abrasion resistance
- Low compression set



Application Examples

Medium and Heavy duty applications:

- Mobile equipment
- Lift trucks
- Earthmoving equipment

Materials - Standard application

For hydraulic components in mineral oils or medias with good lubricating performance.

Seal Ring: Zurcon® Z20 Standard polyurethane

Back-up Ring: Polyacetal resin (POM)

Set reference: Z2054

Materials - Low temperature application

Seal Ring: Zurcon® Z22 Premium polyurethane

Back-up Ring: Polyacetal resin (POM)

Set reference: Z2254

The Zurcon® polyurethane has high abrasion resistance, a low compression set, high extrusion resistance and a wide temperature range.

Technical Data

Operating conditions:

The Zurcon® Buffer Seal is designed for high pressure rod sealing applications in extreme conditions.

Pressure: Up to 40 MPa (5800 psi)
Up to 60 MPa (8700 psi) peak

Velocity: Up to 1 m/s (40 inch/sec)

Temperature:

Zurcon® Z20 Standard: -35 °C to +110 °C
(-31 °F to +230 °F)

Zurcon® Z22 Premium: -45 °C to +110 °C
(-49 °F to +230 °F)

Media:

Hydraulic fluids based on mineral oil: -35 °C to +110 °C
(-31 °F to +230 °F)

Synthetic and natural ester HEES, HETG: up to +60 °C (+140 °F)

Flame-retardant hydraulic fluids HFA/HFB: up to +40 °C (+104 °F)

Important Note:

The above stated limits for pressure and speed are maximum values individually. Friction heat generated by the combination of pressure and speed may cause local heat built-up. Care should be taken not to apply high values for pressure and speed at the same time.



Installation Recommendations

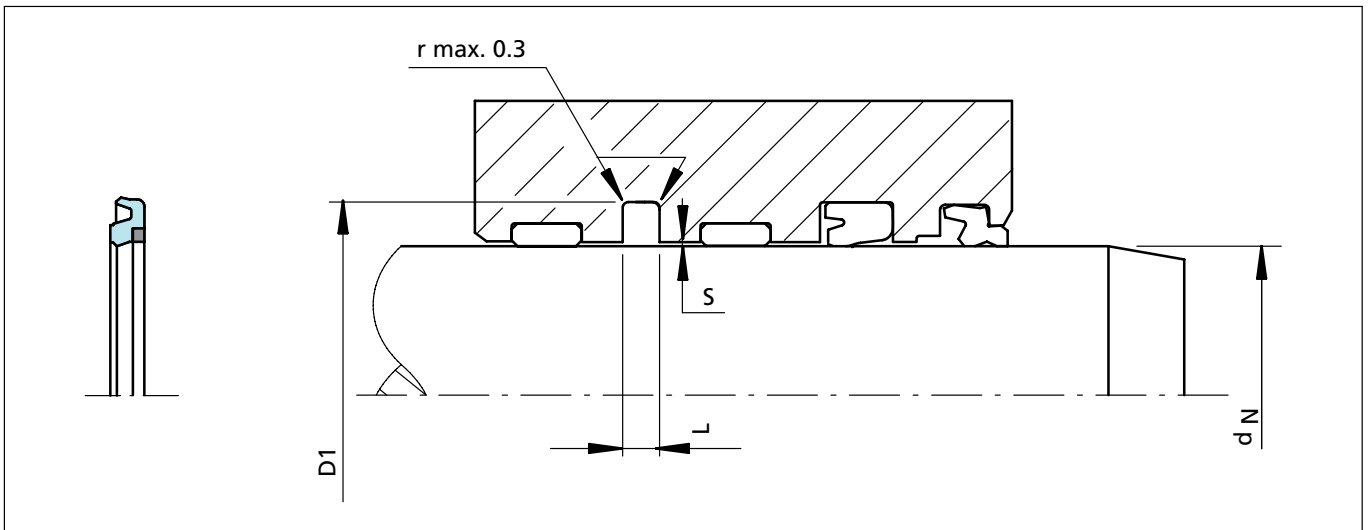


Figure 5 Installation drawing

Table I Installation Dimensions

Rod Diameter	Groove Diameter	Groove Width	Radial Clearance	TSS Article No.
d_N f8/h9	$D1 +0.2$	$L +0.25$	S max.	
40.0	55.5	6.3	0.4	RUK3B0400-Z2054
45.0	60.5	6.3	0.4	RUK3B0450-Z2054
50.0	65.5	6.3	0.4	RUK3B0500-Z2054
55.0	70.5	6.3	0.4	RUK3B0550-Z2054
56.0	71.5	6.3	0.4	RUK3B0560-Z2054
60.0	75.5	6.3	0.4	RUK3B0600-Z2054
63.0	78.5	6.3	0.4	RUK3B0630-Z2054
65.0	80.5	6.3	0.4	RUK3B0650-Z2054
70.0	85.5	6.3	0.4	RUK3B0700-Z2054
75.0	90.5	6.3	0.4	RUK3B0750-Z2054
80.0	95.5	6.3	0.4	RUK3B0800-Z2054
85.0	100.5	6.3	0.4	RUK3B0850-Z2054
90.0	105.5	6.3	0.4	RUK3B0900-Z2054
100.0	115.5	6.3	0.4	RUK3B1000-Z2054
105.0	120.5	6.3	0.4	RUK3B1050-Z2054
110.0	125.5	6.3	0.4	RUK3B1100-Z2054
115.0	130.5	6.3	0.4	RUK3B1150-Z2054
125.0	140.5	6.3	0.4	RUK3B1250-Z2054
140.0	155.5	6.3	0.4	RUK3B1400-Z2054

The rod diameters printed in **bold** are in accordance with the recommendations of ISO 7425/2.



Zurcon® Buffer Seal

TSS Ordering Example

Buffer Seal Type RUK

Rod diameter: $d_N = 63.0$ mm

Groove diameter: $D1 = 78.5$ mm

Groove width: $L = 6.3$ mm

TSS Part No.: RUK3B0630 -

Material

Compound: Z2054
(Zurcon® Z20 + POM Back-up Ring)

TSS Article No.	RUK3	B	0630	-	Z2054
TSS Series No.					
Type (Standard)					
Rod diameter x 10					
Quality Index (Standard)					
Material code					

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