

# Zurcon<sup>®</sup> Buffer Seal



**zurcon**



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ISO 9001:2000

ISO/TS 16949:2002

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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.

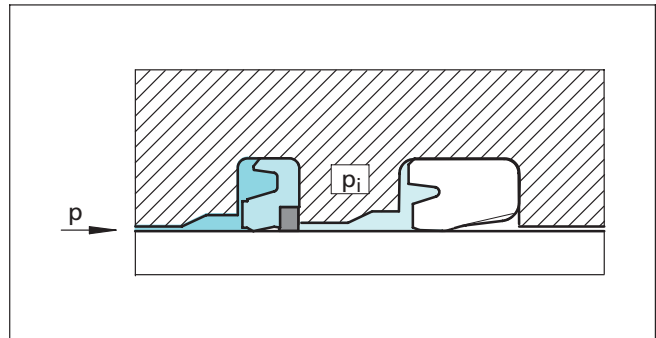


Figure 1 Tandem configuration

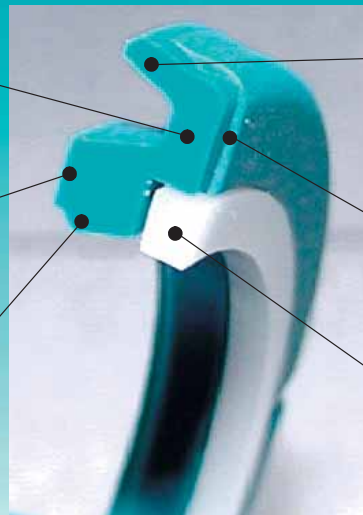
## Characteristics

### 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.

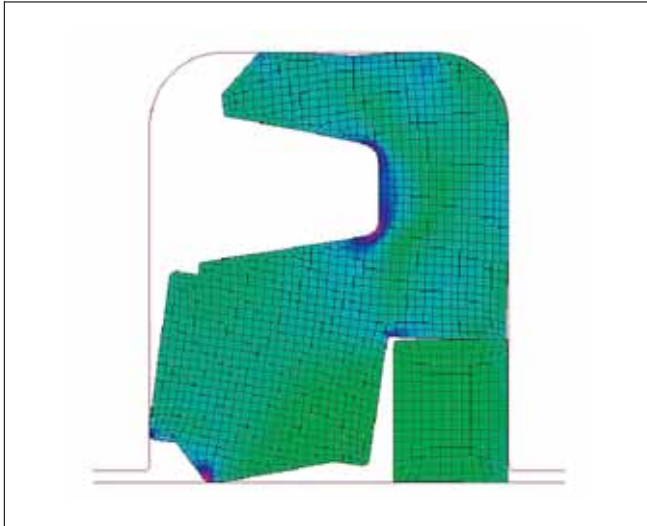


Figure 2 Zurcon® Buffer Seal un-pressurized

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.

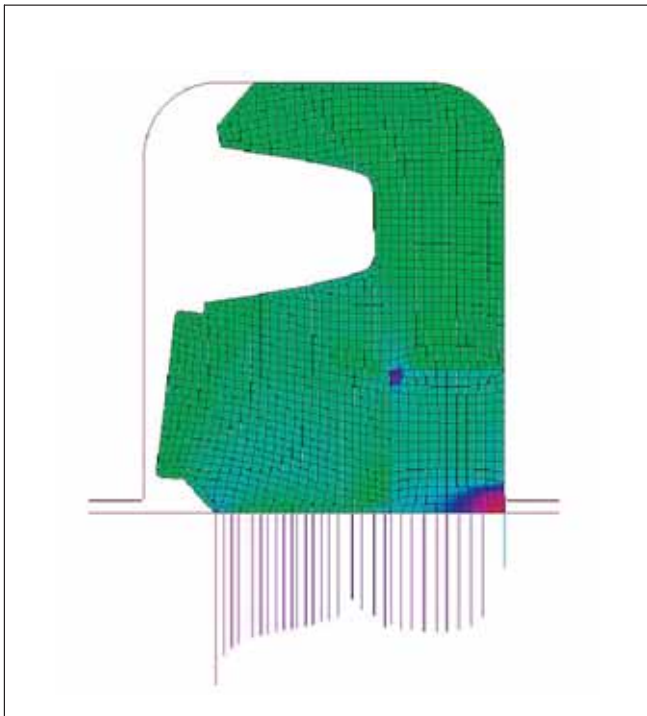


Figure 3 Pressure distribution at 40 MPa (5800 psi)

## 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.

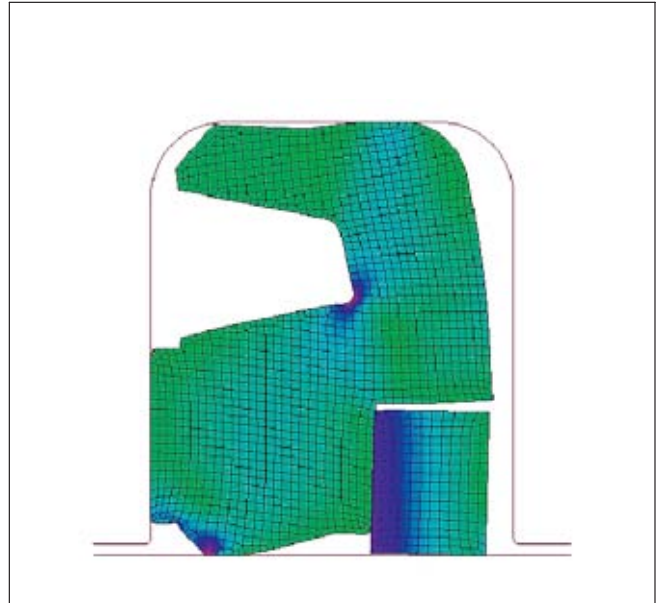


Figure 4 Pressure relief with a back pressure bigger of 0.5 MPa (72.5 psi)

## 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

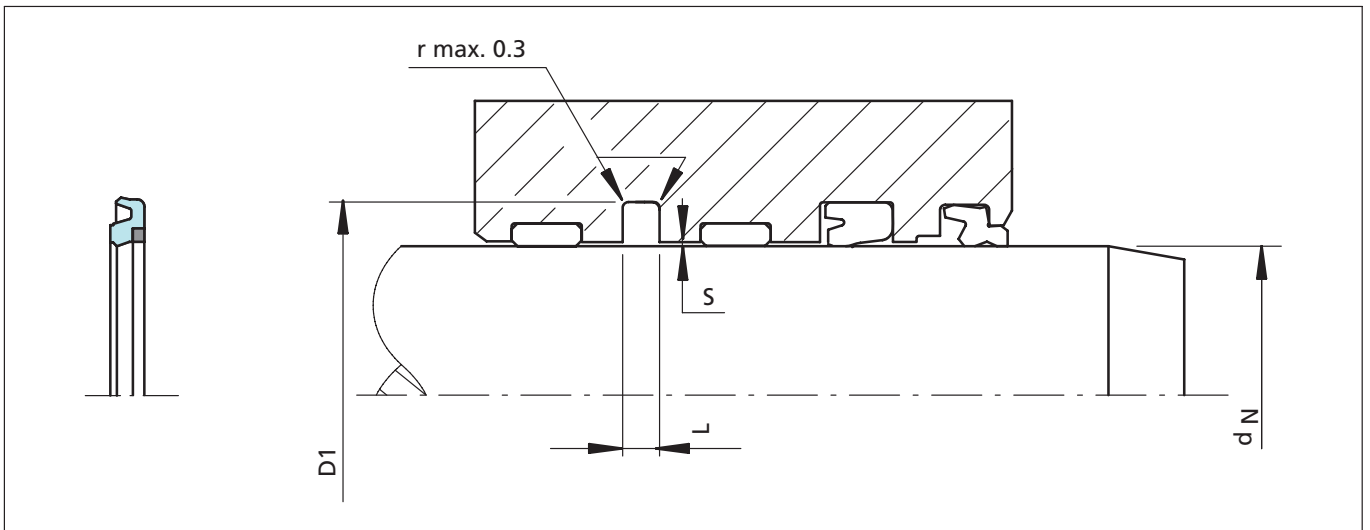


Figure 5 Installation drawing

**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
<b>45.0</b>	<b>60.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B0450-Z2054</b>
<b>50.0</b>	<b>65.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B0500-Z2054</b>
55.0	70.5	6.3	0.4	RUK3B0550-Z2054
<b>56.0</b>	<b>71.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B0560-Z2054</b>
60.0	75.5	6.3	0.4	RUK3B0600-Z2054
<b>63.0</b>	<b>78.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B0630-Z2054</b>
65.0	80.5	6.3	0.4	RUK3B0650-Z2054
<b>70.0</b>	<b>85.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B0700-Z2054</b>
75.0	90.5	6.3	0.4	RUK3B0750-Z2054
<b>80.0</b>	<b>95.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B0800-Z2054</b>
85.0	100.5	6.3	0.4	RUK3B0850-Z2054
<b>90.0</b>	<b>105.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B0900-Z2054</b>
<b>100.0</b>	<b>115.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B1000-Z2054</b>
105.0	120.5	6.3	0.4	RUK3B1050-Z2054
<b>110.0</b>	<b>125.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B1100-Z2054</b>
115.0	130.5	6.3	0.4	RUK3B1150-Z2054
<b>125.0</b>	<b>140.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B1250-Z2054</b>
<b>140.0</b>	<b>155.5</b>	<b>6.3</b>	<b>0.4</b>	<b>RUK3B1400-Z2054</b>

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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