

# HYDRAULIC AND PNEUMATIC SEALS

**eusga**

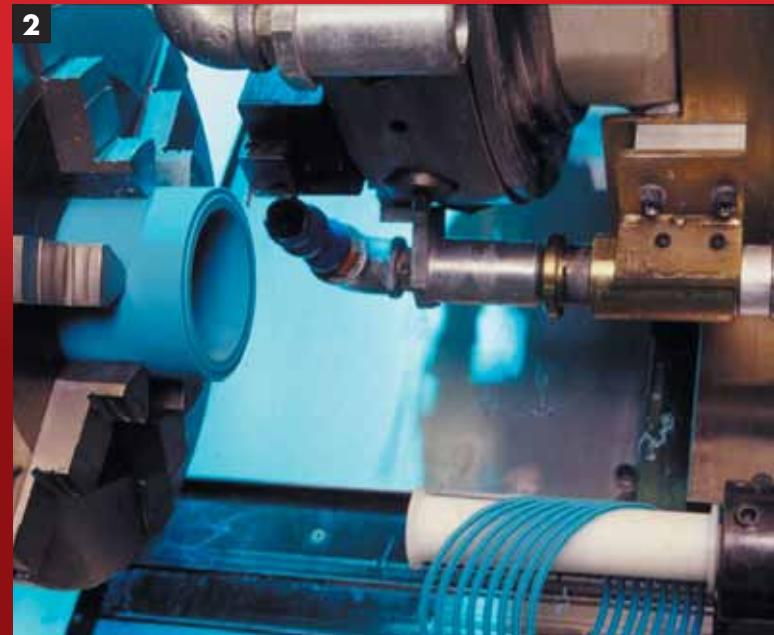
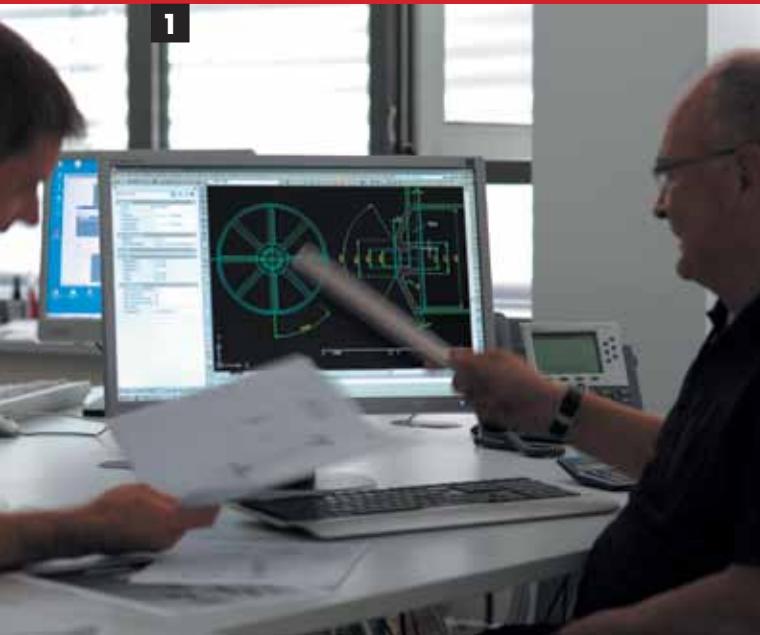
European Seals and Gaskets Association

## PROFESSIONAL SERVICE FOR THE OPTIMUM SEAL SOLUTION

Whether standard branded product, sample seal or custom manufacture, our sealing specialists provide competent advice and find professional solutions.

## ADVICE

Discuss your technical and economic requirements with our application engineers. We provide our great experience in seal technology supported by the know-how of Trelleborg Sealing Solution. We find the correct professional solution for you.



## **DO YOU WANT TO CONTACT US IF YOU HAVE QUESTIONS? PRODUCT RANGE**

Due to the range of Trelleborg Sealing Solution and the collaboration with other leading seal manufacturers, we have a comprehensive range of versions and special products with branded quality.

## **DELIVERY SERVICE**

We are networked with our most important suppliers online using an EDI connection. If any product is not in stock in the REIFF warehouse, we can directly access the large seal stocks of our partners. If it is very urgent, direct shipment from there is possible.

## **EXPRESS MANUFACTURE FOR REPAIRS OR SAMPLE CONSTRUCTION**

We produce seals of all versions and materials reliably in the shortest time. We provide an optimum economic solution without tool costs for repairs or sample / prototype construction.

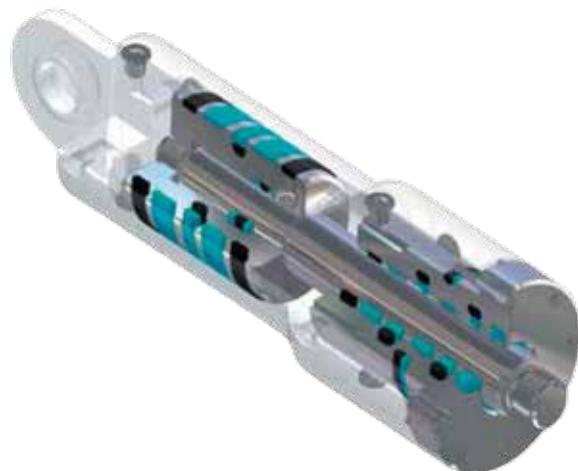
## **PRODUCT RANGE ON THE NEXT PAGES**

### **Static Seals**

- Seals for rotating and swivelling movements
- Scrapers
- Rod seals
- Piston seals
- Guide elements

- 1** *From the manufacture to the development to the advice – our specialists draw on many years of know-how.*
- 2** *Express manufacture for the mechanical production of sealing profiles is one of our strengths.*

# GENERAL INFORMATION



Hydraulic cylinders

## Selection of sealing elements

Sealing elements have a decisive effect on the design, function and lifespan of cylinders and equipment in the hydraulics and pneumatics fields.

This applies both to piston seals and to piston rod seals, wherein leakage freedom, wear and extrusion resistance, media and temperature compatibility, low friction, compact installation spaces and ease of installation are required in order to meet the requirements of the industry through an overall functional solution.

The importance of these parameters and their limits depends in general on the specific application. To be able to select the suitable type of seal and material, it is necessary to first identify all operating parameters.

We recommend that limits be adhered to since they have a decisive influence on the functionality and lifespan of the sealing system. In the final selection of the type of seal and material, the detailed specifications of the sealing elements must also be taken into account.



Pneumatic cylinders

# REGISTER OVERVIEW

## HYDRAULIC / PNEUMATIC SEALS

The program on the next few pages:

Hydraulic products	Pneumatic products
<b>Seals for rotational and tilting motions</b>	<b>Rod seals</b>
<ul style="list-style-type: none"> <li>• Seals for rotational and tilting motions</li> <li>- Turcon® Roto Glyd Ring® TG3, TG4</li> <li>- Turcon® Roto Glyd Ring® TG5, TG6</li> <li>- Turcon® Roto Variseal® TV</li> </ul>	<ul style="list-style-type: none"> <li>• Rod seals</li> <li>- Type ARG</li> <li>- Type ARUP</li> </ul>
<b>Piston seals</b>	<b>Piston seals</b>
<ul style="list-style-type: none"> <li>• Piston seals</li> <li>- Stepseal® 2K, PS</li> <li>- Glydring® T, PT</li> <li>- Wynseal® PW</li> <li>- D-A-S Kompaktdichtung®</li> <li>- AQ-Seal® PQ</li> <li>- AQ-Seal® 5, PQ</li> <li>- Variseal® M2, PV</li> </ul>	<ul style="list-style-type: none"> <li>• Piston seals</li> <li>- Type AK</li> <li>- Type APDE</li> <li>- Type APDF</li> <li>- Type APDG</li> <li>- Type APG</li> </ul>
<b>Rod seals</b>	<b>Scraper</b>
<ul style="list-style-type: none"> <li>• Rod seals</li> <li>- Turcon Stepseal® 2K, RS</li> <li>- Glydring® T, RT</li> <li>- Rimseal® RR</li> <li>- Grooved rings RU0, RU2, RU3</li> <li>- Variseal® M2, RV</li> </ul>	<ul style="list-style-type: none"> <li>• Scrapers</li> <li>- Type ARAA</li> <li>- Type AWNS</li> <li>- Type AWSD</li> <li>- Type AWSW</li> </ul>
<b>Scraper</b>	
<ul style="list-style-type: none"> <li>• Scrapers</li> <li>- Turcon Excluder® 2, WE 3</li> <li>- Turcon Excluder® 5, WE 5</li> <li>- DA17, WD17</li> <li>- DA22, WD22</li> <li>- ASW, WSW</li> <li>- SA, WSA</li> <li>- A, WA</li> <li>- WM</li> </ul>	
<b>Guide elements</b>	
<ul style="list-style-type: none"> <li>• Guide element material</li> <li>• Technical Description</li> <li>• Guide elements in open length</li> <li>• Guide elements B Slydw GL®, TB - B</li> <li>• Overview of guide rings</li> <li>• Piston guide rings</li> <li>• Rod guide rings</li> </ul>	

# SEALS FOR ROTATIONAL AND SWIVELING MOVEMENTS

## Selection criteria for roto seals

Seal Design	Area of use	Application	Function	Norm DIN/ISO	Ø range mm	Installation
		rotating tilting	screw-type			Type of notch corresponding to Ø mm
Roto Glyd Ring®	Rotary distributor Swivel motors: – Mobile hydraulics – Machine tools	• • •	outer sealing	dual-acting radial, axial	ISO 7425/1 8 – 2700	divided < 25 closed ≥ 25
						divided < 15 closed ≥ 15
Roto Glyd Ring®	Rotary distributor Swivel motors: – Mobile hydraulics – Machine tools	• • •	inner-sealing <sup>1)</sup>	dual-acting radial, axial	ISO 7425/2 6 – 2600	divided < 12 closed ≥ 12
Roto Glyd Ring® S	Rotary distributor Swivel motors: – Mobile hydraulics – Machine tools	• • •	outer sealing	dual-acting radial, axial	ISO 7425/1 12 – 2700	divided < 25 closed ≥ 25
						divided < 15 closed ≥ 15
Roto Glyd Ring® S	Rotary distributor Swivel motors: – Mobile hydraulics – Machine tools	• • •	inner-sealing <sup>1)</sup>	dual-acting radial, axial	ISO 7425/2 10 – 2600	divided < 12 closed ≥ 12
Roto Variseal®	Rotary distributor Swivel motors: – Pharmacy – machine tools – Food industry – Chemistry	• • •	inner-sealing	single acting radial	– 5 – 2500	divided

# SEALS FOR ROTATIONAL AND SWIVELING MOVEMENTS



Temperature <sup>1)</sup> (material dependent)	Technical data		Surface hardness mating surface	Material standard materials of the sealing ring	Seal Design
	Speed <sup>1) 2)</sup> °C	Speed <sup>1) 2)</sup> m/s	Pressure <sup>1)</sup> dynamic MPa (bar)	min.	
– 54 + 200	1		30 (300)	55 HRC	Turcon® T10
					Roto Glyd Ring®
– 54 + 200	2		20 (200)	55 HRC	Turcon® T40
					Roto Glyd Ring®
– 45 + 100	2		30 (300)	55 HRC	Zurcon® Z52
					Zurcon® Z80
– 45 + 100	2		30 (300)	55 HRC	Zurcon® Z52
					Zurcon® Z80
– 100 + 260	2		15 (150)	55 HRC	Turcon® T40
			5 (50)	170 HB	Turcon® T78
					Roto Variseal®

\* The values indicated are maximum values that may not be reached simultaneously. The maximum allowable pressure depends on the temperature and on the gap size.

\*\* The temperature range depends on the selected elastomer material and the medium.

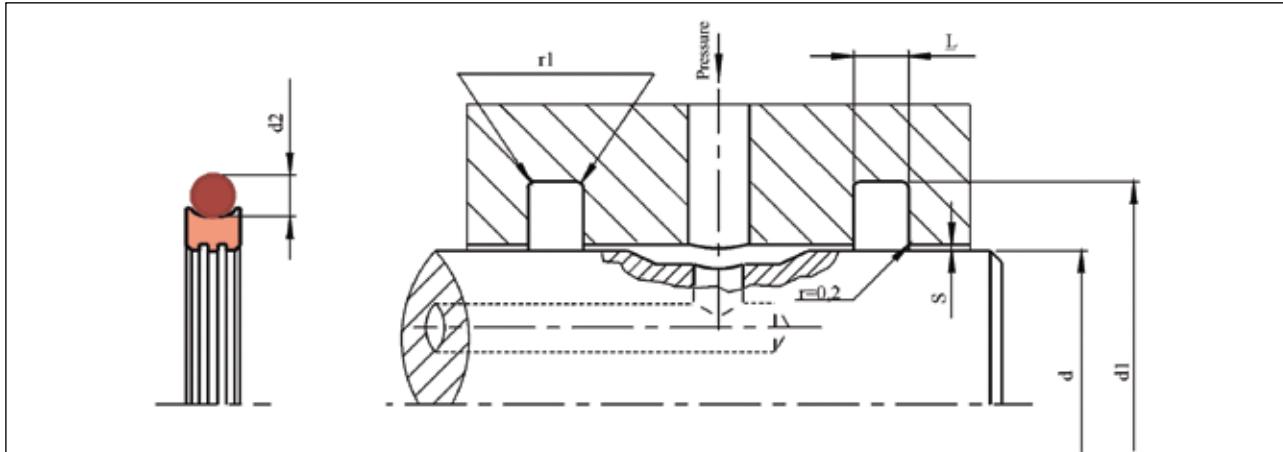
<sup>1)</sup> The technical data represent maximum values that may not occur simultaneously. When using in low temperature ranges below –30°C, please contact us.

<sup>2)</sup> Speed short term, not sustained.

# SEALS FOR ROTATIONAL AND SWIVELING MOVEMENTS

## Turcon® Roto Glyd Ring® TG 3

### Internally sealing



Installation drawing

### Installation dimensions

Standard range	Hole Ø D H9	Groove base Ø	Groove width	Radial play S max*		Radius	O-ring cord Ø	Number of grooves
	Expanded range	d <sub>1</sub> h9	L + 0.2	10 MPa (100 bar)	20 MPa (200 bar)	r <sub>1</sub>	d <sub>2</sub>	
6 - 18.9	6 - 130.0	d <sub>N+</sub> 4.9	2.20	0.15	0.10	0.40	1.78	0
19 - 37.9	10 - 245.0	d <sub>N+</sub> 7.5	3.20	0.20	0.15	0.60	2.62	1
38 - 199.9	19 - 455.0	d <sub>N+</sub> 11.0	4.20	0.25	0.20	1.00	3.53	1
200 - 255.9	38 - 655.0	d <sub>N+</sub> 15.5	6.30	0.30	0.25	1.30	5.33	2
256 - 649.9	120 - 655.0	d <sub>N+</sub> 21.0	8.10	0.30	0.25	1.80	7.00	2
650 - 999.9	650 - 999.9	d <sub>N+</sub> 28.0	9.50	0.45	0.30	2.50	8.40	2

For pressures > 10 MPa, the cross sectional area is preferred to be selected from the "expanded range" series in the next larger profile.

Example: Hole Ø 80 mm

\* For pressures > 30 MPa: S max. = H8/f8 (hole / shaft) near the seal.

### Selection criteria for rotary seals – sealing material and mating material

Seal Design	Material Application Properties	Code	Material O-ring or error	Code	Recommended temperature range °C	Media <sup>1)</sup>	Mating Material
Roto Glyd Ring®	Turcon® T 10 for all lubricating and non-lubricating hydraulic fluids	T 10	NBR	N	-30 to +120 -20 to +80	HL, HLP HETG, HEPG, HEES	Steel
			NBR Low-temperature	T	-30 to +120 -54 to +120 -20 to +80	HL, HLP MIL-H 5606 HETG, HEPG, HEES	Steel, chrome-plated Materials with HRC ≥ 55 HRC
			FKM	V	-20 to +150	HFD	
Turcon® T 40	Turcon® T 40 for water and all lubricating and non-lubricating hydraulic fluids	T 40	NBR	N	-30 to +120 -20 to +80 +5 to +55 -20 to +60	HL, HLP HETG, HEPG, HEES HFA, HFB HFC	Steel Steel, chrome-plated Materials with HRC ≥ 55 HRC
			NBR Low-temperature	T	-30 to +120 -54 to +120	HL, HLP MIL-H-5606	
			FKM	V	-20 to +80 -20 to +150	HETG, HEPG, HEES HDF	For v < 0.2 m/s including materials with HB ≥
		E	EPDM	E	-20 to +60 -60 to +150	HFC HFR	

<sup>1)</sup>The data refer to commercially available process media. For process media that deviation from these data, please contact us.

# HYDRAULIC SEALS FOR ROTATING AND SWIVELLING MOVEMENTS

## Turcon® Roto Glyd Ring® TG3, T10N

The Turcon® Roto Glyd Ring® is used for the sealing of shafts, axles, rotary unions, taps and similar parts involving rotating or tilting movements.

**Name:** RotoGlyd® salt  
**Type:** TG3 inner-sealing  
**Material:** T10N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm		€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4078250	8	12.9	2.2	TG3000080-T10N					
4078270	10	14.9	2.2	TG3000100-T10N					
4078290	12	16.9	2.2	TG3000120-T10N					
4078310	14	18.9	2.2	TG3000140-T10N					
4078340	15	19.9	2.2	TG3000150-T10N					
4078360	16	20.9	2.2	TG3000160-T10N					
4078380	18	22.9	2.2	TG3000180-T10N					
4078400	20	27.5	3.2	TG3100200-T10N					
4078420	22	29.5	3.2	TG3100220-T10N					
4078440	25	32.5	3.2	TG3100250-T10N					
4078480	28	35.5	3.2	TG3100280-T10N					
4078510	30	37.5	3.2	TG3100300-T10N					
4078540	32	39.5	3.2	TG3100320-T10N					
4078560	35	42.5	3.2	TG3100350-T10N					
4078600	36	43.5	3.2	TG3100360-T10N					
4078620	40	51.0	4.2	TG3200400-T10N					
4078650	42	53.0	4.2	TG3200420-T10N					
4078670	45	56.0	4.2	TG3200450-T10N					
4078710	48	59.0	4.2	TG3200480-T10N					
4078730	50	61.0	4.2	TG3200500-T10N					
4078750	52	63.0	4.2	TG3200520-T10N					
4078770	55	66.0	4.2	TG3200550-T10N					
4078790	56	67.0	4.2	TG3200560-T10N					
10004781	60	67.5	3.2	TG3100600-T10N					
4078820	60	71.0	4.2	TG3200600-T10N					
4078860	63	74.0	4.2	TG3200630-T10N					
4078880	65	76.0	4.2	TG3200650-T10N					
4078910	70	81.0	4.2	TG3200700-T10N					
4078950	75	86.0	4.2	TG3200750-T10N					
10004879	75	90.0	6.3	TG3300750-T10N					
4078970	80	91.0	4.2	TG3200800-T10N					
10007685	84	95.0	4.2	TG3200840-T10N					
4078990	85	96.0	4.2	TG3200850-T10N					
4079010	90	101.0	4.2	TG3200900-T10N					
10007676	94	105.0	4.2	TG3200940-T10N					
4079040	95	106.0	4.2	TG3200950-T10N					
4080180	100	111.0	4.2	TG3201000-T10N					
4080230	105	116.0	4.2	TG3201050-T10N					
4080290	110	121.0	4.2	TG3201100-T10N					
4080330	115	126.0	4.2	TG3201150-T10N					
4080380	120	131.0	4.2	TG3201200-T10N					
4080410	125	136.0	4.2	TG3201250-T10N					
4080450	130	141.0	4.2	TG3201300-T10N					
4080500	135	146.0	4.2	TG3201350-T10N					

# HYDRAULIC SEALS FOR ROTATING AND SWIVELLING MOVEMENTS

## Continued: Turcon® Roto Glyd Ring® TG3, T10N



The Turcon® Roto Glyd Ring® is used for the sealing of shafts, axles, rotary unions, taps and similar parts involving rotating or tilting movements.

**Name:** RotoGlyd® salt  
**Type:** TG3 inner-sealing  
**Material:** T10N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4080550	140	151.0	4.2	TG3201400-T10N				
4080600	150	161.0	4.2	TG3201500-T10N				
4080660	160	171.0	4.2	TG3201600-T10N				
4080690	170	181.0	4.2	TG3201700-T10N				
4080770	180	191.0	4.2	TG3201800-T10N				
4080830	190	201.0	4.2	TG3201900-T10N				
4080920	210	225.5	6.3	TG3302100-T10N				
4080950	220	235.5	6.3	TG3302200-T10N				
4080970	240	255.5	6.3	TG3302400-T10N				
4080990	250	265.5	6.3	TG3302500-T10N				
4081020	280	301.0	8.1	TG3402800-T10N				
4081050	300	321.0	8.1	TG3403000-T10N				
4081080	320	341.0	8.1	TG3403200-T10N				
4081200	350	371.0	8.1	TG3403500-T10N				
4081250	360	381.0	8.1	TG3403600-T10N				
4081290	400	421.0	8.1	TG3404000-T10N				
4081330	420	441.0	8.1	TG3404200-T10N				
4081360	450	471.0	8.1	TG3404500-T10N				
4081430	500	521.0	8.1	TG3405000-T10N				

## Turcon® Roto Glyd Ring® TG3, T40N



The Turcon® Roto Glyd Ring® is used for the sealing of shafts, axles, rotary unions, taps and similar parts involving rotating or tilting movements.

**Name:** RotoGlyd® salt  
**Type:** TG3 inner-sealing  
**Material:** T40N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4078160	6	10.9	2.2	TG3000060-T40N				
10033792	6.3	11.2	2.2	TG3000063-T40N				
4078240	8	12.9	2.2	TG3000080-T40N				
4078260	10	14.9	2.2	TG3000100-T40N				

# HYDRAULIC SEALS FOR ROTATING AND SWIVELLING MOVEMENTS



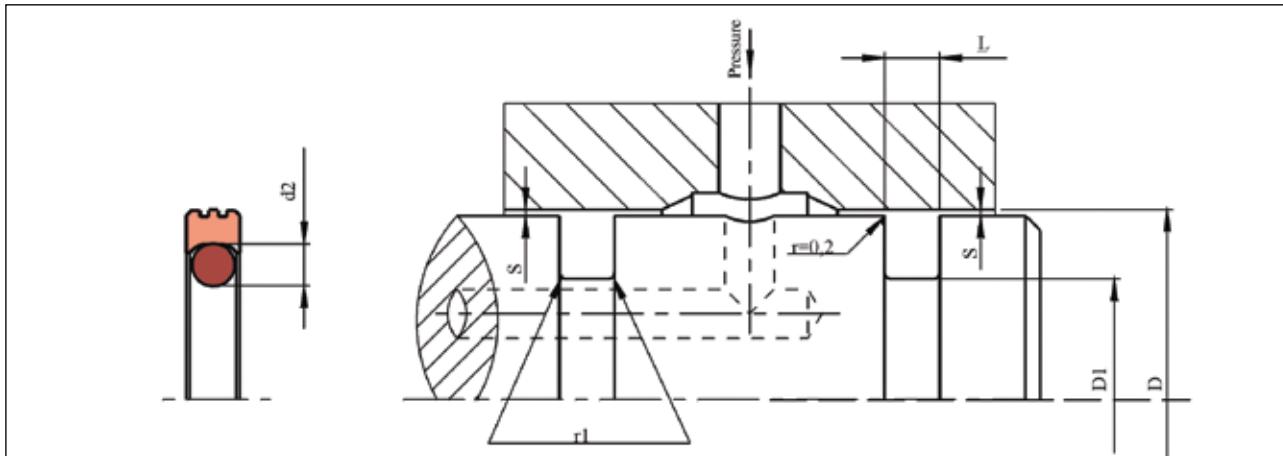
## Turcon® Roto Glyd Ring® TG3, T40N

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4078300	14	18.9	2.2	TG3000140-T40N				
4078350	16	20.9	2.2	TG3000160-T40N				
4078370	18	22.9	2.2	TG3000180-T40N				
4078390	20	27.5	3.2	TG3100200-T40N				
4078410	22	29.5	3.2	TG3100220-T40N				
4078430	25	32.5	3.2	TG3100250-T40N				
4078470	28	35.5	3.2	TG3100280-T40N				
4078500	30	37.5	3.2	TG3100300-T40N				
4078530	32	39.5	3.2	TG3100320-T40N				
4078550	35	42.5	3.2	TG3100350-T40N				
4078590	36	43.5	3.2	TG3100360-T40N				
10015577	40	47.5	3.2	TG3100400-T40N				
4078610	40	51.0	4.2	TG3200400-T40N				
4078640	42	53.0	4.2	TG3200420-T40N				
4078660	45	56.0	4.2	TG3200450-T40N				
4078700	48	59.0	4.2	TG3200480-T40N				
4078720	50	61.0	4.2	TG3200500-T40N				
4078740	52	63.0	4.2	TG3200520-T40N				
4078760	55	66.0	4.2	TG3200550-T40N				
4078780	56	67.0	4.2	TG3200560-T40N				
4078800	60	71.0	4.2	TG3200600-T40N				
4078850	63	74.0	4.2	TG3200630-T40N				
4078870	65	76.0	4.2	TG3200650-T40N				
4078890	70	81.0	4.2	TG3200700-T40N				
4078960	80	91.0	4.2	TG3200800-T40N				
4078980	85	96.0	4.2	TG3200850-T40N				
4079000	90	101.0	4.2	TG3200900-T40N				
4079030	95	106.0	4.2	TG3200950-T40N				
4080170	100	111.0	4.2	TG3201000-T40N				
4080200	105	116.0	4.2	TG3201050-T40N				
4080250	110	121.0	4.2	TG3201100-T40N				
4080300	115	126.0	4.2	TG3201150-T40N				
4080360	120	131.0	4.2	TG3201200-T40N				
4080400	125	136.0	4.2	TG3201250-T40N				
4080420	130	141.0	4.2	TG3201300-T40N				
4080470	135	146.0	4.2	TG3201350-T40N				
4080520	140	151.0	4.2	TG3201400-T40N				
4080570	150	161.0	4.2	TG3201500-T40N				
4080630	160	171.0	4.2	TG3201600-T40N				
4080680	170	181.0	4.2	TG3201700-T40N				
4080710	180	191.0	4.2	TG3201800-T40N				
4080790	190	201.0	4.2	TG3201900-T40N				
4080890	200	215.5	6.3	TG3302000-T40N				
4080900	210	225.5	6.3	TG3302100-T40N				
4080940	220	235.5	6.3	TG3302200-T40N				
10007955	235	256.0	8.1	TG3402350-T40N				
4080960	240	255.5	6.3	TG3302400-T40N				
4080980	250	265.5	6.3	TG3302500-T40N				
4081000	280	301.0	8.1	TG3402800-T40N				
4081030	300	321.0	8.1	TG3403000-T40N				
4081070	320	341.0	8.1	TG3403200-T40N				
4081120	350	371.0	8.1	TG3403500-T40N				
4081220	360	381.0	8.1	TG3403600-T40N				

# SEALS FOR ROTATIONAL AND SWIVELING MOVEMENTS

## Turcon® Roto Glyd Ring® TG 4

### Externally sealing



Installation drawing

### Installation dimensions

Standard range	Hole Ø D H9	Groove base Ø	Groove width	Radial play S max*		Radius	O-ring cord Ø	Number of grooves
	Expanded range	D <sub>N</sub> h9	L + 0,2	10 MPa (100 bar)	20 MPa (200 bar)	r1	d2	
8 - 39.9	8 - 135.0	D <sub>N</sub> - 4.9	2.20	0.15	0.10	0.40	1.78	0
40 - 79.9	14 - 250.0	D <sub>N</sub> - 7.5	3.20	0.20	0.15	0.60	2.62	1
80 - 132.9	22 - 460.0	D <sub>N</sub> - 11.0	4.20	0.25	0.20	1.00	3.53	1
133 - 329.9	40 - 675.0	D <sub>N</sub> - 15.5	6.30	0.30	0.25	1.30	5.33	2
330 - 669.9	133 - 690.0	D <sub>N</sub> - 21.0	8.10	0.30	0.25	1.80	7.00	2
670 - 999.9	670 - 999.9	D <sub>N</sub> - 28.0	9.50	0.45	0.30	2.50	8.40	2

For pressures > 10 MPa, the cross sectional area is preferred to be selected from the "expanded range" series in the next larger profile.

Example: Hole Ø 80 mm

\* For pressures > 30 MPa: S max. = H8/f8 (hole / shaft) near the seal.

### Selection criteria for rotary seals – sealing material and mating material

Seal Design	Material Application Properties	Code	Material O-ring or error	Code	Recommended temperature range °C	Media 1)	Mating Material
Roto Glyd Ring®	Turcon® T 10 for all lubricating and non-lubricating hydraulic fluids	T 10	NBR	N	-30 to +120	HL, HLP	Steel
					-20 to +80	HETG, HEPG, HEES	Steel, chrome-plated
			NBR Low-temperature	T	-30 to +120	HL, HLP	Materials with
					-54 to +120	MIL-H 5606	HRC ≥ 55 HRC
	Turcon® T 40 for all lubricating and non-lubricating hydraulic fluids and water	T 40	FKM	V	-20 to +80	HETG, HEPG, HEES	
					-20 to +150	HFD	
			NBR	N	-30 to +120	HL, HLP	Steel
					-20 to +80	HETG, HEPG, HEES	Steel, chrome-plated
			+5 to +55		HFA, HFB		Materials with
					-20 to +60	HFC	HRC ≥ 55 HRC
			NBR Low-temperature	T	-30 to +120	HL, HLP	
					-54 to +120	MIL-H-5606	
	Turcon® T 40 for all lubricating and non-lubricating hydraulic fluids and water		FKM	V	-20 to +80	HETG, HEPG, HEES	For v < 0.2 m/s including materials with HB ≥
					-20 to +150	HDF	
			EPDM	E	-20 to +60	HFC	
					-60 to +150	HFR	

<sup>1)</sup>The data refer to commercially available process media. For process media that deviation from these data, please contact us.

# HYDRAULIC SEALS FOR ROTATING AND SWIVELLING MOTIONS

## Turcon® Roto Glyd Ring® TG4, T10N

The Turcon® Roto Glyd Ring® is used for the sealing of shafts, axles, rotary unions, taps and similar parts involving rotating or tilting movements.

**Name:** RotoGlyd® salt  
**Type:** TG4 outer-sealing  
**Material:** T10N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4081620	7.1	12	2.2	TG4000120-T10N				
4081670	9.1	14	2.2	TG4000140-T10N				
4081730	10.1	15	2.2	TG4000150-T10N				
4081840	11.1	16	2.2	TG4000160-T10N				
4081860	13.1	18	2.2	TG4000180-T10N				
4081880	15.1	20	2.2	TG4000200-T10N				
4081900	17.1	22	2.2	TG4000220-T10N				
4081920	20.1	25	2.2	TG4000250-T10N				
4081960	23.1	28	2.2	TG4000280-T10N				
4082000	25.1	30	2.2	TG4000300-T10N				
4082020	27.1	32	2.2	TG4000320-T10N				
10002564	29.1	34	2.2	TG4000340-T10N				
4082070	30.1	35	2.2	TG4000350-T10N				
4082170	34.5	42	3.2	TG4100420-T10N				
4082230	37.5	45	3.2	TG4100450-T10N				
4082280	40.5	48	3.2	TG4100480-T10N				
4082410	42.5	50	3.2	TG4100500-T10N				
4082470	44.5	52	3.2	TG4100520-T10N				
4082500	47.5	55	3.2	TG4100550-T10N				
4082540	52.5	60	3.2	TG4100600-T10N				
4082590	55.5	63	3.2	TG4100630-T10N				
4082610	57.5	65	3.2	TG4100650-T10N				
4082710	62.5	70	3.2	TG4100700-T10N				
4082750	67.5	75	3.2	TG4100750-T10N				
4082790	69.0	80	4.2	TG4200800-T10N				
4082810	74.0	85	4.2	TG4200850-T10N				
4082830	79.0	90	4.2	TG4200900-T10N				
4082860	84.0	95	4.2	TG4200950-T10N				
4082910	89.0	100	4.2	TG4201000-T10N				
4082960	94.0	105	4.2	TG4201050-T10N				
4082990	99.0	110	4.2	TG4201100-T10N				
4083300	104.0	115	4.2	TG4201150-T10N				
4083350	109.0	120	4.2	TG4201200-T10N				
4083390	114.0	125	4.2	TG4201250-T10N				
4083420	119.0	130	4.2	TG4201300-T10N				
4085490	119.5	135	6.3	TG4301350-T10N				
4085510	124.5	140	6.3	TG4301400-T10N				
4085530	134.5	150	6.3	TG4301500-T10N				
4085550	144.5	160	6.3	TG4301600-T10N				
4085570	154.5	170	6.3	TG4301700-T10N				
4085590	164.5	180	6.3	TG4301800-T10N				
4085650	174.5	190	6.3	TG4301900-T10N				
4085700	184.5	200	6.3	TG4302000-T10N				

# HYDRAULIC SEALS FOR ROTATING AND SWIVELLING MOTIONS

## Continued: Turcon® Roto Glyd Ring® TG4, T10N



The Turcon® Roto Glyd Ring® is used for the sealing of shafts, axles, rotary unions, taps and similar parts involving rotating or tilting movements.

**Name:** RotoGlyd® salt  
**Type:** TG4 outer-sealing  
**Material:** T10N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4085820	194.5	210	6.3	TG4302100-T10N				
4085870	204.5	220	6.3	TG4302200-T10N				
4085910	214.5	230	6.3	TG4302300-T10N				
4085970	234.5	250	6.3	TG4302500-T10N				
4086080	264.5	280	6.3	TG4302800-T10N				
4086120	284.5	300	6.3	TG4303000-T10N				
4086160	304.5	320	6.3	TG4303200-T10N				
4086210	329.0	350	8.1	TG4403500-T10N				
4086280	379.0	400	8.1	TG4404000-T10N				
4086360	399.0	420	8.1	TG4404200-T10N				
4086440	429.0	450	8.1	TG4404500-T10N				

## Turcon® Roto Glyd Ring® TG4, T40N



The Turcon® Roto Glyd Ring® is used for the sealing of shafts, axles, rotary unions, taps and similar parts involving rotating or tilting movements.

**Name:** RotoGlyd® salt  
**Type:** TG4 outer-sealing  
**Material:** T40N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4081510	3.1	8	2.2	TG4000080-T40N				
4081560	5.1	10	2.2	TG4000100-T40N				
4081650	9.1	14	2.2	TG4000140-T40N				
4081700	10.1	15	2.2	TG4000150-T40N				
4081760	11.1	16	2.2	TG4000160-T40N				
4081850	13.1	18	2.2	TG4000180-T40N				
4081870	15.1	20	2.2	TG4000200-T40N				
4081890	17.1	22	2.2	TG4000220-T40N				
4081910	20.1	25	2.2	TG4000250-T40N				
10027778	22.5	30	3.2	TG4100300-T40N				
4082010	27.1	32	2.2	TG4000320-T40N				
4082040	30.1	35	2.2	TG4000350-T40N				
4082150	34.5	42	3.2	TG4100420-T40N				

# HYDRAULIC SEALS FOR ROTATING AND SWIVELLING MOTIONS



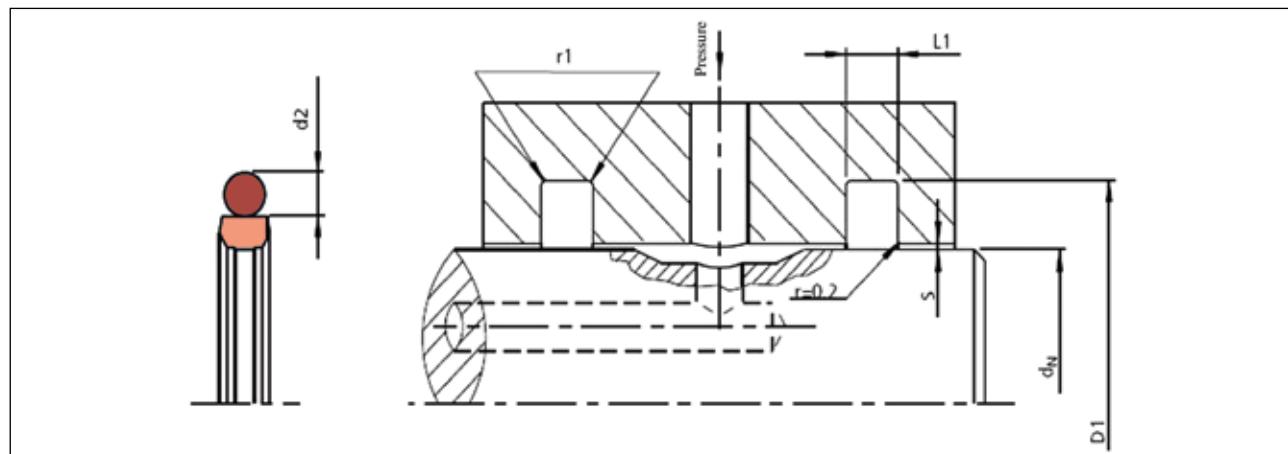
## Turcon® Roto Glyd Ring® TG4, T40N

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4082260	40.5	48	3.2	TG4100480-T40N				
4082460	44.5	52	3.2	TG4100520-T40N				
4082490	47.5	55	3.2	TG4100550-T40N				
4082530	52.5	60	3.2	TG4100600-T40N				
4082600	57.5	65	3.2	TG4100650-T40N				
4082640	62.5	70	3.2	TG4100700-T40N				
4082730	67.5	75	3.2	TG4100750-T40N				
4082800	74.0	85	4.2	TG4200850-T40N				
4082820	79.0	90	4.2	TG4200900-T40N				
4082840	84.0	95	4.2	TG4200950-T40N				
4082940	94.0	105	4.2	TG4201050-T40N				
4082980	99.0	110	4.2	TG4201100-T40N				
4083220	104.0	115	4.2	TG4201150-T40N				
4083330	109.0	120	4.2	TG4201200-T40N				
4083370	114.0	125	4.2	TG4201250-T40N				
4083410	119.0	130	4.2	TG4201300-T40N				
4085480	119.5	135	6.3	TG4301350-T40N				
4085500	124.5	140	6.3	TG4301400-T40N				
4085520	134.5	150	6.3	TG4301500-T40N				
10025943	139.0	150	4.2	TG4201500-T40N				
10013213	142.0	150	3.2	TG4101500-T40N				
4085540	144.5	160	6.3	TG4301600-T40N				
4085560	154.5	170	6.3	TG4301700-T40N				
4085630	174.5	190	6.3	TG4301900-T40N				
4085810	194.5	210	6.3	TG4302100-T40N				
4085840	204.5	220	6.3	TG4302200-T40N				
4085890	214.5	230	6.3	TG4302300-T40N				
4085930	224.5	240	6.3	TG4302400-T40N				
4085990	234.5	250	6.3	TG4302500-T40N				
4086050	264.5	280	6.3	TG4302800-T40N				
4086100	284.5	300	6.3	TG4303000-T40N				
4086140	304.5	320	6.3	TG4303200-T40N				
4588390	314.0	325	4.2	TG4203250-T40N				
4086250	349.0	400	8.1	TG4404000-T40N				
4086330	399.0	420	8.1	TG4404200-T40N				
4086410	429.0	450	8.1	TG4404500-T40N				
4086520	479.0	500	8.1	TG4405000-T40N				

# • SEALS FOR ROTATIONAL AND SWIVELING MOVEMENTS

## Turcon® Roto Glyd Ring® S

### Internally sealing TG 5



Installation drawing

### Installation dimensions

Serial No.	Shaft Ø $d_N$ f8/h9		Groove base Ø $D_1$ H9	Groove width $L_1 + 0,2$	Radial play S max*		Radius $r_1$	O-ring cord Ø $d_2$
	Standard Series	Expanded Series			10 MPa	30 MPa		
TG 50	12 - 18,9	10 - 18,9	$d_N$ - 4,9	2,20	0,20	0,10	0,40	1,78
TG 51	19 - 37,9	12 - 59,9	$d_N$ - 7,5	3,20	0,25	0,15	0,60	2,62
TG 52	38 - 132,9	19 - 199,9	$d_N$ - 11,0	4,20	0,30	0,20	1,00	3,53
TG 53	133 - 255,9	38 - 329,9	$d_N$ - 15,5	6,30	0,35	0,25	1,30	5,33
TG 54	256 - 649,9	120 - 655,0	$d_N$ - 21,0	8,10	0,40	0,25	1,80	7,00
TG 55	650 - 999,9	650 - 999,9	$d_N$ - 28,0	9,50	0,50	0,30	2,50	8,40

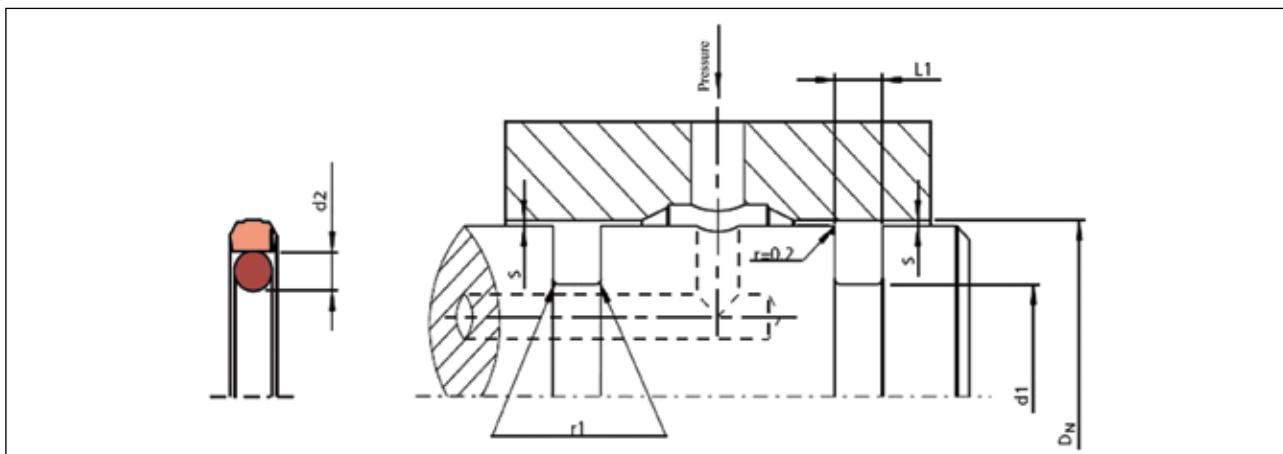
\* for a maximum temperature of +60°C at the seal

Material Application Properties	Abbre-viation	O-ring Material	Abbre-viation	O-ring Operating temperature range °C	Material mating surface	MPa Max.
Zurcon® Z 52 For lubricating hydraulic fluids, high wear resistance. Moulded polyurethane Colour: turquoise	Z 52	NBR - 70 Shore A	N	-30 to 100	Steel Steel, hardened Steel, hard chrome-plated Cast iron Stainless steel	30
		NBR - Low-temperature 70 Shore A	T	-45 to 80		

# SEALS FOR ROTATIONAL AND SWIVELING MOVEMENTS

## Turcon® Roto Glyd Ring® S

### Externally sealing TG 6



Installation drawing

#### Installation dimensions

Serial No.	Shaft Ø D <sub>N</sub> H9		Groove base Ø d <sub>1</sub> h9	Groove width L <sub>1</sub> + 0,2	Radial play S max		Radius r <sub>1</sub>	O-ring cord Ø d <sub>2</sub>
	Standard Series	Expanded Series			10 MPa	30 MPa		
TG 60	12 - 19,9	10 - 24,9	D <sub>N</sub> - 4,9	2,20	0,20	0,10	0,40	1,78
TG 61	20 - 39,9	14 - 69,9	D <sub>N</sub> - 7,5	3,20	0,25	0,15	0,60	2,62
TG 62	40 - 132,9	22 - 199,9	D <sub>N</sub> - 11,0	4,20	0,30	0,20	1,00	3,53
TG 63	133 - 255,9	40 - 329,9	D <sub>N</sub> - 15,5	6,30	0,35	0,25	1,30	5,33
TG 64	256 - 669,9	133 - 690,0	D <sub>N</sub> - 21,0	8,10	0,40	0,25	1,80	7,00
TG 65	670 - 999,9	670 - 999,9	D <sub>N</sub> - 28,0	9,50	0,50	0,30	2,50	8,40

Material Application Properties	Abbre-viation	O-ring Material	Abbre-viation	O-ring Operating temperature range °C	Material mating surface	MPa Max.
Zurcon® Z 52 For lubricating hydraulic fluids, high wear resistance. Moulded polyurethane Colour: turquoise	Z 52	NBR - 70 Shore A	N	-30 to 100	Steel Steel, hardened Steel, hard chrome-plated Cast iron Stainless steel	30
		NBR - Low-temperature 70 Shore A	T	-45 to 80		

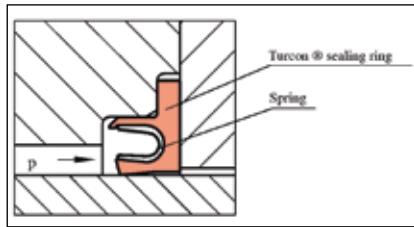
# SEALS FOR ROTATIONAL AND SWIVELING MOVEMENTS

## Turcon® Roto Variseal® TV

### Description

The Turcon® Roto Variseal® is a single-acting shaft seal. It consists of an asymmetrical U-shaped sealing element into which a V-shaped metal spring as a pre-tensioning element is placed. The seal is axially tensioned via a flange and is thus secured against co-rotation.

The particular features of the Roto Variseal® are its seating flange through which the seal is axially tensioned and thus secured against co-rotation, and the short and robust dynamic sealing lip. The latter provides a reduction in friction, significantly extended lifespan and a good scraping effect even in highly viscous media.



Turcon® Roto Variseal®

### Materials

All materials used are physiologically compatible. They contain no materials which give off an odour or a taste.

The following material combinations have proven their effectiveness for most uses:

Sealing ring: Turcon® T40  
Spring: Stainless steel,  
Material No. 1.4310 (AISI 301)  
Material code: %s

Suitable materials for use according to the requirements of the "Food and Drug Administration" (FDA) are available upon request. Other materials available on request.

- high wear resistance
- excellent aging resistance
- good scraping ability
- can be sterilised
- available in high-clean design

### Technical data

#### Operating pressure:

for static loads  
25 MPa (250 bar)

for dynamic loads  
15 MPa (150 bar)

#### Speed:

up to 2 m/s

#### Temperature:

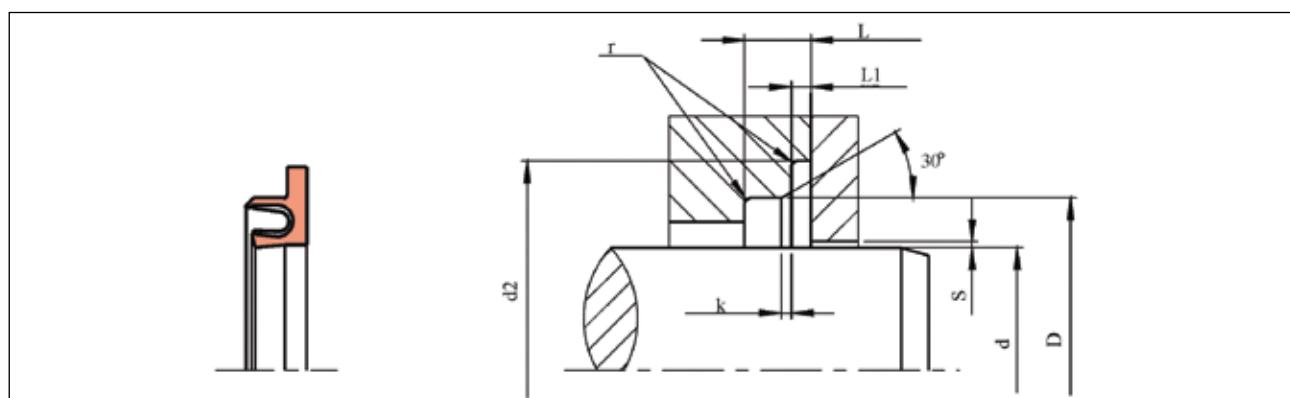
-100 °C to +260 °C

For special applications at lower temperatures, please contact us.

**Gap width:** The max. allowable radial play  $S_{max}$  is indicated, and depends on the operating pressure and functional diameter.  
**Media:** nearly all fluids, chemicals and gases  
**Note:** for high-temperature use, pressure and speed must be limited.

### Advantages

- for rotating, back and forth movement and static applications
- protection against twisting
- low friction coefficient
- seats solidly in the groove even in oscillating or helical motions
- withstands quick temperature changes



Installation drawing

### Installation dimensions

Shaft Ø	Groove base Ø	Groove width	Diagonal	Radius	Radial play S max*
Standard series d f8/h9	Expanded 1) range d f8/h9	D H9 d <sub>2</sub> H10 L <sub>min</sub>	L <sub>1</sub>	k r	< 2 MPa (20 bar) < 10 MPa (100 bar) < 20 MPa (200 bar)
5,0 - 19,9	5,0 - 200,0	d <sub>N</sub> + 5,0 d <sub>N</sub> + 9,0	3,6	0,85 +0 -0,10	0,3 0,8 0,25 0,15 0,10
20,0 - 39,9	10,0 - 400,0	d <sub>N</sub> + 7,0 d <sub>N</sub> + 12,5	4,8	1,35 +0 -0,10	0,4 1,1 0,35 0,20 0,15
40,0 - 400,9	20,0 - 700,0	d <sub>N</sub> + 10,5 d <sub>N</sub> + 17,5	7,1	1,80 +0 -0,10	0,5 1,4 0,50 0,25 0,20
401,0 - 999,9	35,0 - 999,9	d <sub>N</sub> + 14,0 d <sub>N</sub> + 22,0	9,5	2,80 +0 -0,10	0,5 1,6 0,60 0,30 0,25

1) Available on request. Applications outside the standard series can negatively affect the sealing behaviour. An examination of the intended use should therefore be done in advance.

# HYDRAULIC SEALS FOR ROTATING AND SWIVELLING MOTIONS



## Turcon® Roto Variseal® TV, T40S

The Turcon® Roto Variseal® is a single-acting seal, consisting of a U-shaped sealing member into which a V-shaped, corrosion-resistant metal spring is placed as a pre-tensioning element.

**Name:** Roto Variseal®  
**Type:** TV  
**Material:** T40S  
**Parts:** 2-part  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4090200	6	11.5	3.6	TVM100060-T40S				
4090210	8	13.5	3.6	TVM100080-T40S				
4090230	10	15.5	3.6	TVM100100-T40S				
4090260	14	19.5	3.6	TVM100140-T40S				
4090280	15	20.5	3.6	TVM100150-T40S				
4090300	16	21.5	3.6	TVM100160-T40S				
4090310	18	23.5	3.6	TVM100180-T40S				
4090320	20	27.5	4.8	TVM200200-T40S				
4090340	22	29.5	4.8	TVM200220-T40S				
4090360	25	32.5	4.8	TVM200250-T40S				
4090390	28	35.5	4.8	TVM200280-T40S				
4090400	30	37.5	4.8	TVM200300-T40S				
4090420	32	39.5	4.8	TVM200320-T40S				
4090430	36	43.5	4.8	TVM200360-T40S				
4090440	40	50.5	7.1	TVM300400-T40S				
4090450	45	55.5	7.1	TVM300450-T40S				
4090460	50	60.5	7.1	TVM300500-T40S				
4090480	56	66.5	7.1	TVM300560-T40S				
10015281	60	70.5	7.1	TVM300600-T40S				
4090490	63	73.5	7.1	TVM300630-T40S				
4090500	70	80.5	7.1	TVM300700-T40S				
4090510	80	90.5	7.1	TVM300800-T40S				
4090530	90	100.5	7.1	TVM300900-T40S				
4090540	100	110.5	7.1	TVM301000-T40S				
4090550	110	120.5	7.1	TVM301100-T40S				
4090560	125	135.5	7.1	TVM301250-T40S				
4090570	140	150.5	7.1	TVM301400-T40S				
4090580	160	170.5	7.1	TVM301600-T40S				
4090590	180	190.5	7.1	TVM301800-T40S				
4090600	200	210.5	7.1	TVM302000-T40S				
4090610	220	230.5	7.1	TVM302200-T40S				
4090630	250	260.5	7.1	TVM302500-T40S				
4090640	280	290.5	7.1	TVM302800-T40S				
4090650	320	330.5	7.1	TVM303200-T40S				
4090660	360	370.5	7.1	TVM303600-T40S				

# PISTON SEALS

## Selection criteria for piston seals

Seal Design	Area of use	Application			Norm DIN/ISO	Ø-range	Installation Type of notch corresponding to	Technical data*		
		light	medium	heavy				mm	mm Ø	°C
Stepseal® 2K	Mobile hydraulics Standard cylinder Machine tools Injection moulding equipment Presses	• • • • • • • • • • • • • • •	single acting	8/-2700 8/-2300	7425/1	closed divided < 20 closed > 20	-45 to +200 -45 to +100	15 2	80 (800) 80 (800)	80 (800)
Glyd Ring® T	Mobile hydraulics Standard cylinder Machine tools Injection moulding machines Press Automotive industry	• • • • • • • • • • • • • • •	dual-acting	8/-2700 8/-2300	7425/1	closed divided < 20 closed > 20	-45 to +200 -45 to +100	15 2	80 (800) 45 (450) 20 (200) 80 (800)	80 (800)
Wynseal®	Standard cylinder Mobile hydraulics	• • – • • –	dual-acting	7425/1	12/-300	closed	-35 to +110	0,5	25 (250)	25 (250)
D-A-S Kompa-kt-Dichtung®	Standard cylinder Holding cylinder Agricultural equipment	• • – • • – • • –	dual-acting	6547	20/-250	closed	-30 to +100	0,5	35 (350)	35 (350)
AQ-Seal®	Standard cylinder Piston buffer	• • – • • –	dual-acting	7425/1	15/-700	closed	-45 to +200	2	40 (400)	40 (400)
AQ-Seal® 5	Mobile hydraulics Holding cylinder Piston buffer	– • • – • • – • •	dual-acting	–	40/-700	closed	-45 to +200	3	60 (600)	60 (600)
Variseal® M2	Building construction and civil engineering temperature Aggressive media Food technology <sup>1)</sup>	• • – • • – • • –	single acting	3771 MIL-G 5514 F	6/-2500 6/-2700	divided	-70 to +260	15	40 (400) 20 (200)	40 (400)

\* The values indicated are maximum values that may not be reached simultaneously. The maximum allowable pressure depends on the temperature and on the gap size.

\*\* For use in the low temperature range below -30°C, please contact us.

# PISTON SEALS



Height Frequency/ Sort-stroke	Friction	Extrusion	Technical behaviour			Life- span	Soft <sup>4)</sup> Mating area	Water <sup>5)</sup> hydraulics	Material standard Material of the sealing ring	Seal Design
			Leakage <sup>2)</sup>	stat.	dyn.					
A	A	A	A/B	A	C	A	D	D	Turcon® T 46	Stepseal® 2K 
B	B	B	A	A	B <sup>3)</sup>	B	B/C	D	Zurcon® Z 51	
C	A	A	A/B	A	C	A	D	D	Turcon® T 46	Glyd Ring® T 
B <sup>6)</sup>	A	B	B	B	B	B	B	A	Turcon® T 40 <sup>7)</sup>	 
C	A	C	A	B	C	B	D	C	Turcon® T 05	
C	C	B	A	A	B <sup>3)</sup>	A	B	D	Zurcon® Z 51	
D	C	C	A	A	B3)	B	B	D	PU + NBR	Wynseal® 
D	D	B	A	C	B3)	C	B	B/C	NBR + PA	D-A-S Kompakt- Dichtung® 
C	C	C	A	B	A <sup>3)</sup>	B	D	D	Turcon® T 46	AQ-Seal® 
C	B	D	A	A	A <sup>3)</sup>	B	B	B	Turcon® T 40 <sup>7)</sup>	 
C	B	B	A	A	A <sup>3)</sup>	B	D	D	Turcon® T 46	AQ-Seal® 5 
C	B	C	A	A	A <sup>3)</sup>	B	B	A	Turcon® T 40 <sup>7)</sup>	 
B	A	B	B	B	C	B	B	A	Turcon® T 40	Variseal® M2 
C	A	C	B	B	A <sup>3)</sup>	B	D	C	Turcon® T 05	

A = very good

B = good

C = satisfactory

D = sufficient

This analysis only refers to the vertical comparison values of the seals and materials.

1) For highly viscous media, please contact us

2) Gas seal-tightness depends on the surface quality and the mating surface

3) Not recommended for dry air

4) such as aluminium, bronze, stainless steel

5) Special compound Zurcon, Z80 for water hydraulics

6) For high-frequency applications please contact us

7) when using material T40 and at a pressure above 20 MPa (200 bar), please contact us

# PISTON SEALS

## Selection criteria for piston seals – seal and mating surface materials

Seal Design	Material Application Properties	Code	Material O-ring (QUAD-Ring® seal)	Code	Temperature range °C	hydraulic fluids	Mating Material
Glyd Ring® T AQ-Seal® 5 AQ-Seal® Stepseal® K	Turcon® T 46 standard materials for hydraulics, high pressure resistance, good lubricating and Wear characteristics extrusion-resistant	T 46	NBR	N	-30 to +120 -20 to +80 -20 to +60	HL, HLP HETG, HEPG, HEES HFC	Steel Steel, chrome-plated Cast iron
			NBR Low-temper- ature	T	-30 to +120 -54 to +135	HL, HLP MIL-H	
			FKM	V	-20 to +80 -20 to +150	HETG, HEPG, HEES HFC	
			EPDM	E	-20 to +60 -60 to +150	HFC HFD-R	
	Turcon® T 40 for all lubricating and non-lubricating hydraulic fluids, soft mating surfaces	T 40	NBR	N	-30 to +120 -20 to +80 +5 to +55 -20 to +60	HL, HLP HETG, HEPG, HEES HFA, HFB HFC	Steel, chrome-plated Cast iron Steel, stainless Aluminium Bronze
				EPDM	-20 to +60 -60 to +150	HFC HFD-R	
			NBR Low-temper- ature	T	-20 to +80 -54 to +135	HETG, HEPG, HEES HFA, HFB HFC MIL-H 5606	Steel Steel, chrome-plated Cast iron
			FKM	V	-20 to +120 -20 to +80 -20 to +150	HL, HLP HETG, HEPG, HEES HFD	
			EPDM	E	-20 to +60 -60 to +150	HFC HFD-R	
Glyd Ring® T Stepseal® 2K	Zurcon® Z 51 for lubricating hydraulic fluids, high wear resistance, and stiffness	Z 51	NBR	N	-30 to +110	HL, HLP	Steel Steel, chrome-plated Cast iron
	Zurcon® Z 80 self-lubricating properties for water hydraulics	Z 80	NBR	N	-30 to +80	water emulsions	Steel Steel, chrome-plated Aluminium Bronze
Variseal® M2	Turcon® T 40 Turcon® T 05 For applications and properties see above. Other materials available on request.	T 40	Spring material 1,4310	%s	-30 to +150	all hydraulic fluids	Steel, stainless Aluminium Bronze
				-			
Wynseal®	polyurethane For lubricating hydraulic fluids, high wear resistance.	PU	NBR	-	-30 to +80	HL, HLP	steel Steel, chrome-plated Cast iron
D-A-S® compact seal	Profile seal of NBR; Thrust rings made of thermoplastic elastomer, thermoplastic guide rings				-30 to +100	HL, HLP	Steel
					-20 to +20	HFC	Steel, chrome-plated Cast iron

# PISTON SEALS



## Turcon® Stepseal® 2K

### Description

The Stepseal® 2K is a single-acting sealing element consisting of a sealing ring made of high-quality Turcon® or Zurcon® materials and an O-ring as an elastic pre-tensioning element.

The Stepseal® 2K was developed as a rod seal. Based on its excellent properties, it is suitable equally well as a piston seal for one-sided pressure application where high requirements are placed on seal, positioning precision and ease of mobility.

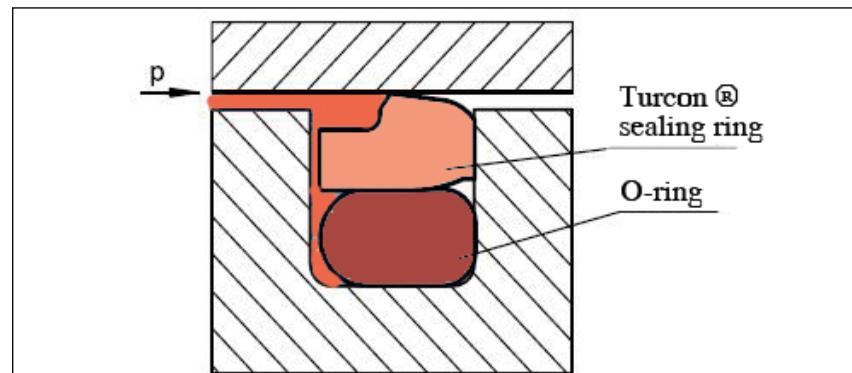
### Materials

Standard materials:

Turcon® sealing ring: Turcon® T 46

O-ring: NBR or FPM

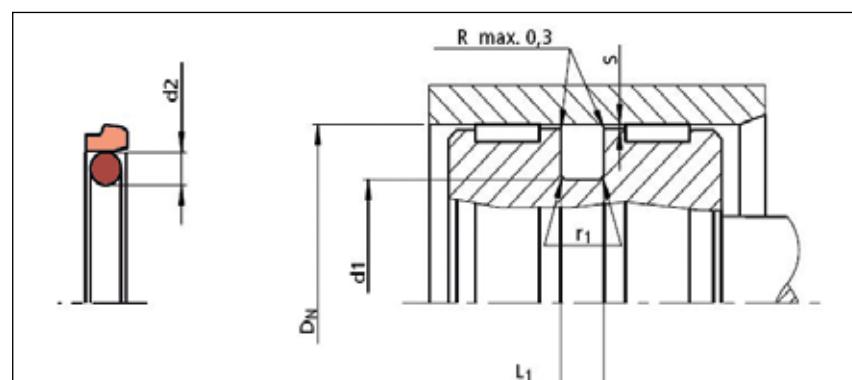
Set: T 46 N or T 46 V



Turcon® Stepseal® 2K

### Advantages

- high static and dynamic seal-tightness
- stick-slip free, no tendency to adhere
- high wear resistance and high extrusion resistance
- long life
- simple groove design, one-piece piston
- can be used in other temperature ranges and high chemical resistance depending on the selection of the O-ring material
- problem-free installation without sealing edge deformation
- available for every diameter up to 2700 mm
- low friction



Installation drawing

### Technical data

Pressure:	up to 80 MPa
Speed:	up to 15 m/s, frequency up to 5 Hz
Temperature:	-45°C to +200°C (**)
Media:	mineral oil based pressure fluid, non-flammable pressure fluids, environmentally friendly pressure fluids (bio oils), water, air and others depending on the O-ring materials.
Gap width:	the max. allowable radial play Smax is indicated in the table below, and depends on the operating pressure and functional diameter.

### Installation dimensions

Standard Use:	Hole Ø D <sub>N</sub> H9	Groove base Ø	Groove width	Radius	Radial play S <sub>max.</sub> *	O-ring cord Ø		
Light-duty Use:		d <sub>1</sub> h9	L <sub>1</sub> + 0,2	r <sub>1</sub>	10 MPa	20 MPa	40 MPa	d <sub>2</sub>
8 - 16.9	17 - 26.9	-	D <sub>N</sub> + 4.9	2.2	0.4	0.30	0.20	0.15
17 - 26.9	27 - 59.9	-	D <sub>N</sub> + 7.3	3.2	0.6	0.40	0.25	0.15
27 - 59.9	60 - 199.9	17 - 26.9	D <sub>N</sub> + 10.7	4.2	1.0	0.50	0.30	0.20
60 - 199.9	200 - 255.9	27 - 59.9	D <sub>N</sub> + 15.1	6.3	1.3	0.70	0.40	0.25
200 - 255.9	256 - 669.9	60 - 199.9	D <sub>N</sub> + 20.5	8.1	1.8	0.80	0.60	0.35
256 - 669.9	670 - 999.9	200 - 255.9	D <sub>N</sub> + 24.0	8.1	1.8	0.90	0.70	0.40
670 - 999.9	≥ 1000	256 - 669.9	D <sub>N</sub> + 27.3	9.5	2.5	1.00	0.80	0.50
≥ 1000**	-	670 - 999.9	D <sub>N</sub> + 38.0	13.8	3.0	1.20	0.90	0.60
								12.00

\* For pressures > 40 MPa: = H8/f8 (hole / piston) near the seal. \*\* specially formed pre-tensioning element

**Important information:** The indicated values are maximum values and must not be reached simultaneously. The maximum operating speed depends on the material and on the pressure, temperature and gap size. Temperature range is also dependent on the medium

# HYDRAULIC PISTON SEALS

## Turcon® Stepseal® 2K PS, T46N



The Stepseal® 2K is a single-acting sealing element consisting of a sealing ring made of high-quality Turcon® or Zurcon® materials and an O-ring as an elastic pre-tensioning element.

**Name:** Turcon® Stepseal®  
**Type:** PSK  
**Material:** T46N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
10008570	3.1	8	2.2	PSK000080-T46N				
10008495	4.1	9	2.2	PSK000090-T46N				
10018690	5.1	10	2.2	PSK000100-T46N				
10012155	9.1	14	2.2	PSK000140-T46N				
10005621	10.1	15	2.2	PSK000150-T46N				
10013548	10.7	18	3.2	PSK100180-T46N				
10014789	11.1	16	2.2	PSK000160-T46N				
10008494	12.7	20	3.2	PSK100200-T46N				
10009025	17.3	28	4.2	PSK200280-T46N				
10007243	17.7	25	3.2	PSK100250-T46N				
10010279	19.3	30	4.2	PSK200300-T46N				
10017808	20.7	28	3.2	PSK100280-T46N				
10007262	21.3	32	4.2	PSK200320-T46N				
10009102	24.3	35	4.2	PSK200350-T46N				
10017840	24.7	32	3.2	PSK100320-T46N				
10006375	29.3	40	4.2	PSK200400-T46N				
10005523	31.3	42	4.2	PSK200420-T46N				
10022160	32.7	40	3.2	PSK100400-T46N				
10004357	34.3	45	4.2	PSK200450-T46N				
10025867	34.9	50	6.3	PSK300500-T46N				
10018686	37.3	48	4.2	PSK200480-T46N				
4587360	39.3	50	4.2	PSK200500-T46N				
10028461	41.3	52	4.2	PSK200500-T46N				
4649860	44.3	55	4.2	PSK200550-T46N				
10024403	44.9	60	6.3	PSK300600-T46N				
10008022	47.9	63	6.3	PSK300630-T46N				
10024485	52.3	63	4.2	PSK200630-T46N				
10024399	54.9	70	6.3	PSK300700-T46N				
10013465	64.9	80	6.3	PSK300800-T46N				
10024001	64.9	85	6.3	PSK300850-T46N				
10025853	74.3	85.5	4.2	PSK200850-T46N				
10017556	74.9	90	6.3	PSK300900-T46N				
10013455	84.9	100	6.3	PSK301000-T46N				
10023021	89.9	105	6.3	PSK301050-T46N				
10017543	94.9	110	6.3	PSK301100-T46N				
10012659	99.0	115	6.3	PSK301150-T46N				
10025553	104.3	115	4.2	PSK201150-T46N				
10023835	104.9	120	6.3	PSK301200-T46N				
10031576	109.9	125	6.3	PSK301250-T46N				
10029591	114.9	130	6.3	PSK301300-T46N				
10025551	124.3	135	4.2	PSK201350-T46N				
10006869	129.3	140	4.2	PSK201400-T46N				
10024039	129.9	145	6.3	PSK301450-T46N				
10030476	139.3	150	4.2	PSK201500-T46N				

# PISTON SEALS

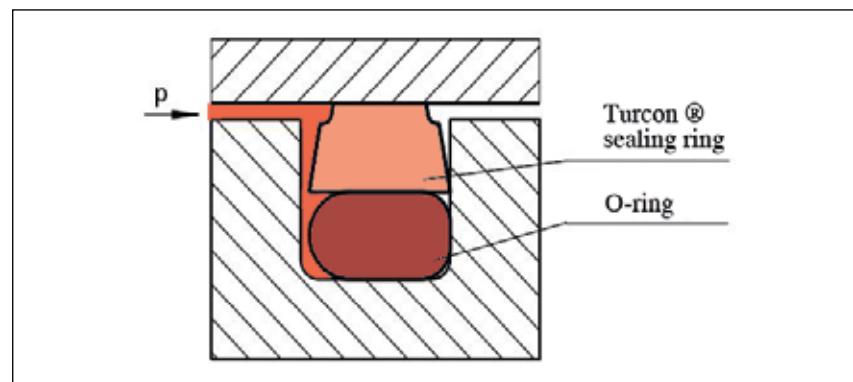


## Turcon® Glyd Ring® T, PT

### Description

The advantages of the Turcon® Glyd Ring® T are in the novel functional principle of the trapezoidal profile cross section.

both sides of the profile flanks have a steep diagonal, which causes the sealing profile to be narrower toward the sealing surface. In this way, the profile retains the robust and compact design typical for piston seals without negatively affecting the required deformability required to achieve a maximum pressing force regardless of pressure.



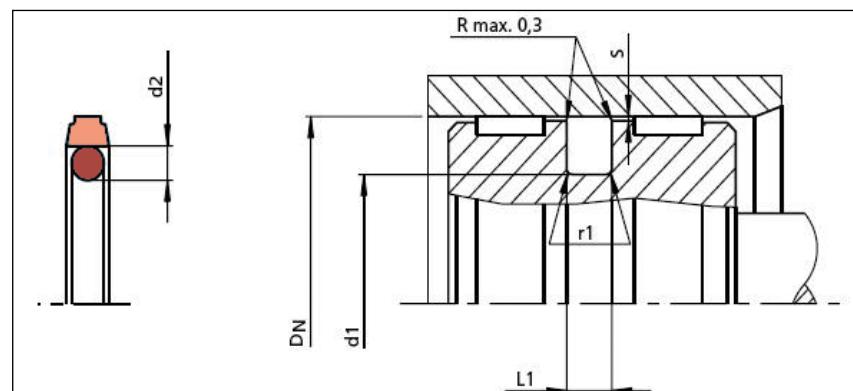
### Materials

Standard materials:

Turcon® sealing ring: Turcon®T46  
O-ring: NBR or FPM  
Set: T 46 N or T 46 V

For specific applications other material combinations can also be used.

Turcon® Glyd Ring® PT



Installation drawing

### Technical data

Operating pressure:	up to 80 MPa (800 bar)
Speed:	up to 15 m/s
Temperature:	-45°C to +200°C (depending on the O-ring material) – (for use in low-temperature ranges, please contact us.)
Media:	Mineral oil based pressure fluid, non-flammable pressure fluids, environmentally friendly pressure fluids (bio oils), water, air and others depending on the O-ring materials.
Gap width:	The max. allowable radial play Smax. is indicated, and depends on the operating pressure and functional diameter.

### Installation dimensions

Hole Ø D H9	Groove base Ø d h9	Groove width L + 0,2	Radius r <sub>1</sub>	Radial play S <sub>max.</sub> *			O-ring cord Ø d <sub>2</sub>
				10 MPa (100 bar)	20 MPa (200 bar)	30 MPa (300 bar)	
8 – 39.9	D– 4.9	2.2	0.4	0.40	0.30	0.20	1.78
15 – 79.9	D– 7.5	3.2	0.6	0.60	0.50	0.30	2.62
15 – 132.9	D–11.0	4.2	1.0	0.70	0.50	0.30	3.53
40 – 329.9	D–15.5	6.3	1.3	0.80	0.60	0.40	5.33
80 – 669.9	D–21.0	8.1	1.8	0.80	0.60	0.40	7.00
133 – 999.9	D–24.5	8.1	1.8	0.90	0.70	0.50	7.00
330 – 999.9	D–28.0	9.5	2.5	1.00	0.80	0.60	8.40
≥1000	D–38.0	13.8	3.0	1.20	0.90	0.70	12.00

\* For pressures > 40 MPa: S<sub>max.</sub> = H8/f8 (hole / piston) near the seal.

# HYDRAULIC PISTON SEALS

## Glyd Ring® T PT, T46N



The Turcon® Glyd Ring®T is an improvement of the proven Turcon® Glyd Ring®, which have been used for decades. It is exchangeable with them in all new applications.

**Name:** Glad® set  
**Type:** PT  
**Material:** T46N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4077830	5.1	10	2.2	PT0000100-T46N				
4077800	7.1	12	2.2	PT0000120-T46N				
4077900	8.5	16	3.2	PT0100160-T46N				
4077870	9.1	14	2.2	PT0000140-T46N				
4077880	10.1	15	2.2	PT0000150-T46N				
4077910	10.5	18	3.2	PT0100180-T46N				
4077890	11.1	16	2.2	PT0000160-T46N				
4077950	12.5	20	3.2	PT0100200-T46N				
10002948	13.1	18	2.2	PT0000180-T46N				
4079050	14.0	25	4.2	PT0200250-T46N				
4078050	14.5	22	3.2	PT0100220-T46N				
4077920	15.1	20	2.2	PT0000200-T46N				
4078080	17.5	25	3.2	PT0100250-T46N				
10027813	19.0	30	4.2	PT0200300-T46N				
4081460	20.5	28	3.2	PT0100280-T46N				
4081570	21.0	32	4.2	PT0200320-T46N				
4081490	22.5	30	3.2	PT0100300-T46N				
10002070	23.1	28	2.2	PT0000280-T46N				
4081540	24.5	32	3.2	PT0100320-T46N				
10028567	27.1	32	2.2	PT0000320-T46N				
4081590	27.5	35	3.2	PT0100350-T46N				
10019503	28.5	36	3.2	PT0100360-T46N				
4081680	29.0	40	4.2	PT0200400-T46N				
4081720	31.0	42	4.2	PT0200420-T46N				
4081660	32.5	40	3.2	PT0100400-T46N				
4081750	34.0	45	4.2	PT0200450-T46N				
4082870	34.5	50	6.3	PT0300500-T46N				
4082850	37.0	48	4.2	PT0200480-T46N				
10014702	37.5	45	3.2	PT0100450-T46N				
4081770	39.0	50	4.2	PT0200500-T46N				
4083450	41.0	52	4.2	PT0200520-T46N				
10021520	43.3	50.8	3.2	PT0100508-T46N				
4081830	44.0	55	4.2	PT0200550-T46N				
4082890	47.5	63	6.3	PT0300630-T46N				
4081950	49.0	60	4.2	PT0200600-T46N				
4082030	52.0	63	4.2	PT0200630-T46N				
4082920	54.0	65	4.2	PT0200650-T46N				
4083460	54.5	70	6.3	PT0300700-T46N				
10016291	56.5	64	3.2	PT0100640-T46N				
4082080	59.0	70	4.2	PT0200700-T46N				
4083470	59.0	80	8.1	PT0400800-T46N				
4082140	64.0	75	4.2	PT0200750-T46N				
4082950	64.0	85	8.1	PT0400850-T46N				

# HYDRAULIC PISTON SEALS



## Glyd Ring® T PT, T46N

Item No.	d mm	D mm	L mm		€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4082220	64.5	80	6.3	PT0300800-T46N					
10023139	67.0	82.2	6.3	PT0300825-T46N					
4082200	69.0	80	4.2	PT0200800-T46N					
4082350	69.0	90	8.1	PT0400900-T46N					
4082930	69.5	85	6.3	PT0300850-T46N					
4571210	74.0	85	4.2	PT0200850-T46N					
4082970	74.0	95	8.1	PT0400950-T46N					
4082290	74.5	90	6.3	PT0300900-T46N					
10016289	79.0	90	4.2	PT0200900-T46N					
4083480	79.0	100	8.1	PT0401000-T46N					
4082380	79.5	95	6.3	PT0300950-T46N					
10007322	84.0	95	4.2	PT0200950-T46N					
4083010	84.0	105	8.1	PT0401050-T46N					
4082420	84.5	100	6.3	PT0301000-T46N					
10005145	89.0	100	4.2	PT0201000-T46N					
4083030	89.0	110	8.1	PT0401100-T46N					
4083000	89.5	105	6.3	PT0301050-T46N					
4083050	94.0	115	8.1	PT0401150-T46N					
4083020	94.5	110	6.3	PT0301100-T46N					
4306810	99.0	110	4.2	PT0201100-T46N					
4083060	99.0	120	8.1	PT0401200-T46N					
4083040	99.5	115	6.3	PT0301150-T46N					
4083490	104.0	125	8.1	PT0401250-T46N					
4082480	104.5	120	6.3	PT0301200-T46N					
4516710	109.0	120	4.2	PT0201200-T46N					
4083090	109.0	130	8.1	PT0401300-T46N					
4083070	109.5	125	6.3	PT0301250-T46N					
10008895	114.0	125	4.2	PT0201250-T46N					
4083100	114.0	135	8.1	PT0401350-T46N					
4083080	114.5	130	6.3	PT0301300-T46N					
4082620	119.0	140	8.1	PT0401400-T46N					
10010440	124.5	140	6.3	PT0301400-T46N					
4082630	129.0	150	8.1	PT0401500-T46N					
4082660	139.0	160	8.1	PT0401600-T46N					
10012253	144.0	165	8.1	PT0401650-T46N					
4083110	144.5	160	6.3	PT0301600-T46N					
4082690	149.0	170	8.1	PT0401700-T46N					
10023700	154.0	175	8.1	PT0401750-T46N					
4082700	159.0	180	8.1	PT0401800-T46N					
10008361	159.5	175.1	6.3	PT0301750-T46N					
4083130	169.0	190	8.1	PT0401900-T46N					
4082720	179.0	200	8.1	PT0402000-T46N					
4083140	184.5	200	6.3	PT0302000-T46N					
4083150	189.0	210	8.1	PT0402100-T46N					
4571180	194.0	215	8.1	PT0402150-T46N					
4082740	199.0	220	8.1	PT0402200-T46N					
4082780	209.0	230	8.1	PT0402300-T46N					
4083160	219.0	240	8.1	PT0402400-T46N					
4083180	225.5	250	8.1	PT0802500-T46N					
4083170	229.0	250	8.1	PT0402500-T46N					
4083190	259.0	280	8.1	PT0402800-T46N					
4711010	264.5	280	6.3	PT0302800-T46N					
10025972	274.5	290	6.3	PT0302900-T46N					
4083200	279.0	300	8.1	PT0403000-T46N					
10011289	292.0	320	9.5	PT0503200-T46N					
4083230	295.5	320	8.1	PT0803200-T46N					

# HYDRAULIC PISTON SEALS

## Continued: Glyd Ring® T PT, T46N



The Turcon® Glyd Ring®T is an improvement of the proven Turcon® Glyd Ring®, which have been used for decades. It is exchangeable with them in all new applications.

**Name:** Glyd-RingT® set  
**Type:** PT  
**Material:** T46N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
<b>4083210</b>	299.0	320	8.1	PT0403200-T46N				
<b>10019383</b>	314.5	339	8.1	PT0803390-T46N				
<b>10032296</b>	315.5	340	8.1	PT0803400-T46N				
<b>4083260</b>	325.5	350	8.1	PT0803500-T46N				
<b>10027099</b>	335.5	360	8.1	PT0803600-T46N				
<b>4083270</b>	375.5	400	8.1	PT0804000-T46N				
<b>4083290</b>	395.5	420	8.1	PT0804200-T46N				
<b>4083320</b>	425.5	450	8.1	PT0804500-T46N				
<b>4083340</b>	455.5	480	8.1	PT0804800-T46N				

# PISTON SEALS



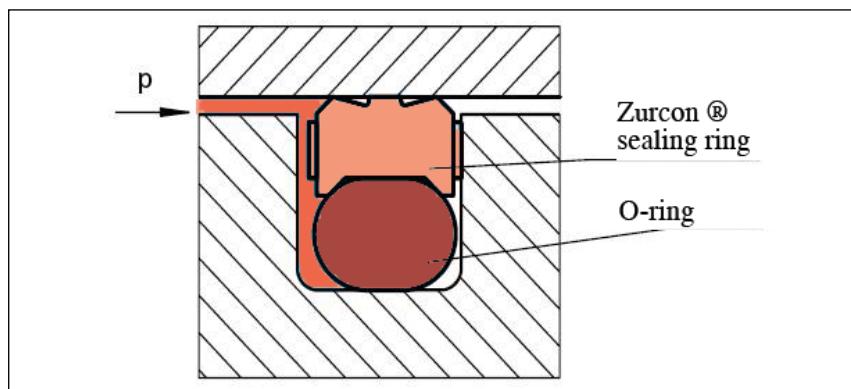
## Wynseal®, PW

### Description

The Wynseal® is a dual-acting piston seal, consisting of a special polyurethane sealing ring with an O-ring as an elastic pre-tensioning element.

The special feature of the Wynseal® is its sealing edge profile. Two external sealing edges act as a primary seal for two-sided pressure application. The centrally arranged seal and support ridge increases the sealing effect.

For targeted activation of the pre-tensioning O-ring, grooves are located on both sides at the flat surfaces. These grooves guarantee a direct pressure application of the seal under all operating conditions.



Wynseal® with O-Ring

### Materials

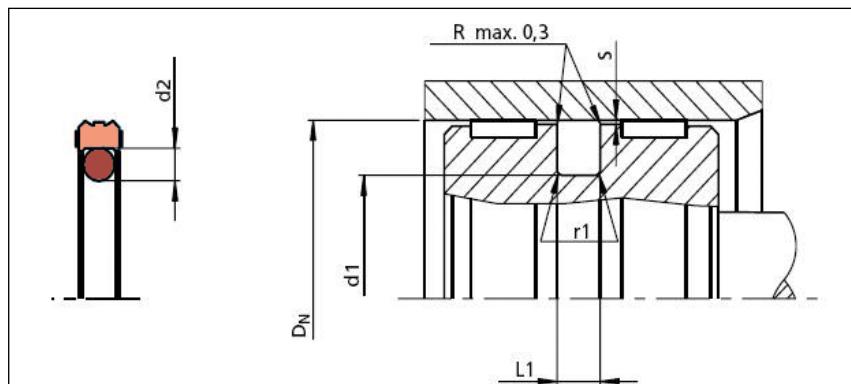
Standard materials:

Wynseal®: Zurcon® Z 20  
Special polyurethane,  
93 Shore A

O-ring: NBR  
Set: Z 20 N

### Advantages

- high static and dynamic seal-tightness
- high wear resistance
- simple groove design, one-piece pistons possible
- fits installation spaces according to DIN/ISO 7425, Part 1



Installation drawing

### Technical data

Operating pressure:	up to 25 MPa (250 bar)
Speed:	moves back and forth up to 0,8 m/s
Temperature:	-35 °C to +110 °C
Media:	Mineral oil based pressure fluid

### Installation dimensions

Serial No.	Groove base Ø d, h9	Groove width L <sub>1</sub> +0.2	Radius r <sub>1</sub>	Radial play S <sub>max.</sub>	O-ring cord Ø d <sub>2</sub>
PW 40	D <sub>N</sub> 4.9	2.2	0.4	0.20	1.78
PW 41	D <sub>N</sub> 7.5	3.2	0.6	0.25	2.62
PW 42	D <sub>N</sub> 11.0	4.2	1.0	0.25	3.53
PW 43	D <sub>N</sub> 15.5	6.3	1.3	0.30	5.33
PW 44	D <sub>N</sub> 21.0	8.1	1.8	0.30	7.00

# HYDRAULIC PISTON SEALS

## Wynseal® PW, Z20N



The Zurcon® Wynseal is a dual-acting piston seal, consisting of a special PU sealing ring with an O-ring as an elastic pre-tensioning element.

**Name:** Wynseal®  
**Type:** PW  
**Material:** Z20N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	
4442800	8.5	16	3.2	PW4100160-Z20N
4442850	14.0	25	4.2	PW4200250-Z20N
4442830	17.5	25	3.2	PW4100250-Z20N
4442840	21.0	32	4.2	PW4200320-Z20N
4442820	24.5	32	3.2	PW4100320-Z20N
4442920	34.5	50	6.3	PW4300500-Z20N
4442890	39.0	50	4.2	PW4200500-Z20N
4442900	44.5	60	6.3	PW4300600-Z20N
4442910	47.5	63	6.3	PW4300630-Z20N
4442880	52.0	63	4.2	PW4200630-Z20N
4442930	54.5	70	6.3	PW4300700-Z20N
4442950	64.5	80	6.3	PW4300800-Z20N
4442870	69.0	80	4.2	PW4200800-Z20N
4442940	84.5	100	6.3	PW4301000-Z20N
10017726	114.5	135	8.4	PW4401350-Z20N
4442970	139.0	160	8.1	PW4401600-Z20N
4442980	179.0	200	8.1	PW4402000-Z20N
4442990	229.0	250	8.1	PW4402500-Z20N

# PISTON SEALS

## D-A-S compact seal®, PC

### Description

The compact seal is a dual-acting sealing and guide element consisting of a rubber profile seal, two thrust rings and two guide rings. The profile seal seals dynamically and statically, whereas the thrust rings prevent extrusion into the sealing gap. The purpose of the guide rings is to guide the piston in the cylinder shaft and to transfer lateral forces. The design results in a compact sealing and guiding combination for a closed installation space.

### Materials

The D-A-S compact sealing ring® is supplied in the following design:

Profile seal: Acrylonitrile-Butadiene rubber (NBR)

Thrust ring: Polyester elastomer with additives

Guide rings: Fibreglass-reinforced thermoplastic material

### Advantages

- good sealing effect, suitable even for locking cylinders
- closed groove for sealing element, thrust ring and guide rings
- cost-effective manufacture of the piston
- low-cost sealing and guide element
- simple snap-in installation

### Technical data

Operating pressure: up to 35 MPa (350 bar)  
short-term up to 40 MPa

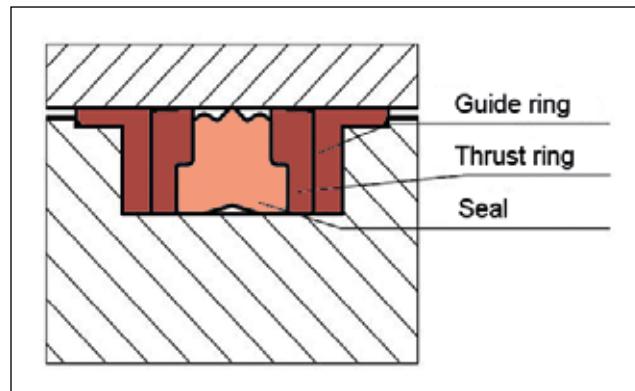
Speed: moves back and forth  
up to 0,5 m/s

Temperature: -30 °C to +100 °C

Media: Mineral oil based pressure fluids, non-flammable pressure fluids, HFA, HFB, HFC (< +40 °C)

### Design shape A

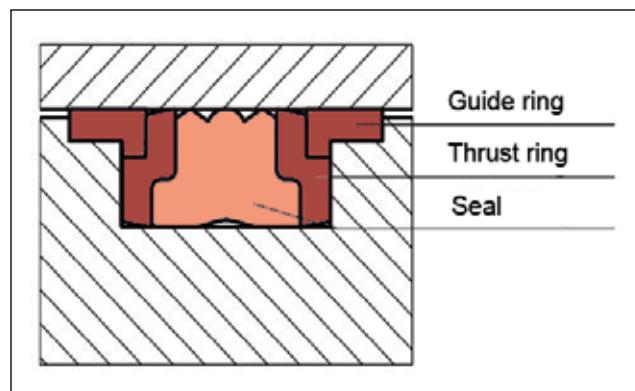
This design shape is characterised by its straight long-shouldered L profiles of the guide rings. Compared to design shape B, it has a lower groove depth at the same cylinder diameter.



D-A-S compact sealing ring®, design shape A

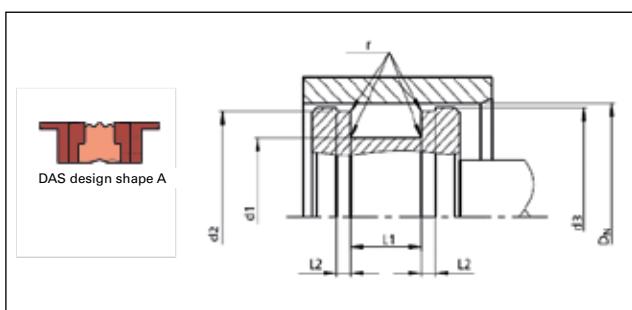
### Design shape B

This design shape is characterised by a Z-shaped thrust ring which meshes with the elastomeric sealing ring inside and which is centred at the outside by the guide ring.



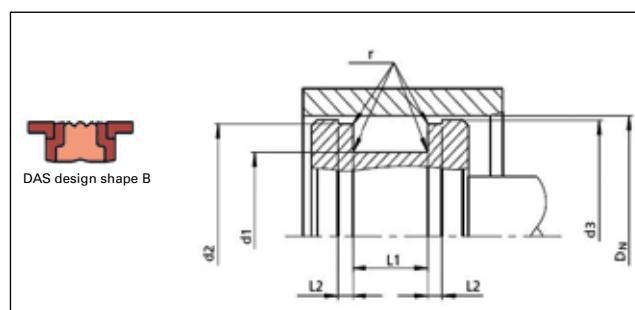
D-A-S compact seal®, design shape B

### Design shape A



Installation drawing

### Design shape B



Installation drawing

# HYDRAULIC PISTON SEALS

The D-A-S compact seal® is a dual-acting seal with a 5-part construction. It consists of a sealing element, two back rings and two angular bushings. The construction of the seals is such that the hardness of the materials used increases from inside to outside, thereby allowing optimal "sealing", "gap bridging" and "guiding" functions in the cylinder shaft by the individual components.

## D-A-S compact seal PC-A



**Material:** NCRO  
**Parts:** 5-part  
**Manufacturer:** Trelleborg

## D-A-S compact seal PC-B



**Material:** NCRO  
**Parts:** 5-part  
**Manufacturer:** Trelleborg

## D-A-S compact seal PC-A

Item No.	d mm	D mm	L mm	HTN Part number	€/100 set beginning at 1 set	€/100 set beginning at 25 set	€/100 set beginning at 100 set	€/100 set beginning at 500 set
4085470	24	32	15.5	A PCA200320-NCRO				
4086220	32	40	15.5	A PCA400400-NCRO				
4086260	38	50	20.5	A PCA200500-NCRO				
4086290	48	60	20.5	A PCA200600-NCRO				
4086310	51	63	20.5	A PCA300630-NCRO				
4086350	58	70	20.5	A PCA200700-NCRO				
4086400	76	90	22.5	A PCA200900-NCRO				
4086380	66	80	22.5	A PCA200800-NCRO				
4086430	86	100	22.5	A PCA201000-NCRO				
4086460	96	110	22.5	A PCA201100-NCRO				
4086510	106	120	22.5	A PCA101200-NCRO				
4086550	108	125	26.5	A PCA201250-NCRO				
4086570	113	130	26.5	A PCA201300-NCRO				
4086590	115	140	25.4	A PCA301400-NCRO				
4086610	133	150	26.5	A PCA301500-NCRO				
4086640	143	160	26.5	A PCA301600-NCRO				

## D-A-S compact seal PC-B

10006822	11	20	13.5	B PCB0N0200-NCRO				
4086680	16	25	13.5	B PCB2N0250-NCRO				
4086720	21	30	13.5	B PCB0A0300-NCRO				
4086740	24	40	18.4	B PCB0A0400-NCRO				
10006821	25	25	15.5	B PCB0B0350-NCRO				
10026131	30	40	12.5	B PCB2E0400-NCRO				
4086820	34	50	18.4	B PCB1A0500-NCRO				
4086800	35	45	16.4	B PCB2N0450-NCRO				
4086830	39	55	18.4	B PCB1A0550-NCRO				
4086840	44	60	18.4	B PCB1A0600-NCRO				
4086850	47	63	18.4	B PCB1A0630-NCRO				
4086860	50	70	22.4	B PCB0A0700-NCRO				
4716060	55	75	35.1	B PCB0A0750-NCRO				
4086870	60	80	22.4	B PCB0A0800-NCRO				
4086880	65	85	22.4	B PCB0A0850-NCRO				
4086890	70	90	22.4	B PCB0A0900-NCRO				
4086900	75	100	22.4	B PCB0A1000-NCRO				
4086910	85	110	22.4	B PCB0A1100-NCRO				
4086920	90	115	22.4	B PCB0A1150-NCRO				
4086930	100	125	25.4	B PCB0A1250-NCRO				
4086940	105	130	25.4	B PCB0B1300-NCRO				
4086950	115	140	25.4	B PCB0B1400-NCRO				
4086960	125	150	25.4	B PCB0B1500-NCRO				
4086990	138	160	26.5	B PCB2A1600-NCRO				
4087000	145	170	25.4	B PCB0A1700-NCRO				
4087010	150	180	35.4	B PCB0A1800-NCRO				
4087020	175	200	25.4	B PCB0A2000-NCRO				

# PISTON SEALS

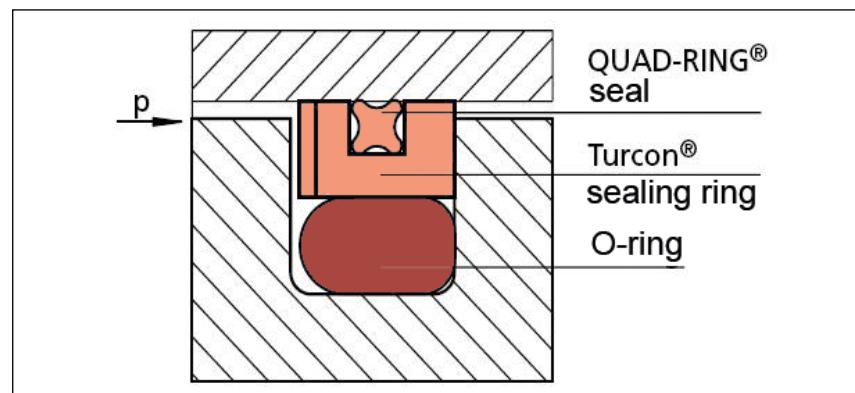


## Turcon® AQ-Seal® PQ

### Description

The Turcon® AQ-Seal® is a dual-acting seal, consisting of a sealing ring made of high-quality Turcon® material, a Quad-Ring® seal and an O-ring as an elastic pre-tensioning element.

Thus, the Turcon® sealing ring and the QUAD-RING® seal together perform the dynamic sealing. The O-ring constitutes the static seal. Thus the advantages of the Turcon® seal combined with the preferences of the QUAD-RING® seal.



### Materials

Standard materials:

The following material combinations have proven their effectiveness for most uses:

Turcon® sealing ring: Turcon® T46

QUAD-RING® seal: NBR

O-ring: NBR

### Special applications

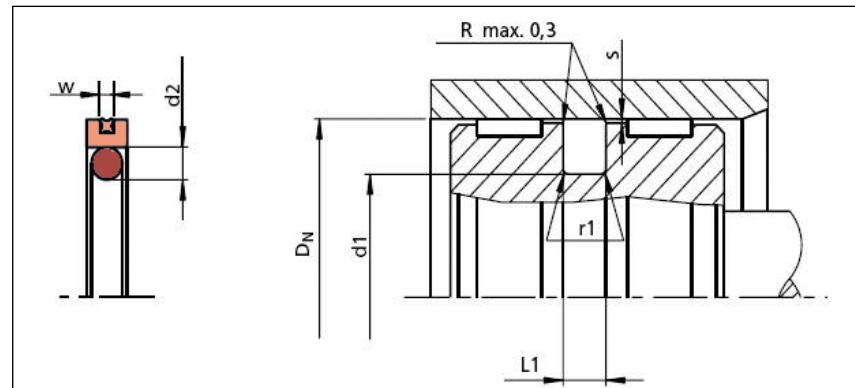
- For special applications, other material combinations can also be used.

### Advantages

- high sealing effect in applications involving media separation such as fluid/fluid or fluid/gas applications
- twice the safety due to the combination of special low-friction materials with elastomeric seals
- simple groove design, small installation space, exchangeable with Turcon® Glyd Ring® and Turcon® Glyd Ring® T, installation according to DIN/ISO 7425/1

Turcon® AQ-Seal® PQ

### Installation recommendation



Installation drawing

### Technical data

Operating pressure:	40 MPa (400 bar)
Speed:	moves back and forth up to 2 m/s
Temperature:	-45 °C to +200 °C (depending on the O-ring and QUAD-RING® sealing materials) (for use in the low temperature range below -30 °C, please contact us.)
Media:	for all conventional hydraulic fluids including bio-oils and gases.
Gap width:	The max. allowable radial play Smax. (see below) is indicated, and depends on the operating pressure and functional diameter.

Recommended Series	Hole Ø D H9	Groove base Ø d h9	Groove width L + 0,2	Radius r <sub>1</sub>	Radial play S <sub>max.</sub> *			O-ring cord Ø d2	QUAD-RING® Seal Cord thickness W
					10 MPa (100 bar)	20 MPa (200 bar)	30 MPa (300 bar)		
16 – 39.9	40 – 79.5	D-11.0	4.2	1.0	0.25	0.15	0.10	3.53	1.78
40 – 79.9	80 – 132.9	D-15.5	6.3	1.3	0.30	0.20	0.15	5.33	1.78
80 – 132.9	133 – 252.9	D-21.0	8.1	1.8	0.30	0.20	0.15	7.00	2.62
133 – 252.9	–	D-24.5	8.1	1.8	0.30	0.20	0.15	7.00	2.62
253 – 462.9	–	D-28.0	9.5	2.5	0.45	0.30	0.25	8.40	3.53
463 – 700.0	–	D-35.0	11.5	3.0	0.55	0.40	0.35	10.00	5.33

\* For pressures > 30 MPa: S<sub>max.</sub> = H8/f8 (hole / piston) near the seal.

# HYDRAULIC PISTON SEALS

## AQ-Seal® PQ, T46N



The Turcon® AQ-Seal® is a dual-acting seal, consisting of a sealing ring made of high-quality Turcon® material, a Quad-Ring® seal and an O-ring made of an elastic pre-tensioning element.

**Type:** AQ-Seal® set PQ  
**Material:** T46N  
**Parts:** 3-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm		€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4083120	5.0	16	4.2	PQ1200160-T46N					
4083280	7.0	18	4.2	PQ1200180-T46N					
4083310	9.0	20	4.2	PQ1200200-T46N					
4083500	11.0	22	4.2	PQ1200220-T46N					
4083510	14.0	25	4.2	PQ1200250-T46N					
4083520	17.0	28	4.2	PQ1200280-T46N					
4083530	19.0	30	4.2	PQ1200300-T46N					
4083550	21.0	32	4.2	PQ1200320-T46N					
4083560	24.0	35	4.2	PQ1200350-T46N					
4083570	29.0	40	4.2	PQ1400400-T46N					
4083580	31.0	42	4.2	PQ1400420-T46N					
4083590	34.0	45	4.2	PQ1400450-T46N					
4083630	34.5	50	6.3	PQ1200500-T46N					
4083600	37.0	48	4.2	PQ1400480-T46N					
4083610	39.0	50	4.2	PQ1400500-T46N					
4083650	41.0	52	4.2	PQ1400520-T46N					
4083660	44.0	55	4.2	PQ1400550-T46N					
4083690	47.5	63	6.3	PQ1200630-T46N					
4083670	49.0	60	4.2	PQ1400600-T46N					
4083680	52.0	63	4.2	PQ1400630-T46N					
4083700	54.0	65	4.2	PQ1400650-T46N					
4083720	54.5	70	6.3	PQ1200700-T46N					
4083710	59.0	70	4.2	PQ1400700-T46N					
4083760	59.0	80	8.1	PQ2200800-T46N					
4083730	64.0	75	4.2	PQ1400750-T46N					
4083780	64.0	85	8.1	PQ2200850-T46N					
4083740	64.5	80	6.3	PQ1400800-T46N					
4083800	69.0	90	8.1	PQ2200900-T46N					
4083770	69.5	85	6.3	PQ1400850-T46N					
4083820	74.0	95	8.1	PQ2200950-T46N					
4083790	74.5	90	6.3	PQ1400900-T46N					
4083850	79.0	100	8.1	PQ2201000-T46N					
4083810	79.5	95	6.3	PQ1400950-T46N					
4083870	84.0	105	8.1	PQ2201050-T46N					
4083830	84.5	100	6.3	PQ1401000-T46N					
4083890	89.0	110	8.1	PQ2201100-T46N					
4083860	89.5	105	6.3	PQ1401050-T46N					
4083910	94.0	115	8.1	PQ2201150-T46N					
4083880	94.5	110	6.3	PQ1401100-T46N					
4083930	99.0	120	8.1	PQ2201200-T46N					
4083900	99.5	115	6.3	PQ1401150-T46N					
4083950	104.0	125	8.1	PQ2201250-T46N					
4083920	104.5	120	6.3	PQ1401200-T46N					

# HYDRAULIC PISTON SEALS

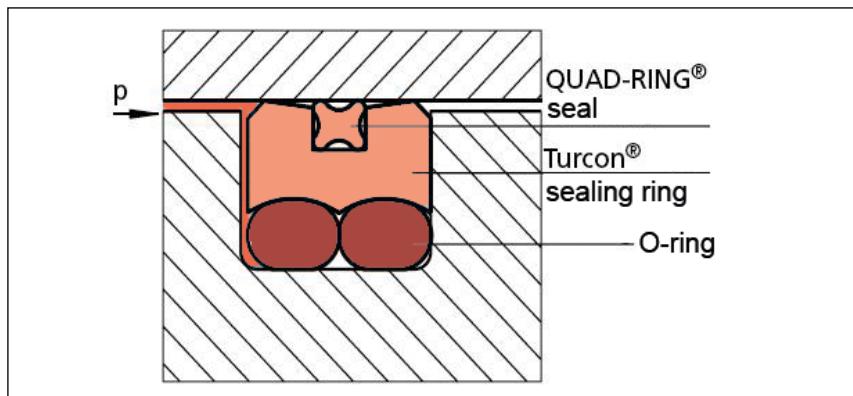


## AQ-Seal® PQ, T46N

Item No.	d mm	D mm	L mm		€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4083970	109.0	130	8.1	PQ2201300-T46N					
4083940	109.5	125	6.3	PQ1401250-T46N					
4083980	114.0	135	8.1	PQ2401350-T46N					
4083960	114.5	130	6.3	PQ1401300-T46N					
10026721	115.5	140	8.1	PQ2201400-T46N					
4083990	119.0	140	8.1	PQ2401400-T46N					
4084010	129.0	150	8.1	PQ2401500-T46N					
4084020	139.0	160	8.1	PQ2401600-T46N					
4084030	149.0	170	8.1	PQ2401700-T46N					
4084040	159.0	180	8.1	PQ2401800-T46N					
4084050	169.0	190	8.1	PQ2401900-T46N					
4084060	179.0	200	8.1	PQ2402000-T46N					
4084070	189.0	210	8.1	PQ2402100-T46N					
10018093	195.5	220	8.1	PQ2202200-T46N					
4084080	199.0	220	8.1	PQ2402200-T46N					
4084090	209.0	230	8.1	PQ2402300-T46N					
4084100	219.0	240	8.1	PQ2402400-T46N					
4084120	225.5	250	8.1	PQ2202500-T46N					
4084110	229.0	250	8.1	PQ2402500-T46N					
4084130	252.0	280	9.5	PQ3202800-T46N					
4084140	272.0	300	9.5	PQ3203000-T46N					
4084150	292.0	320	9.5	PQ3203200-T46N					
10012802	330.0	302	9.5	PQ3203300-T46N					
10001633	332.0	360	9.5	PQ3203600-T46N					
4084170	372.0	400	9.5	PQ3204000-T46N					
4084180	392.0	420	9.5	PQ3204200-T46N					
4084190	422.0	450	9.5	PQ3204500-T46N					
4084200	445.0	480	11.5	PQ5204800-T46N					
4084210	465.0	500	11.5	PQ5205000-T46N					
4084220	565.0	600	11.5	PQ5206000-T46N					

# PISTON SEALS

## Turcon® AQ-Seal® 5, PQ



Turcon® AQ-Seal® 5, PQ

### Description

The Turcon® AQ-Seal® 5 is a patented improvement of the proven standard design of the Turcon® AQ seal®.

The sealing profile of the Turcon® ring was newly designed at its dynamic and static sealing surfaces. Instead of a single O-ring as a pre-tensioning element, there are now two O-rings that enable a targeted pressing onto the sealing edges.

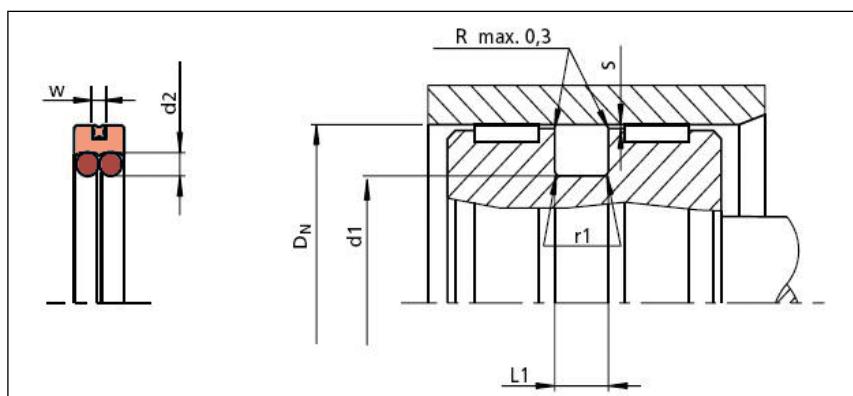
### Materials

Standard materials:

Turcon® sealing ring: Turcon®T46

QUAD-RING® seal: NBR

O-ring: NBR



Installation drawing

### Special applications

- For special applications that require other material combinations, please contact us.

### Advantages

- high sealing effect in applications involving media separation such as fluid/fluid or fluid/gas applications
- increased safety due to the combination of special low-friction materials with elastomeric seals
- low gas permeation rate
- increased pressure limits, higher gliding speed compared to the AQ-Seal®
- excellent lubrication properties, no stick-slip effect

### Technical data

Operating pressure: 60 MPa (600 bar)

Speed: up to 3 m/s

Temperature: -30°C to + 200°C

(depending on the O-ring and QUAD-RING® sealing materials)

(for use in the low temperature range below - 30°C,

please contact us.)

Media: for all conventional hydraulic fluids including bio-oils and gases.

Gap width: The max. allowable radial play Smax. is indicated, and depends on the operating pressure and functional diameter.

### Installation dimensions

Hole Ø D H9	Groove base Ø	Groove width	Radius	Radial play S <sub>max.</sub> *			O-ring cord Ø	QUAD-RING® Seal cord thickness W
Recommended Series	Possible Series	d h9	L + 0.2	r <sub>1</sub>	10 MPa (100 bar)	20 MPa (200 bar)	30 MPa (300 bar)	d2
40 – 79.9	25/-140	D-10.0	6.3	0.6	0.30	0.20	0.15	2.62
80 – 132.9	50/-250	D-13.0	8.3	1.0	0.40	0.30	0.15	3.53
133 – 462.9	100/-480	D-18.0	12.3	1.3	0.40	0.30	0.20	5.33
463 – 700.0	425/-700	D-31.0	16.3	1.8	0.50	0.40	0.30	7.00

\* For pressures > 30 MPa: S<sub>max.</sub> = H8/f8 (hole / piston) near the seal.

# HYDRAULIC PISTON SEALS



## AQ Seal5® PQ, T46N

The Turcon® AQ-Seal® 5 is an improvement of the proven standard design of the Turcon® AQ seal®.

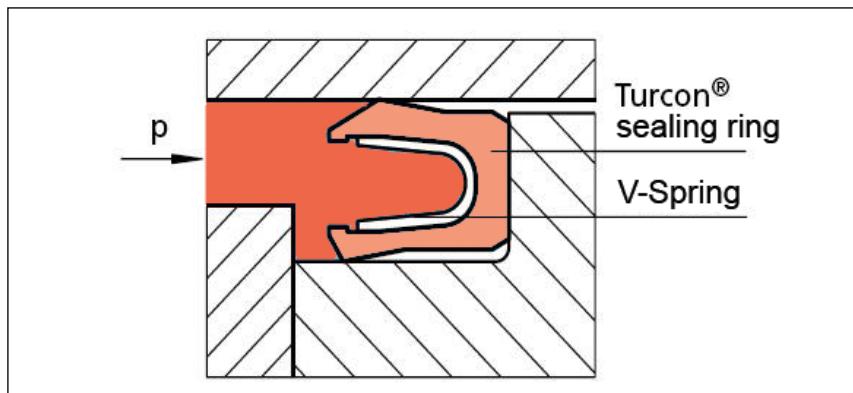
**Type:** AQ-Seal5® set PQ  
**Material:** T46N  
**Parts:** 4-part  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4083430	30	40	6.3	PQ0100400-T46N				
4084240	32	42	6.3	PQ0100420-T46N				
4084250	35	45	6.3	PQ0100450-T46N				
4084260	38	48	6.3	PQ0100480-T46N				
4084270	40	50	6.3	PQ0100500-T46N				
4084280	42	52	6.3	PQ0100520-T46N				
4084290	45	55	6.3	PQ0100550-T46N				
4084300	50	60	6.3	PQ0100600-T46N				
4084320	53	63	6.3	PQ0100630-T46N				
4084350	55	65	6.3	PQ0100650-T46N				
4084360	60	70	6.3	PQ0100700-T46N				
4084380	65	75	6.3	PQ0100750-T46N				
4084390	67	80	8.3	PQ0200800-T46N				
4084410	72	85	8.3	PQ0200850-T46N				
4084420	77	90	8.3	PQ0200900-T46N				
4084430	82	95	8.3	PQ0200950-T46N				
4084440	87	100	8.3	PQ0201000-T46N				
4084460	92	105	8.3	PQ0201050-T46N				
4084470	97	110	8.3	PQ0201100-T46N				
4084480	102	115	8.3	PQ0201150-T46N				
4084490	107	120	8.3	PQ0201200-T46N				
4084500	112	125	8.3	PQ0201250-T46N				
4084510	117	130	8.3	PQ0201300-T46N				
4084520	117	135	12.3	PQ0301350-T46N				
4084530	122	140	12.3	PQ0301400-T46N				
4084550	132	150	12.3	PQ0301500-T46N				
4084560	142	160	12.3	PQ0301600-T46N				
4084570	152	170	12.3	PQ0301700-T46N				
4084580	162	180	12.3	PQ0301800-T46N				
4084590	172	190	12.3	PQ0301900-T46N				
4084600	182	200	12.3	PQ0302000-T46N				
4084610	192	210	12.3	PQ0302100-T46N				
4084620	202	220	12.3	PQ0302200-T46N				
4084630	212	230	12.3	PQ0302300-T46N				
4084640	222	240	12.3	PQ0302400-T46N				
4084650	232	250	12.3	PQ0302500-T46N				
4084660	262	280	12.3	PQ0302800-T46N				
4084670	282	300	12.3	PQ0303000-T46N				
4084680	302	320	12.3	PQ0303200-T46N				
4084690	332	350	12.3	PQ0303500-T46N				
4084700	382	400	12.3	PQ0304000-T46N				
4084710	402	420	12.3	PQ0304200-T46N				
4084720	432	450	12.3	PQ0304500-T46N				

# PISTON SEALS

## Turcon® Variseal® M2, PV



Turcon® Variseal® M2

### Description

The Turcon® Variseal® M2 is a single-acting seal into which a V-shaped metal spring is placed as a pre-tensioning element.

### Materials

All materials used are physiologically compatible. They contain no materials which give off an odour or a taste. The following material combinations have proven their effectiveness for most uses:

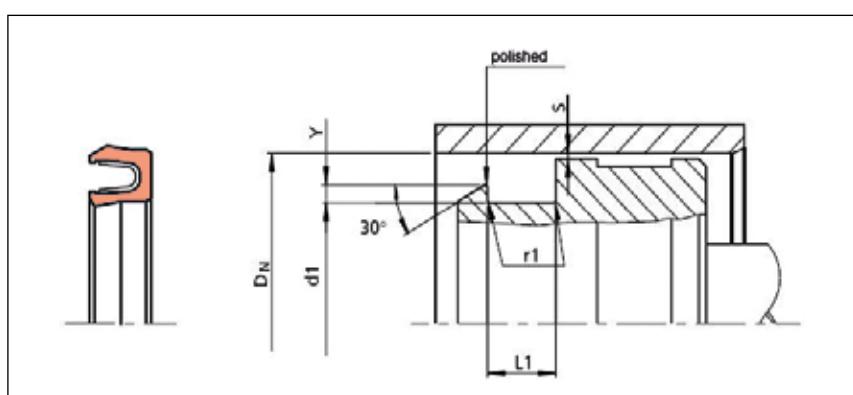
Sealing ring: Turcon® T40  
 Spring: Stainless steel,  
 Material No. 1,4310  
 (AISI 301)

Material code: %s

Suitable materials for use according to the requirements of the "Food and Drug Administration" (FDA) are available upon request.

### Advantages

- resistant against most fluids and chemicals
- low friction values
- stick-slip free, no tendency to adhere
- high wear resistance and shape stability
- adjusts to rapid temperature changes
- physiologically compatible when used in food technology, pharmaceutical and medical technology
- can be sterilised
- unlimited storability



Installation drawing

### Technical data

Operating pressure:	for static loads of 60 MPa (600 bar) for dynamic loads of 45 MPa (450 bar)
Speed:	for back and forth motions up to 15 m/s
Temperature:	- 70°C to + 260°C for special applications at lower temperatures, please contact us
Media:	nearly all fluids, chemicals and gases
Note:	for high-temperature use, pressure and speed must be limited

### Installation dimensions

Standard range	Hole Ø D H9	Expanded <sup>1)</sup> range	Groove base Ø d h9	Groove width L + 0.2	Radius r <sub>1</sub>	Web <sup>2)</sup> Y min.	Radial play S <sub>max.</sub> *			
	< 2 MPa (20 bar)		< 10 MPa (100 bar)	< 20 MPa (200 bar)	< 40 MPa (400 bar)					
6.0 – 13.9	6.0 – 40.0	D <sub>N</sub> – 2.9	2.4	0.4	0.4	0.4	0.20	0.10	0.08	0.05
14.0 – 24.9	10.0 – 200.0	D <sub>N</sub> – 4.5	3.6	0.4	0.6	0.6	0.25	0.15	0.10	0.07
25.0 – 45.9	16.0 – 400.0	D <sub>N</sub> – 6.2	4.8	0.6	0.7	0.7	0.35	0.20	0.15	0.08
46.0 – 124.9	28.0 – 700.0	D <sub>N</sub> – 9.4	7.1	0.8	0.8	0.8	0.50	0.25	0.20	0.10
125.0 – 999.9	45.0 – 999.9	D <sub>N</sub> – 12.2	9.5	0.8	0.9	0.9	0.60	0.30	0.25	0.12
1000.0 – 2500.0	100.0 – 1000.0	D <sub>N</sub> – 19.0	15.0	0.8	0.9	0.9	0.90	0.50	0.40	0.20

\* For pressures > 40 MPa: S<sub>max.</sub> = H8/f8 (hole / piston) near the seal.

1) Available on request.

2) Y<sub>max</sub> = 0,035 x D

# HYDRAULIC PISTON SEALS



## Variseal® M2 PV, T40S

The Turcon® Variseal® is a single-acting seal, consisting of an asymmetric U-shaped sealing member into which a V-shaped metal spring is placed as a pre-tensioning element.

**Name:** Variseal®  
**Type:** PV  
**Material:** T40S  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4085190	3.1	6	2.4	PVA000060-T40S				
4085200	5.1	8	2.4	PVA000080-T40S				
4085220	7.1	10	2.4	PVA000100-T40S				
4085230	9.1	12	2.4	PVA000120-T40S				
4085240	11.5	16	3.6	PVA100160-T40S				
4085250	15.5	20	3.6	PVA100200-T40S				
4085260	18.8	25	4.8	PVA200250-T40S				
10013913	23.8	30	4.8	PVC200300-T40S				
4085270	25.8	32	4.8	PVA200320-T40S				
4085280	28.8	35	4.8	PVA200350-T40S				
4085300	33.8	40	4.8	PVA200400-T40S				
4341030	38.8	45	4.8	PVA200450-T40S				
4085310	40.6	50	7.1	PVA300500-T40S				
4085320	42.6	52	7.1	PVA300520-T40S				
4085340	45.6	55	7.1	PVA300550-T40S				
4085350	53.6	63	7.1	PVA300630-T40S				
10023518	54.6	64	7.1	PVA300640-T40S				
4085360	70.6	80	7.1	PVA300800-T40S				
4085370	85.6	95	7.1	PVA300950-T40S				
4085380	90.6	100	7.1	PVA301000-T40S				
4085400	112.8	125	9.5	PVA401250-T40S				
10022764	137.8	150	9.5	PVA401500-T40S				
4085410	147.8	160	9.5	PVA401600-T40S				
4085420	187.8	200	9.5	PVA402000-T40S				

# ROD SEALS

## Selection criteria for rod seals

Seal Design	Area of use	Application			Norm DIN/ISO	Ø-range	Installation Type of notch corresponding to	Technical data*			
		light	medium	heavy				mm	mm Ø	°C	m/s
Turcon® Stepseal® 2K 	Mobile hydraulics	•	•	•	7425/2	3/-2600	Individual, primary and secondary seal, single acting	divided < 16 closed > 16	-45 to +200	15	70 (700)
	Standard cylinder	•	•	•							70 (700)
	Machine tools	•	•	•							25 (250)
	Injection moulding machines	•	•	•							80 (800)
	Presses	•	•	•		3/-2200	Individual, seal, single acting	divided < 18 closed > 18	-45 to +100	2	80 (800)
	Plastics industry	•	•	•							60 (600)
	Hydraulic hammer	•	•	•							25 (250)
Glyd Ring® T 	Servo hydraulics	•	•	•	7425/2	3/-2600	Individual, seal, pressure on both sides	divided < 16 closed > 16	-45 to +200	15	80 (800)
	industrial hydraulics	•	•	•							60 (600)
	Mobile hydraulics	•	•	•							25 (250)
	Machine tools	•	•	•							80 (800)
Zurcon® Rimseal® 	Mobile hydraulics	•	•	•	7425/2	8/-2200	Individual, primary and secondary seal, single acting	divided < 16 closed > 16	-45 to +100	In tandem with Turcon® Stepseal® K	in tandem 60 (600) as single seal 25 (250)
	Standard cylinder	•	•	•							5 m/s
	Machine tools	•	•	•							5 m/s
	Injection moulding machines	•	•	•							5 m/s
	Presses	•	•	•							5 m/s
	Plastics industry	•	•	•							5 m/s
Grooved ring RU0 	industrial hydraulics	•	•	-		6/-200	Individual, or secondary seal, single acting	divided < 18 closed > 18			
	Mobile hydraulics	•	•	-							
RU2 	Avg. Mobile hydraulics	•	•	-		6/-185	Individual, or secondary seal, single acting	divided < 18 closed > 18	-35 to +110	0,5	40 (400)
	telescopic cylinder	•	•	-							
RU3 	industrial hydraulics	•	•	-		6/-235	Individual, or secondary seal, single acting	divided < 18 closed > 18			
	Standard cylinder	•	•	-							
Variseal® M2 	Building construction and civil engineering temperature	•	•	•	AS 4716	3/-2600	Individual, seal, single acting	divided (half open)	-70 to +260	15	40 (400)
	Aggressive media	•	•	•							20 (200)
	Food technology <sup>1)</sup>	•	•	•							20 (200)

\* The values indicated are maximum values that may not be reached simultaneously. The maximum allowable pressure depends on the temperature and on the gap size.

\*\* For use in the low temperature range below -30°C, please contact us.

# ROD SEALS



Height Frequency/ Sort-stroke	Friction	Extrusion	Technical behaviour			Life- span	Soft <sup>4)</sup> Mating area	Water hydraulics <sup>5)</sup>	Material standard Material of the sealing ring	Seal Design
			Leakage <sup>2)</sup> stag.	dyn.	gases					
A	A	A	A/B	A	C	A	D	D	Turcon® T 46	Turcon® Stepseal® 2K
A	A	B	B	B	B	B	B	A	Turcon® T 29	
B	A	C	A	A	C	B	C	C	Turcon® T 05	
B	B	B	A	A	B <sup>3)</sup>	B	B/C	D	Zurcon® Z 51	
C	A	A	A	AB	C	A	D	D	Turcon® T 46	Glyd Ring® T
B <sup>6)</sup>	A	B	B	B	B	B	B	A	Turcon® T 40 <sup>7)</sup>	
C	A	C	A	B	C	B	D	C	Turcon® T 05	
C	C	B	A	B	B <sup>3)</sup>	A	B	D	Zurcon® Z 51	
 <b>Zurcon® Rimseal®</b>										
C	A/B	B	A	A	A	A	A	C	Z 52	
 <b>Grooved ring RU0</b>										
C	B	C	A	A	B <sup>3)</sup>	B	D	D	Z 20	
 <b>RU2</b>										
 <b>RU3</b>										
B	A	B	B	B	C	B	B	A	Turcon® T 40	
C	A	C	B	B	A <sup>3)</sup>	B	D	C	Turcon® T 05	

A = very good

B = good

C = satisfactory

D = sufficient

This analysis only refers to the vertical comparison values of the seals and materials.

1) For highly viscous media, please contact us

2) Gas seal-tightness depends on the surface quality and the mating surface

3) Not recommended for dry air

4) such as aluminium, bronze, stainless steel

5) Special compound Zurcon, Z80 for water hydraulics

6) For high-frequency applications please contact us

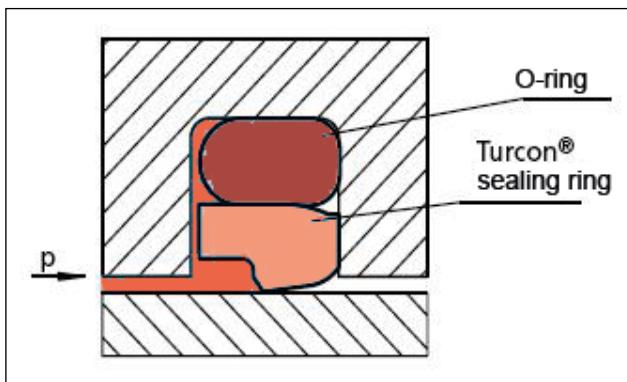
7) when using material T40 and at a pressure above 20 MPa (200 bar), please contact us



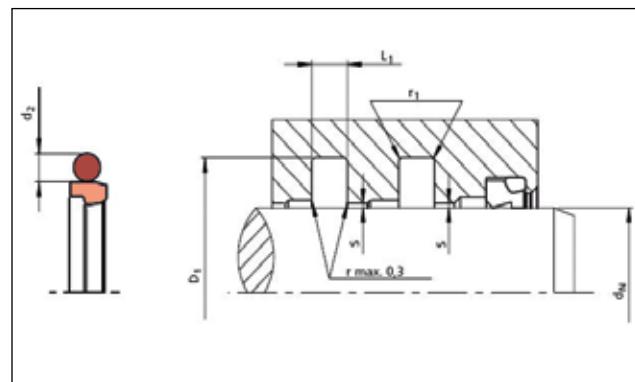
# ROD SEALS



## Turcon® Stepseal® 2K



Turcon® Stepseal® 2K



Installation drawing

### Description

Rod seals may not exhibit any dynamic leaking on the atmospheric side under any operating conditions and must be completely statically sealed when the machine is at a standstill. In addition, they should achieve a high mechanical efficiency through low friction and be easily installed in small spaces. Costs and lifespan of the seals must meet the high expectations of the operator. With the Turcon® Stepseal®, it is possible for the first time to arrange multiple seals one after the other. This creates a statically and dynamically sealed, dual-acting tandem arrangement without any disruptive intermediate pressure build-up. The single-acting sealing element is made of high-quality Turcon® and Zurcon® materials with excellent lubrication and wear properties. It is used as an elastic pre-tensioning element by way of O-ring in grooves according to DIN/ISO 7425/2.

### Advantages:

- High static and dynamic sealing
- High extrusion strength, permits larger gap widths
- Low friction, high efficiency
- Stick-slip free, no tendency to adhere
- High wear resistance, high operating safety
- Can be used in other temperature ranges and high chemical resistance depending on the selection of the O-ring material

- Problem-free installation without sealing edge deformation
- Available for every rod diameter up to 2600 mm

### Application examples

Mobile hydraulics, standard cylinders, machine tools, injection moulding machines, presses, automobile industry, hydraulic hammers, Servo hydraulics

### Material

Turcon® Stepseal® 2K: Turcon® T 46  
O-ring: NBR or FPM  
Set: T 46 N or T 46 V

### Technical data

Operating pressure:	up to 80 MPa
Speed:	Motion back and forth up to 15 m/s, frequency up to 5 Hz
Temperature:	-45°C to +200°C (depending on O-ring material)
Media:	Mineral oil based pressure fluid, non-flammable pressure fluids, environmentally friendly pressure fluids (bio oils), water, air and others depending on the O-ring materials
Gap width:	The max. allowable radial play $S_{max}$ is indicated in the table below, and depends on the operating pressure and functional diameter.

### Installation dimensions

Series No.	Rod Ø d f8/h9			Groove base Ø	Groove width	Radius r <sub>1</sub>	Radial play S max. *			O-ring cord Ø d <sub>2</sub>
	Standard Use:	Light <sup>1)</sup> Use:	Heavy Use:				10 MPa	20 MPa	40 MPa	
RSK0	3 - 7.9	8 - 19.0	-	d <sub>N</sub> + 4.9	2.2	0.4	0.30	0.20	0.15	1.78
RSK1	8 - 18.9	19 - 37.9	-	d <sub>N</sub> + 7.3	3.2	0.6	0.40	0.25	0.15	2.62
RSK2	19 - 37.9	38 - 199.9	8 - 18.9	d <sub>N</sub> + 10.7	4.2	1.0	0.50	0.30	0.20	3.53
RSK3	38 - 199.9	200 - 255.9	19 - 37.9	d <sub>N</sub> + 15.1	6.3	1.3	0.70	0.40	0.25	5.33
RSK4	200 - 255.9	256 - 649.9	38 - 199.9	d <sub>N</sub> + 20.5	8.1	1.8	0.80	0.60	0.35	7.00
RSK8	256 - 649.9	650 - 999.9	200 - 255.9	d <sub>N</sub> + 24.0	8.1	1.8	0.90	0.70	0.40	7.00
RSK5	650 - 999.9	≥ 1000	256 - 649.9	d <sub>N</sub> + 27.3	9.5	2.5	1.00	0.80	0.50	8.40
RSK6	≥ 1000	-	650 - 999.9	d <sub>N</sub> + 38.0	13.8	3.0	1.20	0.90	0.60	12.00

\* For pressures > 40 MPa: H8/f8 (hole/rod) behind the seal; or contact REIFF about alternative materials or profiles

<sup>1)</sup> For easier installation in closed grooves and small rod diameters (< 40 mm)

**Important information:** The indicated values are maximum values and must not be reached simultaneously. The maximum operating speed depends on the material and on the pressure, temperature and gap size. Temperature range is also dependent on the medium

# HYDRAULIC ROD SEALS

## Continued: Turcon® Stepseal® 2K RS, T46N



Rod seals must not exhibit any dynamic leakage to the atmospheric side under any operating states and must be completely statically seal-tight when the machine is at a standstill. In addition, they should achieve a high mechanical efficiency due to low friction and be easy to install in small spaces.

The Turcon® Stepseal® 2K rod seal comes closest to meeting these ideal requirements.

**Name:** Turcon® Stepseal®  
**Type:** RSK  
**Material:** T46N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm		€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
<b>10018575</b>	4	8.9	2.2	RSK000040-T46N					
<b>10011885</b>	5	9.9	2.2	RSK000050-T46N					
<b>10011891</b>	6	10.9	2.2	RSK000060-T46N					
<b>10005128</b>	8	12.9	2.2	RSK000080-T46N					
<b>10007954</b>	10	14.9	2.2	RSK000100-T46N					
<b>10007257</b>	10	17.3	3.2	RSK100100-T46N					
<b>10010503</b>	12	19.3	3.2	RSK100120-T46N					
<b>10025061</b>	14	18.9	2.2	RSK000140-T46N					
<b>10014262</b>	14	21.3	3.2	RSK100140-T46N					
<b>10006376</b>	15	22.3	3.2	RSK100150-T46N					
<b>10008449</b>	16	23.3	3.2	RSK100160-T46N					
<b>10015537</b>	18	22.9	2.2	RSK000180-T46N					
<b>10005072</b>	18	25.3	3.2	RSK100180-T46N					
<b>10005916</b>	20	27.3	3.2	RSK100200-T46N					
<b>4650090</b>	22	29.3	3.2	RSK100220-T46N					
<b>10007349</b>	22	32.7	4.2	RSK200220-T46N					
<b>10009195</b>	25	32.3	3.2	RSK100250-T46N					
<b>10027742</b>	25	35.7	4.2	RSK200250-T46N					
<b>10015205</b>	28	35.3	3.2	RSK100280-T46N					
<b>10011896</b>	28	38.7	4.2	RSK200280-T46N					
<b>4704770</b>	30	37.3	3.2	RSK100300-T46N					
<b>10001547</b>	30	40.7	4.2	RSK200300-T46N					
<b>4704780</b>	40	50.7	4.2	RSK200400-T46N					
<b>10011897</b>	40	55.1	6.3	RSK300400-T46N					
<b>10008101</b>	42	52.7	4.2	RSK200420-T46N					
<b>10023089</b>	42	57.1	6.3	RSK300420-T46N					
<b>10010060</b>	45	55.0	4.2	RSK200450-T46N					
<b>10006883</b>	45	60.1	6.3	RSK300450-T46N					
<b>10012674</b>	48	63.1	6.3	RSK300480-T46N					
<b>10008094</b>	50	60.7	4.2	RSK200500-T46N					
<b>10006382</b>	50	65.1	6.3	RSK300500-T46N					
<b>10011915</b>	52	67.1	6.3	RSK300520-T46N					
<b>10007353</b>	56	66.7	4.2	RSK200560-T46N					
<b>10005071</b>	56	71.1	6.3	RSK300560-T46N					
<b>10003595</b>	60	70.7	4.2	RSK200600-T46N					
<b>10024404</b>	60	75.1	6.3	RSK300600-T46N					
<b>10017787</b>	63	73.7	4.2	RSK200630-T46N					
<b>10027465</b>	63	78.1	6.3	RSK300630-T46N					
<b>10013954</b>	65	80.1	6.3	RSK300650-T46N					
<b>10016866</b>	70	80.7	4.2	RSK200700-T46N					

# HYDRAULIC ROD SEALS



## Turcon® Stepseal® 2K RS, T46N

Rod seals must not exhibit any dynamic leakage to the atmospheric side under any operating states and must be completely statically seal-tight when the machine is at a standstill. In addition, they should achieve a high mechanical efficiency due to low friction and be easy to install in small spaces.

The Turcon® Stepseal® 2K rod seal comes closest to meeting these ideal requirements.

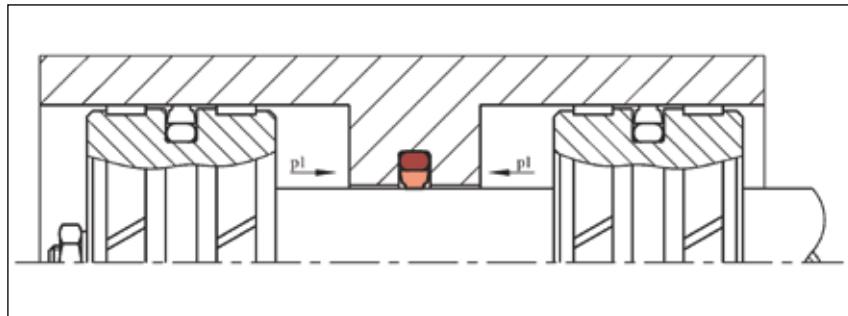
**Name:** Turcon® Stepseal®  
**Type:** RSK  
**Material:** T46N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
10011883	70	85.1	6.3	RSK300700-T46N				
10006213	75	90.1	6.3	RSK300750-T46N				
10008682	80	95.1	6.3	RSK300800-T46N				
10011898	85	100.1	6.3	RSK300850-T46N				
10006876	90	105.1	6.3	RSK300900-T46N				
10005387	95	110.1	6.3	RSK300950-T46N				
10008082	100	115.1	6.3	RSK301000-T46N				
10010613	105	120.0	6.3	RSK301050-T46N				
10012150	110	125.1	6.3	RSK301100-T46N				
10013045	115	130.1	6.3	RSK301150-T46N				
10001558	120	135.1	6.3	RSK301200-T46N				
10009486	125	140.1	6.3	RSK301250-T46N				
10009199	130	145.1	6.3	RSK301300-T46N				
10015976	135	150.1	6.3	RSK301350-T46N				
4717080	140	155.1	6.3	RSK301400-T46N				
10016075	145	160.1	6.3	RSK301450-T46N				
10009030	150	165.1	6.3	RSK301500-T46N				
10022376	150	170.5	8.1	RSK401500-T46N				
10011913	160	175.1	6.3	RSK301600-T46N				
10009067	160	180.5	8.1	RSK401600-T46N				
10005830	170	185.1	6.3	RSK301700-T46N				
10005831	180	195.1	6.3	RSK301800-T46N				
10022379	180	200.5	8.1	RSK401800-T46N				
10008686	190	205.1	6.3	RSK301900-T46N				
10011286	210	230.5	8.1	RSK402100-T46N				
10023624	220	240.5	8.1	RSK402200-T46N				
10023892	225	245.5	8.1	RSK402250-T46N				
10007348	240	260.5	8.1	RSK402400-T46N				
10019745	260	284.0	8.1	RSK802600-T46N				
10032302	270	290.5	8.1	RSK402700-T46N				
10029595	280	304.0	8.1	RSK802800-T46N				
10032304	300	320.5	8.1	RSK403000-T46N				
10012807	310	334.0	8.1	RSK803100-T46N				
10032307	360	380.5	8.1	RSK403600-T46N				
10032310	390	410.5	8.1	RSK403900-T46N				
10016678	430	454.0	8.1	RSK804300-T46N				

# ROD SEALS

## Turcon® Glyd Ring® T, RT



Turcon® Glyd Ring®

### Description

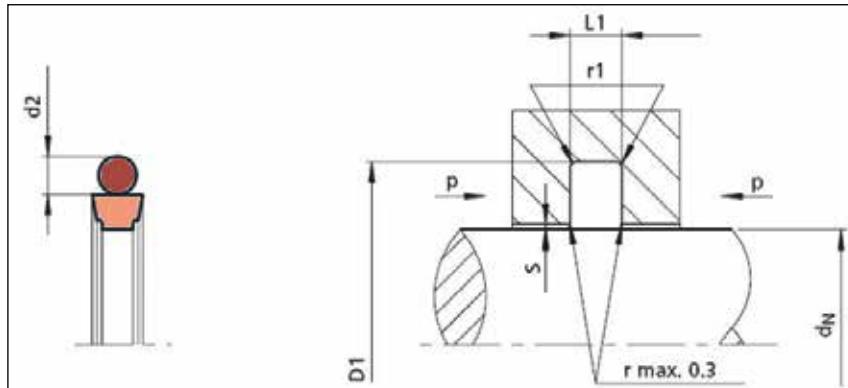
The Glyd Ring® T is preferred to be used as a dual-acting, inner-sealing seal. It seals off two pressure spaces from one another. Normally, no additional guide is required for the piston rod.

### Materials

Standard materials:

Turcon® sealing ring: Turcon® T46  
O-ring: NBR

For specific applications other material combinations can also be used.



Installation drawing

### Advantages

- reduced tendency for gap extrusion
- larger sealing gap possible (about 50 to 100%), depending on the operating conditions
- by enlarging the sealing gap, safe use even with contaminated media
- static sealing through optimised pressure profile
- available for every cylinder diameter up to 2600 mm

### Technical data

Operating pressure: up to 80 MPa (800 bar)

Speed: moving back and forth  
up to 15 m/s

Temperature: -54°C to +200°C (depending on the O-ring material)

Media: Mineral oil based pressure fluid, non-flammable pressure fluids, environmentally friendly pressure fluids (bio oils), water, air and others – depending on the O-ring materials.

Gap width: The max. allowable radial play  $S_{max.}$  is indicated below, and depends on the operating pressure and functional diameter.

### Installation dimensions

Standard Use:	Rod Ø $d_N f8/h9$	Groove base Ø	Groove width	Radius	Radial play $S_{max.}^*$			O-ring cord Ø
	Light 1) Use:				10 MPa	20 MPa	40 MPa	
3 - 7.9	8 - 19.0	—	$d_N + 4.9$	2.2	0.4	0.40	0.30	0.20
8 - 18.9	19 - 37.9	—	$d_N + 7.3$	3.2	0.6	0.60	0.50	0.30
19 - 37.9	38 - 199.9	8 - 18.9	$d_N + 10.7$	4.2	1.0	0.70	0.50	0.30
38 - 199.9	200 - 255.9	19 - 37.9	$d_N + 15.1$	6.3	1.3	0.80	0.60	0.40
200 - 255.9	256 - 649.9	38 - 199.9	$d_N + 20.5$	8.1	1.8	0.80	0.60	0.40
256 - 649.9	650 - 999.9	200 - 255.9	$d_N + 24.0$	8.1	1.8	0.90	0.70	0.50
650 - 999.9	≥ 1000	256 - 649.9	$d_N + 27.3$	9.5	2.5	1.00	0.80	0.60
≥ 1000	—	650 - 999.9	$d_N + 38.0$	13.8	3.0	1.20	0.90	0.70

\* For pressures > 40 MPa:  $S_{max.} = H8/f8$  (hole / piston) near the seal.

\*\* For diameters of < 20,0 mm, a split groove design is recommended.

# HYDRAULIC ROD SEALS



## Glydring® T RT, T46N

The Turcon® Glyd Ring® T is an improvement of the proven Turcon® Glyd Ring®, which have been used for decades. It is exchangeable with them in all new applications.

**Name:** Glyd-RingT® set  
**Type:** RT  
**Material:** T46N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
10026116	4	9.0	2.2	RT0000040-T46N				
10005924	5	10.0	2.2	RT0000050-T46N				
4080210	8	12.9	2.2	RT0000080-T46N				
4085600	8	15.3	3.2	RT0100080-T46N				
4085610	10	14.9	2.2	RT0000100-T46N				
4085620	10	17.3	3.2	RT0100100-T46N				
4087090	12	16.9	2.2	RT0000120-T46N				
4085640	12	19.3	3.2	RT0100120-T46N				
4085660	14	18.9	2.2	RT0000140-T46N				
4081010	14	21.3	3.2	RT0100140-T46N				
4085680	15	22.3	3.2	RT0100150-T46N				
10001106	16	21.0	2.2	RT0000160-T46N				
4081090	16	23.3	3.2	RT0100160-T46N				
10009275	18	23.0	2.2	RT0000180-T46N				
4081100	18	25.3	3.2	RT0100180-T46N				
4081130	20	27.3	3.2	RT0100200-T46N				
4087100	20	30.7	4.2	RT0200200-T46N				
4085690	22	29.3	3.2	RT0100220-T46N				
4085710	22	32.7	4.2	RT0200220-T46N				
4081160	25	32.3	3.2	RT0100250-T46N				
4085720	25	35.7	4.2	RT0200250-T46N				
10010197	28	35.3	3.2	RT0100280-T46N				
4085730	28	38.7	4.2	RT0200280-T46N				
4081180	30	40.7	4.2	RT0200300-T46N				
10002482	32	39.3	3.2	RT0100320-T46N				
4085740	32	42.7	4.2	RT0200320-T46N				
10024974	35	42.3	3.2	RT0100350-T46N				
4085750	35	45.7	4.2	RT0200350-T46N				
10001101	36	43.3	3.2	RT0100360-T46N				
4081210	36	46.7	4.2	RT0200360-T46N				
10019388	38	48.7	4.2	RT0200380-T46N				
10005833	38	53.1	6.3	RT0300380-T46N				
4081230	40	50.7	4.2	RT0200400-T46N				
4085760	40	55.1	6.3	RT0300400-T46N				
4085770	42	52.7	4.2	RT0200420-T46N				
4085780	42	57.1	6.3	RT0300420-T46N				
4085790	45	55.7	4.2	RT0200450-T46N				
4085800	45	60.1	6.3	RT0300450-T46N				
4085830	48	58.7	4.2	RT0200480-T46N				
4085850	48	63.1	6.3	RT0300480-T46N				
4081270	50	60.7	4.2	RT0200500-T46N				
4085860	50	65.1	6.3	RT0300500-T46N				
4085880	52	62.7	4.2	RT0200520-T46N				

# HYDRAULIC ROD SEALS

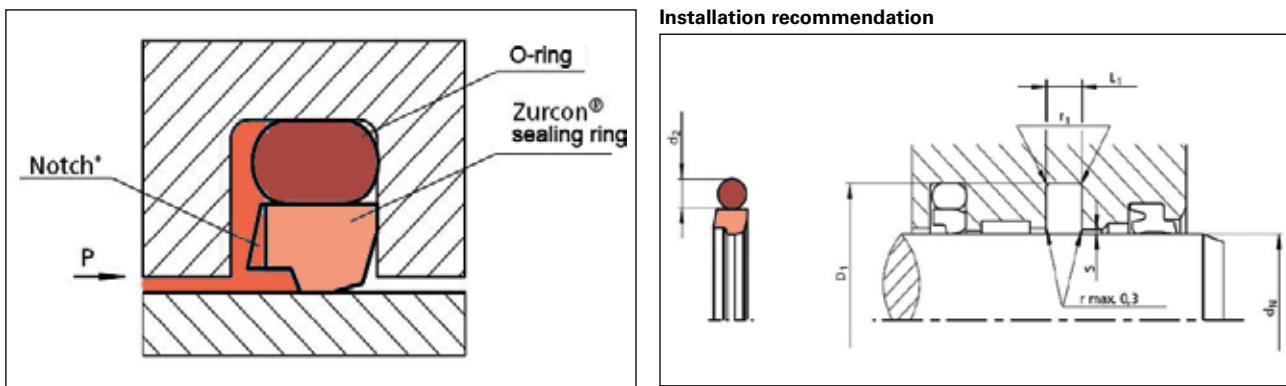
## Continued: Glydring® T RT, T46N

Item No.	d mm	D mm	L mm		€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4085900	52	67.1	6.3	RT0300520-T46N					
4085920	55	65.7	4.2	RT0200550-T46N					
4085940	55	70.1	6.3	RT0300550-T46N					
4085960	56	66.7	4.2	RT0200560-T46N					
4087110	56	71.1	6.3	RT0300560-T46N					
4085980	60	70.7	4.2	RT0200600-T46N					
4086000	60	75.1	6.3	RT0300600-T46N					
4086010	63	73.7	4.2	RT0200630-T46N					
4086030	63	78.1	6.3	RT0300630-T46N					
4516690	65	75.7	4.2	RT0200650-T46N					
4087120	65	80.1	6.3	RT0300650-T46N					
4081320	70	85.1	6.3	RT0300700-T46N					
4086060	75	90.1	6.3	RT0300750-T46N					
4081370	80	95.1	6.3	RT0300800-T46N					
4086070	85	100.1	6.3	RT0300850-T46N					
4086090	90	105.1	6.3	RT0300900-T46N					
4086110	95	110.1	6.3	RT0300950-T46N					
4086130	100	115.1	6.3	RT0301000-T46N					
4086150	105	120.1	6.3	RT0301050-T46N					
10025564	110	120.1	4.2	RT0201100-T46N					
4086170	110	125.1	6.3	RT0301100-T46N					
4086180	115	130.1	6.3	RT0301150-T46N					
4086200	120	135.1	6.3	RT0301200-T46N					
4086230	125	140.1	6.3	RT0301250-T46N					
4086240	130	145.1	6.3	RT0301300-T46N					
4086270	135	150.1	6.3	RT0301350-T46N					
10005606	140	150.7	4.2	RT0201400-T46N					
4086300	140	155.1	6.3	RT0301400-T46N					
4086320	150	165.1	6.3	RT0301500-T46N					
4086340	160	175.1	6.3	RT0301600-T46N					
4086370	160	180.5	8.1	RT0401600-T46N					
4086390	170	185.1	6.3	RT0301700-T46N					
4087130	180	195.1	6.3	RT0301800-T46N					
4086420	180	200.5	8.1	RT0401800-T46N					
4086450	190	205.1	6.3	RT0301900-T46N					
4086480	200	220.5	8.1	RT0402000-T46N					
4086500	210	230.5	8.1	RT0402100-T46N					
4086530	220	240.5	8.1	RT0402200-T46N					
4086560	230	250.5	8.1	RT0402300-T46N					
4086580	240	260.5	8.1	RT0402400-T46N					
4086600	250	270.5	8.1	RT0402500-T46N					
10023838	260	280.5	8.1	RT0402600-T46N					
4086620	280	304.0	8.1	RT0802800-T46N					
4086670	320	344.0	8.1	RT0803200-T46N					
10010343	330	354.0	8.1	RT0803300-T46N					

# ROD SEALS



## ZURCON® Rimseal®, RR



Zurcon® Rimseal®

\* notch

Installation drawing

### Description

For safe sealing of hydraulic cylinders at the piston rod, a redundant sealing system is necessary when conditions of use and areas of use place high demands on leakage freedom and operational safety. In order to meet the spectrum of requirements with regard to standard installation space, ease of installation, media, temperature, pressure, etc., a sealing system is offered comprising rubber-prestressed synthetic seals. This provides as much flexibility as possible in material selection and tailoring to the system.

The rod sealing system for highly loaded hydraulic cylinders should consist of three elements.

The Turcon® Stepseal® 2K is used as the primary seal. This sealing element has a universal recycling property for redundant rod sealing systems, and is high-temperature and media resistant.

The Zurcon® Rimseal® was developed as a secondary seal. It guarantees safe sealing of thin oil films in the system at low secondary pressures.

The optimum pressure profile automatically develops under dynamic conditions.

Since the third element in the redundant sealing system is a double-scraper the

recycling property for the Zurcon® Rimseal® had to be ensured as well. The notches on the Zurcon® Rimseal® guarantee rapid sealing after recycling. This results in an optimum sealing system made up of three seals installed one after the other in series, each independent of the other, wherein the hardness of the material decreases from the pressure side to the atmospheric side.

### Materials

The Zurcon® Rimseal® is made of the following material combination:

Sealing ring: Zurcon® Z 52  
Special polyurethane  
58 Shore D

Pre-tensioning

element: O-Ring, NBR

### Advantages

- high static and dynamic seal-tightness
- low friction
- high wear resistance
- smaller installed space
- easy to install
- optimum system element
- DIN/ISO installed spaces optional
- available for every diameter from 8 to 2200 mm

### Technical data

Pressure:	in a tandem system: up to 60 MPa (600 bar) as individual element: 25 MPa (250 bar)
Speed:	5 m/s for short strokes (<1 m) in a tandem system
Temperature:	-30°C to +100°C
Media:	Pressure fluids • mineral oil based • synthetic and natural esters HEES, HETG up to +60°C • non-flammable pressure fluids HFA, HFC up to +60°C

### Installation dimensions

Serial No. RR 13 Standard use	Rod Ø $d_N$ f8/h9 Serial No. RR 15 Light-duty use	Serial No. RR 11 Heavy-duty use	Groove base Ø $D_1$ H9	Groove width $L_1 + 0.2$	Radius $r_1$	Radial play S max. *	O-ring cord Ø $d_2$
8 - 18.9	19 - 37.9	-	$d_N + 7.3$	3.2	0.6	0.40	0.25
19 - 37.9	38 - 199.9	8 - 18.9	$d_N + 10.7$	4.2	1.0	0.40	0.25
38 - 199.9	200 - 255.9	19 - 37.9	$d_N + 15.1$	6.3	1.3	0.50	0.30
200 - 255.9	256 - 649.9	38 - 199.9	$d_N + 20.5$	8.1	1.8	0.60	0.35
256 - 649.9	650 - 999.9	200 - 255.9	$d_N + 24.0$	8.1	1.8	0.60	0.35
650 - 999.9	1000 - 2200	256 - 649.9	$d_N + 27.3$	9.5	2.5	0.70	0.50
1000 - 2200	-	650 - 999.9	$d_N + 38.0$	13.8	3.0	1.00	0.70

# HYDRAULIC ROD SEALS

## Rimseal® RR, Z52N



The Zurcon® Rimseal® was developed as a secondary seal. It guarantees safe sealing of thin oil films in the system at low secondary pressures.  
The Turcon® Stepseal® 2K is used as the corresponding primary seal.

**Type:** Rimseal® set RR  
**Material:** Z52N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 set beginning at 1 set	€/100 set beginning at 10 set	€/100 set beginning at 25 set	€/100 set beginning at 50 set	€/100 set beginning at 100 set
4087180	8	15.3	3.2	RR1300080-Z52N				
4087190	10	17.3	3.2	RR1300100-Z52N				
4087200	12	19.3	3.2	RR1300120-Z52N				
4087210	14	21.3	3.2	RR1300140-Z52N				
4087220	15	22.3	3.2	RR1300150-Z52N				
4087230	16	23.3	3.2	RR1300160-Z52N				
4087240	18	25.3	3.2	RR1300180-Z52N				
10012005	20	27.3	3.2	RR1500200-Z52N				
4087250	20	30.7	4.2	RR1300200-Z52N				
4087260	22	32.7	4.2	RR1300220-Z52N				
4087270	25	35.7	4.2	RR1300250-Z52N				
4087280	28	38.7	4.2	RR1300280-Z52N				
4087290	30	40.7	4.2	RR1300300-Z52N				
4087300	32	42.7	4.2	RR1300320-Z52N				
4087310	35	45.7	4.2	RR1300350-Z52N				
4087320	36	46.7	4.2	RR1300360-Z52N				
4087330	40	55.1	6.3	RR1300400-Z52N				
4087340	42	57.1	6.3	RR1300420-Z52N				
4087350	45	60.1	6.3	RR1300450-Z52N				
4087360	48	63.1	6.3	RR1300480-Z52N				
4087370	50	65.1	6.3	RR1300500-Z52N				
4087380	52	67.1	6.3	RR1300520-Z52N				
4087390	55	70.1	6.3	RR1300550-Z52N				
4087400	56	71.1	6.3	RR1300560-Z52N				
4087410	60	75.1	6.3	RR1300600-Z52N				
4087420	63	78.1	6.3	RR1300630-Z52N				
4087430	65	80.1	6.3	RR1300650-Z52N				
4087440	70	85.1	6.3	RR1300700-Z52N				
4087450	75	90.1	6.3	RR1300750-Z52N				
4087460	80	95.1	6.3	RR1300800-Z52N				
4087470	85	100.1	6.3	RR1300850-Z52N				
4087480	90	105.1	6.3	RR1300900-Z52N				
4087490	95	110.1	6.3	RR1300950-Z52N				
4087500	100	115.1	6.3	RR1301000-Z52N				
4087510	110	125.1	6.3	RR1301100-Z52N				
4213430	120	135.1	6.3	RR1301200-Z52N				
4087520	125	140.1	6.3	RR1301250-Z52N				
4087530	140	155.1	6.3	RR1301400-Z52N				
4087540	160	175.1	6.3	RR1301600-Z52N				
4087550	180	195.1	6.3	RR1301800-Z52N				
4087560	200	220.5	8.1	RR1302000-Z52N				
4087570	220	240.5	8.1	RR1302200-Z52N				
10023893	225	245.5	8.1	RR1302250-Z52N				
10025136	240	260.5	8.1	RR1302400-Z52N				
4087580	250	270.5	8.1	RR1302500-Z52N				
10019630	260	284.0	8.1	RR1302600-Z52N				

# ROD SEALS



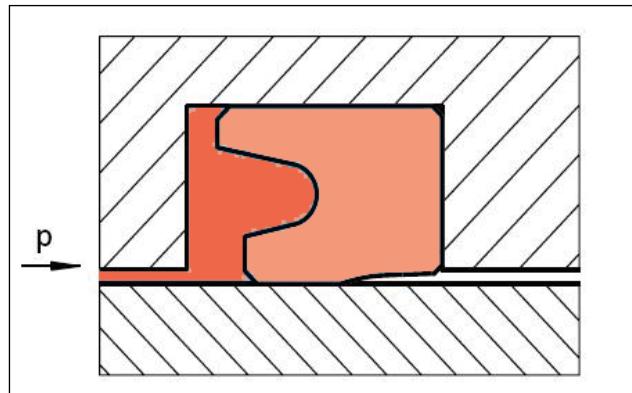
## Grooved ring, RU0, RU2, RU3

### Design shape RU0

The grooved ring, design shape RU0, is installed as a single-acting, single-lipped compact seal. This design shape can better absorb deflections of the piston rod than for example grooved rings of design shape RU2, which has a stiff lip geometry. In the pressure-less state, it has lower frictional forces compared to the double-lipped grooved rings.

#### Advantages

- good, pressure-adjusted sealing effect
- robust against high loads and deflections of the piston rod
- good extrusion resistance
- easy to install
- low friction in the low pressure range than the double-lipped versions



Grooved ring, design RU0

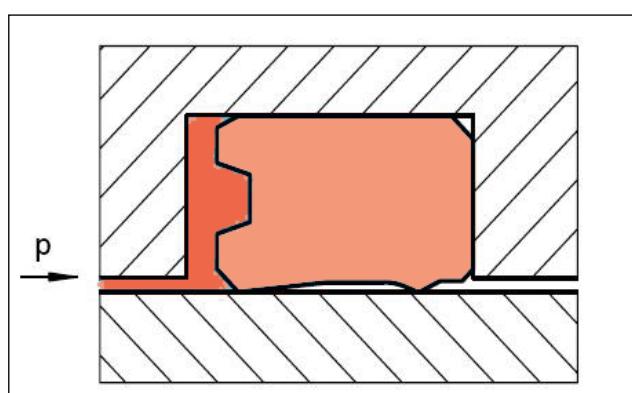
### Design shape RU2

The grooved ring, design shape RU2, in compact design, was designed for small spaces. It is therefore especially suited for installation in space-saving designs. The compact design shape provides a high sealing effect even at low system pressures.

The grooved ring has two sealing lips in the dynamic sealing range. The compact design shape with two sealing lips provides an improvement of the leakage behaviour at low system pressures. By building in an oil depot between the two sealing lips, the friction at pressures above about 10 MPa is reduced. Also, the two sealing lips prevent penetration of contamination from the atmospheric side.

#### Advantages

- good sealing effect in low and high pressure ranges
- good wear resistance
- good lubricant film formation at the sealing edge
- robust against impact loads
- suitable for small spaces
- easy to install

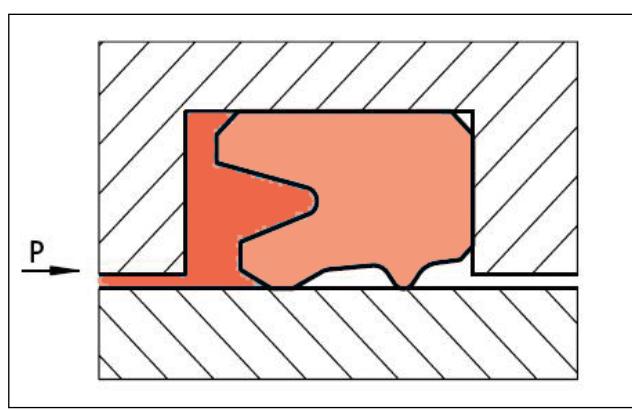


Grooved ring, design RU2

### Design shape RU3

The grooved ring, design shape RU3, is used as a rod seal for severe conditions in the mobile and industrial hydraulics area. It is installed with a fixed seat at the outer diameter. The rear, dynamic sealing lip improves the leakage behaviour and also prevents penetration of contaminants from the atmospheric side. Compared to design shape RU2, the inner sealing lip is more flexible and can be better adapted to operating conditions and to deflections of the piston rod.

Between the sealing lips, a deposit of lubricant forms. This counteracts the stick-slip tendency and prevents dry running. At the same time, the good lubrication behaviour acts to reduce wear.



Grooved ring, design RU3

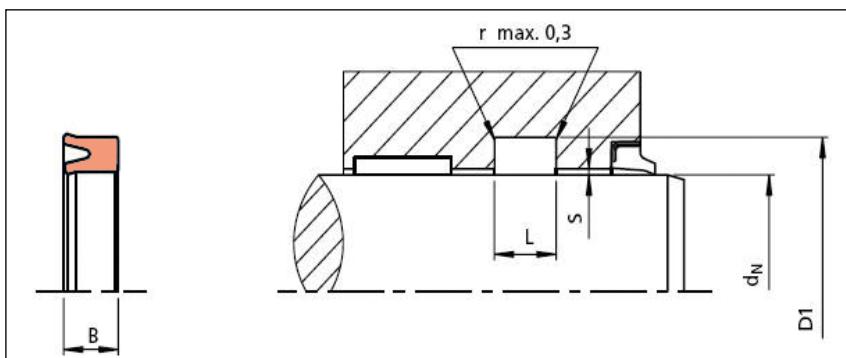
#### Advantages

- good sealing effect even in the pressure-less state
- good wear resistance
- good lubrication film formation in the sealing gap
- compensated deflections of the rod
- low stick-slip tendency
- Incursion of contaminants and air into the system is largely eliminated
- robust against impact loads and high pressures
- easy to install

# ROD SEALS

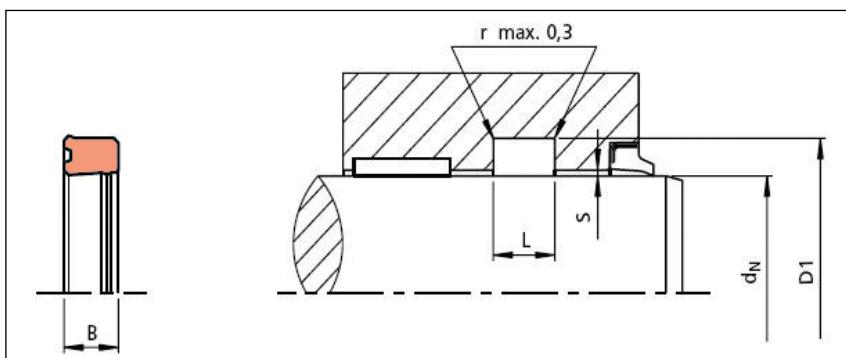
## Grooved ring, RU0, RU2, RU3

Design shape RU0



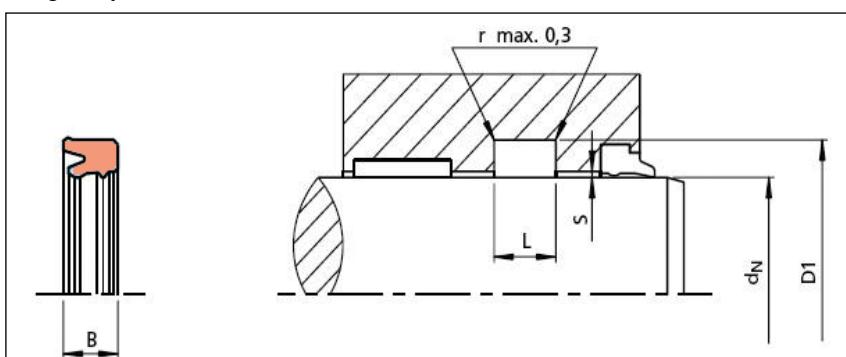
Installation drawing

Design shape RU2



Installation drawing

Design shape RU3



Installation drawing

### Installation dimensions

max. Operating pressure MPa	Radial gap dimension $S_{\max}$	
	$d_n < 60 \text{ mm}$	$d_n > 60 \text{ mm}$
5	0.40	0.50
10	0.30	0.40
20	0.20	0.30
30	0.15	0.20
40	0.10	0.15

The values provided in this table for  $S_{\max}$  apply to all design shapes for the side of the grooved ring facing away from the pressure. They are designed for an operating temperature of 60°C.

### Materials

The thermoplastic polyurethane material Z 20 used for the grooved ring, which is a special polyurethane with a 93 Shore A and is turquoise in colour, has a high wear resistance, a low residual pressure deformation and has a high extrusion resistance. It is especially robust against cracking due to bending and tensile loads and is therefore very installation friendly.

### Working principle

The sealing effect of the grooved ring arises from the inherent pre-stressing of the sealing element and by the compression of the sealing lips when installed. In the operating state, the system pressure is superimposed onto the radial pressure forces.

At low stroke speeds, grooved rings can tend to exhibit stick-slip phenomena due to an insufficient lubricating film in the sealing gap and due to their material properties.

### Technical data

Operating pressure:	max. 40 MPa (400 bar)
Speed:	back and forth motion max. 0,5 m/s
Temperature:	Use in mineral oils: -30°C to +110°C
Media:	Mineral oil based pressure fluid

### Important information:

The indicated values are maximum values and must not be reached simultaneously. The maximum operating speed depends on the material and on the pressure, temperature and gap size. Temperature range is also dependent on the medium.

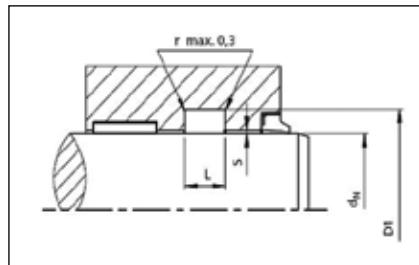
# HYDRAULIC ROD SEALS



## Grooved ring RU0, Z20

The grooved ring of design shape RU0 is a single-lipped sealing ring and is used primarily as a seal for piston rods in hydraulic cylinders.

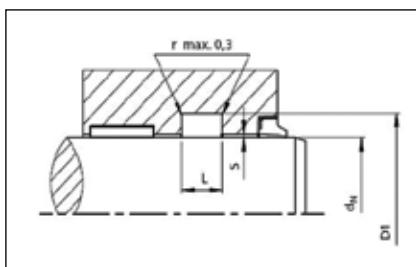
Type: RU  
 Material: Z20  
 Manufacturer: Trelleborg



Item No.	d mm	D mm	B mm	L mm	HTN Part number	€/100 units beginning at 1 unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4443370	12	20	5.0	5.5	RU0	RU0100120-Z20			
4443380	12	22	8.0	9.0	RU0	RU0000120-Z20			
4443390	16	22	5.0	6.0	RU0	RU0000160-Z20			
4443400	16	24	5.7	6.3	RU0	RU9000160-Z20			
4443410	18	24	4.7	5.3	RU0	RU0200180-Z20			
4443420	18	24	5.0	6.0	RU0	RU0000180-Z20			
4443430	18	34	8.0	9.0	RU0	RU0100180-Z20			
4443440	20	26	5.0	6.0	RU0	RU0000200-Z20			
4443450	20	28	5.0	6.0	RU0	RU0200200-Z20			
10029264	20	28	5.7	6.3	RU0	RU0300200-Z20			
4443490	22	30	8.0	9.0	RU0	RU0000220-Z20			
4443510	25	32	6.0	7.0	RU0	RU0000250-Z20			
10026129	25	32	7.2	8.0	RU0	RU0300220-Z20			
4443530	25	35	8.0	9.0	RU0	RU0300250-Z20			
4443540	25	40	10.0	11.0	RU0	RU0400250-Z20			
4337080	30	38	5.7	6.3	RU0	RU0100300-Z20			
4443560	30	40	10.0	11.0	RU0	RU0000300-Z20			
4443600	32	42	8.0	9.0	RU0	RU0000320-Z20			
4443620	32	45	10.0	11.0	RU0	RU0100320-Z20			
4443630	35	45	7.2	8.0	RU0	RU0100350-Z20			
4443640	35	45	10.0	11.0	RU0	RU0000350-Z20			
4443650	36	46	7.0	8.0	RU0	RU0100360-Z20			
4443660	36	46	10.0	11.0	RU0	RU0000360-Z20			
4443670	40	50	10.0	11.0	RU0	RU0000400-Z20			
4443680	40	55	10.0	11.0	RU0	RU0100400-Z20			
4443690	52	62	10.0	11.0	RU0	RU0000520-Z20			
4443700	60	70	7.2	8.0	RU0	RU0100600-Z20			
4443710	63	75	12.0	13.0	RU0	RU0000630-Z20			
10021120	70	78	8.0	9.0	RU0	RU1100700-Z20			
4443720	70	80	12.0	13.0	RU0	RU0000700-Z20			
4443730	90	110	12.0	13.0	RU0	RU0100900-Z20			
4443740	110	125	15.0	16.0	RU0	RU0001100-Z20			
4443760	120	135	15.0	16.0	RU0	RU0001200-Z20			
4443770	132	142	6.0	7.0	RU0	RU0001320-Z20			
4443780	136	146	6.0	7.0	RU0	RU0001360-Z20			
4443790	140	160	15.0	16.0	RU0	RU0001400-Z20			

# HYDRAULIC ROD SEALS

## Grooved ring RU2, Z20



The grooved ring of design shape RU2 is a double-lipped sealing ring in compact design and is used primarily as a seal for piston rods in hydraulic cylinders.

Type: RU  
 Material: Z20  
 Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	L mm	HTN Part number	€/100 units beginning at 1 unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4443800	6	14	5.7	6.3	RU02 RU2000060-Z20				
4443810	8	14	5.0	6.0	RU02 RU2300080-Z20				
4443820	8	16	5.7	6.3	RU02 RU2200080-Z20				
4443830	10	18	5.7	6.3	RU02 RU2000100-Z20				
4443840	12	20	5.7	6.3	RU02 RU2100120-Z20				
4443850	14	22	5.7	6.3	RU02 RU2100140-Z20				
4443860	16	24	5.7	6.3	RU02 RU2000160-Z20				
4443870	18	25	5.0	6.0	RU02 RU2000180-Z20				
4443880	18	26	5.7	6.3	RU02 RU2100180-Z20				
10026914	20	28	5.7	6.3	RU02 RU1500200-Z20				
4443890	20	28	5.7	6.3	RU02 RU2100200-Z20				
4443900	22	28	5.7	6.3	RU02 RU2100220-Z20				
10026144	22	29	5.0	6.3	RU02 RU2200220-Z20				
4443910	22	30	5.7	6.3	RU02 RU2300220-Z20				
4443920	25	33	5.7	6.3	RU02 RU2000250-Z20				
4443930	28	36	5.7	6.3	RU02 RU2000280-Z20				
4443940	30	40	10.0	11.0	RU02 RU2400300-Z20				
4443950	32	40	6.0	7.0	RU02 RU2000320-Z20				
4443960	32	42	7.0	8.0	RU02 RU2100320-Z20				
10006922	35	43	6.0	7.0	RU02 RU2000350-Z20				
4443970	35	45	10.0	11.0	RU02 RU2200350-Z20				
4443980	36	44	6.0	7.0	RU02 RU2100360-Z20				
10004084	36	44	8.0	9.0	RU02 RU2200360-Z20				
4443990	40	48	6.0	7.0	RU02 RU2000400-Z20				
4444000	40	48	8.0	9.0	RU02 RU2100400-Z20				
4444010	40	50	10.0	11.0	RU02 RU2200400-Z20				
4444020	45	53	5.7	6.3	RU02 RU2000450-Z20				
10006924	45	53	8.0	9.0	RU02 RU2100450-Z20				
4444030	45	55	5.7	6.3	RU02 RU2300450-Z20				
4444040	45	55	7.0	8.0	RU02 RU2500450-Z20				
4444050	50	60	7.0	8.0	RU02 RU2400500-Z20				
10024878	55	63	8.0	9.0	RU02 RU2000550-Z20				
4444070	56	64	8.0	9.0	RU02 RU2000560-Z20				
4444060	56	66	6.5	7.5	RU02 RU2100560-Z20				
4444070	60	68	8.0	9.0	RU02 RU2000600-Z20				
4444080	65	73	8.0	9.0	RU02 RU2000650-Z20				
4444090	70	80	12.0	13.0	RU02 RU2100700-Z20				
4444100	80	95	11.5	12.5	RU02 RU2100800-Z20				
4444110	90	98	8.0	9.0	RU02 RU2100900-Z20				
10022525	90	100	6.5	7.5	RU02 RU2000900-Z20				
4444120	100	110	12.0	13.0	RU02 RU2001000-Z20				
4444130	100	120	15.0	16.0	RU02 RU2101000-Z20				
4444140	110	130	15.0	16.0	RU02 RU2101100-Z20				

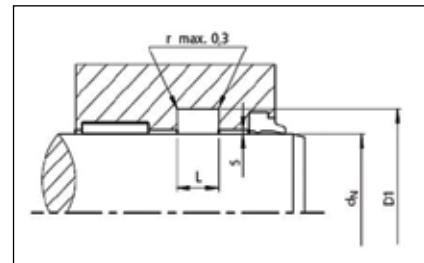
# HYDRAULIC ROD SEALS



## Grooved ring RU3, Z20

The grooved ring, design shape RU3, is used as a rod seal for severe conditions.

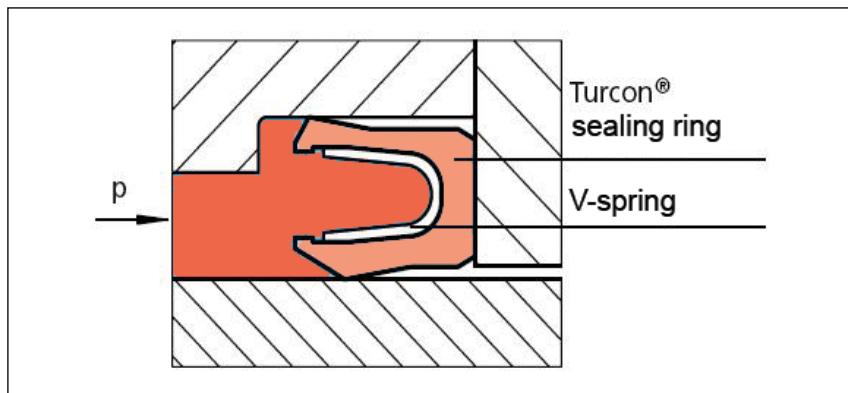
**Type:** RU  
**Material:** Z20  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	B mm	L mm	HTN Part number	€/100 units beginning at 1 unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4444170	10	20	7.0	8.0	RU03	RU3000100-Z20			
4444180	12	22	7.0	8.0	RU03	RU3000120-Z20			
4444190	14	24	7.3	8.0	RU03	RU3000140-Z20			
4616260	16	26	7.3	8.0	RU03	RU3000160-Z20			
4444220	18	28	7.3	8.0	RU03	RU3000180-Z20			
4444230	20	28	4.3	8.0	RU03	RU3100200-Z20			
4444240	20	30	7.3	8.0	RU03	RU3000200-Z20			
4444250	22	32	7.3	8.0	RU03	RU3000220-Z20			
4444260	25	35	7.3	8.0	RU03	RU3000250-Z20			
4444270	28	38	7.3	8.0	RU03	RU3100280-Z20			
4444280	28	43	11.5	12.5	RU03	RU3300280-Z20			
4444290	30	38	5.7	6.3	RU03	RU3100300-Z20			
10029374	30	40	7.3	8.0	RU03	RU3000300-Z20			
4444300	32	42	7.3	8.0	RU03	RU3000320-Z20			
4444310	35	45	7.0	8.0	RU03	RU3000350-Z20			
4444320	36	46	7.3	8.0	RU03	RU3000360-Z20			
4443330	40	48	5.7	6.3	RU03	RU3000400-Z20			
4444330	40	50	7.3	8.0	RU03	RU3100400-Z20			
4444340	40	55	11.5	12.5	RU03	RU3200400-Z20			
4444350	45	55	7.3	8.0	RU03	RU3000450-Z20			
4444360	45	60	11.5	12.5	RU03	RU3100450-Z20			
4443340	50	60	7.3	8.0	RU03	RU3000500-Z20			
4444370	50	60	7.0	8.0	RU03	RU3100500-Z20			
4444380	50	65	11.5	12.5	RU03	RU3200500-Z20			
4444390	56	71	11.5	12.5	RU03	RU3100560-Z20			
4444400	56	76	15.0	16.0	RU03	RU3200560-Z20			
4444410	63	78	11.5	12.5	RU03	RU3000630-Z20			
4444420	63	83	15.0	16.0	RU03	RU3100630-Z20			
4444430	70	85	11.5	12.5	RU03	RU3000700-Z20			
4444440	80	95	11.5	12.5	RU03	RU3000800-Z20			
4444450	80	100	15.0	16.0	RU03	RU3100800-Z20			
10026587	90	100	11.5	12.5	RU03	RU3600900-Z20			
4444460	90	105	11.5	12.5	RU03	RU3000900-Z20			
4444470	90	110	15.0	16.0	RU03	RU3200900-Z20			
4444480	100	120	15.0	16.0	RU03	RU3101000-Z20			
4444490	110	130	15.0	16.0	RU03	RU3001100-Z20			

# ROD SEALS

## Turcon® Variseal® M2, RV



Turcon® Variseal® M2

### Description

The Turcon® Variseal® M2 is a single-acting seal into which a V-shaped metal spring is placed as a pre-tensioning element.

### Materials

All materials used are physiologically compatible. They are odourless and tasteless materials.

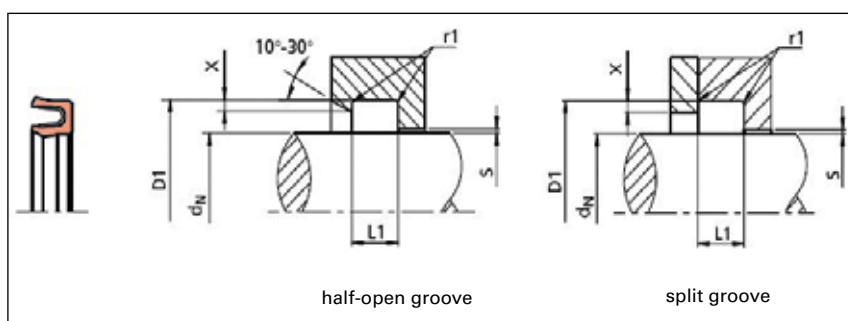
The following material combinations have proven their effectiveness for most uses:

Sealing ring: Turcon® T40

Spring: Stainless steel,

Material No. 1.4310 (AISI 301)

Suitable materials for use according to the requirements of the "Food and Drug Administration" (FDA) are available upon request.



Installation drawing

### Advantages

- resistant against most fluids and chemicals
- low friction values
- stick-slip free, no tendency to adhere
- high wear resistance and shape stability
- adjusts to rapid temperature changes
- physiologically compatible when used in food technology, pharmaceutical and medical technology
- can be sterilised
- unlimited storability

### Technical data

- Operating pressure: for static loads of 60 MPa (600 bar)  
for dynamic loads of 45 MPa (450 bar)
- Speed: for movement back and forth  
up to 15 m/s
- Temperature: -70°C to + 260°C  
for special applications, there are special Turcon® and Zurcon® and other spring materials available, even for low temperatures.
- Media: nearly all fluids, chemicals and gases
- Note: for high-temperature use, pressure and speed must be limited

### Installation dimensions

Standard range	Rod Ø d f8/h9	Groove base Ø	Groove width	Radius	Web <sup>2)</sup>	Radial play S <sub>max</sub> *			
	Expanded <sup>1)</sup> range	D H9	L + 0.2	r <sub>1</sub>	Y min.	< 2 MPa (20 bar)	< 10 MPa (100 bar)	< 20 MPa (200 bar)	< 40 MPa (400 bar)
3.0– 9.9	3.0– 40.0	d <sub>N</sub> + 2.9	2.4	0.4	0.4	0.20	0.10	0.08	0.05
10.0– 19.9	6.0– 200.0 <sup>3)</sup>	d <sub>N</sub> + 4.5	3.6	0.4	0.6	0.25	0.15	0.10	0.07
20.0– 39.9	10.0– 400.0 <sup>3)</sup>	d <sub>N</sub> + 6.2	4.8	0.6	0.7	0.35	0.20	0.15	0.08
40.0– 119.9	20.0– 700.0 <sup>3)</sup>	d <sub>N</sub> + 9.4	7.1	0.8	0.8	0.50	0.25	0.20	0.10
120.0– 630.0	35.0–1600.0 <sup>3)</sup>	d <sub>N</sub> +12.2	9.5	0.8	0.9	0.60	0.30	0.25	0.12
1000.0–2600.0	80.0–2600.0 <sup>3)</sup>	d <sub>N</sub> +19.0	15.0	0.8	0.9	0.90	0.50	0.40	0.20

\* For pressures > 40 MPa: S<sub>max</sub> = H8/f8 (hole / piston) near the seal.

<sup>1)</sup> Available on request.

<sup>2)</sup> Maximum web height X = 0,02 x d

Please note: The recommended web height is not always possible.

<sup>3)</sup> For diameters that are beyond the "possible range", rod tolerance h8 must be selected.

For an operating pressure of <40 MPa, please contact us.

# HYDRAULIC ROD SEALS

## Variseal® M2 RV, T40S

The Turcon® Variseal® is a single-acting seal, consisting of an asymmetric U-shaped sealing member into which a V-shaped metal spring is placed as a pre-tensioning element.

**Type:** Variseal® RV

**Material:** T40S

**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4087620	3	5.9	2.4	RVA000030-T40S				
4087630	4	6.9	2.4	RVA000040-T40S				
4087650	5	7.9	2.4	RVA000050-T40S				
4087660	6	8.9	2.4	RVA000060-T40S				
4087680	8	10.9	2.4	RVA000080-T40S				
4087690	10	14.5	3.6	RVA100100-T40S				
4087710	12	16.5	3.6	RVA100120-T40S				
4087730	14	18.5	3.6	RVA100140-T40S				
4087740	15	19.5	3.6	RVA100150-T40S				
4087760	16	20.5	3.6	RVA100160-T40S				
4087770	18	22.5	3.6	RVA100180-T40S				
4087780	20	26.2	4.8	RVA200200-T40S				
4087790	22	28.2	4.8	RVA200220-T40S				
4087800	25	31.2	4.8	RVA200250-T40S				
4087810	28	34.2	4.8	RVA200280-T40S				
4087930	30	36.2	4.8	RVA200300-T40S				
4087940	32	38.2	4.8	RVA200320-T40S				
4087950	35	41.2	4.8	RVA200350-T40S				
4087960	36	42.2	4.8	RVA200360-T40S				
4087970	40	49.4	7.1	RVA300400-T40S				
4087980	42	51.4	7.1	RVA300420-T40S				
4088000	45	54.4	7.1	RVA300450-T40S				
4088010	48	57.4	7.1	RVA300480-T40S				
4088020	50	59.4	7.1	RVA300500-T40S				
4088030	52	61.4	7.1	RVA300520-T40S				
4088040	55	64.4	7.1	RVA300550-T40S				
4088050	56	65.4	7.1	RVA300560-T40S				
4088060	60	69.4	7.1	RVA300600-T40S				
4088070	63	72.4	7.1	RVA300630-T40S				
4088080	65	74.4	7.1	RVA300650-T40S				
4088090	70	79.4	7.1	RVA300700-T40S				
4088100	75	84.4	7.1	RVA300750-T40S				
4088110	80	89.4	7.1	RVA300800-T40S				
4088120	85	94.4	7.1	RVA300850-T40S				
4088130	90	99.4	7.1	RVA300900-T40S				
4088140	95	104.4	7.1	RVA300950-T40S				
4088150	100	109.4	7.1	RVA301000-T40S				
4088170	110	119.4	7.1	RVA301100-T40S				
4088180	125	137.2	9.5	RVA401250-T40S				
4088190	140	152.2	9.5	RVA401400-T40S				
4088200	160	172.2	9.5	RVA401600-T40S				
4088210	180	192.2	9.5	RVA401800-T40S				
4088220	220	232.2	9.5	RVA402200-T40S				
4088230	250	262.2	9.5	RVA402500-T40S				

# SCRAPER

## Selection criteria for scrapers

Scraper Design	Area of use	Application Function			Primarily used with seal	Standard materials	
		light	medium	heavy		Material of the scraper	Rod contamination
Excluder® 2	Standard cylinder Machine tools Injection moulding machines	• • • • • • • • •	• • • • • • • • •	• dual-acting	Turcon® Stepseal® K	Turcon® T 46	Chips, contamination, dust
Excluder® 5	Mobile hydraulics Presses Construction equipment Adjusting cylinders	• • • • • • — — • — — •	• • • • • • — — • — — •	• dual-acting	Turcon® Stepseal® K	Turcon® T 46 Zurcon® Z 52	Soil, ice contamination, dust
Scraper DA 22	Standard cylinder Industrial Hydraulic cylinder	• • • • • •	• • • • • •	dual-acting	Turcon® Stepseal® K	Z 201	Contamination, dust
Scraper DA 17	Standard cylinder Industrial Hydraulic cylinder Presses	• • • • • — • • —	• • — • • — • • —	dual-acting	Turcon® Stepseal® K	NBR 90	Contamination, dust
Scraper ASW	Agricultural equipment Mobile hydraulics	• • — • • —	• • — • • —	single acting	Grooved ring	Z 201	Contamination, dust
Scraper SA	Standard cylinder Mobile hydraulics	• • • • • •	• • • • • •	single acting	Grooved ring	NBR + Metal	Contamination, dust
Scraper A	Standard cylinder Mobile hydraulics	• • • • • • • • •	• • • • • • • • •	single acting	Grooved ring	NBR	Contamination, dust
Metal scraper	Iron and steel industry Rolling plants Special use	• • • • • • • • •	• • • • • • • • •	single acting	Turcon® Stepseal® K	N7MS N8MS	Solidly adhering particles, clay, soil, abrasive materials, ice

# SCRAPER



Dimensional range	Installation Type of notch	Norm DIN/ISO	Technical data			Height Frequency/ Sort-stroke	Technical behaviour		Life-span	Scraper Design
			Temperature °C	Speed m/s	Friction		Media compatibility			
mm Ø										
4/-2600	divided < 30 closed > 30	6195 Type D	-54 to +200	15	A	A	A	A	Excluder® 2	
19/-2600	divided < 30 closed > 30	6195 Type D	-45 to +200	15	A	B	A	A	Excluder® 5	
19/-1500	divided < 30 closed > 30	6195 Type D	-45 to +110	2	B	C	C	A	Scraper DA 22	
5/-180	divided < 18 closed > 18	6195 Type C	-35 to +100	1	B	B	C	A	Scraper DA 17	
10/-440	divided < 18 closed > 18	-	-30 to +110	1	C	A	B	B	Scraper ASW	
8/-125	divided < 14 closed > 14	-	-35 to +10	1	B	A	C	A	Scraper SA	
16/-120	open	-	-30 to +110	1	C	A	B	B	Scraper A	
6/-390	open < 12 divided < 15 closed > 15	-	-30 to +110	1	C	A	B	B	Metal scraper	
12/-220	open	-	-30 to +110	1	C	B	B	A		

A = very good, B = good, C = satisfactory

\* For use in low temperature range below -30°C, please contact us!

# SCRAPER

## Selection criteria for scrapers – seal and mating surface materials

Scraper Design	Material Application Properties	Code	Material O-ring	Code	Temperature range °C	Hydraulic Fluids*	Mating Material
Excluder® 2 Excluder® 5	Turcon®T 46 standard materials for hydraulics, high pressure resistance, good lubricating and wear properties, extrusion-durable	T 46	NBR	N	-30 to +120	HL, HLP	Steel
					-20 to +80	HETG, HEPG, HEES	Steel
					-20 to +60	HFC	chrome-plated
			NBR Low-temperature	T	-30 to +120	HL, HLP	Cast iron
					-54 to +135	MIL-H 5606	
	Turcon®T 40 for all lubricating and non-lubricating hydraulic fluids, soft mating surfaces	T 40	FKM	V	-20 to +200	HL, HLP	
					-20 to +80	HETG, HEPG, HEES	
					-20 to +150	HFD	
			EPDM	E	-20 to +60	HFC	
					-20 to +150	HFD-R	
Excluder® 5	Zurcon® Z 52 for lubricating hydraulic fluids, high wear resistance, also suitable for contaminated media	Z 52	NBR	N	-30 to +120	HL, HLP	Steel,
					-20 to +80	HETG, HEPG, HEES	chrome-plated
					+5 to +55	HFA, HFB	Cast iron
					-20 to +60	HFC	Steel, stainless
			EPDM	E	-20 to +60	HFC	Aluminium
	Scraper DA 22	Z 201			-20 to +150	HFD-R	Bronze
					-35 to +100	HL, HLP	Steel
					-35 to +100	HL, HLP	Steel,
					-35 to +100	HL, HLP	chrome-plated
					-35 to +100	HL, HLP	Cast iron
Scraper ASW	Polyurethane	Z 201			-35 to +100	HL, HLP	Steel
					-35 to +100	HL, HLP	Steel,
					-35 to +100	HL, HLP	chrome-plated
Scraper DA 17 Scraper SA Scraper A	Acrylonitrile butadiene rubber NBR	NBR 90 FKM 90			-30 to +120	HL, HLP	Steel,
					-20 to +80	HETG, HEPG, HEES	chrome-plated
					+5 to +55	HFA, HFB	Cast iron
Metal Scraper	Double-lip metal scraper				-30 to +120	HL, HLP	Steel
					-20 to +80	HETG, HEPG, HEES	Steel,
					+5 to +55	HFA, HFB	

\* When using biologically decomposing oils (bio oils) in connection with polyurethane and elastomers, limits must be observed.  
Please contact us.

# SCRAPER



## Turcon® Excluder® 2, WE3

### Description

The Turcon® Excluder® 2 is a double scraper with two geometrically different scraping lips that are oppositely arranged. The Excluder® 2 is always installed in a groove together with an elastic O-ring.

### Materials

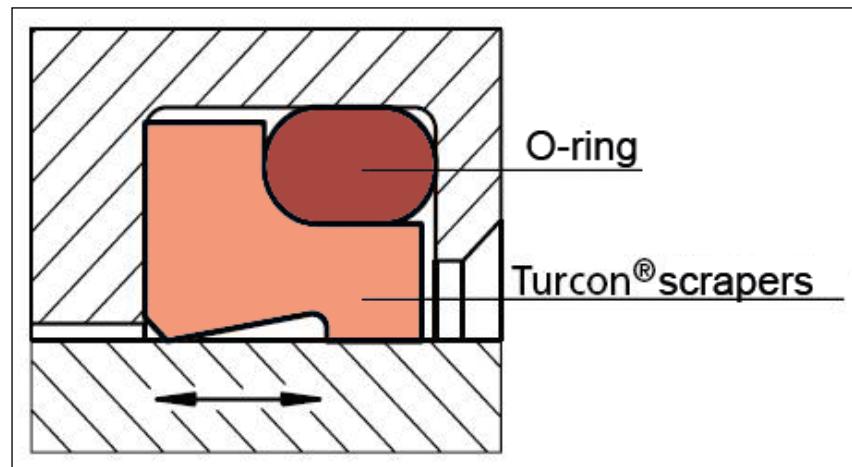
The following material combinations have proven their effectiveness for most uses:  
 Excluder® 2: Turcon® T46  
 O-ring: Nitrile butadiene rubber, NBR

### Special application

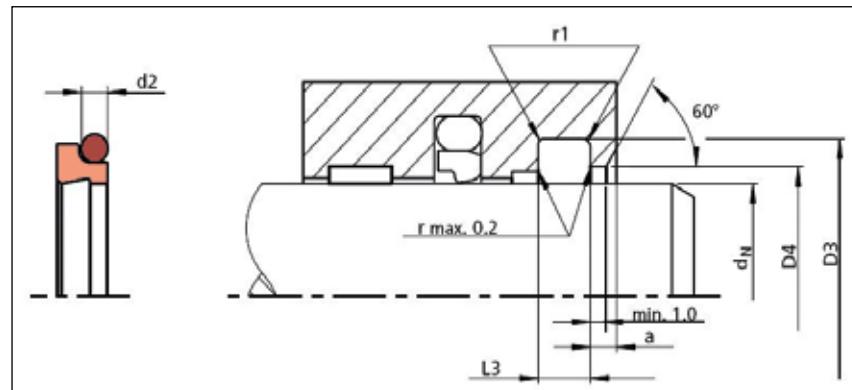
- For special applications, other material combinations can also be used.

### Advantages

- excellent lubrication properties
- stick-slip free, no tendency to adhere
- can compensate large deflections of the piston rod or plunger
- space-saving design
- very good scraping effect from the outside, even against adhering contamination, etc.
- very good scraping effect from inside against the residual oil film adhering to the surface of the piston rod
- very good media resistance
- available for all diameters up to 2600 mm (Turcon)  
up to 2200 mm (Zurcon)



Turcon® Excluder® 2



Installation drawing

### Technical data

Speed: moves back and forth 15 m/s for Turcon® materials

Temperature: -54°C to +200 °C (depending on the O-ring material)

Media: Mineral oil based pressure fluid, non-flammable fluids, environmentally friendly pressure fluids (bio oils), water, air and others depending on the O-ring materials.

### Installation dimensions

Rod Ø d f8/h9		Groove base Ø	Groove width	Hole Ø	Web	O-ring cord Ø
Standard range	Expanded range	D H9	L + 0.2	d <sub>1</sub> , H11	a min.	d <sub>2</sub>
4.0 - 11.9	6.0 - 130.0	d + 4.8	3.7	d + 1.5	2.0	1.78
12.0 - 64.9	10.0 - 245.0	d + 6.8	5.0	d + 1.5	2.0	2.62
65.0 - 250.9	25.0 - 400.0	d + 8.8	6.0	d + 1.5	3.0	3.53
251.0 - 400.0	40.0 - 655.0	d + 12.2	8.4	d + 2.0	4.0	5.33
251.0 - 400.0	251.0 - 400.0	d + 12.2	8.4	d + 2.0	4.0	5.33

# HYDRAULIC SCRAPER

## Turcon® Excluder® 2 WE3, T46N



A double-scraper - Excluder®2 WE3 - with two geometrically different scraping lips arranged opposite one another. Always install together with an O-ring.

**Name:** Turcon® Excluder® 2  
**Type:** WE3  
**Material:** T46N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4091130	6	10.8	3.7	WE3000060-T46N				
4091160	8	12.8	3.7	WE3000080-T46N				
4091180	10	14.8	3.7	WE3000100-T46N				
4091210	12	18.8	5.0	WE3100120-T46N				
4091240	14	20.8	5.0	WE3100140-T46N				
4091250	15	21.8	5.0	WE3100150-T46N				
4091260	16	22.8	5.0	WE3100160-T46N				
4091280	18	24.8	5.0	WE3100180-T46N				
4091290	20	26.8	5.0	WE3100200-T46N				
4091330	22	28.8	5.0	WE3100220-T46N				
4091350	25	31.8	5.0	WE3100250-T46N				
4091380	28	34.8	5.0	WE3100280-T46N				
4091400	30	36.8	5.0	WE3100300-T46N				
4091460	32	38.8	5.0	WE3100320-T46N				
4091470	35	41.8	5.0	WE3100350-T46N				
4091480	36	42.8	5.0	WE3100360-T46N				
4091510	40	46.8	5.0	WE3100400-T46N				
4091530	42	48.8	5.0	WE3100420-T46N				
4091550	45	51.8	5.0	WE3100450-T46N				
4091580	48	54.8	5.0	WE3100480-T46N				
4091600	50	56.8	5.0	WE3100500-T46N				
4091620	52	58.8	5.0	WE3100520-T46N				
4091640	55	61.8	5.0	WE3100550-T46N				
4091650	56	62.8	5.0	WE3100560-T46N				
4091700	65	73.8	6.0	WE3200650-T46N				
4091730	70	78.8	6.0	WE3200700-T46N				
4091750	75	83.8	6.0	WE3200750-T46N				
4091780	80	88.8	6.0	WE3200800-T46N				
4091820	85	93.8	6.0	WE3200850-T46N				
4091840	90	98.8	6.0	WE3200900-T46N				
4091870	95	103.8	6.0	WE3200950-T46N				
4091890	100	108.8	6.0	WE3201000-T46N				
4091910	110	118.8	6.0	WE3201100-T46N				
4091930	125	133.8	6.0	WE3201250-T46N				
4091950	140	148.8	6.0	WE3201400-T46N				
4091970	160	168.8	6.0	WE3201600-T46N				
4091990	180	188.8	6.0	WE3201800-T46N				

# SCRAPER



## Turcon® Excluder® 5, WE5

### Description

The Turcon® Excluder® 5 is a patented double scraper with two geometrically different scraping lips that are oppositely arranged. The scraper is installed in a groove together with an O-ring as an elastic pre-tensioning element.

### Materials

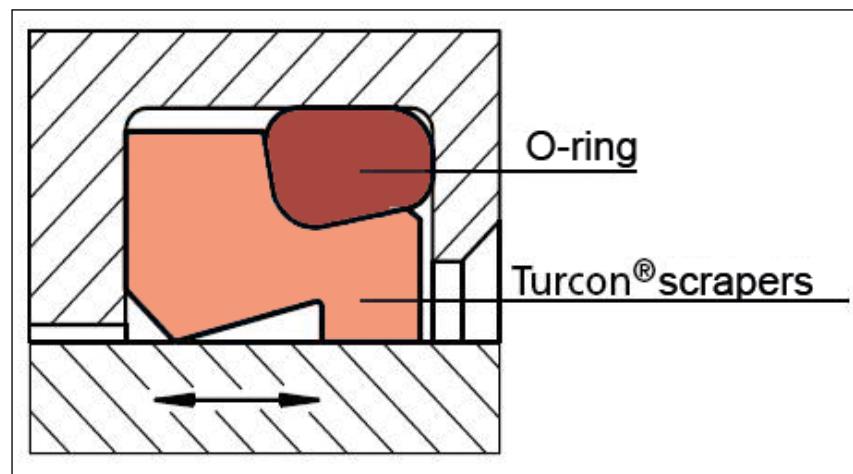
The following material combinations have proven their effectiveness for most uses:

Excluder® 5: Turcon® T46

O-ring: Nitrile butadiene rubber, NBR  
Set: T46N

### Special applications

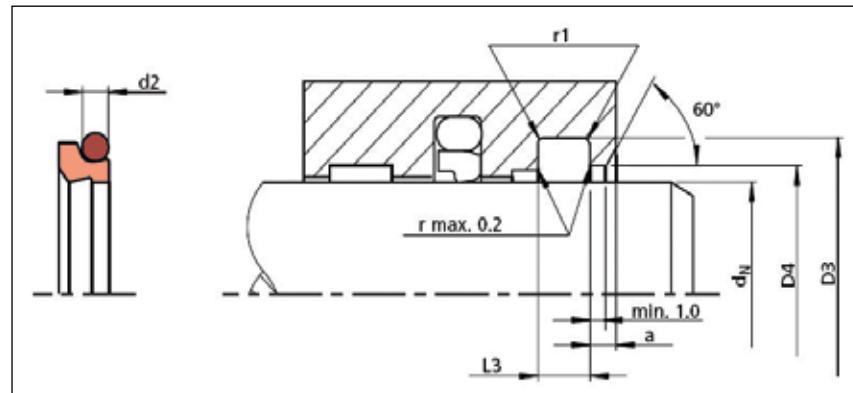
For special applications, other material combinations can also be used.



Turcon® Excluder® 5

### Advantages

- excellent lubrication properties
- stick-slip free, no tendency to adhere
- robust scraper for robust operation
- can compensate large deflections of the piston rod or plunger
- very good scraping effect from the outside, even against adhering contamination, etc.
- very good scraping effect from inside against the residual oil film adhering to the surface of the piston rod
- same installation as Zurcon® Excluder® 500
- very good media resistance
- available for every diameter up to 2.500 mm



Installation drawing

### Technical data

Speed: moving back and forth  
15 m/s for Turcon® materials  
2 m/s for Zurcon® materials

Temperature: -45°C to +200°C (Turcon®)  
-45°C to +100°C (Zurcon®)

Media: Mineral oil based pressure fluid, nonflammable pressure fluids, environmentally friendly pressure fluids (bio oils), water, air and others depending on the O-ring materials.

### Installation dimensions

Rod Ø $d_N$ f8/h9	Groove base Ø	Groove width	Hole Ø	Web	O-ring cord Ø
Standard range	Expanded range	$D_3$ H9	$L_3 + 0.2$	$d_4$ H11	a min.
19.0 - 39.9	19.0 - 100.0	$d_N + 7.6$	4.2	$d + 1.5$	3.0
40.0 - 69.9	30.0 - 200.0	$d_N + 8.8$	6.3	$d + 1.5$	3.0
70.0 - 139.9	70.0 - 360.0	$d_N + 12.2$	8.1	$d + 2.0$	4.0
140.0 - 399.9	100.0 - 650.0	$d_N + 16.0$	9.5	$d + 2.5$	5.0
400.0 - 649.9	200.0 - 650.0	$d_N + 24.0$	14.0	$d + 2.5$	8.0
650.0 - 999.9	400.0 - 999.0	$d_N + 27.3$	16.0	$d + 2.5$	10.0
≥ 1000	≥ 1000	$d_N + 27.3$	16.0	$d + 2.5$	10.0

# HYDRAULIC SCRAPER

## Turcon® Excluder® 5 WE5, T46N



A double-scraper - Excluder®8 WE5 – with two geometrically different scraping lips arranged opposite one another.  
The scraper is installed in a groove together with an O-ring as an elastic pre-tensioning element.

**Name:** Turcon® Excluder® 5  
**Type:** WE5  
**Material:** T46N  
**Parts:** 2-part  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4092180	20	27.6	4.2	WE5000200-T46N				
4092230	22	29.6	4.2	WE5000220-T46N				
4092250	25	32.6	4.2	WE5000250-T46N				
4092280	28	35.6	4.2	WE5000280-T46N				
4092320	30	37.6	4.2	WE5000300-T46N				
4092360	32	39.6	4.2	WE5000320-T46N				
4092400	35	42.6	4.2	WE5000350-T46N				
4092420	36	43.6	4.2	WE5000360-T46N				
4092440	40	48.8	6.3	WE5100400-T46N				
4015310	42	50.8	6.3	WE5100420-T46N				
4092470	45	53.8	6.3	WE5100450-T46N				
4092490	50	58.8	6.3	WE5100500-T46N				
4015240	55	63.8	6.3	WE5100550-T46N				
4092540	56	64.8	6.3	WE5100560-T46N				
4092560	60	68.8	6.3	WE5100600-T46N				
4092570	63	71.8	6.3	WE5100630-T46N				
4092600	65	73.8	6.3	WE5100650-T46N				
4015290	70	82.2	8.1	WE5200700-T46N				
4092610	75	87.2	8.1	WE5200750-T46N				
4092630	80	92.2	8.1	WE5200800-T46N				
4092670	90	102.2	8.1	WE5200900-T46N				
4092720	100	112.2	8.1	WE5201000-T46N				
4092750	110	122.2	8.1	WE5201100-T46N				
4092760	125	137.2	8.1	WE5201250-T46N				
4092790	140	156.0	9.5	WE5301400-T46N				
4092820	160	176.0	9.5	WE5301600-T46N				
4092860	180	196.0	9.5	WE5301800-T46N				
4092890	200	216.0	9.5	WE5302000-T46N				
4092900	220	236.0	9.5	WE5302200-T46N				
4092910	250	266.0	9.5	WE5302500-T46N				
4092920	280	296.0	9.5	WE5302800-T46N				

# SCRAPER



## Scraper DA17/ WD17

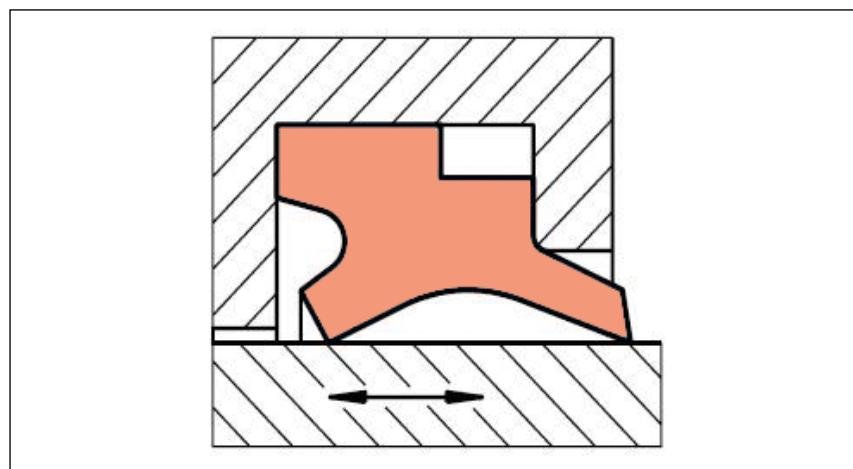
### Description

Scraper DA 17 is a moulded, vulcanised double-acting elastomeric scraper. It has two geometrically opposite scraper lips.

The dual scraper is preferred to be used for back and forth moving piston rods and plunger pistons in hydraulic cylinders. It prevents penetration of contaminants into the system and on the medium side keeps the residual oil film away from the exiting piston rod. We prefer that this be used together with our Turcon® Stepseal® rod seals, i.e. seals with hydrodynamic recycling capability.

### Materials

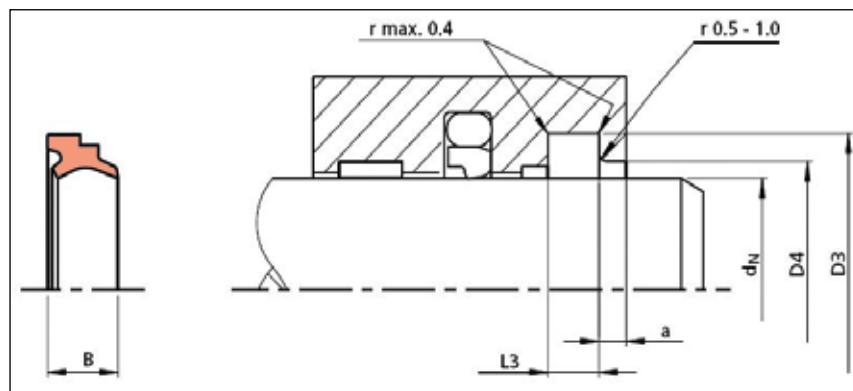
Standard material: Nitrile butadiene rubber NBR, 90 Shore A



Scraper DA 17

### Advantages

- low friction
- good scraping effect outward and inward
- can compensate large deflections of the piston rod or plunger
- simpler, smaller installed space
- compact design
- easy to install and remove without tools
- slight rotation and tilting possible.



Installation drawing

### Technical data

Speed:	moves back and forth up to 1 m/s
Temperature:	-30°C to +110°C
Media:	Mineral oil based hydraulic fluid, non-flammable fluids (HFA,HFB, HFC), water, air etc.

The indicated values are maximum values and must not be reached simultaneously. The maximum operating speed depends on the material and on the pressure, temperature and gap size. Temperature range is also dependent on the medium.

# HYDRAULIC SCRAPER

## Scraper DA17/ WD17, NBR90



Scraper DA 17 is a vulcanised dual-acting elastomeric scraper. It has two geometrically opposite scraper lips.

**Name:** Hydraulic scraper  
**Type:** DA17 / WD17  
**Material:** NBR90  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	H mm	L mm		€/100 units beginning at 1 unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4092950	10	18.0	8	6.0	WD1700100-N9651				
4092960	12	20.0	8	6.0	WD1700120-N9651				
4092980	15	23.0	8	6.0	WD1700150-N9651				
4092990	16	24.0	8	6.0	WD1700160-N9651				
4093000	18	26.0	8	6.0	WD1700180-N9651				
4093020	22	30.0	8	6.0	WD1700220-N9651				
4093030	24	32.0	8	6.0	WD1700240-N9651				
4093040	25	33.0	8	6.0	WD1700250-N9651				
4093050	28	36.0	8	6.0	WD1700280-N9651				
4093060	30	38.0	8	6.0	WD1700300-N9651				
4093070	32	40.0	8	6.0	WD1700320-N9651				
4063080	35	43.0	8	6.0	WD1700350-N9651				
4093080	36	44.0	8	6.0	WD1700360-N9651				
4093090	37	45.0	8	6.0	WD1700370-N9651				
4093100	38	46.0	8	6.0	WD1700380-N9651				
4093110	40	48.0	8	6.0	WD1700400-N9651				
4093120	42	50.0	8	6.0	WD1700420-N9651				
4093130	45	53.0	8	6.0	WD1700450-N9651				
4093140	46	54.0	8	6.0	WD1700460-N9651				
4093150	48	56.0	8	6.0	WD1700480-N9651				
4093160	50	58.0	8	6.0	WD1700500-N9651				
4093170	52	60.0	8	6.0	WD1700520-N9651				
4093180	55	63.0	8	6.0	WD1700550-N9651				
4093190	56	64.0	8	6.0	WD1700560-N9651				
4093200	60	68.0	8	6.0	WD1700600-N9651				
4093210	63	71.0	8	6.0	WD1700630-N9651				
4093220	65	73.0	8	6.0	WD1700650-N9651				
4093230	68	76.0	8	6.0	WD1700680-N9651				
4093240	70	78.0	8	6.0	WD1700700-N9651				
4093250	75	83.0	8	6.0	WD1700750-N9651				
4093260	80	88.0	8	6.0	WD1700800-N9651				
4093270	85	93.0	8	6.0	WD1700850-N9651				
4067880	90	98	8	6.0	WD1700900-N9651				
4093280	95	103	8	6.0	WD1700950-N9651				
4093290	100	108	8	6.0	WD1701000-N9651				
4093300	105	117	11	8.2	WD1701050-N9651				
4093310	110	122	11	8.2	WD1701100-N9651				
4093320	115	127	11	8.2	WD1701150-N9651				
4093330	120	132	11	8.2	WD1701200-N9651				
4093340	125	137	11	8.2	WD1701250-N9651				
4093350	130	142	11	8.2	WD1701300-N9651				
4093360	135	147	11	8.2	WD1701350-N9651				
4093370	140	152	11	8.2	WD1701400-N9651				

# HYDRAULIC SCRAPER



## Scraper DA17/ WD17, NBR90

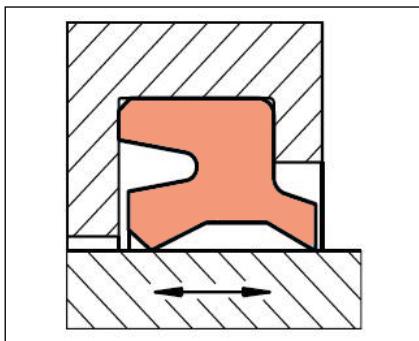
Item No.	d mm	D mm	H mm	L mm		€/100 units beginning at 1 unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4093380	145	157	11	8.2	WD1701450-N9651				
4093390	150	162	11	8.2	WD1701500-N9651				
4093400	155	167	11	8.2	WD1701550-N9651				
4093410	160	172	11	8.2	WD1701600-N9651				
4093420	165	177	11	8.2	WD1701650-N9651				
4093430	170	182	11	8.2	WD1701700-N9651				
4093440	180	192	11	8.2	WD1701800-N9651				
4093450	185	197	11	8.2	WD1701850-N9651				
4093460	190	202	11	8.2	WD1701900-N9651				
4093480	195	207	11	8.2	WD1701950-N9651				
4093490	200	212	11	8.2	WD1702000-N9651				
4093500	205	220	13	9.5	WD1702050-N9651				
4093510	210	225	13	9.5	WD1702100-N9651				
4093530	220	235	13	9.5	WD1702200-N9651				
4093540	225	240	13	9.5	WD1702250-N9651				
4093560	240	255	13	9.5	WD1702400-N9651				
4093570	250	265	13	9.5	WD1702500-N9651				
4093580	260	275	13	9.5	WD1702600-N9651				
10032317	270	285	13	9.5	WD1702700-N9651				
4093600	275	290	13	9.5	WD1702750-N9651				
4093620	280	295	13	9.5	WD1702800-N9651				
4093630	290	305	13	9.5	WD1702900-N9651				
4093650	300	315	13	9.5	WD1703000-N9651				
4093660	310	325	13	9.5	WD1703100-N9651				
4093680	320	335	13	9.5	WD1703200-N9651				
10019128	339	341	13	9.5	WD17V3260-N9651				
4093690	350	365	13	9.5	WD1703500-N9651				
4093700	360	375	13	9.5	WD1703600-N9651				
4093710	370	385	13	9.5	WD1703700-N9651				

# SCRAPER

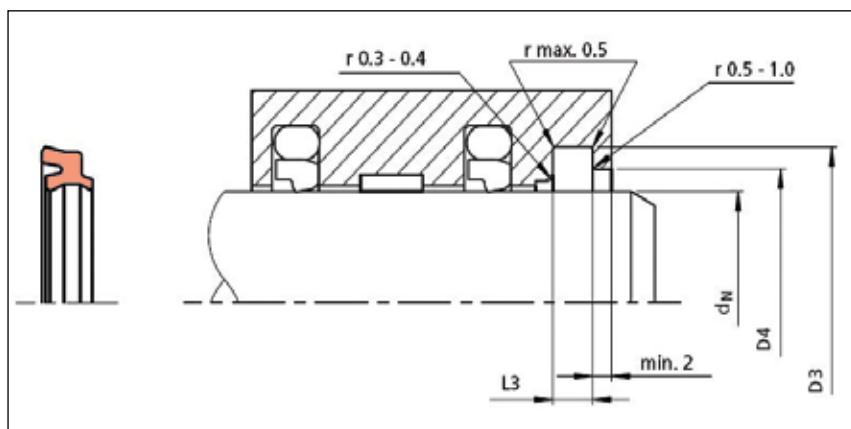
## Scraper DA22 / WD22

### Description

Scraper DA 22 is a dual-acting scraper made of polyurethane.



Scraper DA 22



Installation drawing

### Material

The scrapers are made of high-quality, high precision polyester-polyurethane.

Material: Z 201  
Hardness, Shore A: 93 ± 5, measured on the test specimen

### Advantages

- good scraping effect even with strongly adhering contaminants
- wear-resistant, long lifespan
- retention and recycling of residual oil amounts
- reduced friction compared to elastomeric materials
- Standard element for standard spaces

### Technical data

Scraper side: Atmospheric pressure  
Sealing side: Pressures to 2 MPa (20 bar), for higher pressure, a relief hole must be provided  
Speed: moves back and forth up to 1 m/s  
Temperature: -35°C to +100°C  
Media: Mineral oils and greases, non-flammable hydraulic fluids  
Groove design: closed

### Installation dimensions

Rod Ø d f8/h9	Groove base Ø D H11	Groove width L	Width H max.	Hole Ø d <sub>1</sub> H11
5.0	10.0	3.5 + 0.2	4.2	7.5
8.0	13.0	3.5 + 0.2	4.2	10.5
10.0	16.0	4.0 + 0.2	4.7	12.5
12.0	18.0	4.0 + 0.2	4.7	14.5
14.0	20.0	4.0 + 0.2	4.7	16.5
16.0	22.0	4.0 + 0.2	4.7	18.5
<b>18.0</b>	<b>24.0</b>	<b>4.0 + 0.2</b>	<b>4.7</b>	<b>20.5</b>
20.0	26.0	4.0 + 0.2	4.7	22.5
<b>22.0</b>	<b>28.0</b>	<b>4.0 + 0.2</b>	<b>4.7</b>	<b>24.5</b>
25.0	31.0	4.0 + 0.2	4.7	27.5
<b>28.0</b>	<b>36.0</b>	<b>5.0 + 0.2</b>	<b>6.0</b>	<b>31.0</b>
30.0	38.0	5.0 + 0.2	6.0	33.0
32.0	40.0	5.0 + 0.2	6.0	35.0
<b>36.0</b>	<b>44.0</b>	<b>5.0 + 0.2</b>	<b>6.0</b>	<b>39.0</b>
40.0	48.0	5.0 + 0.2	6.0	43.0
<b>45.0</b>	<b>53.0</b>	<b>5.0 + 0.2</b>	<b>6.0</b>	<b>48.0</b>
50.0	58.0	5.0 + 0.2	6.0	53.0
55.0	65.0	6.0 + 0.2	7.3	58.0
<b>56.0</b>	<b>66.0</b>	<b>6.0 + 0.2</b>	<b>7.3</b>	<b>59.0</b>
60.0	70.0	6.0 + 0.2	7.3	63.0
63.0	73.0	6.0 + 0.2	7.3	66.0
65.0	75.0	6.0 + 0.2	7.3	68.0
<b>70.0</b>	<b>80.0</b>	<b>6.0 + 0.2</b>	<b>7.3</b>	<b>73.0</b>
75.0	85.0	6.0 + 0.2	7.3	78.0
80.0	90.0	6.0 + 0.2	7.3	83.0
85.0	95.0	6.0 + 0.2	7.3	88.0
<b>90.0</b>	<b>100.0</b>	<b>6.0 + 0.2</b>	<b>7.3</b>	<b>103.0</b>
100.0	110.0	6.0 + 0.2	7.3	103.0
<b>110.0</b>	<b>125.0</b>	<b>8.5 + 0.3</b>	<b>10.5</b>	<b>114.0</b>
125.0	140.0	8.5 + 0.3	10.5	129.0
<b>140.0</b>	<b>155.0</b>	<b>8.5 + 0.3</b>	<b>10.5</b>	<b>144.0</b>
160.0	175.0	8.5 + 0.3	10.5	164.0
180.0	195.0	8.5 + 0.3	10.5	184.0

Dimensions in bold print corresponding to DIN/ISO 6195, design space Type C.

Other dimensions available on request.

Up to diameters of 18, we recommend a split groove.

# HYDRAULIC SCRAPER



## Scraper DA22 / WD22, Z201

This scraper DA 22 is a dual-acting PU scraper for closed spaces. With regard to profile geometry and the material used, important technical improvements have been made with scrapers DA 22.

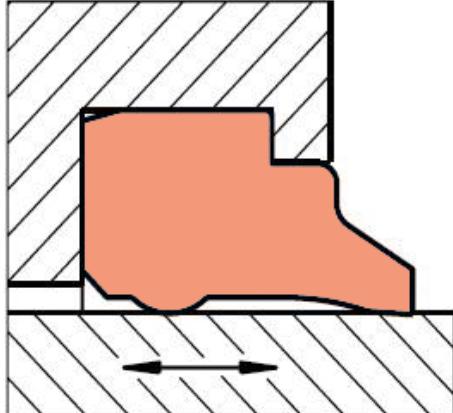
**Name:** Hydraulic scraper  
**Type:** DA22 / WD22  
**Material:** Z201  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	B mm	L mm	€/100 units beginning at 1 unit	€/100 units beginning at 250 Unit	€/100 units beginning at 1000 Unit	€/100 units beginning at 2500 Unit
4442040	5	10	4.2	3.5	WD2200050-Z201			
4442050	8	13	4.2	3.5	WD2200080-Z201			
4442060	10	16	4.7	4.0	WD2200100-Z201			
4442070	12	18	4.7	4.0	WD2200120-Z201			
4442090	14	20	4.7	4.0	WD2200140-Z201			
4442100	16	22	4.7	4.0	WD2200160-Z201			
4442120	18	24	4.7	4.0	WD2200180-Z201			
4442130	20	26	4.7	4.0	WD2200200-Z201			
4442140	22	28	4.7	4.0	WD2200220-Z201			
4442150	25	31	4.7	4.0	WD2200250-Z201			
4442160	28	36	6.0	5.0	WD2200280-Z201			
4442170	30	38	6.0	5.0	WD2200300-Z201			
4442180	32	40	6.0	5.0	WD2200320-Z201			
4442200	36	44	6.0	5.0	WD2200360-Z201			
4442210	40	48	6.0	5.0	WD2200400-Z201			
4442230	45	53	6.0	5.0	WD2200450-Z201			
4442240	50	58	6.0	5.0	WD2200500-Z201			
4442270	55	65	7.3	6.0	WD2200550-Z201			
4442300	56	66	7.3	6.0	WD2200560-Z201			
4442320	60	70	7.3	6.0	WD2200600-Z201			
4442340	63	73	7.3	6.0	WD2200630-Z201			
4442350	65	75	7.3	6.0	WD2200650-Z201			
4442370	70	80	7.3	6.0	WD2200700-Z201			
4442400	75	85	7.3	6.0	WD2200750-Z201			
4442420	80	90	7.3	6.0	WD2200800-Z201			
4442450	85	95	7.3	6.0	WD2200850-Z201			
4442480	90	100	7.3	6.0	WD2200900-Z201			
4442510	100	110	7.3	6.0	WD2201000-Z201			
4442550	110	125	10.5	8.5	WD2201100-Z201			
4442580	125	140	10.5	8.5	WD2201250-Z201			
4442600	140	155	10.5	8.5	WD2201400-Z201			
4442630	160	175	10.5	8.5	WD2201600-Z201			
4442670	180	195	10.5	8.5	WD2201800-Z201			

# SCRAPER

## Scraper ASW / WSW



Scraper ASW

### Description

Scraper ASW is a single-acting scraper made of polyurethane. The particular feature of this scraper is its additional support ridge on the inside surface. It prevents the tipping or rotating of the scraper within the groove. At the same time, this support improves the fixed seat in the groove and thereby prevents penetration of contaminants over the back of the scraper. This is a technical improvement compared to similar scraper forms.

### Materials

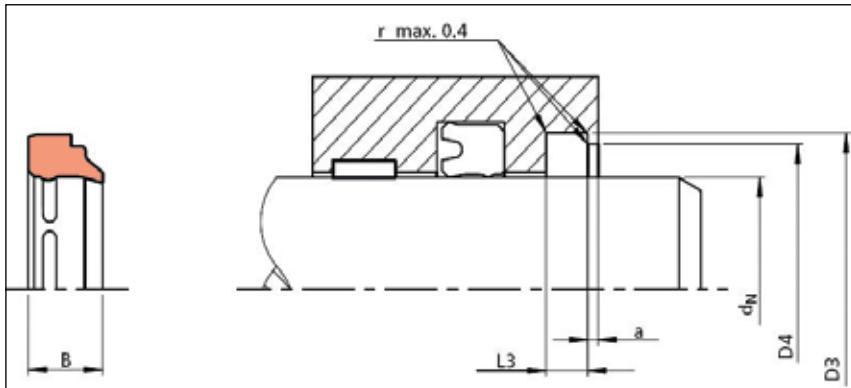
The standard material is a highly wear-resistant polyurethane with good flexibility in cold.

Standard material: Z 201,  
polyurethane,  
92 Shore A

Colour: turquoise

### Advantages

- simple groove design
- very good scraping effect, wear-resistant
- no tipping or rotating in the groove
- easy to install
- flush outward seal



Installation drawing

### Technical data

Speed:	moves back and forth up to 1 m/s
Temperature:	-35 °C to +100 °C
Media:	Mineral oil based hydraulic fluid

The indicated values are maximum values and must not be reached simultaneously.

The maximum operating speed depends on the material and on the pressure, temperature and gap size. Temperature range is also dependent on the medium.

# HYDRAULIC SCRAPER

## Scraper ASW/ WSW, Z201

Scraper ASW is a single-acting scraper made of PU.

The particular feature of this scraper ASW is its additional support ridge on the inside surface.

It prevents the ASW scraper from tipping or rotating within the groove.

**Name:** Hydraulic scraper

**Type:** ASW / WSW

**Material:** WU9E1

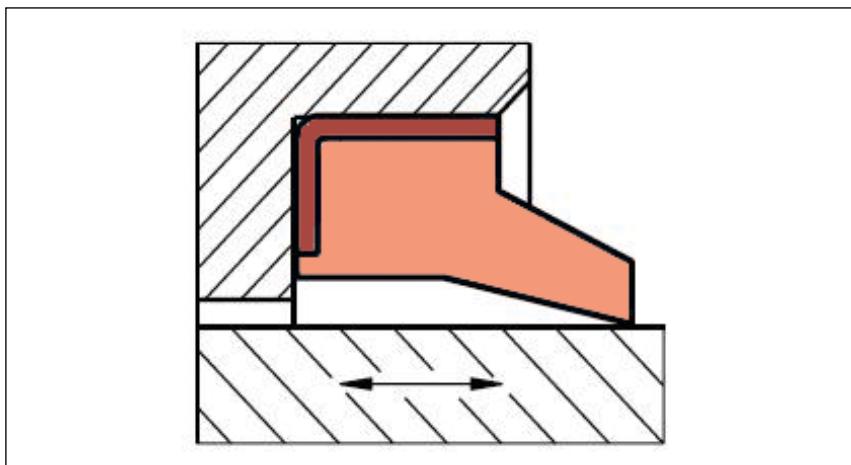
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	H mm	L mm	€/100 units beginning at 1 unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4442250	10	18	7.0	4.0	WSW100100-Z201				
4442260	12	18	5.0	2.6	WSW000120-Z201				
4442280	12	20	7.0	4.0	WSW100120-Z201				
4442290	14	20	5.0	2.6	WSW000140-Z201				
4442310	16	24	7.0	4.0	WSW000160-Z201				
4442330	18	26	7.0	4.0	WSW000180-Z201				
4442360	20	28	7.0	4.0	WSW000200-Z201				
4442390	25	33	7.0	4.0	WSW000250-Z201				
4442410	28	36	7.0	4.0	WSW000280-Z201				
4442430	30	38	7.0	4.0	WSW000300-Z201				
4442440	32	40	7.0	4.0	WSW000320-Z201				
4442460	35	43	7.0	4.0	WSW000350-Z201				
4442470	36	44	7.0	4.0	WSW000360-Z201				
4442490	40	48	7.0	4.0	WSW000400-Z201				
4442500	42	50	7.0	4.0	WSW000420-Z201				
4442530	45	53	7.0	4.0	WSW000450-Z201				
4442540	50	58	7.0	4.0	WSW000500-Z201				
4442560	55	63	7.0	4.0	WSW000550-Z201				
4442570	56	64	7.0	4.0	WSW000560-Z201				
4442590	60	68	7.0	4.0	WSW000600-Z201				
4442610	63	71	7.0	4.0	WSW000630-Z201				
4442620	65	73	7.0	4.0	WSW000650-Z201				
4442650	70	78	7.0	4.0	WSW000700-Z201				
4442680	75	83	7.0	4.0	WSW000750-Z201				
4442700	75	83	7.3	4.0	WSW100750-Z201				
4442710	80	88	7.0	4.0	WSW000800-Z201				
4442720	85	93	7.0	4.0	WSW000850-Z201				
4442740	90	98	7.0	4.0	WSW000900-Z201				
4442750	100	108	7.0	4.0	WSW001000-Z201				
4442770	110	122	10.0	5.5	WSW001100-Z201				
4442780	120	132	10.0	5.5	WSW001200-Z201				
4442790	125	137	10.0	5.5	WSW001250-Z201				

# SCRAPER

## Scraper SA, WSA



Scraper SA

### Description

Scraper SA is a moulded vulcanised, single-acting elastomeric scraper. It is vulcanised in a metal cage at its outer diameter.

### Materials

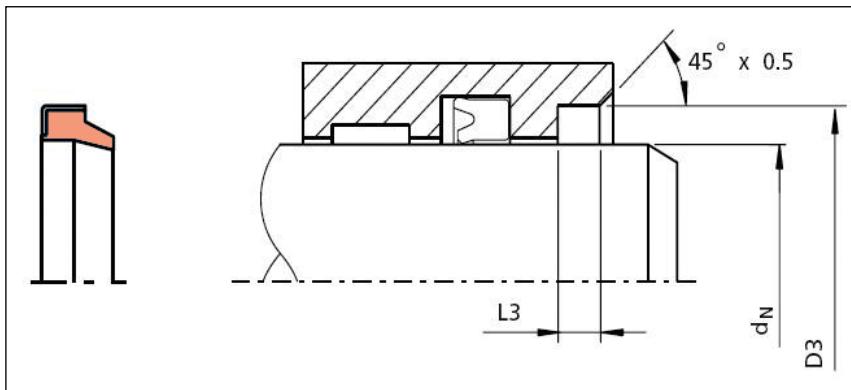
Standard material:

Scraper: Nitrile-butadiene rubber  
NBR, 90 Shore A, black  
Fluorelastomer, FKM,  
90 Shore A, black

Metal cage: Steel plate, AISI 1008

### Advantages

- simple groove design
- fixed seat in the groove due to metallic pressed fit
- easy to install
- cost-effective component



Installation drawing

### Technical data

Speed:	moves back and forth up to 1 m/s
Temperature:	-30 °C to +110 °C
Media:	Mineral oil based hydraulic fluids polyglycol-water emulsions and water-oil-emulsions
Groove design:	open

The indicated values are maximum values and must not be reached simultaneously.  
The maximum operating speed depends on the material and on the pressure,  
temperature and gap size. Temperature range is also dependent on the medium

# HYDRAULIC SCRAPER



## Scraper SA/ WSA, NBR90

Scraper WSA is a single-acting elastomeric scraper that has a vulcanised metal housing attached to it such that it can be pressed into open spaces.

**Name:** Hydraulic scraper  
**Type:** SA / WSA  
**Material:** NBR90  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	H mm	L mm	€/100 units beginning at 1 unit	€/100 units beginning at 20 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4094460	6	13	4.5	3.0	WSA000060-N9MMN			
4094470	10	16	4.5	3.0	WSA000100-N9MMN			
4094480	10	18	7.0	5.0	WSA100100-N9MMN			
4094490	12	20	6.0	4.0	WSA000120-N9MMN			
4094500	12	22	8.0	5.0	WSA100120-N9MMN			
4094520	14	22	4.0	3.0	WSA000140-N9MMN			
4094530	16	22	4.0	3.0	WSA000160-N9MMN			
4094540	16	26	8.0	5.0	WSA200160-N9MMN			
4094560	18	28	10.0	7.0	WSA100180-N9MMN			
4094570	20	26	7.0	4.0	WSA000200-N9MMN			
4094580	20	28	5.0	3.5	WSA200200-N9MMN			
4094590	20	28	8.0	5.0	WSA300200-N9MMN			
4094600	20	30	6.0	4.0	WSA400200-N9MMN			
4094610	20	30	7.0	5.0	WSA500202-N9MMN			
4094620	20	30	10.0	7.0	WSA600200-N9MMN			
4094630	22	28	8.0	5.0	WSA000220-N9MMN			
4094640	22	32	10.0	7.0	WSA100220-N9MMN			
4094660	25	35	7.0	5.0	WSA000250-N9MMN			
4094670	25	35	10.0	7.0	WSA100250-N9MMN			
4094680	28	38	8.0	5.0	WSA000280-N9MMN			
4094700	30	40	8.0	5.0	WSA000300-N9MMN			
4094710	30	40	10.0	7.0	WSA100300-N9MMN			
4094720	30	45	8.0	5.0	WSA200300-N9MMN			
4094730	32	42	7.0	5.0	WSA000320-N9MMN			
4094740	32	45	8.0	4.0	WSA100320-N9MMN			
4094750	32	45	10.0	7.0	WSA200320-N9MMN			
4094760	35	45	10.0	7.0	WSA000350-N9MMN			
10007468	35	47	10.0	7.0	WSA100350-N9MMN			
4094770	36	45	10.0	7.0	WSA000360-N9MMN			
4094780	38	48	10.0	7.0	WSA000380-N9MMN			
4094790	40	50	7.0	5.0	WSA000400-N9MMN			
4094800	40	50	8.0	5.0	WSA100400-N9MMN			
4094810	40	50	10.0	7.0	WSA200400-N9MMN			
4094820	42	52	10.0	7.0	WSA000420-N9MMN			
4094830	45	55	10.0	7.0	WSA000450-N9MMN			
4094840	50	56	7.0	5.0	WSA000500-N9MMN			
4094890	55	63	10.0	7.0	WSA000550-N9MMN			
4094900	55	65	10.0	7.0	WSA100550-N9MMN			
4094910	56	66	10.0	7.0	WSA000560-N9MMN			
4094920	60	70	10.0	7.0	WSA000600-N9MMN			
4094930	60	74	8.0	5.0	WSA100600-N9MMN			
4094940	63	75	10.0	7.0	WSA000630-N9MMN			
4094950	65	75	10.0	7.0	WSA000650-N9MMN			

# HYDRAULIC SCRAPER

## Continued: Scraper SA/ WSA, NBR90



Scraper WSA is a single-acting elastomeric scraper that has a vulcanised metal housing attached to it such that it can be pressed into open spaces.

**Name:** Hydraulic scraper  
**Type:** SA / WSA  
**Material:** NBR90  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	H mm	L mm		€/100 units beginning at 1 unit	€/100 units beginning at 20 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
<b>4094960</b>	70	80	10.0	+7.0	WSA000700-N9MMN				
<b>4094970</b>	75	85	10.0	7.0	WSA000750-N9MMN				
<b>4094980</b>	80	90	10.0	7.0	WSA000800-N9MMN				
<b>4094990</b>	85	95	10.0	7.0	WSA000850-N9MMN				
<b>4095000</b>	90	100	10.0	7.0	WSA000900-N9MMN				
<b>4095010</b>	95	105	10.0	7.0	WSA000950-N9MMN				
<b>4095020</b>	100	110	10.0	7.0	WSA001000-N9MMN				
<b>4095030</b>	105	115	10.0	7.0	WSA001050-N9MMN				
<b>4095040</b>	110	120	10.0	7.0	WSA001100-N9MMN				
<b>4095060</b>	120	130	10.0	7.0	WSA001200-N9MMN				
<b>4095080</b>	125	140	12.0	9.0	WSA001250-N9MMN				
<b>4095090</b>	130	145	12.0	9.0	WSA001300-N9MMN				
<b>4095100</b>	140	155	12.0	9.0	WSA001400-N9MMN				
<b>4095110</b>	150	165	12.0	9.0	WSA001500-N9MMN				
<b>4095120</b>	160	175	12.0	9.0	WSA001600-N9MMN				
<b>4095130</b>	170	185	14.0	10.0	WSA001700-N9MMN				
<b>4095140</b>	180	195	14.0	10.0	WSA001800-N9MMN				
<b>4095150</b>	200	220	16.0	12.0	WSA002000-N9MMN				

# SCRAPER



## Scraper A, WA

### Description

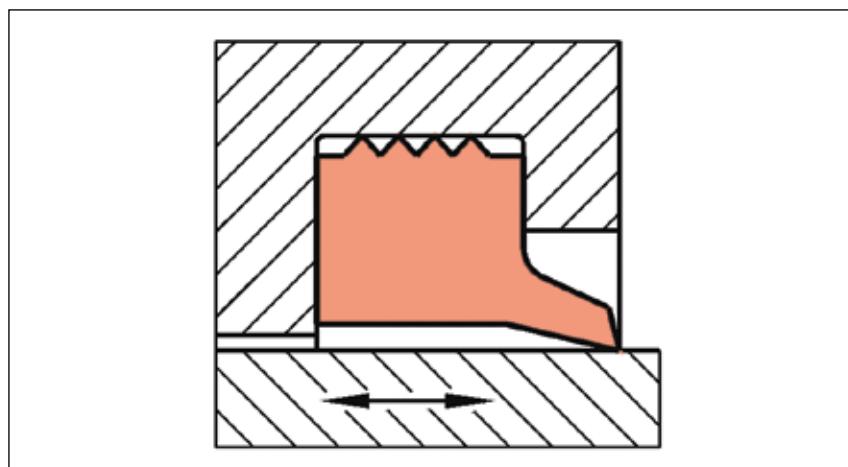
Scraper A is a moulded, vulcanised single-acting elastomeric scraper. It has a grooved sealing surface at the outer diameter.

### Materials

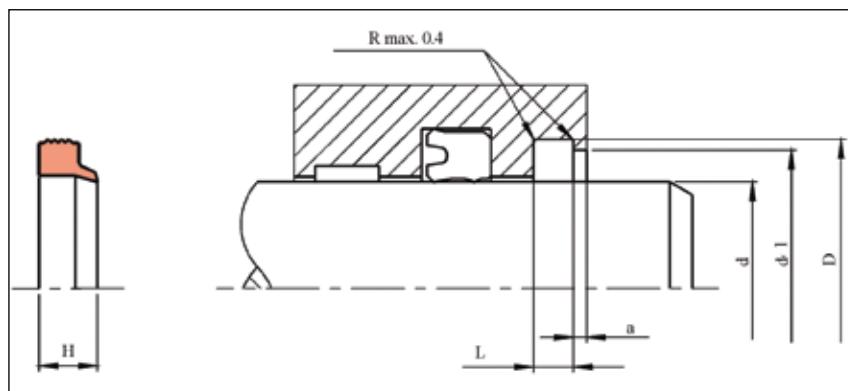
Standard material: Nitrile butadiene rubber  
NBR, 90 Shore A  
or  
Fluoroelastomer FKM, 90 Shore A

### Advantages

- small installed spaces
- simple groove design
- easy to install



Scraper A



Installation drawing

### Technical data

Speed:	moves back and forth up to 1 m/s
Temperature:	-30 °C to +110 °C
Media:	Mineral oil based hydraulic fluids, non-flammable fluids (HFA, HFB, HFC)

The indicated values are maximum values and must not be reached simultaneously.  
The maximum operating speed depends on the material and on the pressure,  
temperature and gap size. Temperature range is also dependent on the medium.

# HYDRAULIC SCRAPER

## Scraper A / WA, NBR90



**Name:** Hydraulic scraper  
**Type:** A / WA  
**Material:** NBR90  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	H mm	L mm		€/100 units beginning at 1 unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4095250	6	12	6	4.0	WA0000060-N9				
4095260	8	16	8	5.0	WA0000080-N9				
4095270	9	16	5	3.0	WA0000090-N9				
4095280	10	16	4.5	3.0	WA0000100-N9				
4095290	10	18	8	5.0	WA0100100-N9				
4095310	10	20	8	5.0	WA0200100-N9				
4095320	12	22	8	5.0	WA0000120-N9				
4095330	14	25	8	5.0	WA0000140-N9				
4095340	15	23	8	5.0	WA0000150-N9				
4095350	16	22	5	3.0	WA0000160-N9				
4095360	16	23	5	3.0	WA0100160-N9				
4095370	16	24	7	5.0	WA0200160-N9				
4095380	16	26	8	5.0	WA0300160-N9				
4095390	18	26	7	4.0	WA0000180-N9				
4095400	18	28	8	5.0	WA0100180-N9				
4095410	20	28	5	3.5	WA0000200-N9				
4095420	20	28	7	4.0	WA0100200-N9				
4095430	20	30	7	4.0	WA0200200-N9				
4095440	20	30	10	7.0	WA0300200-N9				
4095470	22	30	7	4.0	WA0100220-N9				
4095480	22	32	10	7.0	WA0200220-N9				
4095490	23	33	10	7.0	WA0000230-N9				
4095500	24	34	10	7.0	WA0000240-N9				
4095510	25	33	7	4.0	WA0100250-N9				
4703400	25	35	8	5.0	WA0200250-N9				
4095530	25	35	10	7.0	WA0300250-N9				
4095540	28	36	7	4.0	WA0000280-N9				
4095550	28	38	8	5.0	WA0100280-N9				
4095560	28	38	10	7.0	WA0200280-N9				
4095570	28	40	10	7.0	WA0300280-N9				
4095580	30	38	7	5.0	WA0000300-N9				
4095590	30	40	8	5.0	WA0100300-N9				
4095600	30	40	10	7.0	WA0200300-N9				
4095610	32	40	7	5.0	WA0000320-N9				
4095630	32	42	7	5.0	WA0100320-N9				
4095640	32	45	10	7.0	WA0200320-N9				
4095650	35	43	7	5.0	WA0000350-N9				
4095670	35	45	10	7.0	WA0200350-N9				
4095680	36	44	7	4.0	WA0000360-N9				
4095690	36	45	10	7.0	WA0100360-N9				
4095710	38	48	10	7.0	WA0000380-N9				
4095720	38	50	7	4.0	WA0100380-N9				

# HYDRAULIC SCRAPER



## Scraper A/WA, N9

Item No.	d mm	D mm	H mm	L mm		€/100 units beginning at 1 unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4095730	40	48	7	4.0	WA0000400-N9				
4095740	40	50	8	5.0	WA0100400-N9				
4095750	40	50	10	7.0	WA0200400-N9				
4095760	40	52	8	5.0	WA0300400-N9				
4095780	40	56	7	5.0	WA0400400-N9				
4095790	40	56	10	7.0	WA0500400-N9				
4095800	45	53	7	4.0	WA0000450-N9				
4095810	45	55	7	5.0	WA0100450-N9				
4095820	45	55	10	7.0	WA0200450-N9				
4095830	45	60	10	7.0	WA0300450-N9				
4095840	47	57	10	7.0	WA0000470-N9				
4095850	48	55	10	7.0	WA0000480-N9				
10009867	48	60	10	4.0	WA0100480-N9				
4095860	48	60	10	7.0	WA0200480-N9				
4095870	50	56	7	5.0	WA0000500-N9				
4095880	50	58	7	5.0	WA0100500-N9				
4095890	50	60	10	7.0	WA0200500-N9				
4095900	50	65	10	7.0	WA0300500-N9				
4095910	50	66	10	7.0	WA0400500-N9				
4095920	52	62	10	7.0	WA0000520-N9				
4095940	54	64	8	5.0	WA0100540-N9				
4095950	55	63	10	7.0	WA0000550-N9				
4095960	55	65	7	5.0	WA0100550-N9				
4095970	55	65	10	7.0	WA0200550-N9				
4095980	55	72	10	7.0	WA0300550-N9				
4095990	56	64	7	4.0	WA0000560-N9				
4096000	56	65	8	5.0	WA0100560-N9				
4096010	56	68	10	7.0	WA0200560-N9				
4096020	57	67	10	7.0	WA0000570-N9				
4096030	58	68	10	7.0	WA0000580-N9				
4096040	60	68	7	4.0	WA0000600-N9				
4096050	60	70	10	7.0	WA0100600-N9				
4096060	60	76	10	7.0	WA0200600-N9				
4096070	60	80	10	7.0	WA0300600-N9				
4096080	62	72	10	7.0	WA0000620-N9				
4096090	63	73	9	6.0	WA0000630-N9				
4096100	63	75	10	7.0	WA0100630-N9				
4096110	65	75	7	5.0	WA0000650-N9				
4096120	65	75	10	7.0	WA0100650-N9				
4096130	68	75	10	7.0	WA0000680-N9				
4096140	70	78	7	4.0	WA0000700-N9				
4096150	70	80	7	5.0	WA0100700-N9				
4096160	70	80	10	7.0	WA0200700-N9				
4096170	72	82	10	7.0	WA0000720-N9				
4096180	75	85	10	7.0	WA0000750-N9				
4096190	75	87	12	7.0	WA0100750-N9				
4096200	80	88	7	4.0	WA0000800-N9				
4063870	80	88	7	10.0	WA0100800-N9				
4096210	80	90	10	7.0	WA0200800-N9				
4096220	80	92	10	7.0	WA0300800-N9				
4096230	80	96	10	7.0	WA0500800-N9				
4096240	82	92	10	7.0	WA0000820-N9				
4096250	85	95	10	7.0	WA0000850-N9				
4096260	88	100	10	7.0	WA0000880-N9				
4096270	90	97	7	5.0	WA0000900-N9				
4096280	90	98	7	4.0	WA0100900-N9				

# HYDRAULIC SCRAPER

## Continued: Scraper A/WA, N9



**Name:** Hydraulic scraper  
**Type:** A / WA  
**Material:** N9  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	H mm	L mm		€/100 units beginning at 1 unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4096290	90	100	10	7.0	WA0200900-N9				
4096300	90	102	10	7.0	WA0300900-N9				
4096310	92	102	10	7.0	WA0000920-N9				
4096320	95	105	10	7.0	WA0000950-N9				
4096330	98	108	7	5.0	WA0000980-N9				
4096340	100	110	10	7.0	WA0001000-N9				
4096350	100	112	10	7.0	WA0101000-N9				
4096360	100	115	10	7.0	WA0201000-N9				
4096370	105	115	10	7.0	WA0001050-N9				
4096380	105	117	10	7.0	WA0101050-N9				
4096390	106	116	10	7.0	WA0001060-N9				
4096400	110	120	10	7.0	WA0001100-N9				
4096410	110	122	10	7.0	WA0101100-N9				
4096420	110	125	10	7.0	WA0201100-N9				
4096430	115	125	10	7.0	WA0001150-N9				
4096440	115	127	10	7.0	WA0101150-N9				
4096450	118	128	10	7.0	WA0001180-N9				
4096460	120	130	10	7.0	WA0001200-N9				
4096470	120	135	12	9.0	WA0101200-N9				
4096480	120	150	12	9.0	WA0201200-N9				
4096490	125	133	7	5.0	WA0001250-N9				
4096500	125	140	12	9.0	WA0101250-N9				
4096510	130	142	10	5.5	WA0101300-N9				
4096520	130	145	12	9.0	WA0001300-N9				
4096530	135	150	12	9.0	WA0001350-N9				
4096540	140	155	12	9.0	WA0001400-N9				
4096550	145	160	12	9.0	WA0001450-N9				
4096560	150	165	12	9.0	WA0001500-N9				
4096570	160	172	10	5.5	WA0101600-N9				
4096580	160	175	12	9.0	WA0001600-N9				
4096590	165	180	12	9.0	WA0001650-N9				
4096600	170	195	16	12.0	WA0001700-N9				
4096610	180	195	12	9.0	WA0001800-N9				
4096620	185	200	14	10.0	WA0001850-N9				
4096640	200	220	16	12.0	WA0002000-N9				
4096650	250	275	16	12.0	WA0002500-N9				
4096660	260	280	16	12.0	WA0002600-N9				
4096670	280	305	16	12.0	WA0002800-N9				
4096680	325	350	16	12.0	WA0003250-N9				
4096690	360	390	16	12.0	WA0003600-N9				
4096700	390	415	16	12.0	WA0003900-N9				

# SCRAPER



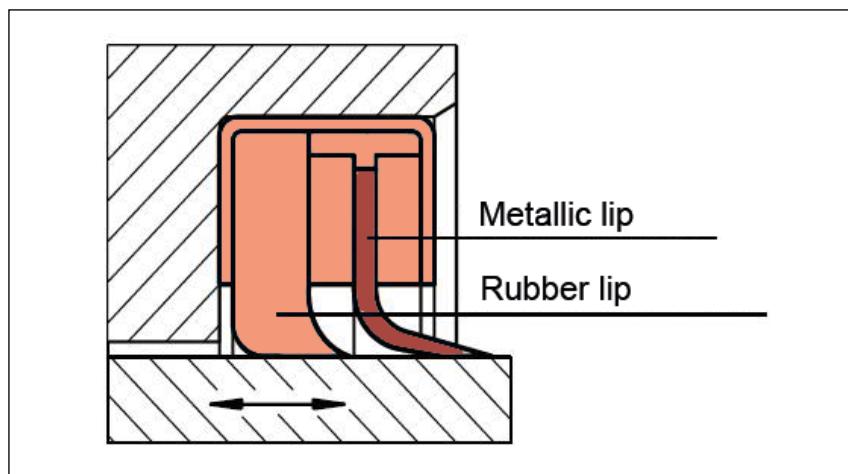
## Metal scraper, WM

### Description

The metal scraper is a single-acting special scraper and has two different scraper lips - a thin metallic lip and a rubber lip. Both scraper lips are arranged in tandem one after the other and are housed together in a compact metal housing.

### Materials

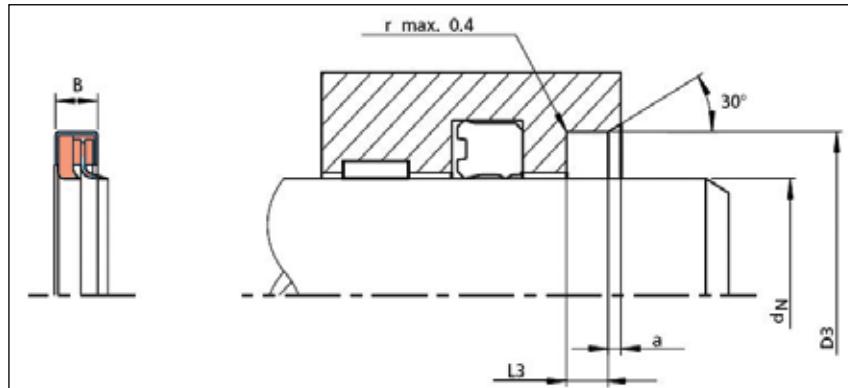
Standard design, metric dimension series
Inner scraper lip: Acrylonitrile butadiene rubber NBR
Metal housing: Steel plate 1,0204 (AISI 1008) or similar
External scraper lip: Brass



Metal scraper

### Advantages

- very good scraping effect even in very adhesive contaminants, such as frost, mud
- very wear-resistant
- fixed seat in the groove through a metal cage
- easy to install into open groove



Installation drawing

### Technical data

Speed:	moving back and forth max. 1 m/s
Temperature:	-30 °C to +120 °C
Media:	Mineral oil based hydraulic fluid, non-flammable fluids (HFA,HFB, HFC), water, air etc.
Chamfer:	H = 6.5 – 8 $\triangleq$ chamfer 2.0 H = 8.5 – 10 $\triangleq$ chamfer 3.0

The indicated values are maximum values and must not be reached simultaneously. The maximum operating speed depends on the material and on the pressure, temperature and gap size. Temperature range is also dependent on the medium.

# HYDRAULIC SCRAPER

## Metal scraper WM, NBR



The metal scraper is a single-acting special scraper and has two different scraper lips – a thin metallic lip and a rubber lip. Both scraper lips are arranged in tandem one after the other and are housed together in a compact metal housing.

**Name:** Metal scraper  
**Type:** Metal VA / WM  
**Material:** NBR  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	H mm	L mm	
4096720	14	27	6.5	7.0	WM0000140-N7BSI
4096730	15	28	6.5	7.0	WM0000150-N7BSI
4096750	18	31	6.5	7.0	WM0000180-N7BSI
4096770	22	35	6.5	7.0	WM0000220-N7BSI
4096790	28	41	6.5	7.0	WM0000280-N7BSI
4096800	30	43	7.0	7.5	WM0000300-N7BSI
4096820	35	48	7.0	7.5	WM0000350-N7BSI
4096830	36	49	7.0	7.5	WM0000360-N7BSI
4096840	38	51	7.0	7.5	WM0000380-N7BSI
4096880	55	69	7.5	8.0	WM0000550-N7BSI
4096890	58	72	7.5	8.0	WM0000580-N7BSI
4096910	63	77	7.5	8.0	WM0000630-N7BSI
4096920	65	79	7.5	8.0	WM0000650-N7BSI
4096940	75	89	7.5	8.0	WM0000750-N7BSI
4096960	85	101	8.0	8.5	WM0000850-N7BSI
4096970	90	106	8.0	8.5	WM0000900-N7BSI
4096980	95	111	8.0	8.5	WM0000950-N7BSI
10016943	100	120	8.5	9.0	WM0001000-N7BSI
4097010	120	140	8.5	9.0	WM0001200-N7BSI
4097020	130	150	8.5	9.0	WM0001300-N7BSI
4097030	140	160	8.5	9.0	WM0001400-N7BSI
4097040	150	170	8.5	9.0	WM0101500-N7BSI
4097050	160	180	8.5	9.0	WM0001600-N7BSI
4097060	170	190	8.5	9.0	WM0001700-N7BSI
4097070	180	200	10.0	12.0	WM0001800-N7BSI
4097080	200	230	10.0	12.0	WM0102000-N7BSI
4097090	210	230	10.0	12.0	WM0002100-N7BSI
4097100	220	250	10.0	12.0	WM0102200-N7BSI

# HYDRAULIC GUIDE ELEMENTS MATERIAL

## Turcite®-Slydring®



### Description

Because of their excellent friction behaviour, stick-slip free operation and high temperature and chemical resistance, Turcite® Slydringe®'s are used as piston and rod guides.

### Materials

Different Turcite® materials for piston and rod Slydringe®'s are recommended.

### Turcite®T47

This high-performance material has been proven for most applications and is recommended as a standard material for low-friction, stick-slip free movements. It has extraordinarily good wear characteristics and a very high chemical and thermal resistance.

### Turcite®T51

T51 is also a high-performance material that was specifically modified for use in hydraulics and for soft mating surfaces.

### Advantages

- Excellent lubrication conditions due to the teardrop structure
- no "stick-slip" effects at start and extremely low speeds
- Minimum static and dynamic friction for high efficiencies, even at lower temperatures
- Can be used for non-lubricating media with corresponding Turcite® materials
- High wear resistance results in a long lifespan
- Installation spaces correspond to ISO 10766
- Can be used for most hydraulic fluids, mating surfaces and coatings and surface qualities, depending on the selected Turcite® material
- Can be used with new environmentally friendly hydraulic fluids
- Favourable to the incorporation of foreign particles
- Good damping effect, absorbs vibrations

### Areas of use

Speed:	moves back and forth max. 15 m/s
Temperature:	-60 °C to +200 °C
Calculated value:	max. 15 N/mm*2*, stat. pressure resistance at 25 °C.

For the Turcite® material, always remember that surface pressure decreases with increasing temperature. In practice, durability for dynamic use depends essentially on the operating temperature, and thus this temperature should not in general exceed +150 °C.

# HYDRAULIC GUIDE ELEMENTS MATERIAL

## Orkot®-Slydring®



### Description

Slydring® made of Orkot® fabric composite materials are used in high-load hydraulic cylinders such as those used in mobile hydraulics, press design and the like. The high pressure resistance, good lubrication behaviour and extraordinary wear properties guarantee a long lifespan.

### Materials

#### Orkot® C380

Orkot® C380 is a fabric composite material made of plastic/fine fabric with additional lubricants, and is impregnated with special thermal curing polyester resins. It has a high wear resistance, good emergency characteristics and has a dampening effect on vibrations.

It is used as a standard material in pistons and piston rods.

### Advantages

- stable shape and damping
- high lateral force absorption
- good wear resistance
- good scraping effect
- good embedding capacity for foreign particles
- long lifespan

### Areas of use

Speed: max. 1 m/s  
moves back and forth

Temperature: -60 °C to +130 °C  
(Orkot® C380)

Calculated values: Pressure resistance under dynamic operating conditions  
90 N/mm<sup>2</sup>  
(Orkot® C380)

The allowable load capacity for dynamic use is in practice dependent on the operating temperature, among other things, which should in general not exceed +100 °C.

# GUIDE ELEMENTS



## Technical Description

### Calculation of extended length

The extended length of the guide elements is designed such that after installation a gap "Z" arises at the end of the guide. This is required for the following reasons:

- compensation of longitudinal expansion of the guides due to temperature effects
- avoidance of undesirable pressure build-up

In ordering the guides in open length for self-preparation of Slydring®'s, the cut length can be determined according to the following formulas:

### Slydring® for pistons:

$$L = c \times (D-W) - k \text{ [mm]}$$

### Slydring® for rods:

$$L = c \times (d + W) - k \text{ [mm]}$$

D = hole diameter [mm]

d = rod diameter [mm]

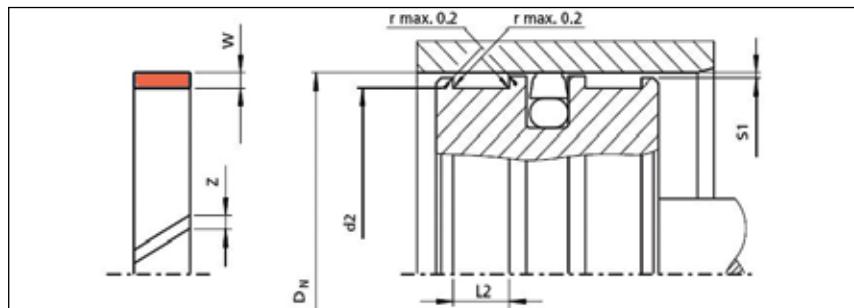
W = ring thickness [mm]

c = 3,11 material factor, valid for all materials

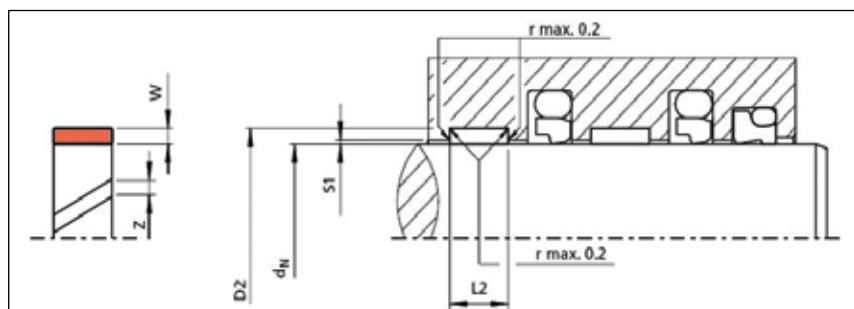
k = Temperature constant:

1.8 for Turcite® materials for applications >120°C,  
0.8 for all other materials and temperatures

The standard installation orientation for pistons and rods is shown in the figures below.

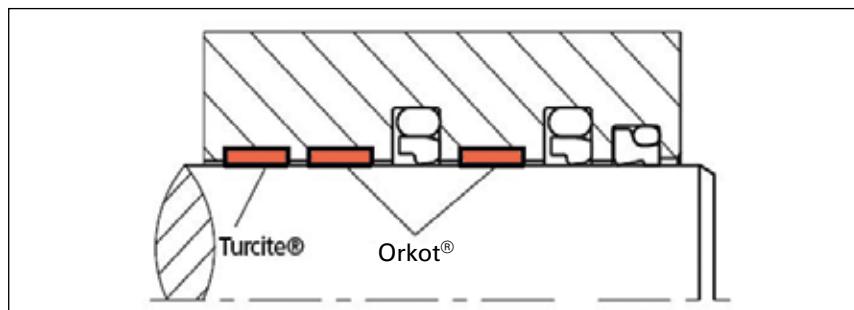


Piston guide

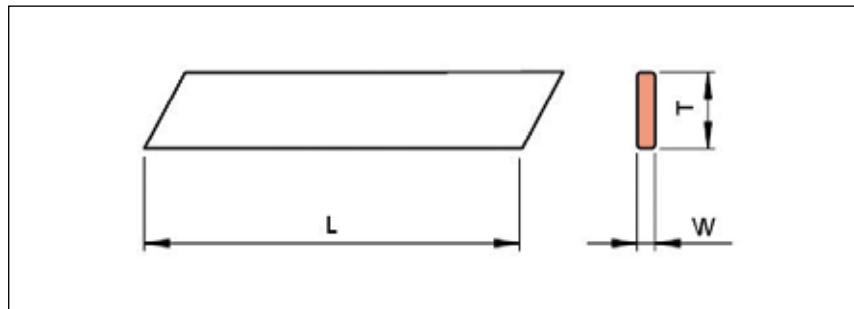


Rod guide

To further improve operational safety, in particular under high loads, the installation of a 3rd guide made of the material Turcite® T47. It is installed on the oil side and serves as an internal scraper for contaminated media, among other things



Rod guide for high loads



Cut to length

# HYDRAULIC GUIDE ELEMENTS

## Slydring® in open length, T47

**Name:** Guideway  
**Type:** GM  
**Material:** T47  
**Manufacturer:** Trelleborg

Item No.	Groove width L mm	Thickness D mm	Manufacturer Part number	€/100 m beginning at 0.01 m	€/100 m beginning at 25 m	€/100 m beginning at 50 m	€/100 m beginning at 100 m
<b>10017359</b>	4.0	1.50	GMZH810542T47				
<b>4098070</b>	2.5	1.55	GM4100000-T47				
<b>4098080</b>	4.0	1.55	GM4300000-T47				
<b>10012404</b>	9.70	2.00	GM4900000-T47				
<b>10018039</b>	25.0	2.00	GMZH810008T47				
<b>10011120</b>	4.0	2.50	GM6400000-T47				
<b>10013568</b>	5.5	2.50	GMZH810197-T47				
<b>4098090</b>	5.6	2.50	GM6500000-T47				
<b>4063090</b>	9.7	2.50	GM6900000-T47				
<b>10032531</b>	10.0	2.50	GMZH810082-T47				
<b>4098100</b>	15.0	2.50	GM7300000-T47				
<b>10012712</b>	19.5	2.50	GM7400000-T47				
<b>10022683</b>	20.0	2.50	GMZH810055T47				
<b>4098110</b>	25.0	2.50	GM7500000-T47				
<b>10018169</b>	29.8	2.50	GM7600000-T47				
<b>10005799</b>	40.0	2.50	GMZH810054T47				

## Slydring®-Meterware, C380

**Name:** Guideway  
**Type:** GM  
**Material:** Orkot® C380  
**Manufacturer:** Trelleborg

Item No.	Groove width L mm	Thickness D mm	Manufacturer Part number	€/100 m beginning at 0.01 m	€/100 m beginning at 100 m	€/100 m beginning at 200 m	€/100 m beginning at 500 m
<b>4292480</b>	4.0	1.55	GM43A0000-C380				
<b>4099300</b>	5.6	2.50	GM65A0000-C380				
<b>4099310</b>	9.5	2.50	GM69A0000-C380				
<b>4099320</b>	15.0	2.50	GM73A0000-C380				
<b>4099330</b>	24.5	2.50	GM75A0000-C380				
<b>4099340</b>	25.0	4.00	GM98A0000-C380				

# HYDRAULIC GUIDE ELEMENTS



## Turcite B Slydw GL® guideway, TB

**Name:** Guideway  
**Type:** Turcite® B Slydway GL  
**Material:** TB  
**Design:** B  
**Manufacturer:** Trelleborg

Item No.	Groove width	Thickness	Manufacturer Part number	€/100 m	€/100 m	€/100 m	€/100 m	€/100 m
	L mm	D mm		beginning at 0.01 m	beginning at 2.1 m	beginning at 4.1 m	beginning at 9.1 m	beginning at 24.1 m
4677120	12	1.00	GLB000012-TB					
4619390	100	1.00	GLB000100-TB					
10024517	150	1.00	GLB000150-TB					

Item No.	Groove width	Thickness	Manufacturer Part number	€/100 m	€/100 m	€/100 m	€/100 m	€/100 m
	L mm	D mm		beginning at 0.01 m	beginning at 2.5 m	beginning at 5 m	beginning at 10 m	beginning at 24.1 m
4098280	10	1.50	GLB500010-TB					
4098300	15	1.50	GLB500015-TB					
4098330	20	1.50	GLB500020-TB					
4570760	22	1.50	GLB500022-TB					
4098380	25	1.50	GLB500025-TB					
4098410	30	1.50	GLB500030-TB					
4570770	32	1.50	GLB500032-TB					
4098430	35	1.50	GLB500035-TB					
4098470	40	1.50	GLB500040-TB					
4098500	45	1.50	GLB500045-TB					
4098550	50	1.50	GLB500050-TB					
10020424	55	1.50	GLB500055-TB					
4098570	60	1.50	GLB500060-TB					
10012996	65	1.50	GLB500065-TB					
4098590	70	1.50	GLB500070-TB					
10020444	75	1.50	GLB500075-TB					
4098640	80	1.50	GLB500080-TB					
4098660	90	1.50	GLB500090-TB					
4098680	100	1.50	GLB500100-TB					
4110510	110	1.50	GLB500110-TB					
10028794	120	1.50	GLB500120-TB					
4098700	125	1.50	GLB500125-TB					
4342210	140	1.50	GLB500140-TB					
4097160	150	1.50	GLB500150-TB					

# GUIDE RING

## Selection criteria for the Slydring®

Slydring® Name	Area of use	Application			Use in	Installation	Norm <sup>1)</sup> ISO	
		light	medium	heavy				
								mm
Turcite® Slydring®	Mobile hydraulics	•	•	–	Steel, Steel, chrome-plated	•	•	
	Standard cylinder	•	•	–	Cast iron, stainless			
	Machine tools	•	•	–	Steel			
	Injection moulding machines	•	•	–	Aluminium, bronze			
	Automotive industry	•	•	–			Goods by the meter until $\varnothing$ 4000	
					Aluminium, bronze	•	•	
Orkot® Slydring®	Mobile hydraulics	–	•	•	Steel, Steel, chrome-plated	Rings until $\varnothing$ 1500 <sup>2)</sup>	closed	ISO 10766
	Water hydraulics	•	•	•	Cast iron			
	Ship and	•	•	•	Stainless steel			
	Ocean technology	•	•	•				
	Press	•	•	•				

<sup>1)</sup> For Slydring® according to other standards such as the French Norm NF E 48-037 please contact us

<sup>2)</sup> For larger diameters, segments can be used from open length ware.

# GUIDE RING



Load static N/mm <sup>2</sup>	Technical data			Embedding of contaminants	Technical behaviour				Material Name
	Load dynamic N/mm <sup>2</sup>	Temperature range °C	Speed m/s		Friction	Media compatibility	For Diesel effect	for Life-span	
25	15	-60 to +200	15	A	A	A	A	A	Turcite® T47
25	15	-60 to +200	15	A	A	A	A	B	Turcite® T51
25	10	-60 to +200	15	A	A	A	A	A	Turcite® T59
345	90	-60 to +130 <sup>3)</sup>	1	B	C	C	C	A	Orkot® C380

<sup>3)</sup> For higher temperatures up to +250°C, we offer our special material Orkot® C324 on request.

A = very good, B = good, C = satisfactory, D = sufficient

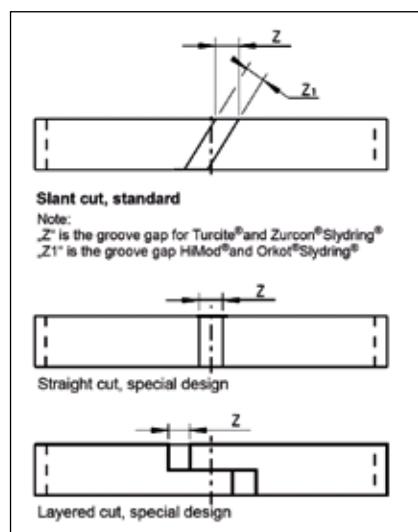
## Technical Description

### Delivery forms for Slydring®

Materials	Ring Ø mm	Ring cut for Ø mm
Turcite® T47 /T51 /T59	–	8 – 4.000
Orkot® C380	16 – 1.500	300 – 2.000

### Delivery forms

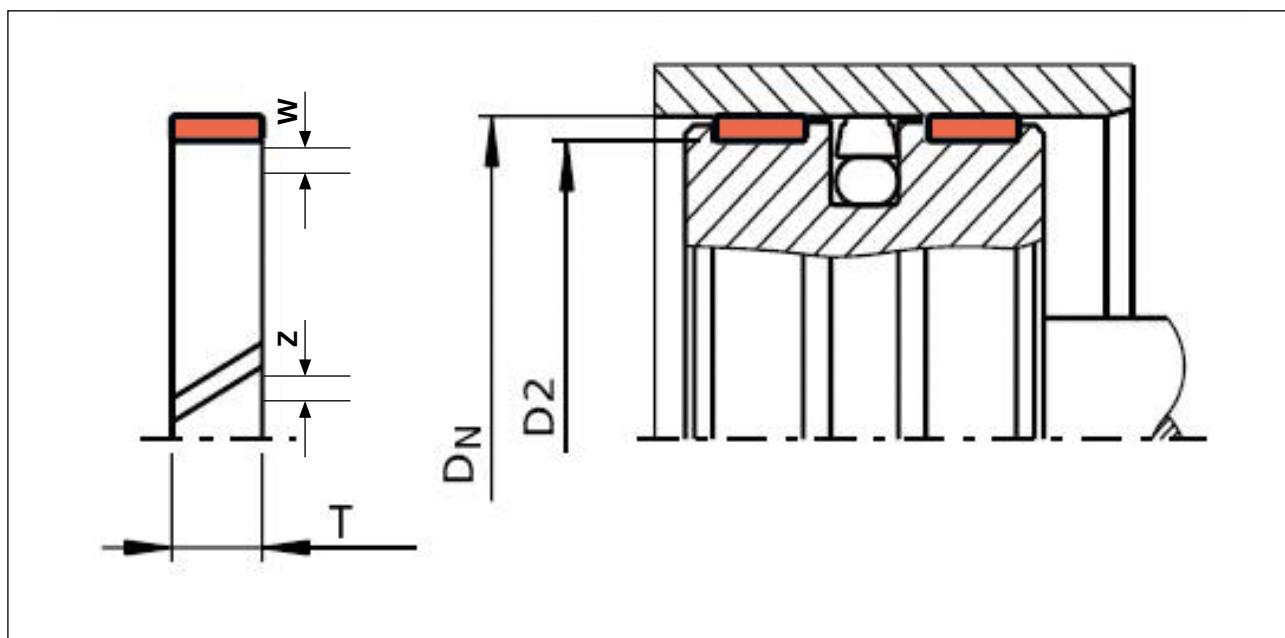
According to the figure, three different types of cuts can be selected. In the process, the slant cut is the most used standard. Other types of cuts are available on request.



Types of cuts

# PISTON GUIDE RINGS

## Installation recommendation Slydring® – for pistons



Installation drawing

### Installation dimensions

Hole <sup>1)</sup> $\varnothing D_N\text{ H}9$	Groove base $\varnothing d\text{ h}8$	Groove width $L +0.2$	Ring thickness W	Ring gap Z
8– 20.0	$D_N\text{-}3.10$	2.50	1.55	3)
10– 50.0	$D_N\text{-}3.10$	4.00	1.55	3)
16– 140.0	$D_N\text{-}5.00$	5.60	2.50	3)
60– 220.0	$D_N\text{-}5.00$	9.70	2.50	3)
130– 400.0	$D_N\text{-}5.00$	15.00	2.50	3)
280– 999.9	$D_N\text{-}5.00$	25.00	2.50	3)
1000/-4200.0	$D_N\text{-}5.00$	25.00	2.50	3)
280– 999.9	$D_N\text{-}8.00$	25.00	4.00	3)
1000/-2200.0	$D_N\text{-}8.00$	25.00	4.00	3)
100– 999.9	$D_N\text{-}8.00$	9.70	4.00	3)

<sup>1)</sup> Recommended diameter ranges<sup>2)</sup> Data apply to the Slydring® only.<sup>3)</sup> Calculation of the extended length.

### Recommended radii for groove base

D	R <sub>max</sub>
8 – 250	0.2
> 250	0.4

### Surface roughness

Characteristic	Mating surface $\mu\text{m}$		Groove surface $\mu\text{m}$
	Turcite® materials	Luytex® materials	
R <sub>max</sub>	0.63/-4.00	1.00/-4.00	< 16.0
R <sub>Z DIN</sub>	0.40/-2.50	0.63/-2.50	< 10.0
R <sub>a</sub>	0.05/-0.40	0.10/-0.40	< 2.5

The characterised parameters correspond to ISO 10766 and are preferred to be used.  
Data in mm.

# HYDRAULIC GUIDE RING PISTONS



## Slydring® - for pistons, C380

Guide rings are for guiding the pistons and the piston rods of a working cylinder and to absorb the lateral forces.

**Name:** Guide ring  
**Type:** GP  
**Material:** Orkot® C380  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4099280	11.0	16	5.6	GP6500160-C380					
4101190	13.0	18	5.6	GP6500180-C380					
4101220	15.0	20	5.6	GP6500200-C380					
4101250	17.0	22	5.6	GP6500220-C380					
4101370	20.0	25	5.6	GP6500250-C380					
4101390	20.0	25	9.7	GP6900250-C380					
4101410	23.0	28	5.6	GP6500280-C380					
4101430	25.0	30	5.6	GP6500300-C380					
4101450	25.0	30	9.7	GP6900300-C380					
4101500	27.0	32	5.6	GP6500320-C380					
4101520	27.0	32	9.7	GP6900320-C380					
4101470	28.9	32	4.0	GP4300320-C380					
10025144	29.0	34	9.7	GP6900340-C380					
4101540	30.0	35	5.6	GP6500350-C380					
4101560	30.0	35	9.7	GP6900350-C380					
10003938	31.9	35	4.0	GP4300350-C380					
4101590	35.0	40	5.6	GP6500400-C380					
4101620	35.0	40	9.7	GP6900400-C380					
4101640	37.0	42	5.6	GP6500420-C380					
4101670	40.0	45	5.6	GP6500450-C380					
4101710	40.0	45	9.7	GP6900450-C380					
4101760	43.0	48	5.6	GP6500480-C380					
4101790	45.0	50	5.6	GP6500500-C380					
4101830	45.0	50	9.7	GP6900500-C380					
4101860	47.0	52	5.6	GP6500520-C380					
4101900	50.0	55	5.6	GP6500550-C380					
4101930	50.0	55	9.7	GP6900550-C380					
4102060	55.0	60	5.6	GP6500600-C380					
4102110	55.0	60	9.7	GP6900600-C380					
4102130	58.0	63	5.6	GP6500630-C380					
4102150	58.0	63	9.7	GP6900630-C380					
4102170	60.0	65	5.6	GP6500650-C380					
4102190	60.0	65	9.7	GP6900650-C380					
4102210	63.0	68	5.6	GP6500680-C380					
4102230	63.0	68	9.7	GP6900680-C380					
4102250	65.0	70	5.6	GP6500700-C380					
4102270	65.0	70	9.7	GP6900700-C380					
4102290	70.0	75	5.6	GP6500750-C380					
4102310	70.0	75	9.7	GP6900750-C380					
4102330	75.0	80	5.6	GP6500800-C380					
4102340	75.0	80	9.7	GP6900800-C380					
4102360	80.0	85	5.6	GP6500850-C380					
4102380	80.0	85	9.7	GP6900850-C380					

# **HYDRAULIC GUIDE RING PISTONS**

## **Continued: Slydring® - for pistons, C380**



Guide rings are for guiding the pistons and the piston rods of a working cylinder and to absorb the lateral forces.

**Name:** Guide ring  
**Type:** GP  
**Material:** Orkot® C380  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4102400	85.0	90	5.6	GP6500900-C380					
4102420	85.0	90	9.7	GP6900900-C380					
4102440	90.0	95	9.7	GP6900950-C380					
4102460	95.0	100	5.6	GP6501000-C380					
4102480	95.0	100	9.7	GP6901000-C380					
4102500	100.0	105	5.6	GP6501050-C380					
4102520	100.0	105	9.7	GP6901050-C380					
4102540	105.0	110	9.7	GP6901100-C380					
4102560	110.0	115	9.7	GP6901150-C380					
4102580	115.0	120	9.7	GP6901200-C380					
4102600	120.0	125	5.6	GP6501250-C380					
4102620	120.0	125	9.7	GP6901250-C380					
4102640	125.0	130	9.7	GP6901300-C380					
4102660	125.0	130	15.0	GP7301300-C380					
4102680	130.0	135	9.7	GP6901350-C380					
4102700	130.0	135	15.0	GP7301350-C380					
10010439	135.0	140	5.6	GP65A1400-C380					
4102720	135.0	140	9.7	GP6901400-C380					
4102740	135.0	140	15.0	GP7301400-C380					
4102760	145.0	150	15.0	GP7301500-C380					
4102780	155.0	160	9.7	GP6901600-C380					
4102800	155.0	160	15.0	GP7301600-C380					
4102820	165.0	170	15.0	GP7301700-C380					
4102840	175.0	180	9.7	GP6901800-C380					
4102860	175.0	180	15.0	GP7301800-C380					
4102880	185.0	190	15.0	GP7301900-C380					
4102900	195.0	200	9.7	GP6902000-C380					
4102920	195.0	200	15.0	GP7302000-C380					
4102940	205.0	210	15.0	GP7302100-C380					
4102960	215.0	220	9.7	GP6902200-C380					
4102980	215.0	220	15.0	GP7302200-C380					
4103000	225.0	230	15.0	GP7302300-C380					
4103020	235.0	240	15.0	GP7302400-C380					
4103040	245.0	250	9.7	GP6902500-C380					
4103060	245.0	250	15.0	GP7302500-C380					
4103120	272.0	280	25.0	GP9802800-C380					
4103080	275.0	280	9.7	GP6902800-C380					
4103100	275.0	280	15.0	GP7302800-C380					
4103140	295.0	300	15.0	GP7303000-C380					
10019070	307.0	312	25.0	GP7503120-C380					
4103200	312.0	320	25.0	GP9803200-C380					
4103160	315.0	320	15.0	GP7303200-C380					
4103180	315.0	320	25.0	GP7503200-C380					

# HYDRAULIC GUIDE RING PISTONS



## Slydring® – for pistons, C380

Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
10019069	334.0	339	25.0	GP7503390-C380					
4103220	345.0	350	25.0	GP7503500-C380					
4103280	352.0	360	25.0	GP9803600-C380					
4103240	355.0	360	15.0	GP7303600-C380					
4103260	355.0	360	25.0	GP7503600-C380					
4103340	392.0	400	25.0	GP9804000-C380					
4103300	395.0	400	15.0	GP7304000-C380					
4103320	395.0	400	25.0	GP7504000-C380					
4103360	415.0	420	25.0	GP7504200-C380					
4103420	442.0	450	25.0	GP9804500-C380					
4103380	445.0	450	15.0	GP7304500-C380					
4103400	445.0	450	25.0	GP7504500-C380					
4103440	475.0	480	25.0	GP7504800-C380					
4103500	492.0	500	25.0	GP9805000-C380					
4103460	495.0	500	15.0	GP7305000-C380					
4103480	495.0	500	25.0	GP7505000-C380					

## Slydring® – for pistons, T47

Guide rings are for guiding the pistons and the piston rods of a working cylinder and to absorb the lateral forces.

Name: Guide ring  
 Type: GP  
 Material: T47  
 Manufacturer: Trelleborg



Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4098210	4.9	8	2.5	GP4100080-T47					
4101020	6.9	10	2.5	GP4100100-T47					
4101030	6.9	10	4.0	GP4300100-T47					
4101040	8.9	12	4.0	GP4300120-T47					
10028526	10.0	13	2.5	GP4100130-T47					
4101050	10.9	14	4.0	GP4300140-T47					
4101080	11.0	16	5.6	GP6500160-T47					
4101060	11.9	15	4.0	GP4300150-T47					
4101070	12.9	16	4.0	GP4300160-T47					
4101170	13.0	18	5.6	GP6500180-T47					
4101090	14.9	18	4.0	GP4300180-T47					
4101210	15.0	20	5.6	GP6500200-T47					
10019611	16.9	20	2.5	GP4100200-T47					
4101200	16.9	20	4.0	GP4300200-T47					
10004845	16.9	21	4.0	GP4300210-T47					

# HYDRAULIC GUIDE RING PISTONS

## Continued: Slydring® – for pistons, T47



Guide rings are for guiding the pistons and the piston rods of a working cylinder and to absorb the lateral forces.

**Name:** Guide ring  
**Type:** GP  
**Material:** T47  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
<b>4101240</b>	17.0	22	5.6	GP6500220-T47					
<b>4101360</b>	20.0	25	5.6	GP6500250-T47					
<b>4101380</b>	20.0	25	9.7	GP6900250-T47					
<b>10033130</b>	20.9	24	4.0	GP4300240-T47					
<b>4101270</b>	21.9	25	4.0	GP4300250-T47					
<b>10007272</b>	23.0	28	4.0	GP4300280-T47					
<b>4101400</b>	23.0	28	5.6	GP6500280-T47					
<b>4101420</b>	25.0	30	5.6	GP6500300-T47					
<b>4101440</b>	25.0	30	9.7	GP6900300-T47					
<b>4101490</b>	27.0	32	5.6	GP6500320-T47					
<b>4101510</b>	27.0	32	9.7	GP6900320-T47					
<b>4101460</b>	28.9	32	4.0	GP4300320-T47					
<b>4101530</b>	30.0	35	5.6	GP6500350-T47					
<b>4101550</b>	30.0	35	9.7	GP6900350-T47					
<b>10012277</b>	31.9	35	3.9	GP4300350-T47					
<b>4101570</b>	35.0	40	5.6	GP6500400-T47					
<b>4101600</b>	35.0	40	9.7	GP6900400-T47					
<b>4101630</b>	37.0	42	5.6	GP6500420-T47					
<b>10031498</b>	39.0	44	5.6	GP6500440-T47					
<b>4101660</b>	40.0	45	5.6	GP6500450-T47					
<b>4101690</b>	40.0	45	9.7	GP6900450-T47					
<b>10019237</b>	41.0	45	9.5	GP4900450-T47					
<b>4101740</b>	43.0	48	5.6	GP6500480-T47					
<b>10026699</b>	45.0	48	4.0	GP4300480-T47					
<b>4101780</b>	45.0	50	5.6	GP6500500-T47					
<b>4101820</b>	45.0	50	9.7	GP6900500-T47					
<b>4101850</b>	47.0	52	5.6	GP6500520-T47					
<b>4101880</b>	50.0	55	5.6	GP6500550-T47					
<b>4101910</b>	50.0	55	9.7	GP6900550-T47					
<b>4102040</b>	55.0	60	5.6	GP6500600-T47					
<b>4102070</b>	55.0	60	9.7	GP6900600-T47					
<b>10023530</b>	56.0	60	9.5	GP4900600-T47					
<b>4102120</b>	58.0	63	5.6	GP6500630-T47					
<b>4102140</b>	58.0	63	9.7	GP6900630-T47					
<b>4102160</b>	60.0	65	5.6	GP6500650-T47					
<b>4102180</b>	60.0	65	9.7	GP6900650-T47					
<b>4102200</b>	63.0	68	5.6	GP6500680-T47					
<b>4102220</b>	63.0	68	9.7	GP6900680-T47					
<b>4102240</b>	65.0	70	5.6	GP6500700-T47					
<b>4102260</b>	65.0	70	9.7	GP6900700-T47					
<b>10015021</b>	65.0	70	24.8	GP7500700-T47					
<b>4102280</b>	70.0	75	5.6	GP6500750-T47					
<b>4102300</b>	70.0	75	9.7	GP6900750-T47					

# HYDRAULIC GUIDE RING PISTONS



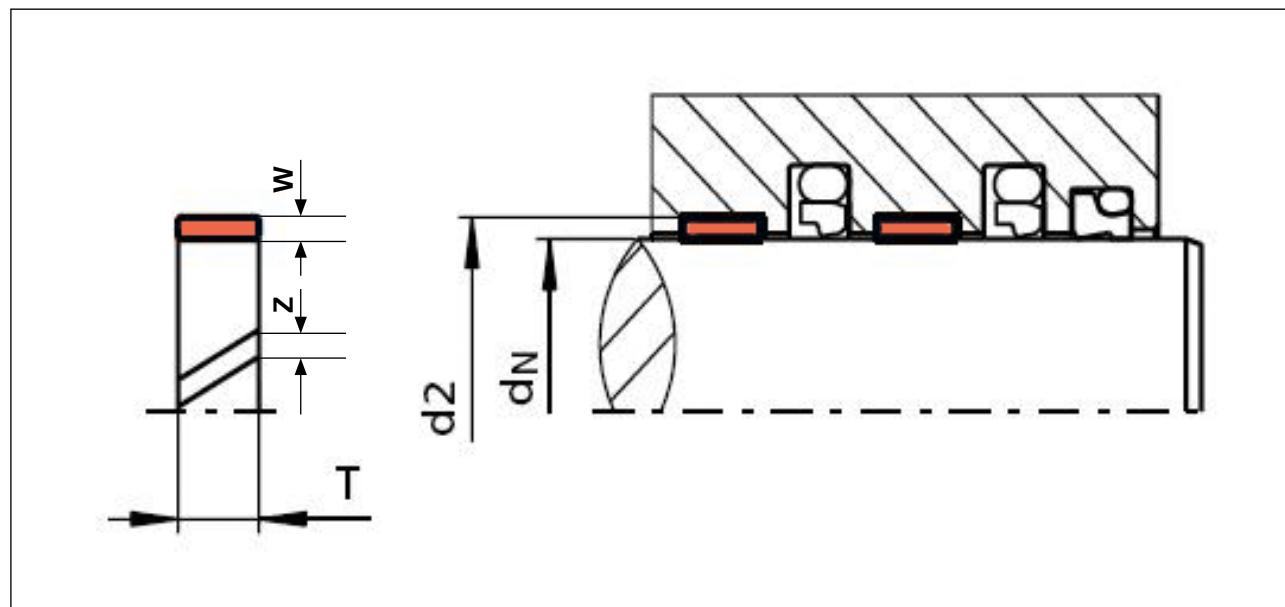
## Slydring® – for pistons, T47

Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit	€/100 units beginning at 500 Unit
4102320	75.0	80	5.6	GP6500800-T47					
4045320	75.0	80	9.7	GP6900800-T47					
10016127	76.0	82	9.7	GP6900810-T47					
4102350	80.0	85	5.6	GP6500850-T47					
4102370	80.0	85	9.7	GP6900850-T47					
4102390	85.0	90	5.6	GP6500900-T47					
4102410	85.0	90	9.7	GP6900900-T47					
10008478	86.9	90	3.9	GP4300900-T47					
4102430	90.0	95	9.7	GP6900950-T47					
4102450	95.0	100	5.6	GP6501000-T47					
4102470	95.0	100	9.7	GP6901000-T47					
4102490	100.0	105	5.6	GP6501050-T47					
4102510	100.0	105	9.7	GP6901050-T47					
10028770	105.0	110	5.6	GP6501100-T47					
4102530	105.0	110	9.7	GP6901100-T47					
4102550	110.0	115	9.7	GP6901150-T47					
4102570	115.0	120	9.7	GP6901200-T47					
4102590	120.0	125	5.6	GP6501250-T47					
4102610	120.0	125	9.7	GP6901250-T47					
4102630	125.0	130	9.7	GP6901300-T47					
4102670	130.0	135	9.7	GP6901350-T47					
4102710	135.0	140	9.7	GP6901400-T47					
10029083	145.0	150	15	GP6501500-T47					
4102770	155.0	160	9.7	GP6901600-T47					

# GUIDE RING FOR RODS

## Installation recommendation Slydring® - for rods

Installation recommendation



Installation drawing

Installation dimensions

Rods <sup>1)</sup> $\varnothing d_N$ f8/h9	Groove base $\varnothing \cdot d_2$ H8	Groove width $L_2 +0.2$	Ring thickness W	Groove gap Z
8–20.0	$d_N +3.10$	2.50	1.55	3)
10–50.0	$d_N +3.10$	4.00	1.55	3)
15–140.0	$d_N +5.00$	5.60	2.50	3)
20–220.0	$d_N +5.00$	9.70	2.50	3)
80–400.0	$d_N +5.00$	15.00	2.50	3)
200–999.9	$d_N +5.00$	25.00	2.50	3)
1000–4200.0	$d_N +5.00$	25.00	2.50	3)
280–999.9	$d_N +8.00$	25.00	4.00	3)
1000–2200.0	$d_N +8.00$	25.00	4.00	3)

<sup>1)</sup> Recommended diameter ranges<sup>2)</sup> Data apply to the Slydring® only.<sup>3)</sup> Calculation of the extended length.

Recommended radii for groove base

D	$R_{max}$
8 – 250	0.2
> 250	0.4

Surface roughness

Characteristic	Mating surface $\mu m$		Groove surface $\mu m$
	Turcite® materials	Luytex® materials	
$R_{max}$	0.63/-4.00	1.00/-4.00	< 16.0
$R_z$ DIN	0.40/-2.50	0.63/-2.50	< 10.0
$R_a$	0.05/-0.40	0.10/-0.40	< 2.5

The characterised parameters correspond to ISO 10766 and are preferred to be used.  
Data in mm.

# HYDRAULIC GUIDE RING ROD



## Slydring® - for rods, C380

Guide rings are for guiding the pistons and the piston rods of a working cylinder and to absorb the lateral forces.

**Name:** Guide ring  
**Type:** GR  
**Material:** Orkot® C380  
**Manufacturer:** Trelleborg



Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4103610	18	23	5.6	GR6500180-C380					
4103630	20	25	5.6	GR6500200-C380					
4103660	20	25	9.7	GR6900200-C380					
4103690	22	27	5.6	GR6500220-C380					
4103710	22	27	9.7	GR6900220-C380					
10025148	24	29	9.7	GR6900240-C380					
4103740	25	30	5.6	GR6500250-C380					
4103760	25	30	9.7	GR6900250-C380					
4103780	28	33	5.6	GR6500280-C380					
4103810	28	33	9.7	GR6900280-C380					
4103830	30	35	5.6	GR6500300-C380					
4103850	30	35	9.7	GR6900300-C380					
4103870	32	37	5.6	GR6500320-C380					
4103890	32	37	9.7	GR6900320-C380					
4103920	35	40	5.6	GR6500350-C380					
4103950	35	40	9.7	GR6900350-C380					
4103970	36	41	5.6	GR6500360-C380					
4104010	36	41	9.7	GR6900360-C380					
4104040	40	45	5.6	GR6500400-C380					
4104070	40	45	9.7	GR6900400-C380					
4104090	40	45	15.0	GR7300400-C380					
4015340	42	47	5.6	GR6500420-C380					
4104150	45	50	5.6	GR6500450-C380					
4104220	45	50	9.7	GR6900450-C380					
4104240	48	53	5.6	GR6500480-C380					
4104260	48	53	9.7	GR6900480-C380					
4104280	50	55	5.6	GR6500500-C380					
4104380	50	55	9.7	GR6900500-C380					
10005753	50	55	15.0	GR7300500-C380					
10021396	51	57	15.0	GR7300560-C380					
4104400	52	57	5.6	GR6500520-C380					
4104420	52	57	9.7	GR6900520-C380					
4015360	55	60	5.6	GR6500550-C380					
4104460	55	60	9.7	GR6900550-C380					
10024879	55	60	15.0	GR7300550-C380					
4104480	56	61	5.6	GR6500560-C380					
4104500	56	61	9.7	GR6900560-C380					
4104520	58	63	5.6	GR6500580-C380					
4104540	58	63	9.7	GR6900580-C380					
4104560	60	65	5.6	GR6500600-C380					
4104580	60	65	9.7	GR6900600-C380					
4104600	63	68	5.6	GR6500630-C380					
4104620	63	68	9.7	GR6900630-C380					

# HYDRAULIC GUIDE RING ROD

## Continued: Slydring® – for rods, C380



Guide rings are for guiding the pistons and the piston rods of a working cylinder and to absorb the lateral forces.

**Name:** Guide ring  
**Type:** GR  
**Material:** Orkot® C380  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4104640	63	68	15.0	GR7300630-C380					
4104660	65	70	5.6	GR6500650-C380					
4104680	65	70	9.7	GR6900650-C380					
4104700	70	75	5.6	GR6500700-C380					
4104740	70	75	15.0	GR7300700-C380					
4104770	75	80	5.6	GR6500750-C380					
4104790	75	80	9.7	GR6900750-C380					
4104810	75	80	15.0	GR7300750-C380					
4104830	80	85	5.6	GR6500800-C380					
4104850	80	85	9.7	GR6900800-C380					
4104870	80	85	15.0	GR7300800-C380					
4104900	85	90	5.6	GR6500850-C380					
4104920	85	90	9.7	GR6900850-C380					
4104940	90	95	5.6	GR6500900-C380					
4104960	90	95	9.7	GR6900900-C380					
4104980	90	95	15.0	GR7300900-C380					
4105000	95	100	5.6	GR6500950-C380					
4105020	95	100	9.7	GR6900950-C380					
4105040	95	100	15.0	GR7300950-C380					
4105060	100	105	5.6	GR6501000-C380					
4105080	100	105	9.7	GR6901000-C380					
4105110	100	105	15.0	GR7301000-C380					
10010712	105	110	5.6	GR65A1050-C380					
4105130	105	110	9.7	GR6901050-C380					
4105160	105	110	15.0	GR7301050-C380					
4105200	110	115	9.7	GR6901100-C380					
4105220	110	115	15.0	GR7301100-C380					
4105240	115	120	9.7	GR6901150-C380					
4105280	115	120	15.0	GR7301150-C380					
4105310	120	125	9.7	GR6901200-C380					
4105340	120	125	15.0	GR7301200-C380					
4105370	125	130	9.7	GR6901250-C380					
4105390	125	130	15.0	GR7301250-C380					
4105410	130	135	15.0	GR7301300-C380					
4105430	135	140	15.0	GR7301350-C380					
4105480	140	145	9.7	GR6901400-C380					
4105500	140	145	15.0	GR7301400-C380					
4105520	150	155	15.0	GR7301500-C380					
4105540	155	160	15.0	GR7301550-C380					
4105560	160	165	9.7	GR6901600-C380					
4105580	160	165	15.0	GR7301600-C380					
4105600	170	175	15.0	GR7301700-C380					
10028712	180	185	5.6	GR6501800-C380					

# HYDRAULIC GUIDE RING ROD



## Slydring® - for rods, C380

Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 10 Unit	€/100 units beginning at 25 Unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit
4105620	180	185	9.7	GR6901800-C380					
4105640	180	185	15.0	GR7301800-C380					
4105660	190	195	15.0	GR7301900-C380					
4105680	195	200	15.0	GR7301950-C380					
4105700	200	205	15.0	GR7302000-C380					
4107060	200	205	25.0	GR7502000-C380					
4107080	210	215	15.0	GR7302100-C380					
4107100	220	225	15.0	GR7302200-C380					
4107120	220	225	25.0	GR7502200-C380					
4107140	230	235	25.0	GR7502300-C380					
10025536	235	240	9.7	GR6912400-C380					
10007171	240	245	15.0	GR7302400-C380					
4107160	240	245	25.0	GR7502400-C380					
4107180	250	255	15.0	GR7302500-C380					
4107200	250	255	25.0	GR7502500-C380					
10032294	270	275	14.8	GR7302700-C380					
4107220	280	285	15.0	GR7302800-C380					
4107240	280	285	25.0	GR7502800-C380					
4107260	280	288	25.0	GR9802800-C380					
4107280	300	305	25.0	GR7503000-C380					
4107300	320	325	15.0	GR7303200-C380					
4107320	320	325	25.0	GR7503200-C380					
4107340	320	328	25.0	GR9803200-C380					
10019133	326	331	25.0	GR7503260-C380					
10025539	335	340	9.7	GR6913400-C380					
10003336	340	345	25.0	GR7503400-C380					
4107360	350	355	25.0	GR7503500-C380					
4107380	360	365	15.0	GR7303600-C380					
4107400	360	365	25.0	GR7503600-C380					
4107420	360	368	25.0	GR9803600-C380					
4107440	400	405	25.0	GR7504000-C380					
4107460	400	408	25.0	GR9804000-C380					
10032295	440	445	14.8	GR7304400-C380					
10003914	440	445	25.0	GR7504400-C380					
10003913	500	505	24.5	GR7505000-C380					

# HYDRAULIC GUIDE RING ROD

## Slydring® - for rods, T47



Guide rings are for guiding the pistons and the piston rods of a working cylinder and to absorb the lateral forces.

**Name:** Guide ring  
**Type:** GR  
**Material:** T47  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit
4103510	10	13.1	2.5	GR4100100-T47				
4103520	10	13.1	4.0	GR4300100-T47				
4103530	12	15.1	4.0	GR4300120-T47				
4103540	14	17.1	4.0	GR4300140-T47				
4103550	14	18.0	9.7	GR4900140-T47				
4103560	15	18.1	4.0	GR4300150-T47				
4103570	16	19.1	4.0	GR4300160-T47				
4103580	16	21.0	5.6	GR6500160-T47				
4103590	18	21.1	4.0	GR4300180-T47				
4103600	18	23.0	5.6	GR6500180-T47				
4103620	20	23.1	4.0	GR4300200-T47				
4103640	20	25.0	5.6	GR6500200-T47				
4103650	20	25.0	9.7	GR6900200-T47				
4103670	22	25.1	4.0	GR4300220-T47				
4103680	22	27.0	5.6	GR6500220-T47				
4103700	22	27.0	9.7	GR6900220-T47				
10030915	24	27.1	4.0	GR4300240-T47				
10017569	24	29.0	9.7	GR6900240-T47				
4103720	25	28.1	4.0	GR4300250-T47				
4103730	25	30.0	5.6	GR6500250-T47				
4103750	25	30.0	9.7	GR6900250-T47				
4103770	28	31.1	4.0	GR4300280-T47				
4103790	28	33.0	5.6	GR6500280-T47				
4103800	28	33.0	9.7	GR6900280-T47				
4149060	30	33.1	3.9	GR4300300-T47				
4103820	30	35.0	5.6	GR6500300-T47				
4103840	30	35.0	9.7	GR6900300-T47				
4103860	32	37.0	5.6	GR6500320-T47				
4103880	32	37.0	9.7	GR6900320-T47				
4103910	35	40.0	5.6	GR6500350-T47				
4103940	35	40.0	9.7	GR6900350-T47				
10023875	36	39.1	3.9	GR4300360-T47				
4103960	36	41.0	5.6	GR6500360-T47				
4103980	36	41.0	9.7	GR6900360-T47				
4104020	40	45.0	5.6	GR6500400-T47				
4104050	40	45.0	9.7	GR6900400-T47				
4104110	42	47.0	5.6	GR6500420-T47				
10033319	45	48.1	4.0	GR4300450-T47				
4104130	45	50.0	5.6	GR6500450-T47				
4104210	45	50.0	9.7	GR6900450-T47				
4104230	48	53.0	5.6	GR6500480-T47				
4104250	48	53.0	9.7	GR6900480-T47				
4104270	50	55.0	5.6	GR6500500-T47				

# HYDRAULIC GUIDE RING ROD



## Slydring® - for rods, T47

Item No.	d mm	D mm	L mm	Manufacturer Part number	€/100 units beginning at 1 unit	€/100 units beginning at 50 Unit	€/100 units beginning at 100 Unit	€/100 units beginning at 250 Unit
4104370	50	55.0	9.7	GR6900500-T47				
4104390	52	57.0	5.6	GR6500520-T47				
4104410	52	57.0	9.7	GR6900520-T47				
4104430	55	60.0	5.6	GR6500550-T47				
4104450	55	60.0	9.7	GR6900550-T47				
4104470	56	61.0	5.6	GR6500560-T47				
4104490	56	61.0	9.7	GR6900560-T47				
4104510	58	63.0	5.6	GR6500580-T47				
4104530	58	63.0	9.7	GR6900580-T47				
4104550	60	65.0	5.6	GR6500600-T47				
4104570	60	65.0	9.7	GR6900600-T47				
4104590	63	68.0	5.6	GR6500630-T47				
4104610	63	68.0	9.7	GR6900630-T47				
4104650	65	70.0	5.6	GR6500650-T47				
4104670	65	70.0	9.7	GR6900650-T47				
4104690	70	75.0	5.6	GR6500700-T47				
4104710	70	75.0	9.7	GR6900700-T47				
4104760	75	80.0	5.6	GR6500750-T47				
4104780	75	80.0	9.7	GR6900750-T47				
4104820	80	85.0	5.6	GR6500800-T47				
4104840	80	85.0	9.7	GR6900800-T47				
4104890	85	90.0	5.6	GR6500850-T47				
4104910	85	90.0	9.7	GR6900850-T47				
4104930	90	95.0	5.6	GR6500900-T47				
4104950	90	95.0	9.7	GR6900900-T47				
4104990	95	100.0	5.6	GR6500950-T47				
4105010	95	100.0	9.7	GR6900950-T47				
4105050	100	105.0	5.6	GR6501000-T47				
4105070	100	105.0	9.7	GR6901000-T47				
4105120	105	110.0	9.7	GR6901050-T47				
4105190	110	115.0	9.7	GR6901100-T47				

# PNEUMATIC SEALS

## Rod seal ARG

### Description

Dual-acting Glyd Ring® rod seal, consisting of a lubricating seal and an O-ring pre-tensioning (leader) element.

Developed especially for frictionless pneumatic applications within small design spaces. Available for all diameters from 3 to 2600 mm.

### Technical data

Operating pressure: 1,6 MPa

Speed: <= 5 m/s

Temperature\*: -30°C ... +200°C

\*(other temperature ranges on request)  
Media: oil-free air (initial lubrication required), oiled air, non-aggressive gases – depending on the material compatibility of the O-ring.

### Material

Standard material: Turcon® T19, 62 Shore D,

PTFE with mineral fibres,

dark green - grey

T19N or T19V (depending on O-ring)

Material (N=NBR / V=FPM)

N7083 NBR 70 Shore A

(-30°C ... +100°C)

V70GA FPM 70 Shore A

(-10°C ... +200°C)

O-ring material:

N7083 NBR 70 Shore A

(-30°C ... +100°C)

V70GA FPM 70 Shore A

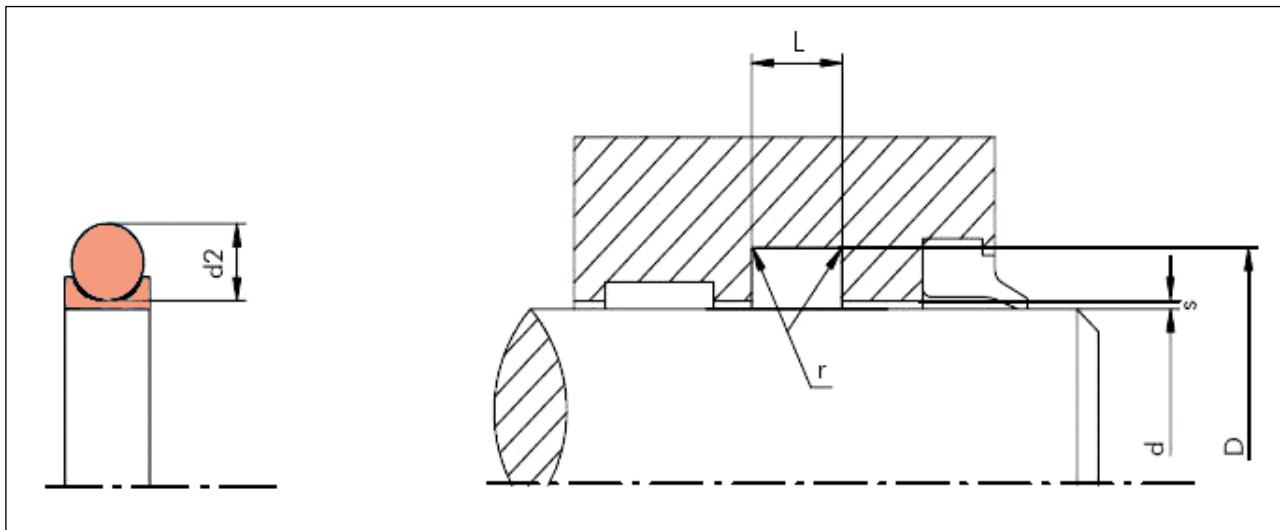
(-10°C ... +200°C)

### Installation

Installation is done in split grooves or closed grooves (greater than rod diameter 12). Direct O-ring installation in the groove followed by snapping in the Glyd Ring®.

Caution: the Glyd Ring® is deformed into the shape of a kidney when installed, whereupon it assumes its original round shape again. It is very important that kinks are avoided. All sharp edges and burrs must be removed from grooves and rods prior to installation.

### Installation recommendation



### Installation dimensions

TSS Serial No.	Rod Ø d f8/h9		Groove diameter	Groove width	Groove radius	radial play	O-ring Diameter
	Standard range	Extended range	d H9	L + 0.16	r <sub>1</sub>	s <sub>max.</sub>	d <sub>2</sub>
ARG0	3 - 14.9	3 - 79.9	d + 4.0	2.00	0.5	0.25	1.78
ARG1	15 - 29.9	6 - 179.9	d + 6.0	2.85	0.5	0.50	2.62
ARG2	30 - 59.9	7 - 299.9	d + 7.5	3.80	0.8	0.50	3.53
ARG3	60 - 199.9	16 - 659.9	d + 12.5	5.60	1.3	0.70	5.33
ARG4	200 - 399.9	110 - 799.9	d + 15.0	7.55	1.3	0.90	7.00
ARG8	400 - 999.9	150 - 999.9	d + 18.0	7.55	1.3	0.90	7.00

Data in mm.

# PNEUMATIC SEALS



## Rod seal ARUP

### Description

Single-acting rod seal with U-shaped cross section. Special lip design for pneumatic applications to maintain lubrication and for minimum wear.

### Material

Standard polyurethane in good quality  
Standard material: Polyurethane, 90 Shore A,  
Material No.: WU9E1

### Technical data

Operating pressure: 1,6 MPa

Speed: ≤ 1 m/s

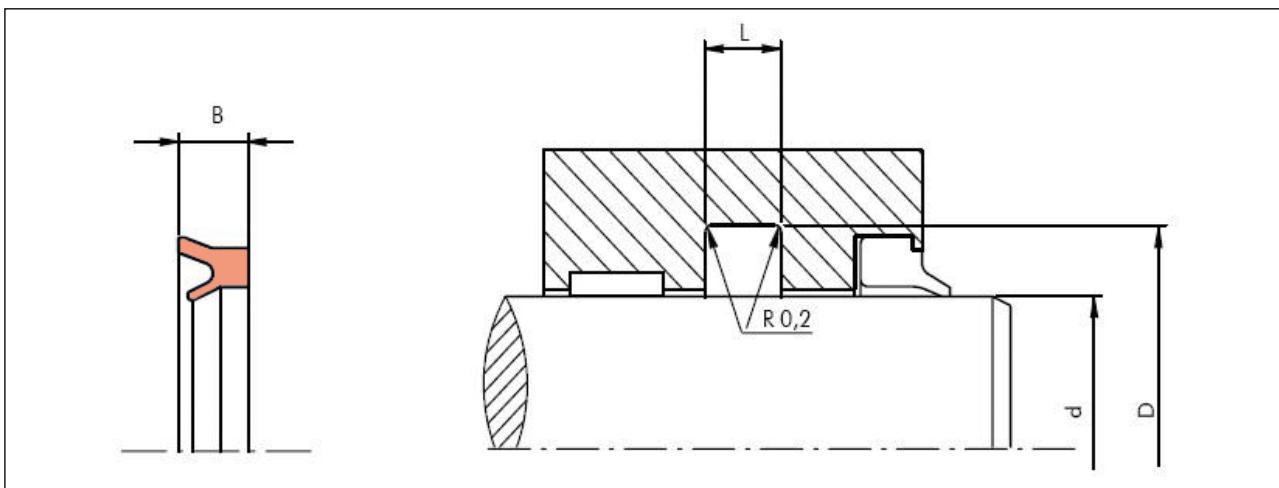
Temperature: -40 °C to +80 °C

Media: oil-free air (initial lubrication required),  
oiled air, non-aggressive gases

### Installation

Installation is done in split grooves or closed grooves (greater than rod diameter 16). All sharp edges and burrs must be removed from grooves and rods prior to installation.

### Installation recommendation



Type: ARUP  
 Material: WU9E1  
 Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	L mm	Manufacturer Part number
10039572	4.00	8.00	3.00	3.50	ARUP0040-WU9E1
10003707	6.00	10.00	3.00	3.50	ARUP0060-WU9E1
10039573	6.00	12.00	4.00	4.50	ARUP20060-WU9E1
10039574	8.00	14.00	4.00	4.50	ARUP10080-WU9E1
10020097	8.00	14.00	4.50	5.00	ARUP00080-WU9E1
10039575	10.00	16.00	4.50	5.00	ARUP00100-WU9E1
10008961	14.00	22.00	6.00	5.50	ARUP00140-WU9E1
10009681	16.00	24.00	5.50	6.00	ARUP00160-WU9E1
10039576	20.00	28.00	5.50	6.00	ARUP00200-WU9E1
10039577	25.00	33.00	5.50	6.00	ARUP00250-WU9E1
10023528	35.00	43.00	7.00	7.50	ARUP00350-WU9E1
10039578	35.00	45.00	7.00	7.50	ARUP10350-WU9E1
10015602	40.00	48.00	5.50	6.00	ARUP00400-WU9E1
10039579	40.00	50.00	7.00	7.50	ARUP10400-WU9E1
10039580	56.00	66.00	7.00	7.50	ARUP00560-WU9E1

# PNEUMATIC SEALS

## Piston seal AK

### Description

Ready-to-install dual-acting complete pneumatic piston with integrated metal disc and seal lips. Air channels are integrated into the rubber cover on the metal disc side on both sides in order to guarantee an even pressure application over the entire surface of the piston.

### Technical data

Operating pressure:	1,2 MPa
Speed:	≤ 1 m/s
Temperature:	-30 °C ... +100 °C *(other temperature ranges on request)
Media:	oil-free air (initial lubrication required), oiled air, non-aggressive gases

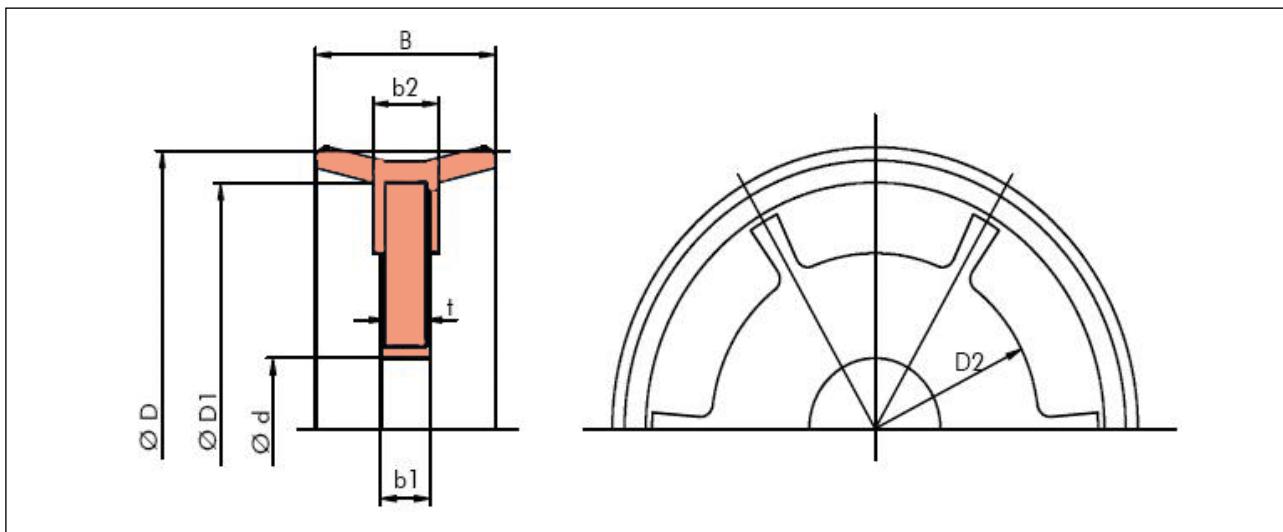
### Material

Standard material:	Material combination NBR 70 Shore A / Steel 1,0315
Material No.:	N7MM

### Installation

The ready-to-install complete pneumatic piston is placed onto the end of the rod and fastened with a nut.

### Installation recommendation



Type: AK  
Material: NBR  
Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	Manufacturer Part number
10034633	8.00	25.00	12.00	AK0802512-N7MM
4144510	8.00	32.00	15.00	AK0803215-N7MM
10005817	10.00	40.00	18.00	AK1004018-N7MM
4190590	10.00	50.00	18.00	AK1005018-N7MM
10003092	16.00	63.00	22.00	AK1606322-N7MM
10018340	16.00	80.00	24.00	AK1608024-N7MM
10034637	20.00	100.00	26.00	AK2010026-N7MM
10034638	20.00	125.00	26.00	AK2012526-N7MM
10034639	22.00	140.00	28.00	AK2214028-N7MM
10034641	27.00	160.00	30.00	AK2716030-N7MM
10034642	27.00	200.00	35.00	AK2720035-N7MM

# PNEUMATIC SEALS



## Piston seal APDE

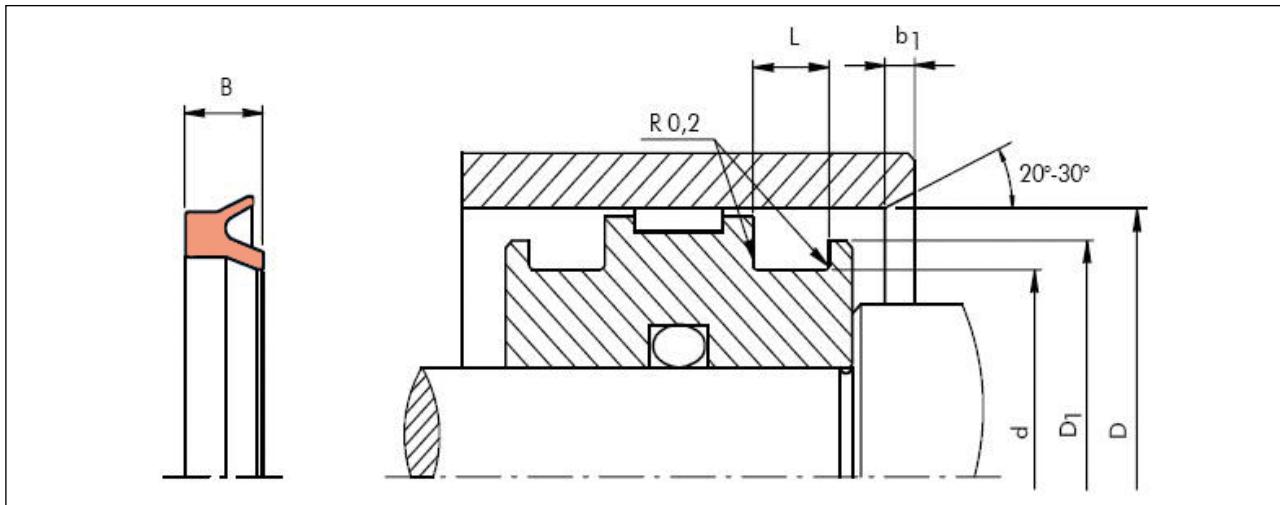
### Description

Single-acting piston seal with U-shaped cross section.  
Dual-acting pistons have two "back-to-back" seals in them. Special lip design for pneumatic applications to maintain lubrication and for minimum wear. Suitable for cylinders with pneumatic damping.

### Technical data

Operating pressure: 1,6 MPa  
Speed: ≤ 1 m/s  
Temperature: from -40°C to +80°C  
Media: oil-free air (initial lubrication required), oiled air, non-aggressive gases

### Installation recommendation



Type: APDE  
Material: WU9E1  
Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	L mm	Manufacturer Part number
10020228	4.00	8.00	2.55	3.00	APDE00080-WU9E1
10026136	7.00	12.00	2.55	3.00	APDE00120-WU9E1
10039582	8.00	13.00	2.55	3.00	APDE00130-WU9E1
10031786	10.00	16.00	2.50	3.00	APDE00160-WU9E1
4711550	22.00	30.00	3.25	3.50	APDE00300-WU9E1
10024805	24.00	32.00	3.25	3.50	APDE00320-WU9E1
10039583	27.00	35.00	3.25	3.50	APDE00350-WU9E1
10039585	30.00	40.00	7.00	7.50	APDE00400-WU9E1
10031101	40.00	50.00	7.00	7.50	APDE00500-WU9E1
10023529	50.00	60.00	5.00	5.70	APDE00600-WU9E1
4715060	53.00	63.00	4.25	4.50	APDE10630-WU9E1
10011773	58.00	70.00	8.50	9.50	APDE00700-WU9E1
10019379	95.00	110.00	10.00	11.00	APDE01100-WU9E1
10039586	105.00	120.00	10.00	11.00	APDE01200-WU9E1
10039587	140.00	160.00	8.25	8.50	APDE01600-WU9E1

# PNEUMATIC SEALS

## Piston seal APDF

### Description

For standard pneumatic piston seals, ideally suited, made of specially developed piston seal polyurethane Seal dimensions correspond to cylinder diameters according to ISO 3320. The geometry of the seal guarantees a high reliability and simple snap-in installation. The seal has an optimized design for reducing the stick-slip effect, for use in cylinders with end position damping and exhaust throttling. The special polyurethane offers excellent wear resistance in connection with extremely high durability. Special lip design for pneumatic applications to maintain lubrication and for minimum wear.

### Material

High-performance Zurcon® polyurethane material  
Standard material: Zurcon® PU, 83 Shore A,

Colour: Bright blue  
Material No.: Z30

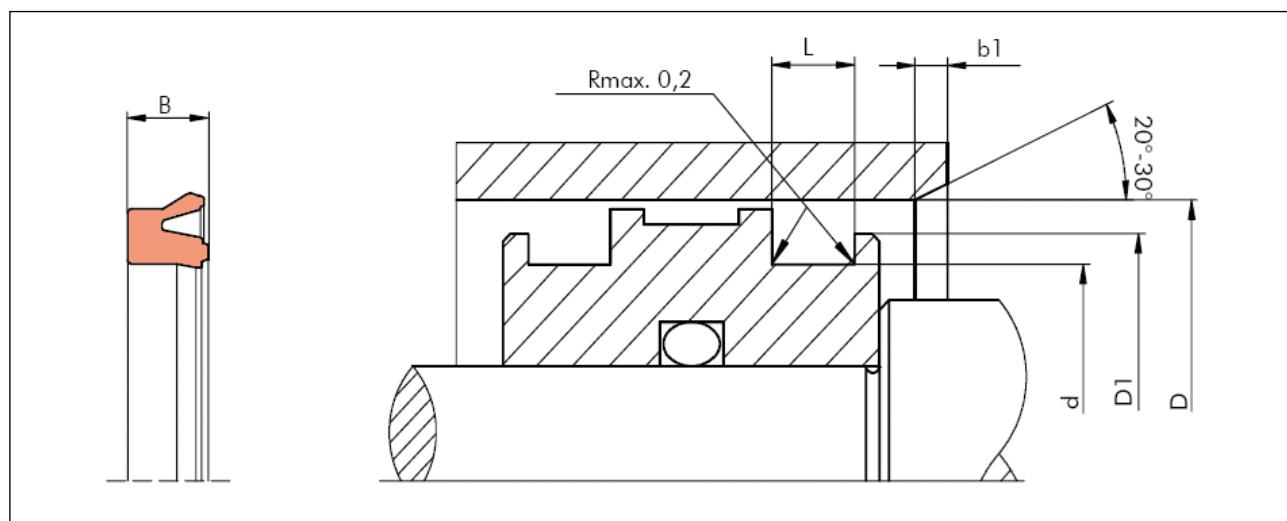
### Installation

The APDF piston seal is snapped into the groove by pulling it over the piston collar. All sharp edges and burrs must be removed from grooves and rods prior to installation.

### Technical data

Operating pressure: 1,6 MPa  
Speed: < = 1 m/s  
Temperature: -35°C to +85°C  
Media: oil-free air (initial lubrication required), oiled air, non-aggressive gases

### Installation recommendation



Type: APDF  
Material: Z30  
Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	L mm	Manufacturer Part number
10034664	17.00	25.00	5.50	6.00	APDF00250-Z30
10034665	24.00	32.00	5.50	6.00	APDF00320-Z30
10034666	30.00	40.00	7.00	7.50	APDF00400-Z30
10034700	40.00	50.00	7.00	7.50	APDF00500-Z30
10034701	53.00	63.00	7.00	7.50	APDF00630-Z30
10034702	68.00	80.00	8.50	9.50	APDF00800-Z30
10034703	88.00	100.00	8.50	9.50	APDF01000-Z30
10034704	110.00	125.00	10.00	11.00	APDF01250-Z30

# PNEUMATIC SEALS



## Piston seal APDG

### Description

For standard pneumatic piston seals, ideally suited for small dimensions, made of specially developed piston seal polyurethane. Seal dimensions correspond to cylinder diameters according to ISO 3320. The geometry of the seal guarantees a high reliability and simple snap-in installation. The special polyurethane offers excellent wear resistance in connection with extremely high durability. Special lip design for pneumatic applications to maintain lubrication and for minimum wear. The seal has an optimised design for reducing back-sliding for use in cylinders with end position damping with exhaust throttling.

### Material

High-performance Zurcon® polyurethane material

Standard material: Zurcon® PU, 83 Shore A,

Colour: Bright blue

Material No.: Z30

### Installation

The APDG piston seal is snapped into the groove by pulling it over the piston collar. All burrs and sharp edges absolutely must be removed from the groove and the shaft so that damage to the seal or the seal lips does not occur.

### Technical data

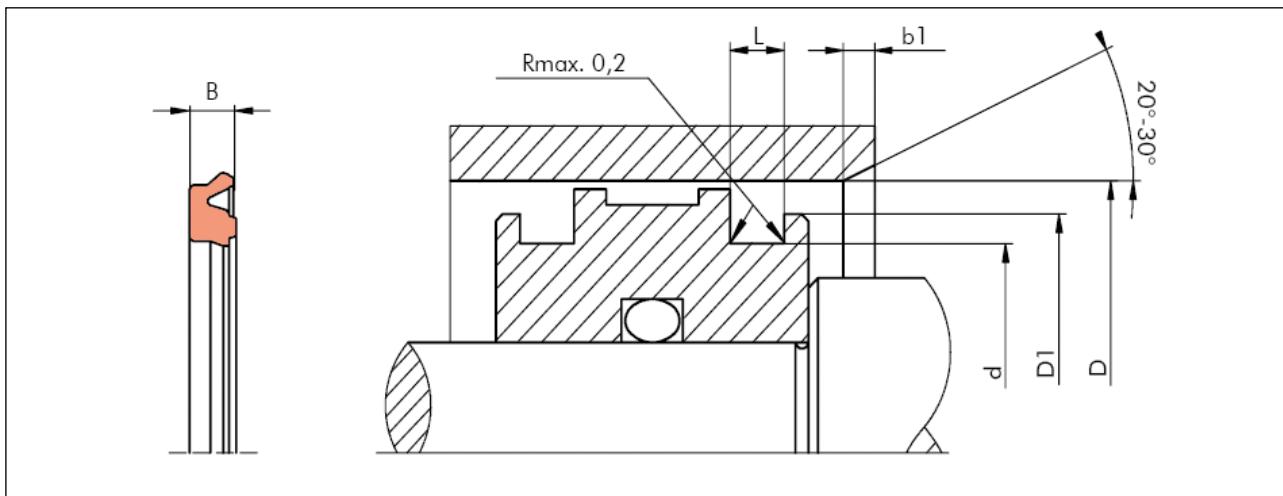
Operating pressure: 1,6 MPa

Speed: < = 1 m/s

Temperature: -35 °C to +85 °C

Media: oil-free air (initial lubrication required), oiled air, non-aggressive gases

### Installation recommendation



Type: APDG

Material: Z30

Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	L mm	Manufacturer Part number
10034654	24	32	3.3	3.5	APDG00320-Z30
10034656	32	40	3.3	3.5	APDG00400-Z30
10034661	34	42	3.3	3.5	APDG00420-Z30
10034662	42	50	3.3	3.5	APDG00500-Z30
10031957	53	63	4.3	4.5	APDG00630-Z30
10034643	70	80	4.3	4.5	APDG00800-Z30
10034646	90	100	4.3	4.5	APDG01000-Z30

# PNEUMATIC SEALS

## Piston seal APG

### Description

Dual-acting Glyd Ring® piston seal, consisting of a sliding seal and a pre-tensioned O-ring leader element. Developed especially for frictionless pneumatic applications within small design spaces. Suitable for cylinders with pneumatic damping. Available for all diameters from 6 to 2700 mm.

### Technical data

Operating pressure: 1,6 MPa  
 Speed: < = 5 m/s  
 Temperature\*: -30 °C ... +200 °C  
 \*(other temperature ranges on request)  
 Media: oil-free air (initial lubrication required), oiled air, non-aggressive gases – depending on the material compatibility of the O-ring.

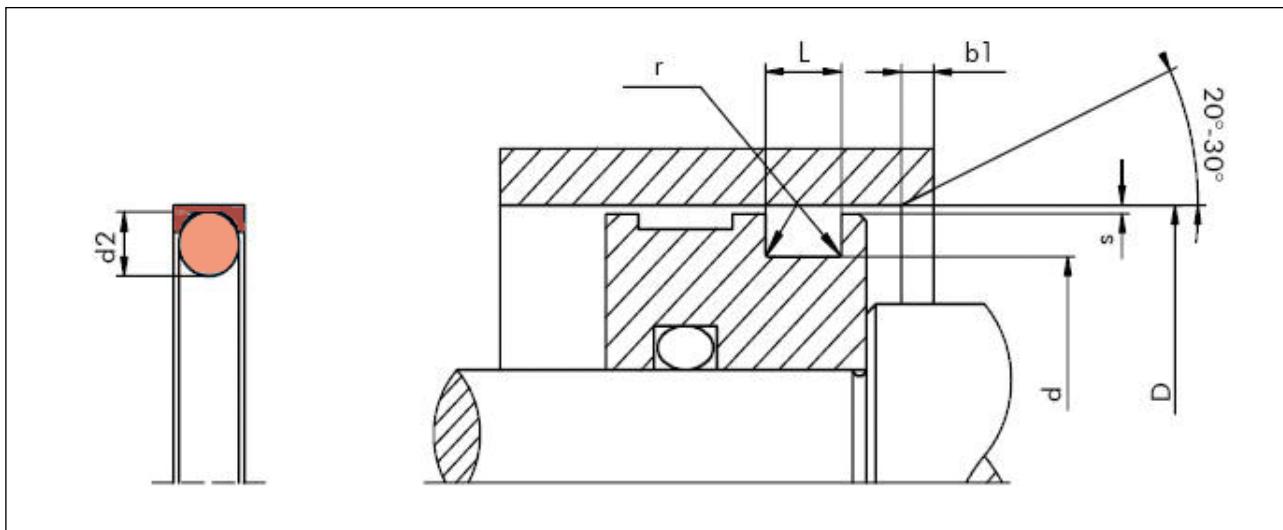
### Material

Standard material: Turcon® T19, 62 Shore D, PTFE with mineral fibres, dark green – grey  
 Colour:  
 Material No.: T19N or T19V (depending on O-ring)  
 Material (N=NBR / V=FPM)  
 O-ring material: N7083 NBR 70 Shore A  
 (-30 °C ... +100 °C)  
 V70GA FPM 70 Shore A  
 (-10 °C ... +200 °C)

### Installation

Direct O-ring installation followed by snapping in the Glyd Ring®. If the Glyd Ring® is pushed over an guide ring groove, an installation sleeve must be used (example drawings available on request). All sharp edges and burrs must be removed from grooves and rods prior to installation.

### Installation recommendation



### Installation dimensions

Serial No.	Hole Ø D H9		Groove diameter	Groove width L + 0.15	Groove radius r	radial play S <sub>max.</sub>	O-ring Diameter d <sub>2</sub>
	Standard range	Extended range					
APG0	8 - 13.9	6 - 79.9	d + 4.0	2.00	0.5	0.25	1.78
APG1	14 - 29.9	10 - 139.9	d + 6.0	2.85	0.5	0.50	2.62
APG2	30 - 79.9	15 - 359.9	d + 7.5	3.80	0.8	0.50	3.53
APG3	80 - 132.9	40 - 449.9	d + 12.5	5.60	1.3	0.70	5.33
APG4	133 - 249.9	110 - 629.9	d + 15.0	7.55	1.3	0.90	7.00
APG8	250 - 354.9	150 - 999.9	d + 18.0	7.55	1.3	0.90	7.00

Data in mm.

# PNEUMATIC SEALS



## Scraper ARAA

### Description

Standard seal scraper with integrated retaining ridge. Compared to ARAN with improved seal lip geometry for better sealing and scraping function, and very good protection against penetration of contaminants. The design of the seal and groove are selected such that ease of installation, by hand or automatically, is ensured.

Installation space corresponds to ARAN, ARS and ARV items. The special polyurethane offers excellent wear resistance in connection with extremely high durability. Special lip design for pneumatic applications to maintain lubrication and for minimum wear. For applications at high humidity, a different material is available which has improved hydrolysis resistance.

### Material

High-performance Zurcon® polyurethane material  
Standard material: Zurcon®, 94 Shore A, turquoise colour  
Material No.: Z20

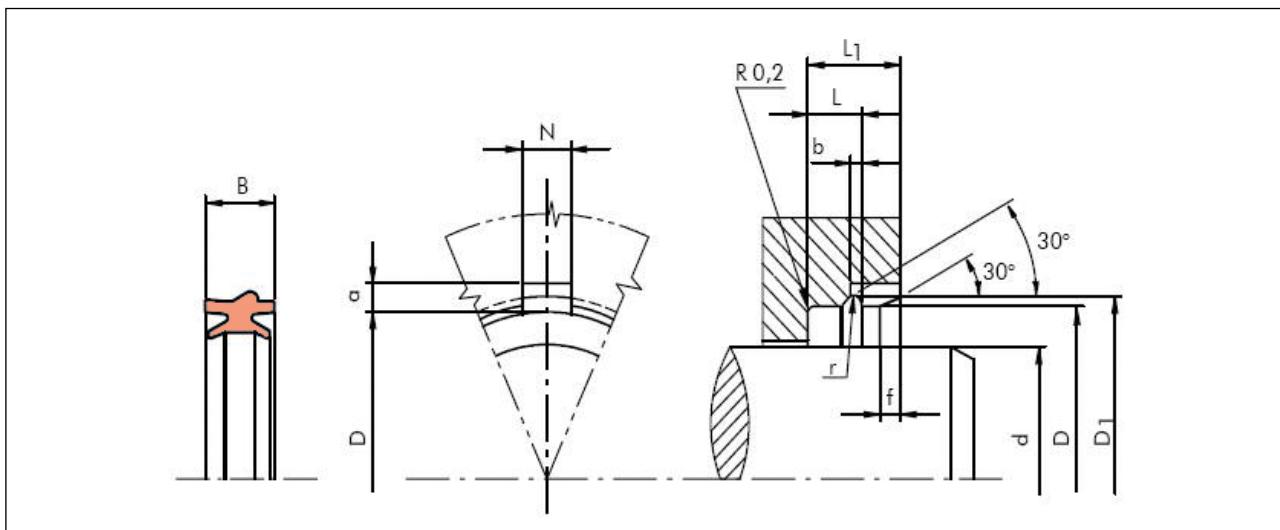
### Installation

The ARAA seal scraper is snapped into an open groove. No additional fastening materials are required. All sharp edges and burrs must be removed from grooves and rods prior to installation. Important: Avoid getting any lubricant onto the outer diameter and in the groove.

### Technical data

Operating pressure: 1,6 MPa  
Speed: < = 1 m/s  
Temperature Z20: -35°C to +110°C  
Media: oil-free air (initial lubrication required), oiled air, non-aggressive gases

### Installation recommendation



Type: ARAA  
Material: Z20  
Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	L mm	Manufacturer Part number
10015223	12.00	22.00	10.70	13.00	ARAA10120EZ20
10015224	16.00	26.00	10.70	13.00	ARAA00160EZ20
10015225	20.00	30.00	10.70	13.00	ARAA00200EZ20
10015226	25.00	35.00	11.20	14.00	ARAA00250EZ20
10015233	32.00	42.00	11.20	14.00	ARAA00320EZ20

# PNEUMATIC SEALS

## Scaper AWNS

### Description

Asymmetric lip seal with sealing lip and scraper lip. Small groove dimensions and dual function of the seal save space and costs.

### Material

Polyurethane, 90 Shore A  
Material No.: WU9E1

### Technical data

Operating pressure: 1,6 MPa

Speed: ≤ 1 m/s

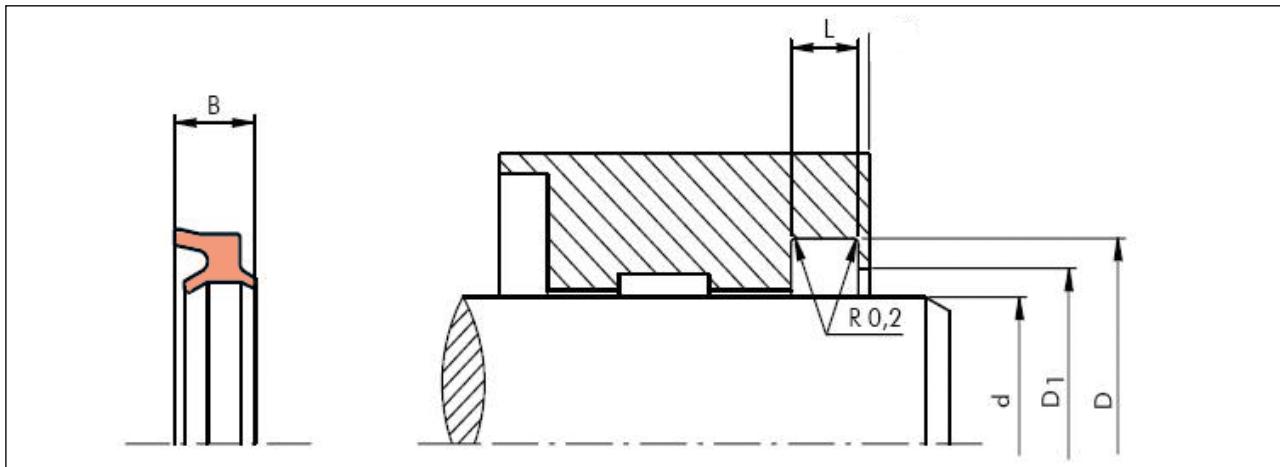
Temperature: - 40°C to +80 °C

Media: oil-free air (initial lubrication required), oiled air, non-aggressive gases

### Installation

Installation is done in split grooves or closed grooves (> rod diameter 12). All sharp edges and burrs must be removed from grooves and rods prior to installation.

### Installation recommendation



Type: AWNS

Material: WU9E1

Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	L mm	Manufacturer Part number
10035392	4.00	8.80	5.20	4.50	AWNS00040-WU9E1
10036411	5.00	8.00	2.80	2.70	AWNS00050-WU9E1
10035393	6.00	9.00	2.80	2.70	AWNS10060-WU9E1
10015430	8.00	12.80	5.20	4.50	AWNS00080-WU9E1
10008586	10.00	14.00	3.70	3.20	AWNS10100-WU9E1
10035394	12.00	20.00	6.50	5.50	AWNS20120-WU9E1
10035395	14.00	20.00	4.80	4.00	AWNS00140-WU9E1
10033997	16.00	20.50	4.00	3.70	AWNS20160-WU9E1
10039627	16.00	22.00	5.00	4.00	AWNS00160-WU9E1
10039623	16.00	26.00	6.50	6.00	AWNS10160-WU9E1
10039614	18.00	28.00	6.50	6.00	AWNS00180-WU9E1
10039626	20.00	30.00	7.50	7.00	AWNS10200-WU9E1
10031781	22.00	27.00	4.60	4.00	AWNS00220-WU9E1
10039615	25.00	31.00	4.80	4.00	AWNS00250-WU9E1
10039617	30.00	40.00	7.50	7.00	AWNS00300-WU9E1
10039625	35.00	45.00	7.50	7.00	AWNS00350-WU9E1
10039618	40.00	50.00	7.50	7.00	AWNS00400-WU9E1
10037630	45.00	53.00	6.00	5.00	AWNS00450-WU9E1

# PNEUMATIC SEALS



## Scaper AWSD

### Description

Asymmetric lip seal with sealing lip and scraper lip. Small groove dimensions and dual function of the seal save space and costs. The special design of the seal enables easy installation, especially for small diameters.

### Technical data

Operating pressure:	1,6 MPa
Speed:	≤ 1 m/s
Temperature:	- 40°C to +80°C
Media:	oil-free air (initial lubrication required), oiled air, non-aggressive gases

### Material

Polyurethane, 90 Shore A  
Material No.: WU9E1

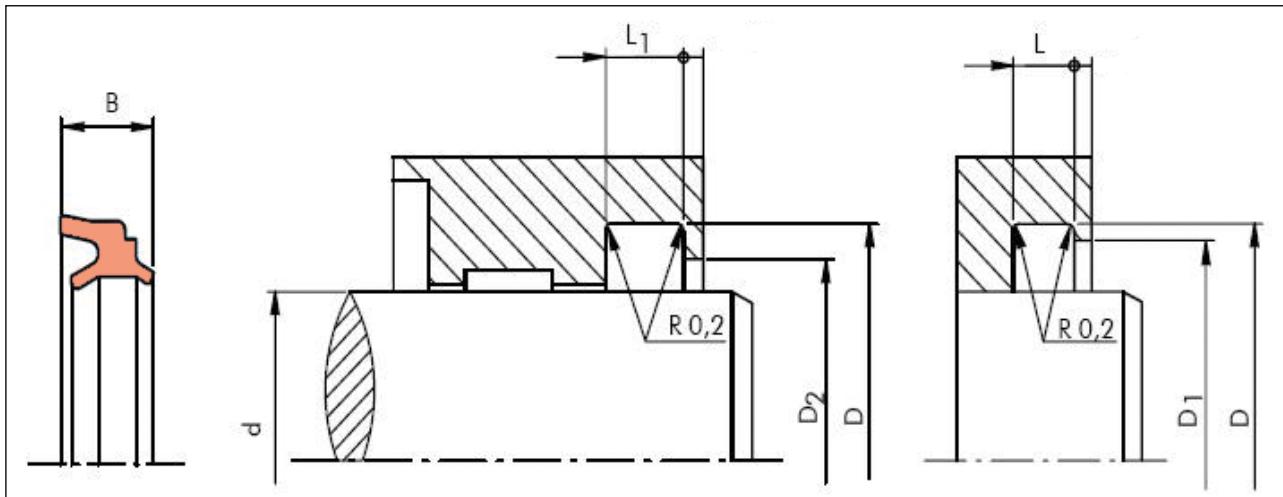
### Installation

Installation is done in split grooves or closed grooves. All sharp edges and burrs must be removed from grooves and rods prior to installation.

### Important:

For all rod diameters > 20 mm, it is recommended that the groove be designed with larger opening diameters.

### Installation recommendation



Type: AWSD  
Material: WU9E1  
Manufacturer: Trelleborg

Item No.	d mm	D mm	B mm	L mm	Manufacturer Part number
10039599	6.00	11.10	5.00	3.60	AWSD00060-WU9E1
10023949	8.00	14.10	5.00	3.60	AWSD00080-WU9E1
10035402	10.00	16.10	6.00	4.20	AWSD00100-WU9E1
10039600	12.00	18.10	6.00	4.20	AWSD00120-WU9E1
10035403	12.00	20.00	8.00	4.00	AWSD0120-WU9E1
10035404	20.00	28.00	8.00	4.00	AWSD00200-WU9E1
10039603	25.00	33.00	8.00	4.00	AWSD00250-WU9E1
10039605	28.00	36.00	8.00	4.00	AWSD00280-WU9E1
10035405	30.00	38.00	8.00	4.00	AWSD10300-WU9E1
10035408	35.00	43.00	8.00	4.00	AWSD00350-WU9E1
10035410	40.00	48.00	8.00	4.00	AWSD00400-WU9E1
10039607	42.00	50.00	8.00	4.00	AWSD00420-WU9E1
10035413	50.00	58.00	8.00	4.00	AWSD00500-WU9E1
10039608	55.00	63.00	8.00	4.00	AWSD00550-WU9E1
10039611	63.00	71.00	8.00	4.00	AWSD00630-WU9E1

# PNEUMATIC SEALS

## Scraper AWSW

**Description**

Single-acting scraper for use with separate rod seals. Special lip design for pneumatic applications for maintaining rod lubrication.

**Material**

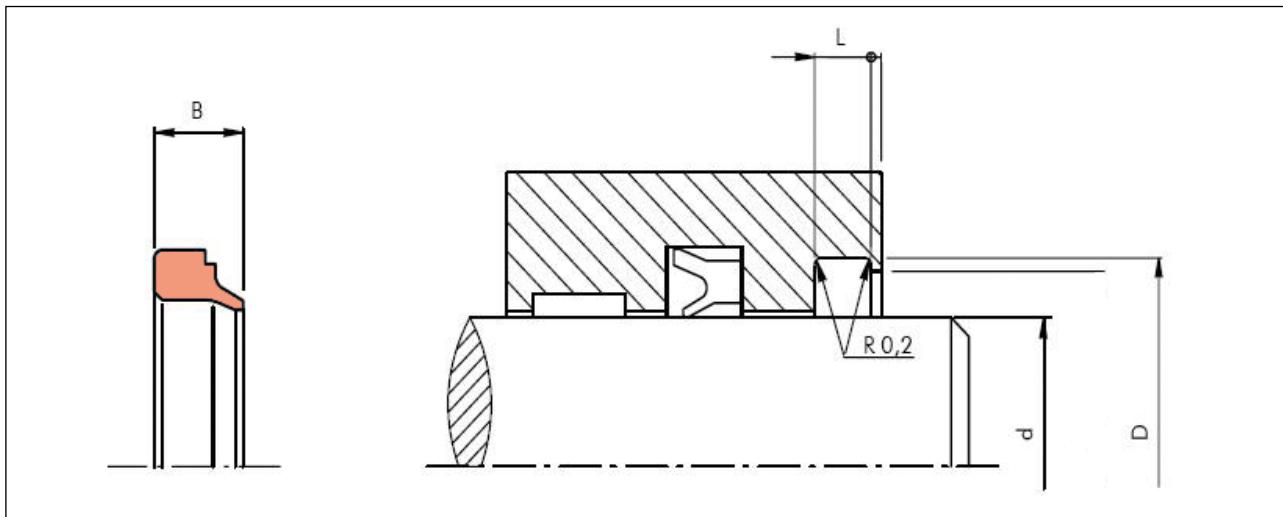
Polyurethane, 90 Shore A  
Material No.: WU9E1

**Technical data**

Operating pressure: –  
Speed: ≤ 1 m/s  
Temperature: –40°C to +80°C  
Media: oil-free air (initial lubrication required), oiled air, non-aggressive gases

**Installation**

Installation is done in split or closed grooves. All sharp edges and burrs must be removed from grooves and rods prior to installation.

**Installation recommendation**


**Type:** AWSW  
**Material:** WU9E1  
**Manufacturer:** Trelleborg

Item No.	d mm	D mm	B mm	L mm	Manufacturer Part number
10035414	6.00	10.00	4.00	2.00	AWSW00060-WU9E1
10039588	8.00	14.00	5.00	2.50	AWSW00080-WU9E1
10039602	10.00	16.00	5.00	2.50	AWSW10100-WU9E1
10035417	10.00	18.00	7.00	4.00	AWSW00100-WU9E1
10035418	14.00	22.00	7.00	4.00	AWSW00140-WU9E1
10037773	16.00	24.00	7.00	4.00	AWSA00160-WU9E1
10039591	18.00	26.00	7.00	4.00	AWSW00180-WU9E1
10035419	20.00	28.00	7.00	4.00	AWSW00200-WU9E1
10039594	22.00	33.00	7.00	4.00	AWSW00220-WU9E1
10023531	25.00	33.00	7.00	4.00	AWSW00250-WU9E1
10039596	28.00	36.00	7.00	4.00	AWSW00280-WU9E1
10035420	30.00	38.00	7.00	4.00	AWSW00300-WU9E1
10035423	40.00	48.00	7.00	4.00	AWSW00400-WU9E1
10039597	45.00	53.00	7.00	4.00	AWSW00450-WU9E1
10035425	60.00	68.00	7.00	4.00	AWSW00600-WU9E1

# REIFF CAN DO MORE

With a product range of more than 140,000 standard products, it is impossible to know every product. Antifriction bearings, V-belts, hydraulic hoses or sealing rings – the products are as diverse as the intended applications and application areas themselves.

Explore our diverse product areas and discover the possibilities this catalogue provides.

**From the standard product to the special design –  
we are true product specialists in the areas of:**

## DRIVE TECHNOLOGY

FLAT SEALS, RUBBER COMPONENTS AND INSULATORS  
RUBBER AND PLASTIC PROFILES

## LINEAR TECHNOLOGY

VIBRATION DAMPING ELEMENTS

SEALING ELEMENTS ANTIFRICTION BEARINGS

## SEALING TECHNOLOGY

ADHESIVES, SEALANTS AND LUBRICANTS  
HYDRAULIC HOSES AND FITTINGS

## HOSE TECHNOLOGY

INDUSTRIAL HOSES AND FITTINGS  
V-BELTS, FLAT BELTS, CONVEYOR BELTS

## PROFILE TECHNOLOGY

PLASTICS  
HYDRAULIC / PNEUMATIC SEALS  
TIMING BELTS AND PULLEYS



If required, we are also pleased to assemble different product elements into individual assemblies.