



## TECHNICAL INFORMATION

# Rod Seals | Turcon® Stepseal® V

### Description

Stepseal® V is based on the dynamic, unidirectional Stepseal® sealing concept. During the extending stroke of the rod, focusing of contact force on the unique Stepseal® sealing edge creates high local sealing pressure and limits the micro fluid film formation under the seal. When the rod is retracted, the design of the full Stepseal® sealing face supports hydrodynamic back-pumping of the fluid film, and so ensures leak-free sealing efficiency with low friction and long service life.

In long-stroke cylinders, and equipment operating with low speed during retraction, it has been found that hydrodynamic back-pumping may become insufficient to prevent build-up of pressure in the seal system behind the primary seal. Pressure build-up in the seal system leads

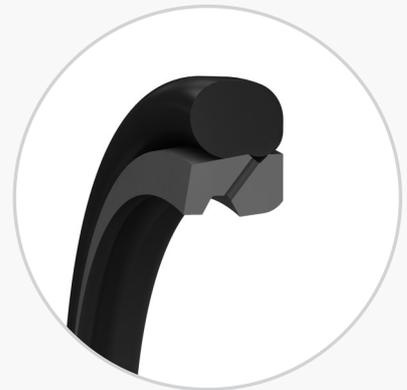
to leakage, increased friction and wear, and may ultimately require replacement of the seals. The usual precaution in such equipment has been to provide space for a buffer volume behind the primary seal, or to install a drain line.

The built-in check valve function is used to eliminate pressure build-up and so render buffer volumes and drain lines obsolete. Extensive development has now brought the inherent prevention of pressure build-up together with dependable sealing performance in one element; Turcon® Stepseal® V.

Stepseal® V has the efficient seal performance and outstanding service life of the Stepseal® range, and the reliable prevention of pressure build-up brought by a refined check valve function.

### Advantages

- Same basic function as Turcon® Stepseal® 2K
- Check valve function of O-Ring eliminates risk of fluid bypassing the seal during pressure loading when pressurized
- No system pressure on secondary sealing element and/ or Excluder®
- Independent of any speed relation of counter surface
- Independent of stroke length and deflection
- Minimum contribution of friction of secondary sealing element and/or Excluder®
- Minimum wear of secondary sealing element and/or Excluder®
- Increased leakage control
- Prolonged seal life
- Increased operational reliability
- Fits standard Turcon® Stepseal® 2K groove dimensions as well as ISO 7425 seal housings



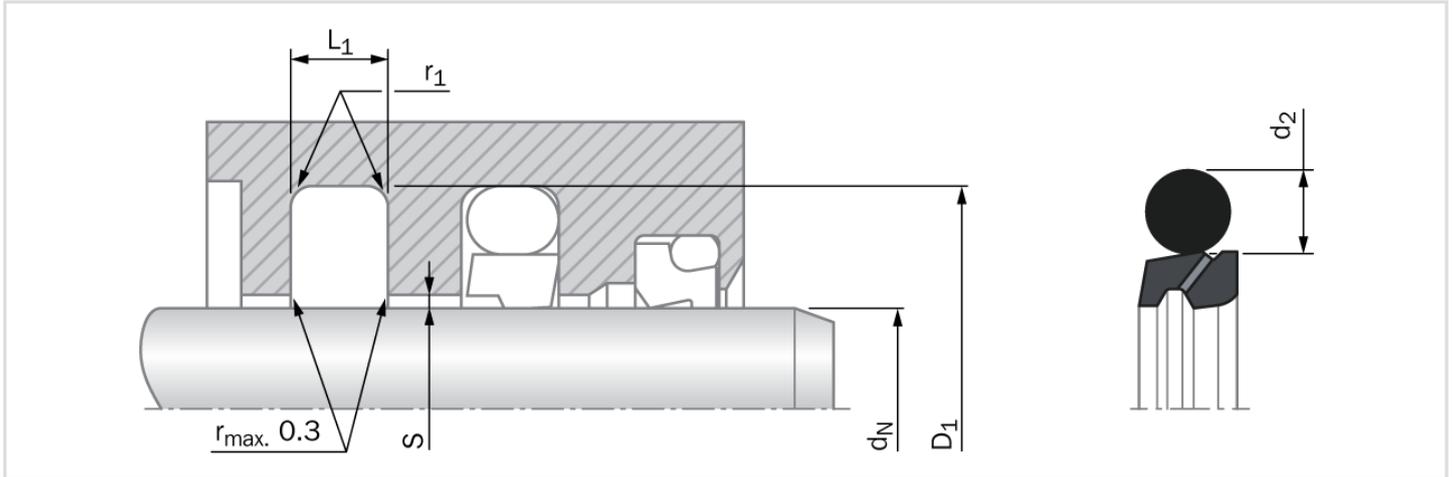
### Technical Data

Pressure	: Up to 50 MPa (Turcon® M12)
Speed	: Up to 15 m/s with reciprocating movements, frequency up to 15 Hz
Temperature	: -30 °C to +200 °C (depending on seal and O-Ring material)
Media	: Mineral oil based hydraulic fluids, flame retardant hydraulic fluids, environmentally safe hydraulic fluids (plant based oils), phosphate ester and others, depending on the seal and O-Ring material
Clearance	: The maximum permissible radial clearance $S_{max}$ is shown in the table on the next page as a function of the operating pressure and functional diameter.



## TECHNICAL INFORMATION

# Rod Seals | Turcon® Stepseal® V



### Installation dimensions - Standard recommendations

Series No.	Rod Diameter $d_N$ f8/h9			Groove Diameter $D_1$ H9	Groove Width $L_1 +0.2$	Radius $r_1$	Radial Clearance $S_{max.}^*$			O-Ring Cross-Section $d_2$
	Standard Application	Light Application	Heavy Duty Application				10 MPa	20 MPa	40 MPa	
RSV2	12 - 37.9	38 - 199.9	-	$d_N + 10.7$	4.2	1.0	0.50	0.30	0.20	3.53
RSV3	38 - 199.9	200 - 255.9	19 - 37.9	$d_N + 15.1$	6.3	1.3	0.70	0.40	0.25	5.33
RSV4	200 - 255.9	256 - 649.9	38 - 199.9	$d_N + 20.5$	8.1	1.8	0.80	0.60	0.35	7.00
RSV8	256 - 649.9	650 - 999.9	200 - 255.9	$d_N + 24.0$	8.1	1.8	0.90	0.70	0.40	7.00
RSV5	650 - 999.9	-	256 - 649.9	$d_N + 27.3$	9.5	2.5	1.00	0.80	0.50	8.40
RSV5X	-	1000 - 1200	-	$d_N + 27.3$	9.5	2.5	1.00	0.80	0.50	8.40
RSV6**	-	-	650 - 999.9	$d_N + 38.0$	13.8	3.0	1.20	0.90	0.60	12.00
RSV6X**	1000 - 2600	-	-	$d_N + 38.0$	13.8	3.0	1.20	0.90	0.60	12.00

\* For pressures from 40 MPa to the maximum specified, use diameter tolerance H8/f8 (bore/rod) in the area behind the seal. Slydring®/Wear Rings are not applicable at very small radial clearance.

\*\* All O-Rings with 12 mm cross section are delivered as special profile ring.

### Important Note

Installation suggestions, material recommendations, parameters and further data provided are always subject to the particular field of use and the application in which the seal is intended to be used, in particular the interaction of the seal with other components of the application. Therefore they neither constitute an agreement on the legal and factual nature nor a guarantee of quality. Technical changes and errors remain reserved.