

# Zurcon® U-Cup RU9



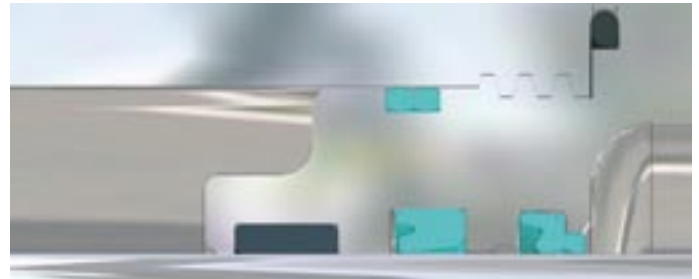
**Innovation in design and material**



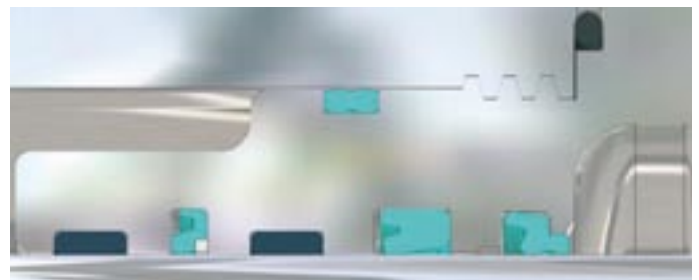
**Your Partner for Sealing Technology**

## Advantages of Zurcon® U-Cup RU9

- Optimum solution for mobile and industrial hydraulic applications
- Long service life minimizes maintenance and downtime
- Unique patented construction gives excellent back-pumping ability
- Constant lubrication film minimizes break-away force
- Proven performance under high pressure for extended periods
- Superb friction characteristics
- Enhanced pressure distribution on rod
- Low heat generation
- Superior extrusion resistance
- Wide operating temperature range
- Almost universal media compatibility
- Compact installation dimensions
- Designed for easy assembly



Zurcon® U-Cup RU9 used as a single seal in a sealing system with a double-acting scraper.



Zurcon® U-Cup RU9 as a secondary seal in a "tandem design" sealing system with double-acting scrapers.

## Features of Zurcon® U-Cup RU9

- Fits into standard groove sizes according to DIN/ISO 5597
- Capable of installation in closed grooves
- Increased hardware clearance
- Interference fit at external diameter
- Trimmed seal lip gives outstanding dynamic and static sealing effect
- Microstructure gives excellent tribological characteristics

## Zurcon® Z20 and Z22 polyurethane:

Proprietary polyurethane material specially developed by Trelleborg Sealing Solutions for manufacture of sealing elements

- High wear resistance
- Low compression set
- Wide operating temperature range
- Almost universal media compatibility

Technical data	
Pressure	max. 40 MPa (5800 psi)
Velocity	max. 0.5 m/s (20 inch/sec)
Operating 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/Operating temperature	
Hydraulic fluids	- Mineral oil base -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 and HFB up to +40°C (+104°F)
Material	- Zurcon® Z20 Standard polyurethane 93 Shore A  - Zurcon® Z22 Premium polyurethane 93 Shore A
Color	Turquoise

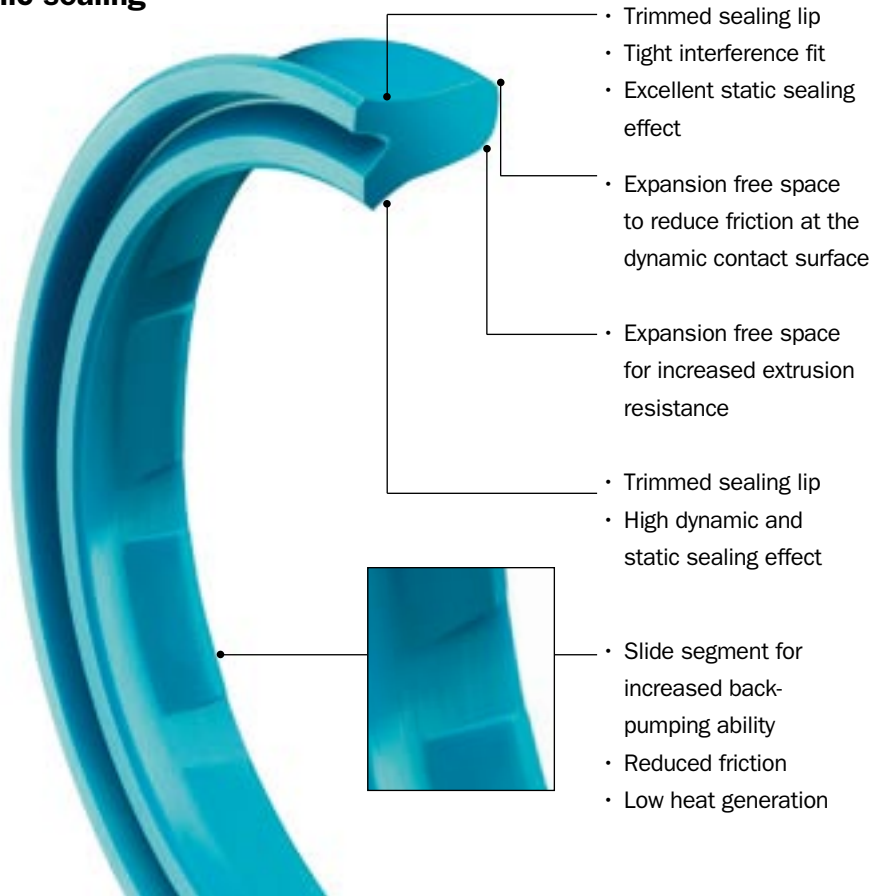
## Zurcon® U-Cup RU9 - Exceptional hydraulic sealing

In mobile and hydraulic applications, a long service life is needed from piston rods. Important in achieving this, is the effectiveness of their sealing system.

Rod seals must operate for extended periods under high pressure and friction. To give long-term performance, wear and extrusion resistance are vital, as is compatibility to aggressive media and a wide temperature capability. While compact installation dimensions and ease of assembly are also essential.

Zurcon® U-Cup RU9, developed to meet these criteria, provides the optimum sealing solution for mobile and industrial hydraulic applications.

A key to the long service life of Zurcon® U-Cup RU9 is its special hydrodynamic and tribologic properties. These are the result of its unique patented microstructure, where sliding surfaces in the seal are combined with back-pumping channels. Giving excellent back-pumping across its entire pressure range, a constant lubrication film underneath the seal-sliding surface reduces dynamic friction and breakaway force, even after pro-longed periods of rest.



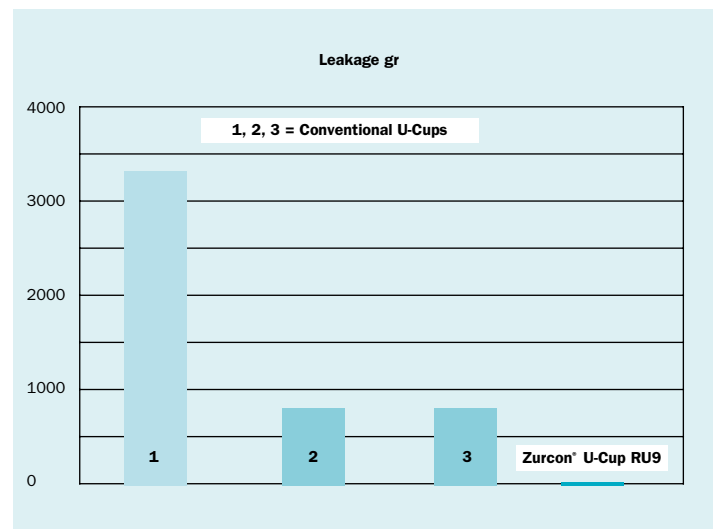
## Sealing Performance with virtually zero leakage

Excellent sealing performance is achieved by:

- Interference fit at the external diameter
- Special shape of both trimmed seal lips
- Controlled pressure distribution and hydrodynamic back-pumping ability over a wide pressure range

### Test Conditions

Groove	50/60/11
Velocity	0.05 to 0.4 m/s (2 inch/sec to 16 inch/sec)
Pressure	0 to 20 MPa (0 to 2900 psi, 200 bar)
Oil Temperature	50°C (122°F)
Oil Type	HLP46
Test Distance	40.5 km (25 miles)



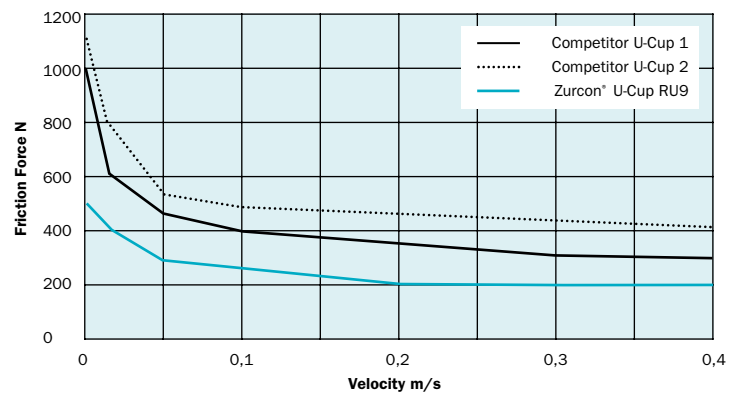
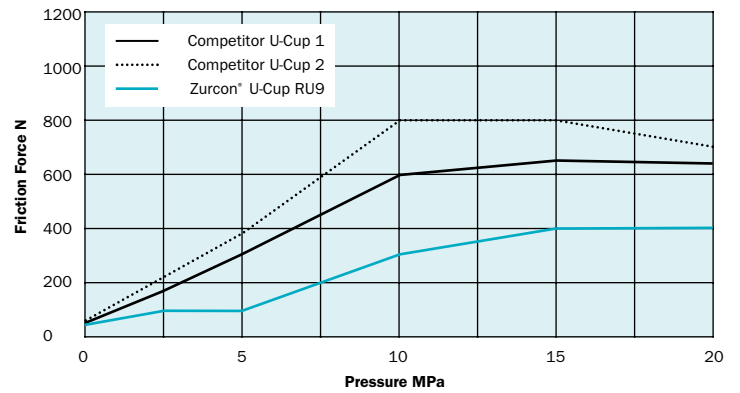
## Superb friction characteristics

The friction force of U-Cups increases greatly between 2.5 and 10 MPa (362 and 1450 psi, 25 and 100 bar). The Zurcon® U-Cup RU9 has a unique feature. When the system pressure is higher, the contact surface between the Zurcon® U-Cup RU9 and the piston rod becomes larger. The seal deforms to such an extent that its entire friction generating inside surface is in contact with the piston rod.

Due to the special design of Zurcon® U-Cup RU9, the pressure distribution on the rod is improved. The resulting tribological benefits (the effect of friction, lubrication, and wear of interacting surfaces) enhance the friction characteristics of the seal. This is illustrated when the friction values of conventional U-Cups are compared to those of the Zurcon® U-Cup RU9.

### Test Conditions

Groove	40/50/8
Oil Temperature	50°C (122°F)
Oil Type	HLP46



## Back-pumping effect extends seal life

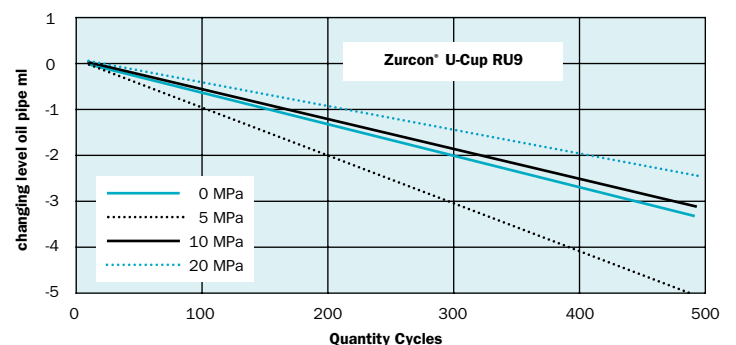
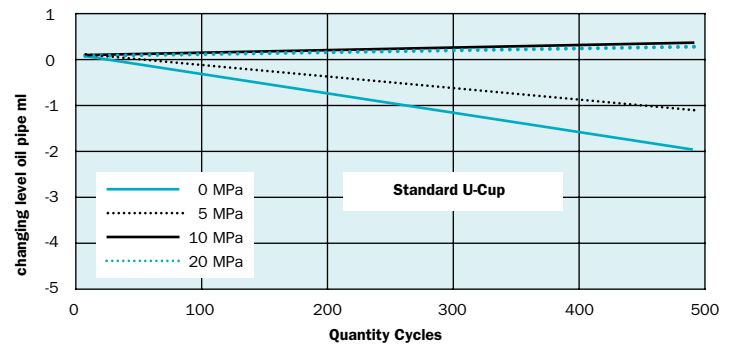
The unique patented microstructure of Zurcon® U-Cup RU9, where sliding surfaces in the seal are combined with back-pumping channels, gives excellent back-pumping across its entire pressure range.



In back-pumping technology, on the forward stroke of the shaft, an oil lubricating film is distributed under the seal. On the return stroke the oil is back-pumped into the system, preventing leakage. This extends seal life by reducing dynamic friction and breakaway force, even after pro-longed periods of rest.

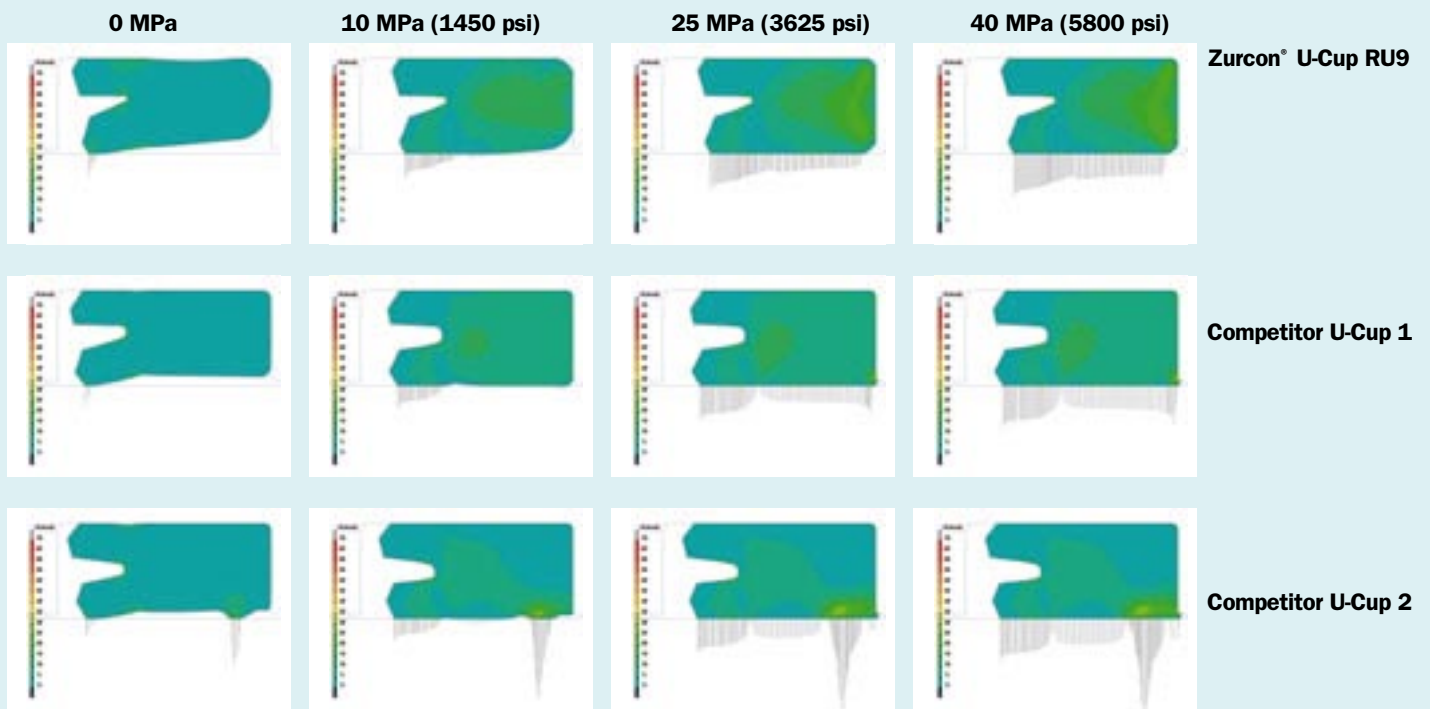
### Test Conditions

Groove	40/50/8
Stroke length	250 mm (1 inch)
Velocity	0.4 m/s (16 inch/sec)
Velocity ratio	1:1
Oil Temperature	50°C (122°F)
Oil Type	HLP46



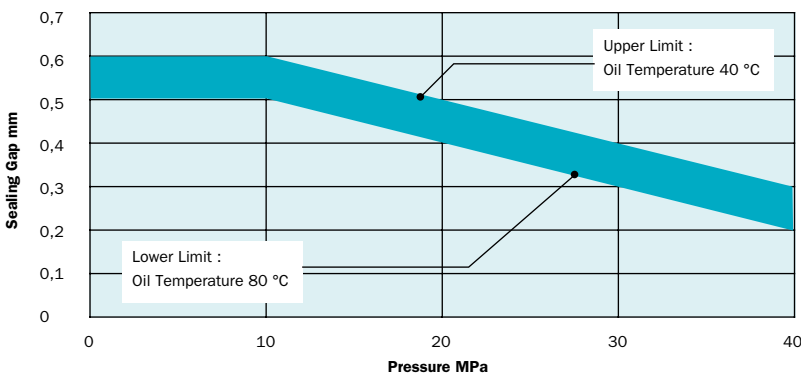
## Zurcon® U-Cup RU9 gives superior performance under pressure compared with standard U-cups

The FEA (Finite Element Analysis) illustrations below clearly demonstrate the outstanding performance of Zurcon® U-Cup RU9 under pressure.



## Hardware clearance can be increased

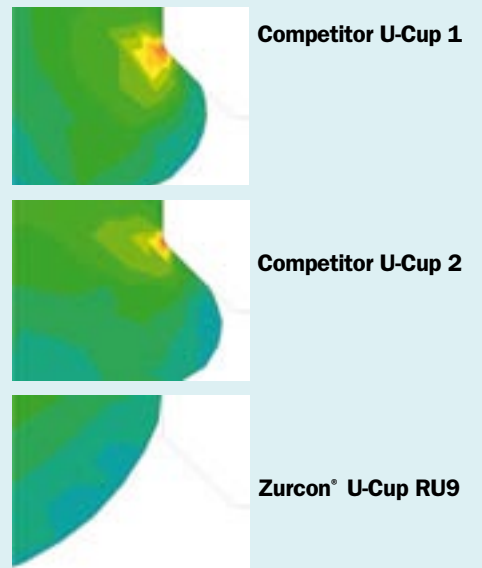
The new Zurcon® U-Cup RU9 design combined with special material properties gives a better extrusion resistance compared to standard U-Cups under all working conditions. This means the hardware clearance can be increased significantly.



All graphs are in metric measurements.

## Better extrusion resistance

40MPa (5800 psi, 400 bar)



Zurcon® U-Cup RU9 shows better extrusion resistance than standard U-Cups in the same hardware and service conditions.

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