

Turcon® Glyd Ring® Hz



Double-acting

Rubber-energized plastic-faced seal

Material:

Turcon®, Zurcon® and Elastomer





■ Turcon® Glyd Ring® Hz



■ Description

Glyd Ring® Hz is a symmetric single- and double-acting rod seal for applications with short-stroke high-frequency linear movements. It is designed to fit into ISO 7425-2 housing grooves.

Glyd Ring® Hz is wider than Turcon® Glyd Ring® giving a tighter fit in the housing groove and limiting its axial movement. It also prevents the seal from being damaged under short-stroke high-frequency movement. Furthermore it eliminates the risk of wear between O-Ring and seal.

Glyd Ring® Hz has notches on both sides to ensure system pressure can instantly activate the O-Ring under the seal despite the tighter fit and the fast alternation of pressure direction.

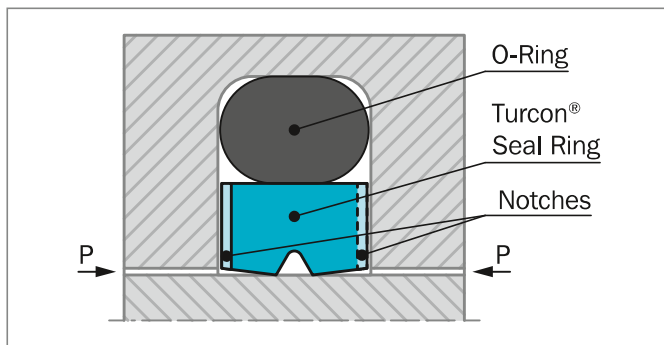


Figure 76: Turcon® Glyd Ring® Hz – short-stroke

The angled contact faces ensure that oil film is not scraped away from the surface but is transported into the groove in the middle of the contact area forming an oil reservoir for lubrication. Wear particles are also likely to be captured in this groove, thus preventing them from embedding in the surface where the highest contact force occurs.

DEFINITION

Short-stroke high-frequency movements are conditions, which in combination can cause problems in hydraulic systems:

Short-Stroke: $\leq 3 \times G$ (Groove width).

Very short reciprocating movements can cause reduced service life due to insufficient lubrication film, giving an increasing temperature on a limited area. These factors increase wear on seal and hardware and wear particles will not be removed from the seal face.

High-Frequency: Reciprocating movement above 5 Hz.

With an increasing frequency the formation of lubrication under the contact face is reduced. High-frequency is most often occurring in connection with short-strokes. These two types of movements together accelerate the wear on hardware and seal.

ADVANTAGES

- Seal face gets lubricated in short-stroke high-frequency linear movements
- Low friction
- No stick-slip effect
- Single and double acting
- High wear resistance
- Installation grooves acc. to ISO 7425-2
- No adhesive effect to the mating surface during long period of inactivity or storage
- Available for all cylinder diameters up to 999.9 mm. (For diameter $\geq 1,000$ mm special part number is required)

APPLICATIONS EXAMPLES

Glyd Ring® Hz has been successfully implemented in a large variety of applications as double acting rod seal for hydraulic components such as:

- Injection molding machines
- Machine tools
- Press brakes
- Handling machinery
- Servo equipment
- Pressure intensifiers
- Shock absorbers
- Wind power pitch cylinders



OPERATING CONDITIONS

Pressure:	Up to 30 MPa with mineral oil depending on seal material
Speed:	Up to 15 m/s with linear movements
Temperature:	-45 °C to +200 °C depending on Seal and O-Ring material
Media:	Mineral oil and other fluids with very high lubricity depending on temperature, seal and O-Ring material compatibility
Clearance:	The maximum permissible radial clearance S_{max} is shown in Table 58 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.

HARDWARE

Short-stroke high-frequency can cause heavy wear on hardware due to poor lubrication under the seal and the fact that wear products cannot be removed from the contact area. The hardest possible hardware material should be recommended, especially when system pressure is above 10 MPa.

INSTALLATION INSTRUCTIONS

Glyd Ring® Hz is installed according to information on page 37 and 38.

Closed groove installation applies the same limits for diameter d_N as for Turcon® Stepseal® 2K in Table 6 page 38.

Tandem seal installation of Glyd Ring® Hz cannot be recommended as the short-strokes create a risk of pressure build-up between the seals.

When used as rod seal we recommend two possibilities, either one Glyd Ring® Hz and one Turcon® Excluder® 2 with drain in between - Figure 77 - or one Glyd Ring® Hz and a single-acting Turcon® Excluder® 1 - Figure 78.

All elements should be in one of the recommended materials.

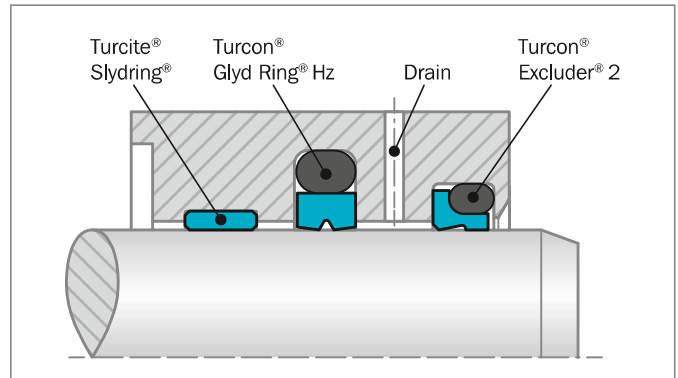


Figure 77: Glyd Ring® Hz with Turcon® Excluder® 2 and Turcite® Slydring®

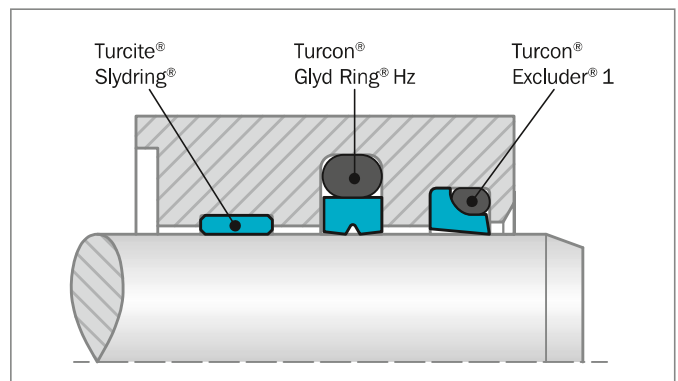


Figure 78: Glyd Ring® Hz with Turcon® Excluder® 1 and Turcite® Slydring®

RECOMMENDED MATERIALS

The following material combinations have proven effective for short-stroke and/or high-frequency applications:

Turcon® Glyd Ring® Hz in Turcon® M12

All round material for hydraulic applications with linear, short-stroke and /or high-frequency movements in mineral oils and fluids having high lubricating properties:

O-Ring:	NBR 70 Shore A	N
	FKM 70 Shore A	V
	depending on medium and temperature	

Set code: M12N or M12V

**Turcon® Glyd Ring® Hz in Turcon® T49**

For medium to heavy applications with linear, short-stroke and/or high-frequency movements in mineral oils:

O-Ring: NBR 70 Shore A N
 FKM 70 Shore A V
 depending on media and temperature

Set code: T49N or T49V

Turcon® Glyd Ring® Hz in Turcon® T40

For light to medium applications with linear, short-stroke and/or high-frequency movements in fluids with lower lubricating properties:

O-Ring: NBR 70 Shore A N
 FKM 70 Shore A V
 EPDM 70 Shore A E
 depending on media and temperature

Set code: T40N, T40V or T40E

Zurcon® Glyd Ring® Hz in Zurcon® Z80

For light applications with linear, short-stroke and/or high-frequency movements in water based fluids, air and gases at reduced pressure and frequencies due to the temperature limitation of the material:

O-Ring: NBR 70 Shore A N
 EPDM 70 Shore A E
 depending on media and temperature

Set code: Z80N or Z80E



Table 57: Turcon® and Zurcon® Materials for Glyd Ring® Hz

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 with high-frequency and short-strokes For new constructions and updating For commonly applied hydraulic fluids 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	30
		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® T40 For lubricating fluids and fluids with lower lubrication performance Water hydraulics at reduced pressure and frequency Surface texture is only suitable for gas sealing when lubricated with fluid 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® T49 For lubricated hydraulics in linear motion High compressive strength High extrusion resistance Very good sliding and wear properties Surface treated for very quick run-in BAM tested Bronze filled Color: Light to dark brown, which may have variations in shading.	T49	NBR 70	N	-30 to +100	Steel (tubes)	30
		NBR 70 Low temp.	T	-45 to +80	Steel hardened 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® Z80 For low frequencies due to the temperature limitation of the material For lubricating fluids and fluids with lower lubrication performance Water based fluids, air and gases at reduced pressure 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	25
		NBR 70 Low temp.	T	-45 to +80	Steel hardened Steel chrome plated (rod)	
		EPDM 70	E**	-45 to (+145)	Stainless steel Aluminum Ceramic coating	

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

** Material not suitable for mineral oils.

BAM: Tested by "Bundes-anstalt Materialprüfung, Germany"

Highlighted materials are recommended.



■ Installation Recommendation

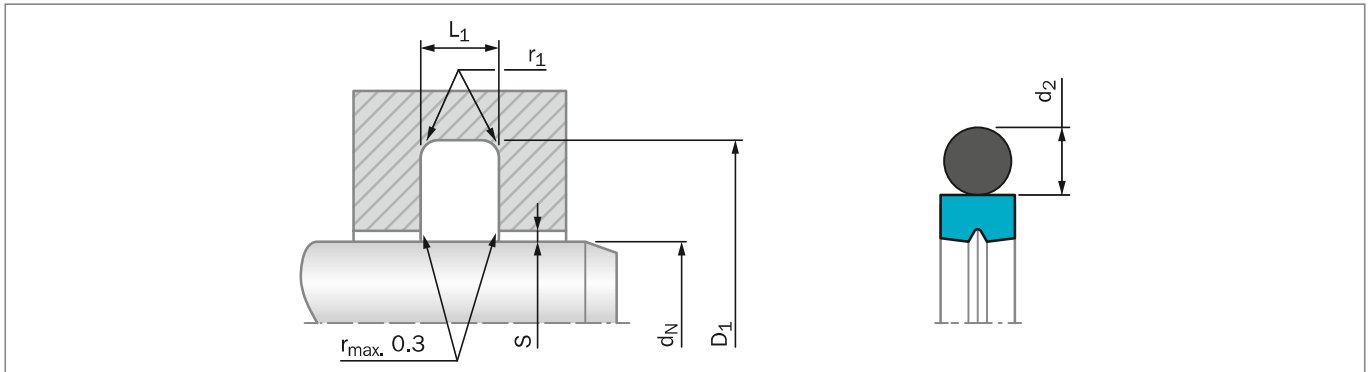


Figure 79: Installation Drawing

Table 58: Installation Dimensions – Standard Recommendations

Series No.	Rod Diameter d_N f8/h9		Groove Diameter D_1 H9	Groove Width L_1 +0.2	Radius r_1 max	Radial Clearance S_{max} *			O-Ring Cross Section d_2
	Standard Range	Available Range				10 MPa	20 MPa	30 MPa	
RGS0	5 - 7.9	5 - 150.0	$d_N + 5.0^{**}$	2.2	0.4	0.25	0.20	0.15	1.78
RGS1	8 - 18.9	8 - 260.0	$d_N + 7.5$	3.2	0.6	0.40	0.25	0.15	2.62
RGS2	19 - 37.9	19 - 480.0	$d_N + 11.0$	4.2	1.0	0.45	0.25	0.20	3.53
RGS3	38 - 199.9	19 - 750.0	$d_N + 15.5$	6.3	1.3	0.55	0.30	0.20	5.33
RGS4	200 - 255.9	38 - 750.0	$d_N + 21.0$	8.1	1.8	0.60	0.35	0.25	7.00
RGS8***	256 - 649.9	120 - 999.9	$d_N + 24.5$	8.1	1.8	0.60	0.35	0.25	7.00
RGS5***	650 - 999.9	256 - 999.9	$d_N + 28.0$	9.5	2.5	0.65	0.50	0.30	8.40

* At pressures > 30 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.

** Can also be used in Turcon® Glyd Ring® T groove $d_N + 4.9$ mm.

*** Grooves are not according to ISO 7425-2.

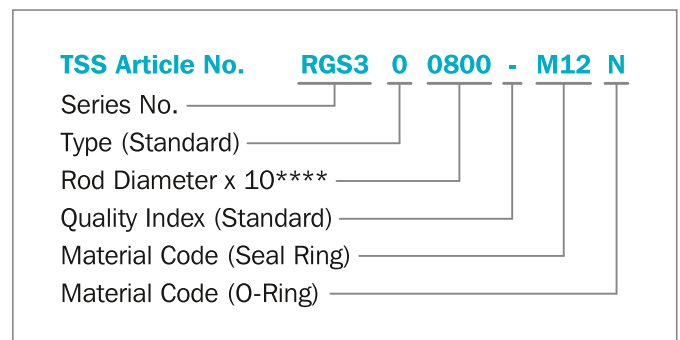
ORDERING EXAMPLE

Glyd Ring® Hz complete with O-Ring, Standard application:

Series:	RGS30 from Table 58
Rod diameter:	$d_N = 80.0$ mm
TSS Part No.:	RGS300800 from Table 59

Select the material from Table 57. The corresponding code numbers are appended to the TSS Part No. Together they form the TSS Article Number.

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



**** For diameters $d_N \geq 1,000$ mm only with TSS Special Article Number.

IMPORTANT NOTE

Installation Dimensions: For rod sealing the groove diameters are **not** identical to diameters for Stepseal® 2K, Glyd Ring® T and Glyd Ring® PG43.



Table 59: 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		
8.0	13.0	2.2	RGS000080	9.50 x 1.80	40.0	55.5	6.3	RGS300400	46.99 x 5.33
8.0	15.5	3.2	RGS100080	10.77 x 2.62	42.0	53.0	4.2	RGS200420	47.22 x 3.53
10.0	15.0	2.2	RGS000100	11.80 x 1.80	42.0	57.5	6.3	RGS300420	46.99 x 5.33
10.0	17.5	3.2	RGS100100	12.37 x 2.62	44.0	55.0	4.2	RGS200440	47.22 x 3.53
12.0	17.0	2.2	RGS000120	14.00 x 1.78	44.4	59.9	6.3	RGS300444	50.17 x 5.33
12.0	19.5	3.2	RGS100120	14.50 x 2.65	45.0	56.0	4.2	RGS200450	50.39 x 3.53
14.0	19.0	2.2	RGS000140	15.60 x 1.78	45.0	60.5	6.3	RGS300450	50.17 x 5.33
14.0	21.5	3.2	RGS100140	17.12 x 2.62	48.0	59.0	4.2	RGS200480	53.57 x 3.53
15.0	20.0	2.2	RGS000150	17.17 x 1.78	48.0	63.5	6.3	RGS300480	53.34 x 5.33
15.0	22.5	3.2	RGS100150	18.00 x 2.65	50.0	61.0	4.2	RGS200500	53.57 x 3.53
16.0	21.0	2.2	RGS000160	17.17 x 1.78	50.0	65.5	6.3	RGS300500	56.52 x 5.33
16.0	23.5	3.2	RGS100160	18.72 x 2.62	50.8	61.8	4.2	RGS200508	53.57 x 3.53
18.0	23.0	2.2	RGS000180	20.35 x 1.78	50.8	66.3	6.3	RGS300508	56.52 x 5.33
18.0	25.5	3.2	RGS100180	20.29 x 2.62	52.0	63.0	4.2	RGS200520	56.74 x 3.53
19.0	30.0	4.2	RGS200190	23.40 x 3.53	52.0	67.5	6.3	RGS300520	56.52 x 5.33
20.0	27.5	3.2	RGS100200	21.89 x 2.62	54.0	69.5	6.3	RGS300540	59.69 x 5.33
20.0	31.0	4.2	RGS200200	25.00 x 3.53	55.0	66.0	4.2	RGS200550	59.92 x 3.53
22.0	29.5	3.2	RGS100220	25.07 x 2.62	55.0	70.5	6.3	RGS300550	59.69 x 5.33
22.0	33.0	4.2	RGS200220	26.58 x 3.53	56.0	67.0	4.2	RGS200560	59.92 x 3.53
24.0	31.5	3.2	RGS100240	26.64 x 2.62	56.0	71.5	6.3	RGS300560	62.87 x 5.33
25.0	32.5	3.2	RGS100250	28.24 x 2.62	58.0	73.5	6.3	RGS300580	62.87 x 5.33
25.0	36.0	4.2	RGS200250	29.75 x 3.53	60.0	71.0	4.2	RGS200600	63.09 x 3.53
25.4	32.9	3.2	RGS100254	28.24 x 2.62	60.0	75.5	6.3	RGS300600	66.04 x 5.33
25.4	36.4	4.2	RGS200254	29.75 x 3.53	63.0	74.0	4.2	RGS200630	66.27 x 3.53
26.0	33.5	3.2	RGS100260	28.24 x 2.62	63.0	78.5	6.3	RGS300630	69.22 x 5.33
26.0	37.0	4.2	RGS200260	31.35 x 3.53	65.0	80.5	6.3	RGS300650	72.39 x 5.33
27.0	34.5	3.2	RGS100270	29.82 x 2.62	67.0	78.0	4.2	RGS200670	72.62 x 3.53
28.0	35.5	3.2	RGS100280	31.42 x 2.62	70.0	81.0	4.2	RGS200700	75.79 x 3.53
28.0	39.0	4.2	RGS200280	32.92 x 3.53	70.0	85.5	6.3	RGS300700	75.57 x 5.33
28.6	36.1	3.2	RGS100286	31.42 x 2.62	72.0	83.0	4.2	RGS200720	75.79 x 3.53
29.0	36.5	3.2	RGS100290	31.42 x 2.62	75.0	86.0	4.2	RGS200750	78.97 x 3.53
30.0	37.5	3.2	RGS100300	32.99 x 2.62	75.0	90.5	6.3	RGS300750	81.92 x 5.33
30.0	41.0	4.2	RGS200300	34.52 x 3.53	80.0	91.0	4.2	RGS200800	85.32 x 3.53
32.0	43.0	4.2	RGS200320	36.09 x 3.53	80.0	95.5	6.3	RGS300800	85.09 x 5.33
35.0	46.0	4.2	RGS200350	40.87 x 3.53	83.0	94.0	4.2	RGS200830	88.49 x 3.53
36.0	43.5	3.2	RGS100360	39.34 x 2.62	85.0	100.5	6.3	RGS300850	91.44 x 5.33
36.0	47.0	4.2	RGS200360	40.87 x 3.53	86.0	97.0	4.2	RGS200860	91.67 x 3.53
38.0	49.0	4.2	RGS200380	44.04 x 3.53	90.0	101.0	4.2	RGS200900	94.84 x 3.53
38.0	53.5	6.3	RGS300380	43.82 x 5.33	90.0	105.5	6.3	RGS300900	97.79 x 5.33
39.0	50.0	4.2	RGS200390	44.04 x 3.53	92.0	103.0	4.2	RGS200920	98.02 x 3.53
40.0	51.0	4.2	RGS200400	44.04 x 3.53	95.0	106.0	4.2	RGS200950	101.19 x 3.53



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		
95.0	110.5	6.3	RGS300950	100.97 x 5.33	205.0	220.5	6.3	RGS302050	208.92 x 5.33
100.0	111.0	4.2	RGS201000	104.37 x 3.53	210.0	225.5	6.3	RGS302100	215.27 x 5.33
100.0	115.5	6.3	RGS301000	107.32 x 5.33	220.0	235.5	6.3	RGS302200	227.97 x 5.33
101.6	112.6	4.2	RGS201016	107.54 x 3.53	220.0	241.0	8.1	RGS402200	227.97 x 7.00
101.6	117.1	6.3	RGS301016	107.32 x 5.33	230.0	245.5	6.3	RGS302300	234.32 x 5.33
104.7	120.2	6.3	RGS301047	110.49 x 5.33	230.0	251.0	8.1	RGS402300	240.67 x 7.00
105.0	116.0	4.2	RGS201050	110.72 x 3.53	240.0	255.5	6.3	RGS302400	247.02 x 5.33
105.0	120.5	6.3	RGS301050	110.49 x 5.33	240.0	261.0	8.1	RGS402400	253.37 x 7.00
110.0	121.0	4.2	RGS201100	113.89 x 3.53	250.0	271.0	8.1	RGS402500	266.07 x 7.00
110.0	125.5	6.3	RGS301100	116.84 x 5.33	260.0	284.5	8.1	RGS802600	266.07 x 7.00
110.0	131.0	8.1	RGS401100	120.02 x 7.00	270.0	291.0	8.1	RGS402700	278.77 x 7.00
112.0	127.5	6.3	RGS301120	116.84 x 5.33	270.0	294.5	8.1	RGS802700	278.77 x 7.00
115.0	126.0	4.2	RGS201150	120.24 x 3.53	275.0	299.5	8.1	RGS802750	291.47 x 7.00
115.0	130.5	6.3	RGS301150	120.02 x 5.33	280.0	301.0	8.1	RGS402800	291.47 x 7.00
118.0	133.5	6.3	RGS301180	123.19 x 5.33	280.0	304.5	8.1	RGS802800	291.47 x 7.00
120.0	131.0	4.2	RGS201200	126.59 x 3.53	290.0	311.0	8.1	RGS402900	304.17 x 7.00
120.0	135.5	6.3	RGS301200	126.37 x 5.33	290.0	314.5	8.1	RGS802900	304.17 x 7.00
125.0	136.0	4.2	RGS201250	129.77 x 3.53	300.0	324.5	8.1	RGS803000	316.87 x 7.00
125.0	140.5	6.3	RGS301250	132.72 x 5.33	310.0	331.0	8.1	RGS403100	316.87 x 7.00
129.0	140.0	4.2	RGS201290	132.94 x 3.53	310.0	334.5	8.1	RGS803100	316.87 x 7.00
130.0	141.0	4.2	RGS201300	136.12 x 3.53	320.0	344.5	8.1	RGS803200	329.57 x 7.00
130.0	145.5	6.3	RGS301300	135.89 x 5.33	330.0	354.5	8.1	RGS803300	342.27 x 7.00
135.0	146.0	4.2	RGS201350	139.29 x 3.53	340.0	364.5	8.1	RGS803400	354.97 x 7.00
135.0	150.5	6.3	RGS301350	142.24 x 5.33	350.0	371.0	8.1	RGS403500	354.97 x 7.00
140.0	151.0	4.2	RGS201400	145.64 x 3.53	350.0	374.5	8.1	RGS803500	367.67 x 7.00
140.0	155.5	6.3	RGS301400	145.42 x 5.33	360.0	384.5	8.1	RGS803600	367.67 x 7.00
145.0	156.0	4.2	RGS201450	148.82 x 3.53	370.0	391.0	8.1	RGS403700	380.37 x 7.00
145.0	160.5	6.3	RGS301450	151.77 x 5.33	370.0	394.5	8.1	RGS803700	380.37 x 7.00
150.0	165.5	6.3	RGS301500	158.12 x 5.33	380.0	404.5	8.1	RGS803800	393.07 x 7.00
160.0	175.5	6.3	RGS301600	164.47 x 5.33	390.0	414.5	8.1	RGS803900	405.26 x 7.00
160.0	181.0	8.1	RGS401600	170.82 x 7.00	400.0	421.0	8.1	RGS404000	405.26 x 7.00
165.0	180.5	6.3	RGS301650	170.82 x 5.33	400.0	424.5	8.1	RGS804000	417.96 x 7.00
170.0	181.0	4.2	RGS201700	177.39 x 3.53	410.0	434.5	8.1	RGS804100	417.96 x 7.00
170.0	185.5	6.3	RGS301700	177.17 x 5.33	420.0	444.5	8.1	RGS804200	430.66 x 7.00
175.0	190.5	6.3	RGS301750	183.52 x 5.33	430.0	454.5	8.1	RGS804300	443.36 x 7.00
180.0	191.0	4.2	RGS201800	183.74 x 3.53	440.0	464.5	8.1	RGS804400	456.06 x 7.00
180.0	195.5	6.3	RGS301800	189.87 x 5.33	450.0	474.5	8.1	RGS804500	468.76 x 7.00
180.0	201.0	8.1	RGS401800	189.87 x 7.00	460.0	484.5	8.1	RGS804600	468.76 x 7.00
190.0	201.0	4.2	RGS201900	196.44 x 3.53	470.0	494.5	8.1	RGS804700	481.38 x 7.00
190.0	205.5	6.3	RGS301900	196.22 x 5.33	500.0	524.5	8.1	RGS805000	506.86 x 7.00
200.0	215.5	6.3	RGS302000	208.92 x 5.33	550.0	574.5	8.1	RGS805500	557.66 x 7.00
200.0	221.0	8.1	RGS402000	208.90 x 7.00	560.0	584.5	8.1	RGS805600	582.68 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		
570.0	594.5	8.1	RGS805700	582.68 x 7.00
580.0	604.5	8.1	RGS805800	608.08 x 7.00
590.0	614.5	8.1	RGS805900	608.08 x 7.00
600.0	624.5	8.1	RGS806000	608.08 x 7.00
630.0	654.5	8.1	RGS806300	658.88 x 7.00
650.0	678.0	9.5	RGS506500	662.90 x 8.40
660.0	688.0	9.5	RGS506600	672.90 x 8.40
670.0	698.0	9.5	RGS506700	682.90 x 8.40
680.0	708.0	9.5	RGS506800	692.90 x 8.40
700.0	724.5	8.1	RGS807000	712.90 x 8.40
800.0	828.0	9.5	RGS508000	812.90 x 8.40
850.0	878.0	9.5	RGS508500	862.90 x 8.40
900.0	928.0	9.5	RGS509000	912.90 x 8.40
950.0	978.0	9.5	RGS509500	962.90 x 8.40
960.0	988.0	9.5	RGS509600	972.90 x 8.40

The rod diameters in **bold** type correspond to the recommendations of ISO 3320.

Part No. for other dimensions and **all** intermediate sizes up to 999.9 mm diameter including imperial (inch) sizes can be supplied.

Larger sizes up to 2,600 mm are available upon request.