

Zurcon® Wynseal M



Double-acting

Rubber-energized plastic-faced seal

Material:

Turcon®, Zurcon® and Elastomer





■ Zurcon® Wynseal M



■ Description

Zurcon® Wynseal M for rod sealing is a modified machined version of the Zurcon® Wynseal design.

Zurcon® Wynseal M is a double-acting seal consisting of a Zurcon® or Turcon® seal ring and an O-Ring as energizing element - Figure 84.

The seal is designed with a seal edge profile. Two seal edges act as primary seal for pressures from both sides and prevent build-up of hydrodynamic pressure over the seal profile and the risk of blow-by effect. The central sealing and supporting rib increases the sealing effect*.

Radial notches are provided on both sides to provide activation of the energizing O-Ring. These ensure direct pressure loading of the seal under all operating conditions.

Installation groove is identical to that of Turcon® Glyd Ring®.

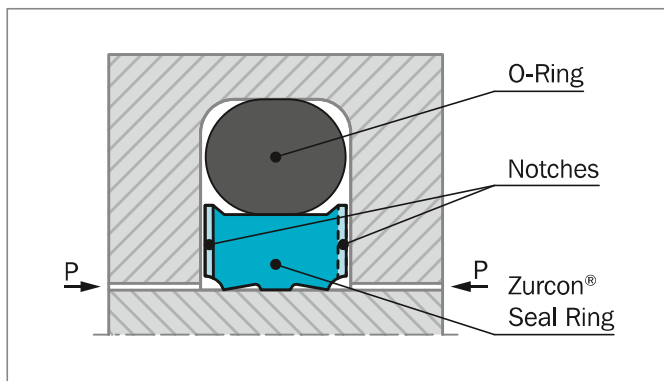


Figure 84: Zurcon® Wynseal M

* Only from RW52 and the following Series No.; RW50 is without seal edge profile and RW51 is without supporting rib.

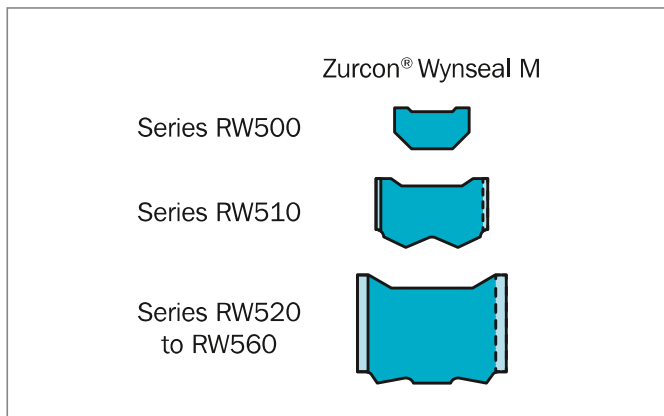


Figure 85: Zurcon® Wynseal M series profile

ADVANTAGES

- High static and dynamic sealing effect
- High abrasion resistance (Zurcon® materials)
- Simple groove design, one-piece piston possible
- Diameter range - from 3 to 2,600 mm
- Fits Stepseal® 2K groove as well as ISO 7425-2 seal housing
- Low friction
- Higher temperature (Turcon® materials)
- Higher pressure
- High chemical resistance

APPLICATION EXAMPLES

Zurcon® Wynseal M is used as double acting rod seal for hydraulic components in applications such as:

- Machine tools
- Forklifts & handling machinery
- Agriculture
- Industrial hydraulics light to medium duty



OPERATING CONDITIONS

Pressure:	Up to 50 MPa
Speed:	Up to 10 m/s
Temperature:	-45 °C to +200 °C depending on seal and O-Ring material
Media:	Mineral oil-based hydraulic fluids, flame retardant hydraulic fluids, environmentally friendly hydraulic fluids (bio-oils), phosphate ester, water and others, depending on temperature, seal and O-Ring material compatibility - see Table 68.
Clearance:	The maximum permissible radial clearance S_{max} is shown in Table 69, as a function of the operating pressure and functional diameter.

IMPORTANT NOTE

The above data are maximum values and cannot be used at the same time, e.g. the maximum operating speed depends on material type, pressure, temperature and gap value. Temperature range also depends on media.

INSTALLATION INSTRUCTIONS

Wynseal® M is installed according to information on page 37 to page 38.

Closed groove installation applies same dimensions as for Turcon® Stepseal® 2K in Table 6 page 38.

RECOMMENDED MATERIALS

The following material combinations have proven effective for hydraulic applications:

Turcon® Wynseal M in Zurcon® Z54

For light to medium hydraulic applications with linear movements in mineral oils and other media with good lubrication:

O-Ring: NBR 70 Shore A N

Set code: Z54N

Turcon® Wynseal M in Turcon® M12

All round material for light to heavy hydraulic applications with linear, short stroke or helical movements in mineral oils, flame retardant hydraulic fluids, phosphate ester, bio-oils or fluids having low lubricating properties:

O-Ring: NBR 70 Shore A N
FKM 70 Shore A V

Set code: M12N or M12V

For specific applications, all Turcon® materials are available.

Other material combinations are listed in Table 68.

**Table 68: Turcon® and Zurcon® Materials for Zurcon® Wynseal M**

Material, Applications, Properties	Code	O-Ring Material Shore A	Code	O-Ring Operating Temp.* °C	Mating Surface Material	MPa max. Dynamic
Turcon® M12 First material choice for seals in linear motion Overall improved properties For new constructions and updating For all commonly applied hydraulic fluids including fluids with low lubrication performance Lowest friction and best sliding properties Lowest wear on seals Improved absorption of abrasive contaminants Low wear or abrasion of counter surface BAM tested Mineral fiber and Additives filled Color: Dark gray	M12	NBR 70	N	-30 to +100	Steel	35
		NBR 70 Low temp.	T	-45 to +80	Steel hardened Steel chrome plated (rod)	
		FKM 70	V	-10 to +200	Steel plated (rod) Cast iron Stainless steel Titanium	
Turcon® T08 For lubricating fluids and linear motion Very high compressive strength and extrusion resistance Hard counter surfaces is recommended Bronze filled Color: Light to dark brown, which may have variations in shading	T08	NBR 70	N	-30 to +100	Steel hardened	50
		NBR 70 Low temp.	T	-45 to +80	Steel chrome plated (rod)	
		FKM 70	V	-10 to +200	Cast iron	
Turcon® T40 For lubricating and non-lubricating fluids High frequency and short strokes Water hydraulics Surface texture is not suitable for gas sealing Carbon fiber filled Color: Gray	T40	NBR 70	N	-30 to +100	Steel	25
		NBR 70 Low temp.	T	-45 to +80	Steel hardened Steel chrome plated (rod)	
		FKM 70	V	-10 to +200	Cast iron	
		EPDM 70	E**	-45 to +145	Stainless steel Aluminum	
Turcon® T46 For lubricated hydraulics in linear motion High compressive strength High extrusion resistance Very good sliding and wear properties BAM tested Bronze filled Color: Light to dark brown, which may have variations in shading.	T46	NBR 70	N	-30 to +100	Steel hardened	35
		NBR 70 Low temp.	T	-45 to +80	Steel chrome plated (rod)	
		FKM 70	V	-10 to +200	Cast iron	

Table continues on next page



Material, Applications, Properties	Code	O-Ring Material Shore A	Code	O-Ring Operating Temp.* °C	Mating Surface Material	MPa max. Dynamic
Zurcon® Z53*** For mineral oil based fluids Very high abrasion and extrusion resistance For counter surface with rougher surface finish Limited chemical resistance Max. working temperature +110 °C Cast polyurethane Color: Yellow to light-brown	Z53	NBR 70	N	-30 to +100	Steel	45
		NBR 70 Low temp.	T	-45 to +80	Steel hardened Steel chrome plated (rod) Cast iron Stainless steel Ceramic coating	
Zurcon® Z54*** For mineral oil based fluids Linear and slowly turning movements High abrasion resistance For counter surface with rougher surface finish Good extrusion resistance Limited chemical resistance Max. working temperature +110 °C Cast polyurethane Color: Turquoise	Z54	NBR 70	N	-30 to +100	Steel	25
		NBR 70 Low temp.	T	-45 to +80	Steel hardened Steel chrome plated (rod) Cast iron Stainless steel Ceramic coating	
Zurcon® Z80 For lubricating and non-lubricating fluids Water based fluids, air and gases Dry air pneumatics High abrasion and extrusion resistance For service in abrasive conditions and media with particles Good chemical resistance Limited temperature capability (-60 to +80 °C) UHMWPE (Ultra High Molecular Weight Polyethylene) Color: White to off-white	Z80	NBR 70	N	-30 to (+100)	Steel	30
		NBR 70 Low temp.	T	-45 to +80	Steel hardened Steel chrome plated (rod)	
		EPDM 70	E**	-45 to (+145)	Stainless steel Aluminum Bronze Ceramic coating	

* The O-Ring Operation Temperature is only valid in mineral hydraulic oil - except EPDM.

** Material not suitable for mineral oils.

*** Max. diameter 2,200 mm

BAM Tested by "Bundesanstalt Materialprüfung, Germany"

Highlighted materials are recommended.



Installation Recommendation

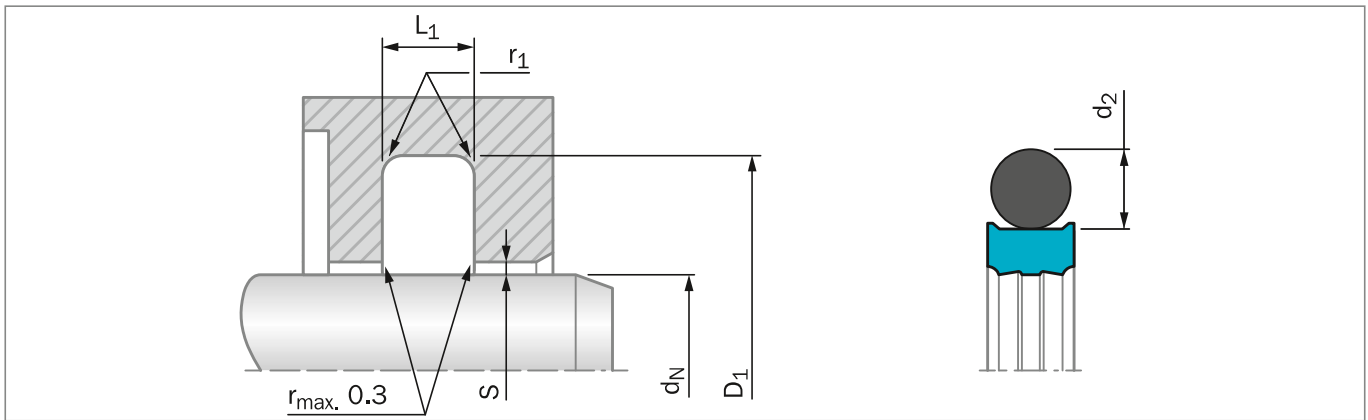


Figure 86: Installation Drawing

Table 69: Installation Dimensions - Standard Recommendations

Series No.	Rod Diameter d_N f8/h9		Groove Diameter*	Groove width	Radius	Radial Clearance S_{max}^{**}			O-Ring Cross Section
	Standard Application	Available Range	D_1 H9	$L_1 +0.2/-0$	r_1 max	10 MPa	20 MPa	40 MPa	d_2
RW500	3 - 7.9	3 - 130.0	$d_N + 4.9$	2.20	0.4	0.40	0.30	0.20	1.78
RW510	8 - 18.9	8 - 250.0	$d_N + 7.3$	3.20	0.6	0.60	0.50	0.30	2.62
RW520	19 - 37.9	8 - 450.0	$d_N + 10.7$	4.20	1.0	0.70	0.50	0.30	3.53
RW530	38 - 199.9	19 - 650.0	$d_N + 15.1$	6.30	1.3	0.80	0.60	0.40	5.33
RW540	200 - 255.9	38 - 650.0	$d_N + 20.5$	8.10	1.8	0.80	0.60	0.40	7.00
RW580	256 - 649.9	200 - 999.9	$d_N + 24.0$	8.10	1.8	0.90	0.70	0.50	7.00
RW550	650 - 999.9	256 - 999.9	$d_N + 27.3$	9.50	2.5	1.00	0.80	0.60	8.40
RW55X	1,000 - 1,200	-	$d_N + 27.3$	9.50	2.5	1.00	0.80	0.60	8.40
RW560***	-	650 - 999.9	$d_N + 38.0$	13.80	3.0	1.20	0.90	0.70	12.00
RW56X***	1,000 - 2,600****	-	$d_N + 38.0$	13.80	3.0	1.20	0.90	0.70	12.00

* Installation with groove dimensions to ISO 7425-2 is also recommended.

** At pressures > **40 MPa** use diameter tolerance H8/f8 (bore/rod) in the area of the seal or consult your local Customer Solution Center for alternative material or profiles. Slydring® / Wear Rings are not applicable at very small radial clearances please consult the Slydring® section in this catalog.

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

**** Z53 and Z54 max diameter 2,200 mm

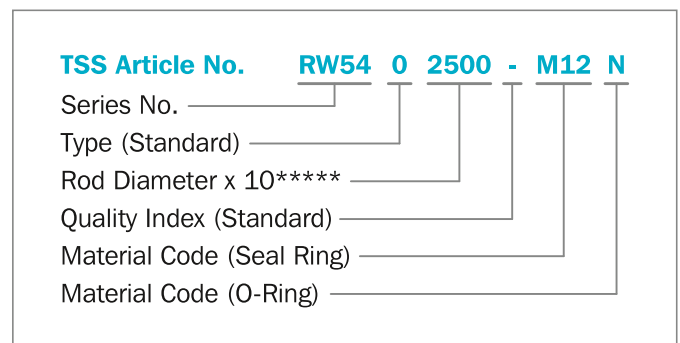
ORDERING EXAMPLE

Zurcon® Wynseal M complete with O-Ring, standard application:

Series:	RW540 from Table 69
Rod Diameter:	$d_N = 250.0$ mm
TSS Part No.:	RW5402500 from Table 70

Select the material from Table 68. The corresponding code numbers are appended to the TSS Part No. Together these form the TSS Article Number.

The TSS Article Number for all intermediate sizes can be determined by following the example:



***** For diameters $d_N \geq 1,000.0$ mm multiply only by factor 1.
 Example: RW56X for diameter $d_N = 1,200.0$ mm
 TSS Article No.: RW56X1200 - M12N



Table 70: Installation Dimensions / TSS Part No.

Rod Dia.	Groove Dia.	Groove Width	TSS Part No.	O-Ring Size	Rod Dia.	Groove Dia.	Groove Width	TSS Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2			d_N f8/h9	D_1 H9	L_1 +0.2		
3.0	7.9	2.2	RW5000030	4.47 x 1.78	48.0	58.7	4.2	RW5200480	51.50 x 3.55
4.0	8.9	2.2	RW5000040	5.60 x 1.80	48.0	63.1	6.3	RW5300480	53.34 x 5.33
5.0	9.9	2.2	RW5000050	6.70 x 1.80	50.0	60.7	4.2	RW5200500	53.57 x 3.53
6.0	10.9	2.2	RW5000060	7.65 x 1.78	50.0	65.1	6.3	RW5300500	56.52 x 5.33
8.0	12.9	2.2	RW5000080	9.50 x 1.80	52.0	62.7	4.2	RW5200520	56.74 x 3.53
8.0	15.3	3.2	RW5100080	10.77 x 2.62	52.0	67.1	6.3	RW5300520	56.52 x 5.33
10.0	14.9	2.2	RW5000100	11.80 x 1.80	55.0	65.7	4.2	RW5200550	59.92 x 3.53
10.0	17.3	3.2	RW5100100	12.37 x 2.62	55.0	70.1	6.3	RW5300550	59.69 x 5.33
12.0	16.9	2.2	RW5000120	13.20 x 1.80	56.0	66.7	4.2	RW5200560	59.92 x 3.53
12.0	19.3	3.2	RW5100120	14.50 x 2.65	56.0	71.1	6.3	RW5300560	59.69 x 5.33
14.0	18.9	2.2	RW5000140	15.60 x 1.78	60.0	70.7	4.2	RW5200600	63.09 x 3.53
14.0	21.3	3.2	RW5100140	17.12 x 2.62	60.0	75.1	6.3	RW5300600	66.04 x 5.33
15.0	19.9	2.2	RW5000150	17.17 x 1.78	63.0	73.7	4.2	RW5200630	66.27 x 3.53
15.0	22.3	3.2	RW5100150	17.12 x 2.62	63.0	78.1	6.3	RW5300630	69.22 x 5.33
16.0	20.9	2.2	RW5000160	17.17 x 1.78	65.0	80.1	6.3	RW5300650	69.22 x 5.33
16.0	23.3	3.2	RW5100160	18.72 x 2.62	70.0	80.7	4.2	RW5200700	75.79 x 3.53
18.0	22.9	2.2	RW5000180	19.00 x 1.80	70.0	85.1	6.3	RW5300700	75.57 x 5.33
18.0	25.3	3.2	RW5100180	20.29 x 2.62	75.0	85.7	4.2	RW5200750	78.97 x 3.53
20.0	27.3	3.2	RW5100200	21.89 x 2.62	75.0	90.1	6.3	RW5300750	81.92 x 5.33
20.0	30.7	4.2	RW5200200	23.40 x 3.53	80.0	90.7	4.2	RW5200800	85.32 x 3.53
22.0	29.3	3.2	RW5100220	25.07 x 2.62	80.0	95.1	6.3	RW5300800	85.09 x 5.33
22.0	32.7	4.2	RW5200220	26.58 x 3.53	85.0	100.1	6.3	RW5300850	91.44 x 5.33
25.0	32.3	3.2	RW5100250	26.64 x 2.62	90.0	100.7	4.2	RW5200900	94.84 x 3.53
25.0	35.7	4.2	RW5200250	29.75 x 3.53	90.0	105.1	6.3	RW5300900	94.62 x 5.33
28.0	35.3	3.2	RW5100280	29.82 x 2.62	95.0	105.7	4.2	RW5200950	101.19 x 3.53
28.0	38.7	4.2	RW5200280	32.92 x 3.53	95.0	110.1	6.3	RW5300950	100.97 x 5.33
30.0	37.3	3.2	RW5100300	32.99 x 2.62	100.0	110.7	4.2	RW5201000	104.37 x 3.53
30.0	40.7	4.2	RW5200300	34.52 x 3.53	100.0	115.1	6.3	RW5301000	107.32 x 5.33
32.0	39.3	3.2	RW5100320	34.59 x 2.62	105.0	115.7	4.2	RW5201050	110.72 x 3.53
32.0	42.7	4.2	RW5200320	36.09 x 3.53	105.0	120.1	6.3	RW5301050	110.49 x 5.33
35.0	42.3	3.2	RW5100350	37.77 x 2.62	110.0	120.7	4.2	RW5201100	113.89 x 3.53
35.0	45.7	4.2	RW5200350	37.69 x 3.53	110.0	125.1	6.3	RW5301100	116.84 x 5.33
36.0	43.3	3.2	RW5100360	39.34 x 2.62	110.0	130.5	8.1	RW5401100	116.84 x 7.00
36.0	46.7	4.2	RW5200360	40.87 x 3.53	115.0	125.7	4.2	RW5201150	120.24 x 3.53
40.0	50.7	4.2	RW5200400	44.04 x 3.53	115.0	130.1	6.3	RW5301150	120.02 x 5.33
40.0	55.1	6.3	RW5300400	43.82 x 5.33	120.0	130.7	4.2	RW5201200	123.42 x 3.53
42.0	52.7	4.2	RW5200420	47.22 x 3.53	120.0	135.1	6.3	RW5301200	126.37 x 5.33
42.0	57.1	6.3	RW5300420	46.99 x 5.33	125.0	135.7	4.2	RW5201250	129.77 x 3.53
45.0	55.7	4.2	RW5200450	50.39 x 3.53	125.0	140.1	6.3	RW5301250	129.54 x 5.33
45.0	60.1	6.3	RW5300450	50.17 x 5.33	130.0	140.7	4.2	RW5201300	136.12 x 3.53



Rod Dia.	Groove Dia.	Groove Width	TSS Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2		
130.0	145.1	6.3	RW5301300	135.89 x 5.33
135.0	145.7	4.2	RW5201350	139.29 x 3.53
135.0	150.1	6.3	RW5301350	139.07 x 5.33
140.0	150.7	4.2	RW5201400	145.64 x 3.53
140.0	155.1	6.3	RW5301400	145.42 x 5.33
145.0	155.7	4.2	RW5201450	148.82 x 3.53
145.0	160.1	6.3	RW5301450	151.77 x 5.33
150.0	165.1	6.3	RW5301500	158.12 x 5.33
160.0	175.1	6.3	RW5301600	164.47 x 5.33
160.0	180.5	8.1	RW5401600	170.82 x 7.00
165.0	180.1	6.3	RW5301650	170.82 x 5.33
170.0	180.7	4.2	RW5201700	177.39 x 3.53
170.0	185.1	6.3	RW5301700	177.17 x 5.33
175.0	190.1	6.3	RW5301750	183.52 x 5.33
180.0	190.7	4.2	RW5201800	183.74 x 3.53
180.0	195.1	6.3	RW5301800	183.52 x 5.33
180.0	200.5	8.1	RW5401800	189.87 x 7.00
190.0	200.7	4.2	RW5201900	196.44 x 3.53
190.0	205.1	6.3	RW5301900	196.22 x 5.33
200.0	215.1	6.3	RW5302000	208.92 x 5.33
200.0	220.5	8.1	RW5402000	208.90 x 7.00
210.0	225.1	6.3	RW5302100	215.27 x 5.33
220.0	235.1	6.3	RW5302200	227.97 x 5.33
220.0	240.5	8.1	RW5402200	227.97 x 7.00
230.0	245.1	6.3	RW5302300	234.32 x 5.33
230.0	250.5	8.1	RW5402300	240.67 x 7.00
240.0	255.1	6.3	RW5302400	247.02 x 5.33
240.0	260.5	8.1	RW5402400	253.37 x 7.00
250.0	270.5	8.1	RW5402500	266.07 x 7.00
260.0	284.0	8.1	RW5802600	266.07 x 7.00
270.0	290.5	8.1	RW5402700	278.77 x 7.00
270.0	294.0	8.1	RW5802700	278.77 x 7.00
280.0	300.5	8.1	RW5402800	291.47 x 7.00
280.0	304.0	8.1	RW5802800	291.47 x 7.00
300.0	324.0	8.1	RW5803000	316.87 x 7.00
320.0	344.0	8.1	RW5803200	329.57 x 7.00
350.0	370.5	8.1	RW5403500	354.97 x 7.00
350.0	374.0	8.1	RW5803500	367.67 x 7.00
360.0	384.0	8.1	RW5803600	367.67 x 7.00
400.0	420.5	8.1	RW5404000	405.26 x 7.00

Rod Dia.	Groove Dia.	Groove Width	TSS Part No.	O-Ring Size
d_N f8/h9	D_1 H9	L_1 +0.2		
400.0	424.0	8.1	RW5804000	417.96 x 7.00
450.0	474.0	8.1	RW5804500	468.76 x 7.00
500.0	524.0	8.1	RW5805000	506.86 x 7.00
550.0	574.0	8.1	RW5805500	557.66 x 7.00
600.0	624.0	8.1	RW5806000	608.08 x 7.00
650.0	677.3	9.5	RW5506500	663.00 x 8.40
700.0	724.0	8.1	RW5807000	712.00 x 8.40
800.0	827.3	9.5	RW5508000	813.00 x 8.40
900.0	927.3	9.5	RW5509000	913.00 x 8.40
1,000.0	1,027.3	9.5	RW55X1000	1,013.00 x 8.40
1,000.0	1,038.0	13.8	RW56X1000	1,016.00 x 12.00
1,100.0	1,138.0	13.8	RW56X1100	1,116.00 x 12.00
1,200.0	1,227.3	9.5	RW55X1200	1,213.00 x 8.40
1,200.0	1,238.0	13.8	RW56X1200	1,216.00 x 12.00
1,300.0	1,338.0	13.8	RW56X1300	1,316.00 x 12.00
1,500.0	1,538.0	13.8	RW56X1500	1,516.00 x 12.00
2,000.0	2,038.0	13.8	RW56X2000	2,016.00 x 12.00
2,600.0	2,638.0	13.8	RW56X2600	2,616.00 x 12.00

The rod diameters in **bold** type are in accordance with the recommendations of ISO 3320.

Other dimensions and all intermediate sizes up to 2,600 mm diameter including imperial (inch) sizes can be supplied.

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