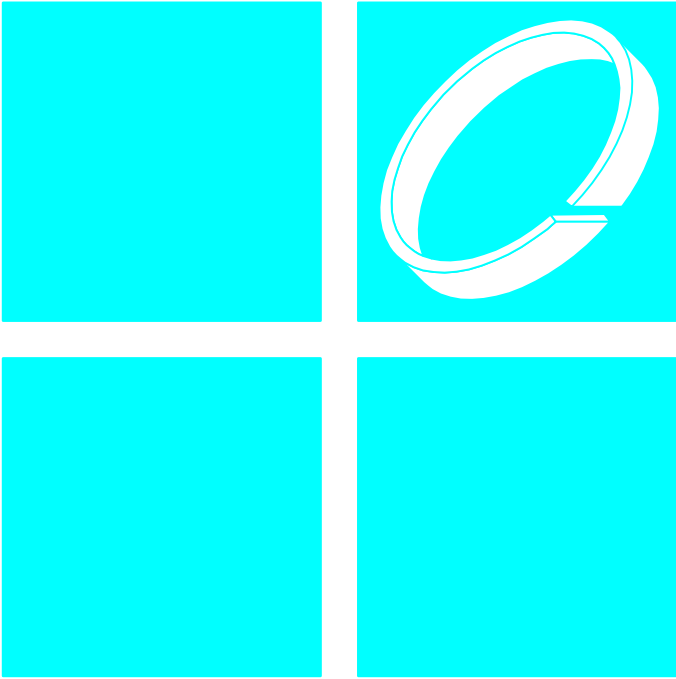

WEAR RINGS SLYDRING®





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■ Choice of Slydring®

The function of Slydring® is to guide the piston and piston rod of a hydraulic cylinder and to absorb the transverse forces which occur. At the same time, metallic contact between the sliding parts of the cylinder, e.g. piston and cylinder barrel or rod and cylinder head, must be prevented. Non-metallic guide rings offer major benefits compared with the traditional metallic guides:

- Cost efficient production
- High load bearing capacity
- Eliminates local stress concentrations
- Wear-resistant, long service lives
- Metal/plastic pairing eliminates fretting and seizure
- Favourable friction behaviour
- Damping of mechanical vibrations
- Good wiping effect, embedding of foreign particles possible
- Protection of the seal against "dieseling"
- Free choice of material of the metal components as guiding properties are no longer required
- Eliminates hydrodynamic pressure problems in the guide system
- Simple closed groove, easy installation
- Low service costs

Materials

In view of the different specific demands made on piston and rod guides, various Slydring® materials are available:

- Highly wear-resistant, low friction, specially modified Turcite® materials for low to medium duty with limited radial forces
- HiMod® materials with friction-reducing fillers for medium to heavy duty
- Luytex® fabric composite materials for heavy duty and high radial forces

In order to choose the most suitable Slydring®, it is first necessary to know all the required functional parameters. Table I can be used to make an initial preselection of the Slydring® and the materials to meet the demands of the application.

Before the final choice of Slydring® and material is made, the details and information must be checked in the relevant data sheets of Slydring® materials.

In principle, piston Slydring® and rod Slydring® are interchangeable if the difference in size is taken into consideration, e.g. piston ring, diameter 100 x 2.5 mm thick can be used as a piston rod Slydring® diameter 95 x 2.5 mm thick. Depending on the material and dimensions of the Slydring®, the thickness tolerance is in the range of +0 to -0.08 mm.

Please do not hesitate to contact our Technical Department for further information on specific applications and special technical questions.



Table I Selection Criteria for Slydring®

Slydring®		Application				Standard ¹⁾	Installation	Material
Type	Page	Field of Application	Light	Medium	Heavy	Mating Surface	Size Range	Recommended Slydring® Material
						ISO	mm	
	9	Mobile hydraulics Standard cylinders Machine tools Injection moulding machines Automotive industry	● ● ●	- ● -	- - -	Steel Steel, hardchromed Cast iron	ISO 10766	Turcite® T47
			● ●	● ●	- -	Mild steel Stainless steel Aluminium, Bronze		Turcite® T51
		Pneumatics Water hydraulics Dry application	● ● ●	- ● ●	- - -	Mild steel Stainless steel Aluminium, Alloys		Turcite® T59
		Foodstuff industry Water hydraulics Dry application Pneumatics	● ● ● ●	● ● ● ●	- - - -	Steel Mild steel Steel, hardchromed Stainless steel Aluminium, Bronze Ceramic coating	ISO 10766	Zurcon® Z80 UHMWPE
	20	Mobile hydraulics Standard cylinders Agricultural machinery	● ● ●	● ● -	- - -	Steel Steel, hardchromed Cast iron	ISO 10766	HiMod® HM061 POM/Glass fibre
		Mobile hydraulics Standard cylinders Agricultural machinery	● ● ●	● ● -	● - -	Steel Steel, hardchromed Cast iron		HiMod® HM062 PA/Glass fibre + PTFE
		Mobile hydraulics Standard cylinders Agricultural machinery	● ● ●	● ● -	● - -	Steel Steel, hardchromed Cast iron		HiMod® HM063 PA/Glass fibre
	42	Mobile hydraulics Standard cylinders Presses	- ● ●	● ● ●	● ● ●	Steel Steel, hardchromed Cast iron Ceramic coating	ISO 10766	Luytex® C320 Polymer/fabric
		Mobile hydraulics Standard cylinders Water hydraulics Shipping and marine engineering Presses	- ● ● ● ●	● ● ● ● ●	● ● ● ● ●	Steel Steel, hardchromed Cast iron Stainless steel		Luytex® C380 Polymer/fabric
		Mobile hydraulics Standard cylinders Presses	- ● ●	● ● ●	● ● ●	Steel Steel, hardchromed Cast iron Stainless steel		Luytex® C931 Phenolic/cotton

1) For Slydring® to other standards, e.g to French standard NF E 48-037, please contact us.
2) Segments made from strip material can be used for larger diameters.



Forms of Supply

Two characteristics must be observed with respect to the forms of supply for Slydring® :

- Type of cut

Figure 1 shows the angle cut which are the most frequently used standard type of cut. Rings with other types of cut are available on request. Design Code as shown in Table III.

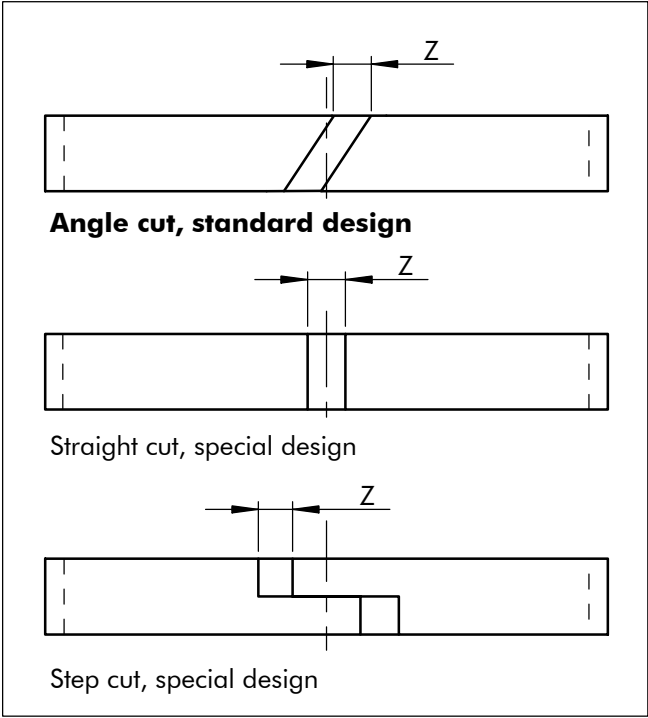


Figure 1 Type of cut

- Design type

Slydring® have a rectangular cross-section with rounded or chamfered edges, thus preventing impermissible edge forces in the corner radii of the grooves. The chamfers also serve to facilitate installation, e.g. when inserting into the cylindrical tube or guide bush.

Slydring® are supplied ready to fit with the gap necessary (dimension Z) for their function. The ring ends are finished as standard with an angle cut.

For further details, please refer to Table II.

Slydring® are depending on material supplied as split rings and/or as strip material. Strip material is available in rolls or precut to size as listed in Table II.

Table II Forms of Supply for Slydring®

Material	Ring Diameter mm	Cut Strip for Diameter mm	Off-the-Roll
Turcite® T47/T51/T59	-	8 - 4200	See Table V
Zurcon® Z80	on request	30 - 4200	on request
Luytex® C320/C380	16 - 1500	300 - 2000	see page 43
Luytex® C931	16 - 1200	-	-
HiMod® HM061	up to 300	-	-
HiMod® HM062	up to 300	-	-
HiMod® HM063	up to 300	-	-

Table III Design Codes for Cut

Material	Turcite®		Zurcon®	HiMod®		Luytex®	
	T47	T51	Z80	HM061	C320	C320	C380
	T59			HM062	C380	C380	
Code for cut	Strip		Strip	Ring	Ring	Strip	
Angle cut	0*	L	0	0	0	A	
Straight cut	B*	D	D	D	H	D	
Step cut	C*	E	E	E	-	E	

Design Code **0**, in bold types are the standard Slydring® versions

*Design Code for **Turcite®** Slydring® with teardrop structure on both sides - which is standard up to and including 3 mm radial thickness "W". See Ordering Examples.

- Teardrop structure: A detailed description can be found on page 9.

■ Design Instructions

Choice of Slydring®

An initial selection can be made for various application, see Table I.

The values for the load on the Slydring® are valid for a load distribution as illustrated in Figure 2. The flexibility of the materials ensures a relatively constant specific load, irrespective of the size of the radial forces F , as with increasing radial loading, the guide surface subjected to the load increases also.

The radial forces which occur can vary within wide ranges and cannot always be calculated exactly in advance. For such cases, a safety factor of at least 2 is recommended when calculating (see calculation example).

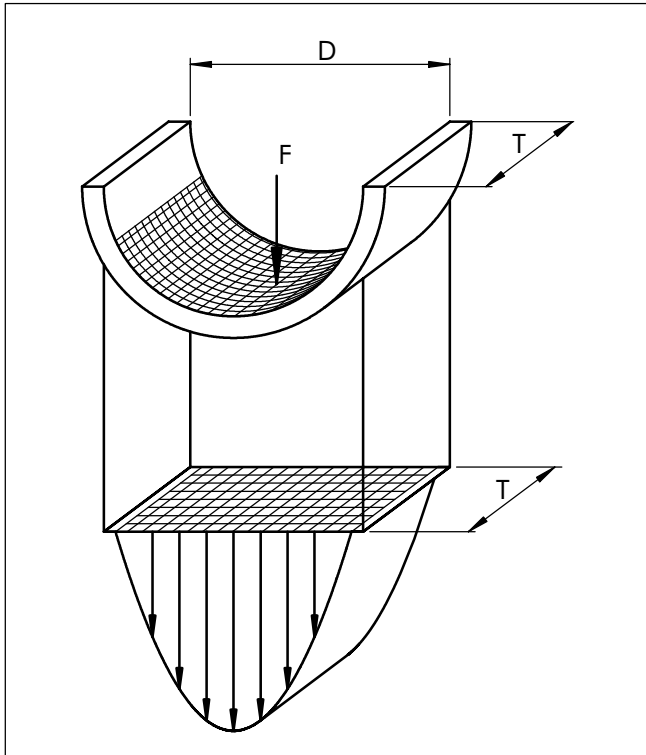


Figure 2 Load distribution

The large effective bearing area of non-metallic Slydring® gives low maximum contact pressure.

Dimensioning of Slydring®

The load, and thus the resulting elastic deformation, is critical for the design of the Slydring®. The Slydring® clearance resulting from the dimensional tolerance, deformation and wear must always be smaller than the smallest gap to be sealed in the system. On request, we are willing to carry out dimensioning calculations for specific applications.

A rough estimate of the number and width of Slydring® required can be calculated using the following formula:

$$\text{Slydring}^{\circledR} \text{ width } T_{\text{total}} = \frac{F \times f}{d_N \times Pr}$$

where:

- F = Maximum radial load [N]
- f = Safety factor
- d_N = Rod diameter [mm]
- Pr = Permissible dynamic load [N/mm²]

Example:

- d_N = 60 mm
- F = 40.000 N
- t = 70 °C
- f = 2

Slydring® material Luytex® C 380
 $Pr_{\text{per.}}$ 100 N/mm²

$$\text{Total} = \frac{40.000 \times 2}{60 \times 100} = 13.3 \text{ mm}$$

From Table V, a groove with a width of 15 mm or 2 grooves with widths of 9.7 mm are selected. The installation of two strips is recommended as this gives a wider guide length.

Selected:

2 strips Series GR69 with a groove width $L_2 = 9.7$ mm

With this choice, the safety factor increases to 2.9.



The standard installation arrangement for pistons and rods is shown in Figures 3 and 4.

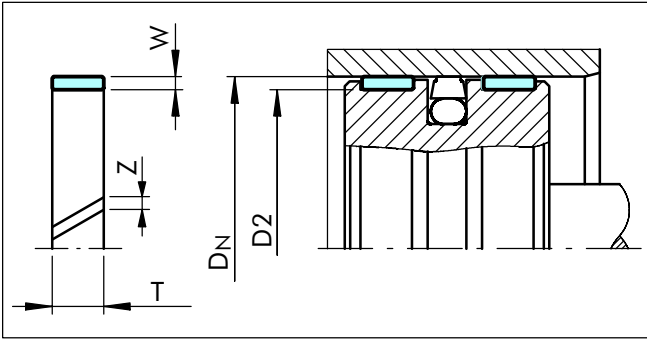


Figure 3 Piston guide

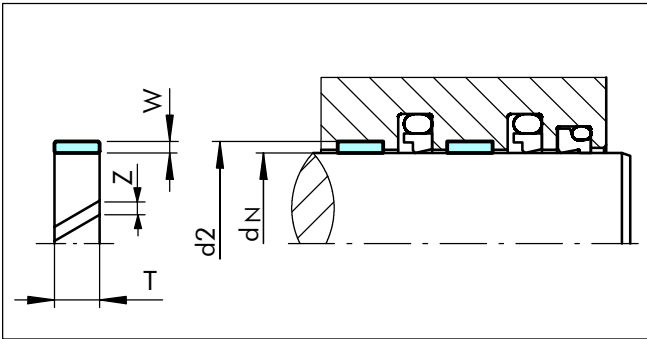


Figure 4 Rod guide

To further improve the operational safety, particularly under high loads, the installation of a 3rd strip made of material Turcite® T47 is recommended. It is installed on the oil side and serves eg as an internal scraper seal where contaminated media may be involved.

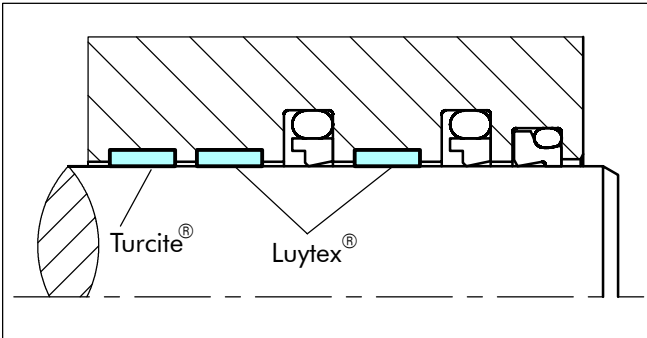


Figure 5 Rod guide for high loads
(See also Figure 15)

Calculation of the Linear Length

The linear length of Turcite® and Luytex® Slydring® are calculated such that a gap "Z" is created at the ends of the strip after installation (see Figure 3 and 4). This is required for the following reasons:

- Compensation of the linear expansion of the strips due to the effects of temperature
- Avoidance of intermediate pressures and entrained pressures.

When ordering strips off-the-roll for manufacturing of Slydring® in your own works, the length of the strip can be calculated using the following formulae:

Piston Slydring®:

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

Rod Slydring®:

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

D_N = Bore diameter [mm]

d_N = Rod diameter [mm]

W = Ring thickness [mm]

c = 3.11 material factor, valid for all materials

k = Temperature constant:
0.8 for all materials.

1.8 only for Turcite® materials for applications
> 120° C.

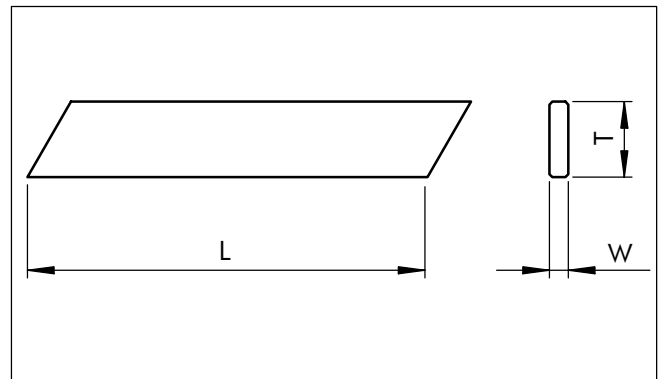


Figure 6 Cut length



■ Turcite® Slydring® for Piston and Rod

Description

Turcite® Slydring® are used as piston and rod guides due to their outstanding friction behaviour, stick-slip free running and good resistance to high temperatures and chemicals.

Slydring® are available as off-the-roll materials for cutting to length in the users works as listed in Table V. Sections cut to size ready for installation is available for rod and piston diameters according to Table II.

Slydring® have a geometrically rectangular cross-section and are chamfered at the edges for easy installation into the grooves.

- Teardrop structure

Slydring® up to and including 3 mm radial thickness in Turcite® materials are as standard supplied with "teardrop" structure on the sliding surfaces. This structure comprises small lubricant pockets on the surface which improve the initial lubrication and promote the formation of a lubricant film. They also help to protect the seal system through their ability to embed any foreign particles. In order to be able to use the strip material for both piston and piston rod guides, the rings have this same teardrop structure on both sides.

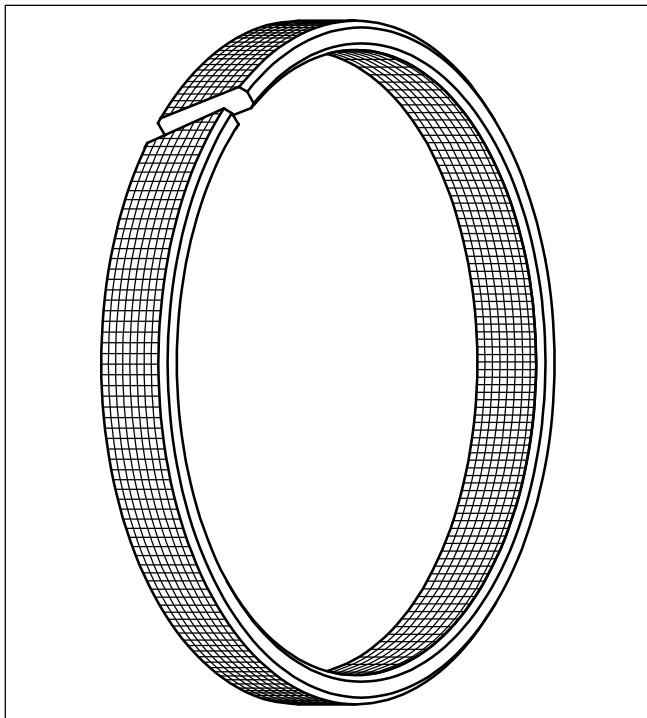


Figure 7 Turcite® Slydring® with teardrop structure

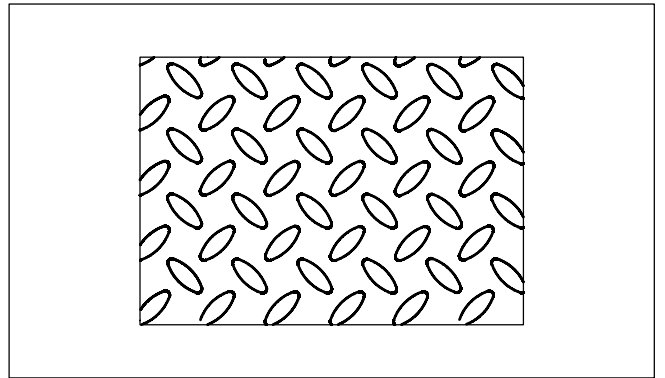


Figure 8 Teardrop structure for Turcite® Slydring®

Slydring® can also be delivered without teardrop structure. In this case, this must be indicated in the Order No. (see Design Code for cut/type in Table III).

Advantages

- Outstanding lubrication conditions further improved by the Teardrop structure
- No stick-slip effect when starting for smooth operation even at very low speeds
- Minimum static and dynamic friction coefficient for low operating temperature and energy loss
- Suitable for non lubricating fluids depending on Turcite® material for optimum design flexibility
- High wear resistance ensures long service life
- Installation grooves according to ISO 10766
- Suitable for most hydraulic fluids in relation with the majority of modern hardware materials and surface finish depending on material selected.
- Suitable for new environmentally safe hydraulic fluids
- The embedding of foreign particles is enhanced
- Good damping effect, absorbs vibrations



Application Examples

The Turcite® Slydring® is successfully applied in demanding applications as a standard guiding element for hydraulic operated pistons, plus for piston rods with special requirements, in:

- Machine tools
- Injection moulding machines
- Press brakes
- Presses
- Robotics & Handling machinery
- Automation
- Positioning cylinders
- Servo hydraulics
- Piston accumulators
- Shock absorber
- Valves for hydraulic & pneumatic circuits
- Agriculture
- Chemical and Process Industry

Technical Data

The Turcite® Slydring® with angle cut is recommended for reciprocating movements

Speed:	up to 15m/s
Temperature:	-60°C to +150°C (200°C)
Media:	Mineral Oil based Hydraulic fluids, barely flammable hydraulic fluids, environmentally safe hydraulic fluids (biological degradable oils), water, air and others. Depending on the Turcite® material compatibility.
Clearance:	The maximum permissible radial clearance s _{max} is depending on the actual sealing system.
Dynamic load F:	Max. 15 N/mm ² at 25°C (Values for size and quantity calculation)

With the Turcite® materials it must be taken into account that the permissible surface pressure decreases with increasing temperatures. The load bearing ability for dynamic applications in practice is dependent primarily on the operating temperature. This should therefore generally not exceed 150°C.

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.

Materials

Various Turcite® materials are recommended for piston and piston rod guides as shown in Table I.

Standard Application:

- For hydraulic components with reciprocating movement in mineral oils or medium with good lubricating performance. Low friction, high resistance to wear, heat and chemicals:

Turcite® T47 (bronze filled)

Special Application:

- For lubricated and poor lubricated moving components: Water hydraulics and soft metal surfaces:

Turcite® T51 (carbon filled)

- For short stroke movements, non-lubricating fluids, water hydraulics, soft metal surfaces or pneumatic, applications requiring self-lubricating sealing materials:

Turcite® T59 (carbon fiber filled)

Table IV Serial Numbers for Turcite® Slydring® in T47, T51, T59

Piston Serial No.	Rod Serial No.	Off-the-roll Serial No.	Groove Width L ₂	Ring Thickness W
GP06	GR06	GM0600000-	6.00	1.00
GP22	GR22	GM2200000-	3.20	1.50
GP31	GR31	GM3100000-	10.00	1.50
GP41	GR41	GM4100000-	2.50	1.55
GP43	GR43	GM4300000-	4.00	1.55
GP49	GR49	GM4900000-	9.70	2.00
GP53	GR53	GM5300000-	15.00	2.00
GP64	GR64	GM6400000-	4.20	2.50
GP65	GR65	GM6500000-	5.60	2.50
GP67	GR67	GM6700000-	6.30	2.50
GP68	GR68	GM6800000-	8.10	2.50
GP69	GR69	GM6900000-	9.70	2.50
GP73	GR73	GM7300000-	15.00	2.50
GP74	GR74	GM7400000-	20.00	2.50
GP75	GR75	GM7500000-	25.00	2.50
GP76	GR76	GM7600000-	30.00	2.50
GP94	GR94	GM9400000-	20.00	3.00
GP98*	GR98*	GM9800000-*	25.00	4.00
GP99*	-	GM9900000-*	9.70	4.00

* without teardrop structure. Further dimensions on request.
Dimensions in **bold** are suitable for installation in grooves to ISO 10766.

Table V Turcite® Slydring® Length of the roll

Turcite® T47, T51, T59	Ring Thickness W
Length of the Roll	
23.0 m	1.55
13.5 m	2.50
7.0 m	4.00

Off-the-roll material can only be supplied as complete rolls.



■ Zurcon® Slydring® for Piston and Rod

Zurcon® Z80

Z80 is a UHMW-PE (ultra high molecular weight polyethylene) material which meets the requirements in FDA 21 CFR 177.1520 and is therefore recommended for use in foodstuff applications. The material is also preferred for use in water hydraulics and pneumatics due to excellent friction and wear properties.

Advantages:

- Good lubrication and wear performance
- Self-lubricating
- Low friction value
- No water absorption
- In compliance with FDA
- Excellent resistance to chemicals
- High wear resistance.

Application Examples

- Water hydraulics
- Dry pneumatics
- Filling machines
- Food processing
- Medical equipment
- Ceramic coated hydraulics

Technical Data

Velocity, reciprocating: Max. 2.0 m/s

Temperature: -60°C to +80°C (100°C)

Load F: Max. 25 N/mm² at 25°C.
 (Values for size and quantity
 calculation)

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.

Table VI Serial Numbers for Slydring® of Material Zurcon® Z80

Piston Serial No.	Rod Serial No.	Off-the-roll Order No.	Groove Width L ₂	Ring Thick-ness W
GP41	GR41	GM4100000-Z80	2.50	1.55
GP43	GR43	GM4300000-Z80	4.00	1.55
GP65	GR65	GM6500000-Z80	5.60	2.50
GP69	GR69	GM6900000-Z80	9.70	2.50
GP73	GR73	GM7300000-Z80	15.00	2.50
GP75	GR75	GM7500000-Z80	25.00	2.50

Further dimensions on request.

Table VII Zurcon® Z80 Slydring® Length of the Roll

Zurcon® Z80	Ring Thickness
Length of the Roll	W
23.0 m	1.55
13.5 m	2.50

Off-the-roll material can only be supplied as complete rolls.



■ Installation Recommendation, Turcite® and Zurcon® Slydring® for Piston According to ISO 10766 Groove Dimensions

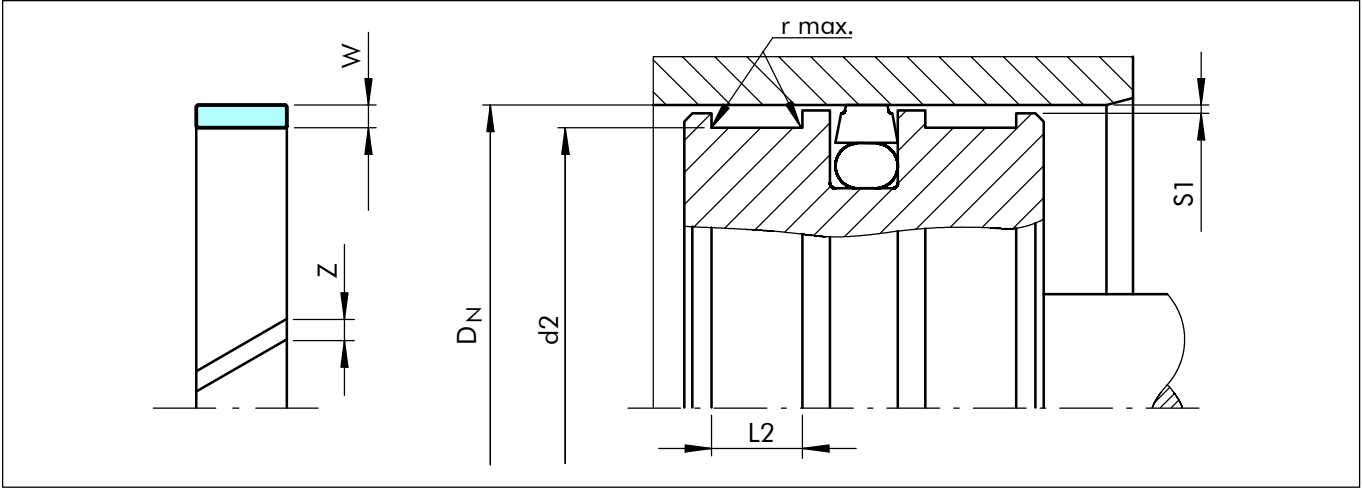


Figure 9 Installation drawing

Table VIII Installation Dimensions

Serial No.	Bore Diameter ¹⁾	Groove Diameter	Groove Width	Ring Thickness	Ring Gap ³⁾
	D _N H9	d ₂ h8	L ₂ +0.2	W	Z
GP41	8 - 20.0	D _N -3.10	2.50	1.55	1 - 2
GP43	10 - 50.0	D _N -3.10	4.00	1.55	1 - 3
GP65	16 - 140.0	D _N -5.00	5.60	2.50	2 - 6
GP69	60 - 220.0	D _N -5.00	9.70	2.50	3 - 8
GP73	130 - 400.0	D _N -5.00	15.00	2.50	5 - 14
GP75	280 - 999.9	D _N -5.00	25.00	2.50	10 - 33
GP75X	1000-4200.0	D _N -5.00	25.00	2.50	33-134
GP98	280 - 999.9	D _N -8.00	25.00	4.00	10 - 33
GP98X	1000-2200.0	D _N -8.00	25.00	4.00	33 - 70
GP99 ⁴⁾	100 - 999.9	D _N -8.00	9.70	4.00	4 - 33

¹⁾ Recommended diameter ranges. ³⁾ Calculation of the linear length, see page 8. ⁴⁾ Non ISO 10766 standard.

For Slydring® to other standards, e.g French standard NF E 48-037, please contact us.

Table IX Recommended Radii for Groove Dia.

D _N	r max.
8 - 250	0.2
>250	0.4

Table X Radial Clearance S1 ²⁾

Bore Dia. D _N	S1 min.	S1 max.
8 - 20	0.20	0.30
20 - 100	0.25	0.40
101 - 250	0.30	0.60
251 - 500	0.40	0.80
501 - 1000	0.50	1.10
>1001	0.60	1.20

²⁾ Specifications valid only in the area of the Slydring®, but not for the seal area.

Table XI Surface Roughness

Parameter	Mating Surface μm		Groove Surface μm
	Turcite® Materials	Zurcon® 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



Table XII Slydring® for Piston

Dimensions				Part No.
Bore Diameter	Groove Diameter	Groove-Width	Thick-ness	
D _N H9	d ₂ h8	L ₂ +0.2	W	
8.0	4.9	2.5	1.55	GP4100080
10.0	6.9	2.5	1.55	GP4100100
10.0	6.9	4.0	1.55	GP4300100
12.0	8.9	4.0	1.55	GP4300120
14.0	10.9	4.0	1.55	GP4300140
15.0	11.9	4.0	1.55	GP4300150
16.0	12.9	4.0	1.55	GP4300160
16.0	11.0	5.6	2.50	GP6500160
18.0	14.9	4.0	1.55	GP4300180
18.0	13.0	5.6	2.50	GP6500180
20.0	16.9	4.0	1.55	GP4300200
20.0	15.0	5.6	2.50	GP6500200
22.0	17.0	5.6	2.50	GP6500220
25.0	21.9	4.0	1.55	GP4300250
25.0	20.0	5.6	2.50	GP6500250
25.0	20.0	9.7	2.50	GP6900250
27.0	22.0	5.6	2.50	GP6500270
27.0	22.0	9.7	2.50	GP6900270
28.0	23.0	5.6	2.50	GP6500280
30.0	26.9	4.0	1.55	GP4300300
30.0	25.0	5.6	2.50	GP6500300
30.0	25.0	9.7	2.50	GP6900300
32.0	28.9	4.0	1.55	GP4300320
32.0	27.0	5.6	2.50	GP6500320
32.0	27.0	9.7	2.50	GP6900320
33.0	28.0	5.6	2.50	GP6500330
35.0	30.0	5.6	2.50	GP6500350
35.0	30.0	9.7	2.50	GP6900350
36.0	31.9	4.0	1.55	GP4300360
37.0	32.0	5.6	2.50	GP6500370
37.0	32.0	9.7	2.50	GP6900370
40.0	36.9	4.0	1.55	GP4300400
40.0	35.0	5.6	2.50	GP6500400
40.0	35.0	9.7	2.50	GP6900400
41.0	36.0	5.6	2.50	GP6500410
41.0	36.0	9.7	2.50	GP6900410
42.0	37.0	5.6	2.50	GP6500420
45.0	40.0	5.6	2.50	GP6500450
45.0	40.0	9.7	2.50	GP6900450

Dimensions				Part No.
Bore Diameter	Groove Diameter	Groove-Width	Thick-ness	
D _N H9	d ₂ h8	L ₂ +0.2	W	
48.0	43.0	5.6	2.50	GP6500480
50.0	46.9	4.0	1.55	GP4300500
50.0	45.0	5.6	2.50	GP6500500
50.0	45.0	9.7	2.50	GP6900500
52.0	47.0	5.6	2.50	GP6500520
55.0	50.0	5.6	2.50	GP6500550
55.0	50.0	9.7	2.50	GP6900550
60.0	55.0	5.6	2.50	GP6500600
60.0	55.0	9.7	2.50	GP6900600
61.0	56.0	5.6	2.50	GP6500610
61.0	56.0	9.7	2.50	GP6900610
63.0	58.0	5.6	2.50	GP6500630
63.0	58.0	9.7	2.50	GP6900630
65.0	60.0	5.6	2.50	GP6500650
65.0	60.0	9.7	2.50	GP6900650
68.0	63.0	5.6	2.50	GP6500680
68.0	63.0	9.7	2.50	GP6900680
70.0	65.0	5.6	2.50	GP6500700
70.0	65.0	9.7	2.50	GP6900700
72.0	67.0	5.6	2.50	GP6500720
75.0	70.0	5.6	2.50	GP6500750
75.0	70.0	9.7	2.50	GP6900750
80.0	75.0	5.6	2.50	GP6500800
80.0	75.0	9.7	2.50	GP6900800
85.0	80.0	5.6	2.50	GP6500850
85.0	80.0	9.7	2.50	GP6900850
90.0	85.0	5.6	2.50	GP6500900
90.0	85.0	9.7	2.50	GP6900900
95.0	90.0	5.6	2.50	GP6500950
95.0	90.0	9.7	2.50	GP6900950
100.0	95.0	5.6	2.50	GP6501000
100.0	95.0	9.7	2.50	GP6901000
105.0	100.0	5.6	2.50	GP6501050
105.0	100.0	9.7	2.50	GP6901050
110.0	105.0	9.7	2.50	GP6901100
115.0	110.0	9.7	2.50	GP6901150
120.0	115.0	9.7	2.50	GP6901200
125.0	120.0	5.6	2.50	GP6501250
125.0	120.0	9.7	2.50	GP6901250



Dimensions				Part No.
Bore Diameter	Groove Diameter	Groove-Width	Thick-ness	
D _N H9	d ₂ h8	L ₂ +0.2	W	
130.0	125.0	9.7	2.50	GP6901300
130.0	125.0	15.0	2.50	GP7301300
135.0	130.0	9.7	2.50	GP6901350
135.0	130.0	15.0	2.50	GP7301350
140.0	135.0	9.7	2.50	GP6901400
140.0	135.0	15.0	2.50	GP7301400
150.0	145.0	15.0	2.50	GP7301500
160.0	155.0	9.7	2.50	GP6901600
160.0	155.0	15.0	2.50	GP7301600
170.0	165.0	15.0	2.50	GP7301700
180.0	175.0	9.7	2.50	GP6901800
180.0	175.0	15.0	2.50	GP7301800
190.0	185.0	15.0	2.50	GP7301900
200.0	195.0	9.7	2.50	GP6902000
200.0	195.0	15.0	2.50	GP7302000
210.0	205.0	15.0	2.50	GP7302100
220.0	215.0	9.7	2.50	GP6902200
220.0	215.0	15.0	2.50	GP7302200
230.0	225.0	15.0	2.50	GP7302300
240.0	235.0	15.0	2.50	GP7302400
250.0	245.0	9.7	2.50	GP6902500
250.0	245.0	15.0	2.50	GP7302500
280.0	275.0	15.0	2.50	GP7302800
280.0	275.0	25.0	2.50	GP7502800

Dimensions				Part No.
Bore Diameter	Groove Diameter	Groove-Width	Thick-ness	
D _N H9	d ₂ h8	L ₂ +0.2	W	
280.0	272.0	25.0	4.00	GP9802800
300.0	295.0	15.0	2.50	GP7303000
320.0	315.0	15.0	2.50	GP7303200
320.0	315.0	25.0	2.50	GP7503200
320.0	312.0	25.0	4.00	GP9803200
350.0	345.0	25.0	2.50	GP7503500
360.0	355.0	15.0	2.50	GP7303600
360.0	355.0	25.0	2.50	GP7503600
360.0	352.0	25.0	4.00	GP9803600
400.0	395.0	15.0	2.50	GP7304000
400.0	395.0	25.0	2.50	GP7504000
400.0	392.0	25.0	4.00	GP9804000
450.0	445.0	15.0	2.50	GP7304500
450.0	445.0	25.0	2.50	GP7504500
450.0	442.0	25.0	4.00	GP9804500
500.0	495.0	15.0	2.50	GP7305000
500.0	495.0	25.0	2.50	GP7505000
500.0	492.0	25.0	4.00	GP9805000
1000.0	995.0	25.0	2.50	GP75X1000
2700.0	2695.0	25.0	2.50	GP75X2700
4200.0	4195.0	25.0	2.50	GP75X4200

Zurcon® Z80 is not available as GP98, GP98X and GP99 (Thickness W=4.0 mm)

All sizes printed in bold type conform to ISO 10766 and should be preferred for use.

All intermediate sizes not contained in the table are available.

The Order No. can be formed from the example below.

Ordering Example

Slydring® for piston diameter D_N = 100.0 mm
Series GP 69 from Table VIII
Groove width: 9.70 mm, ring thickness: 2.50 mm

Material: Turcite® T47
(other materials see Tabel I)

Standard design: With angle cut and teardrop structure
Design code: 0

Part No.: GP6901000 (from Table XII)

Order No.	GP69	0	1000	-	T47
Serial No.					
Design code, standard					
Piston diameter x 10					
Quality Index (Standard)					
Material No.					



Ordering Example for D_N ≥ 1000 mm

Slydring[®] for bore diameter D_N = 2200.0 mm
Series GP98X from Table VIII
Groove width: 25.00 mm, ring thickness: 4.00 mm

Part No.: GP98X2200 (from Table XII)

Order No.	GP98X	0	2200	-	T47
Serial No.					
Design code, standard					
Bore diameter x 1*					
Quality Index (Standard)					
Material No.					

* For diameters ≥ 1000.0 mm multiply only by factor 1.



■ Installation Recommendation, Turcite® and Zurcon® Slydring® for Rod According to ISO 10766 Groove Dimension

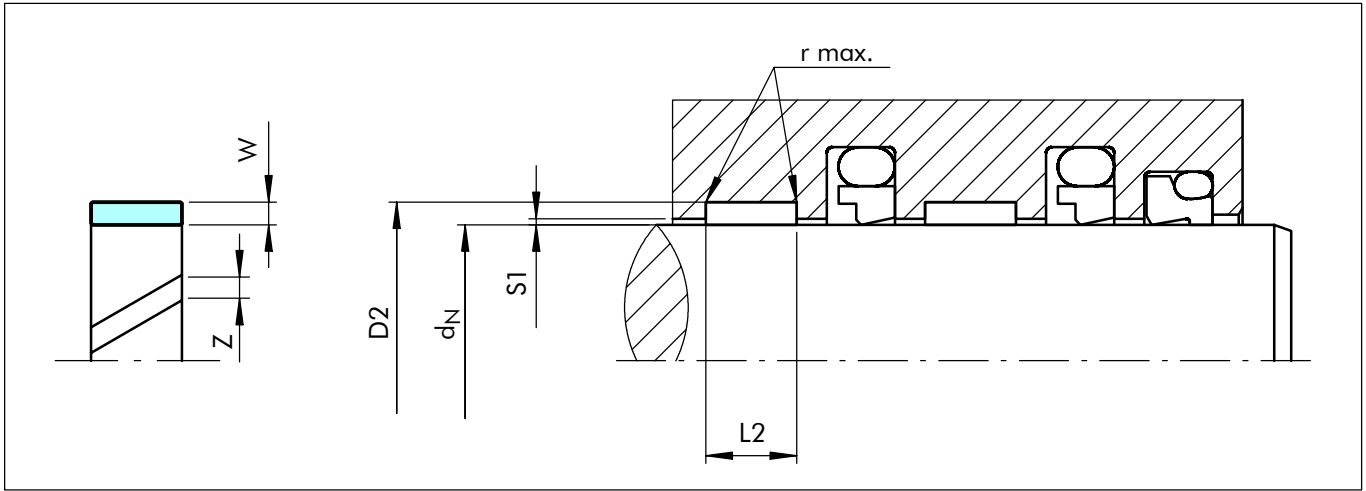


Figure 10 Installation drawing

Table XIII Installation Dimensions

Serial No.	Rod Diameter ¹⁾	Groove Diameter	Groove Width	Ring Thickness	Ring Gap ³⁾
	d_N f8/h9	D_2 H8	$L_2 + 0.2$	W	Z
GR41	8 - 20.0	$d_N + 3.10$	2.50	1.55	1 - 2
GR43	10 - 50.0	$d_N + 3.10$	4.00	1.55	1 - 3
GR65	15 - 140.0	$d_N + 5.00$	5.60	2.50	2 - 6
GR69	20 - 220.0	$d_N + 5.00$	9.70	2.50	2 - 8
GR73	80 - 400.0	$d_N + 5.00$	15.00	2.50	4 - 14
GR75	200 - 999.9	$d_N + 5.00$	25.00	2.50	8 - 33
GR75X	1000-4200.0	$d_N + 5.00$	25.00	2.50	33-134
GR98	280 - 999.9	$d_N + 8.00$	25.00	4.00	10 - 33
GR98X	1000-2200.0	$d_N + 8.00$	25.00	4.00	33 - 70

¹⁾ Recommended diameter ranges. ³⁾ Calculation of the linear length, see page 8.

For Slydring® to other standards, e.g French standard NF E 48-037, please contact us.

Table XIV Recommended Radii for Groove Dia.

d_N	r max.
8 - 250	0.2
>250	0.4

Table XV Radial Clearance S1 ²⁾

Rod Dia. d_N	S1 min.	S1 max.
8 - 20	0.20	0.30
20 - 100	0.25	0.40
101 - 250	0.30	0.60
251 - 500	0.40	0.80
501 - 1000	0.50	1.10
>1001	0.60	1.20

²⁾ Specifications valid only in the area of the Slydring®, but not for the seal area.

Table XVI Surface Roughness

Parameter	Mating Surface μm		Groove Surface μm
	Turcite® Materials	Zurcon® 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_q	0.05 - 0.40	0.10 - 0.40	< 2.5



Table XVII Slydring® for Rods

Dimensions				Part No.
Rod Diameter	Groove Diameter	Groove Width	Thick-ness	
d _N f8/h9	D ₂ H8	L ₂ +0.2	W	
8.0	11.1	2.5	1.55	GR4100080
10.0	13.1	2.5	1.55	GR4100100
10.0	13.1	4.0	1.55	GR4300100
12.0	15.1	4.0	1.55	GR4300120
14.0	17.1	4.0	1.55	GR4300140
15.0	18.1	4.0	1.55	GR4300150
16.0	19.1	4.0	1.55	GR4300160
16.0	21.0	5.6	2.50	GR6500160
18.0	21.1	4.0	1.55	GR4300180
18.0	23.0	5.6	2.50	GR6500180
20.0	23.1	4.0	1.55	GR4300200
20.0	25.0	5.6	2.50	GR6500200
20.0	25.0	9.7	2.50	GR6900200
22.0	25.1	4.0	1.55	GR4300220
22.0	27.0	5.6	2.50	GR6500220
22.0	27.0	9.7	2.50	GR6900220
25.0	28.1	4.0	1.55	GR4300250
25.0	30.0	5.6	2.50	GR6500250
25.0	30.0	9.7	2.50	GR6900250
27.0	32.0	5.6	2.50	GR6500270
27.0	32.0	9.7	2.50	GR6900270
28.0	31.1	4.0	1.55	GR4300280
28.0	33.0	5.6	2.50	GR6500280
28.0	33.0	9.7	2.50	GR6900280
30.0	35.0	5.6	2.50	GR6500300
30.0	35.0	9.7	2.50	GR6900300
32.0	37.0	5.6	2.50	GR6500320
32.0	37.0	9.7	2.50	GR6900320
35.0	40.0	5.6	2.50	GR6500350
35.0	40.0	9.7	2.50	GR6900350
36.0	41.0	5.6	2.50	GR6500360
36.0	41.0	9.7	2.50	GR6900360
40.0	45.0	5.6	2.50	GR6500400
40.0	45.0	9.7	2.50	GR6900400
40.0	45.0	15.0	2.50	GR7300400
42.0	47.0	5.6	2.50	GR6500420
43.0	48.0	5.6	2.50	GR6500430
45.0	50.0	5.6	2.50	GR6500450
45.0	50.0	9.7	2.50	GR6900450

Dimensions				Part No.
Rod Diameter	Groove Diameter	Groove Width	Thick-ness	
d _N f8/h9	D ₂ H8	L ₂ +0.2	W	
48.0	53.0	5.6	2.50	GR6500480
48.0	53.0	9.7	2.50	GR6900480
50.0	55.0	5.6	2.50	GR6500500
50.0	55.0	9.7	2.50	GR6900500
52.0	57.0	5.6	2.50	GR6500520
52.0	57.0	9.7	2.50	GR6900520
55.0	60.0	5.6	2.50	GR6500550
55.0	60.0	9.7	2.50	GR6900550
56.0	61.0	5.6	2.50	GR6500560
56.0	61.0	9.7	2.50	GR6900560
58.0	63.0	5.6	2.50	GR6500580
58.0	63.0	9.7	2.50	GR6900580
60.0	65.0	5.6	2.50	GR6500600
60.0	65.0	9.7	2.50	GR6900600
63.0	68.0	5.6	2.50	GR6500630
63.0	68.0	9.7	2.50	GR6900630
63.0	68.0	15.0	2.50	GR7300630
65.0	70.0	5.6	2.50	GR6500650
65.0	70.0	9.7	2.50	GR6900650
70.0	75.0	5.6	2.50	GR6500700
70.0	75.0	9.7	2.50	GR6900700
70.0	75.0	15.0	2.50	GR7300700
75.0	80.0	5.6	2.50	GR6500750
75.0	80.0	9.7	2.50	GR6900750
75.0	80.0	15.0	2.50	GR7300750
80.0	85.0	5.6	2.50	GR6500800
80.0	85.0	9.7	2.50	GR6900800
80.0	85.0	15.0	2.50	GR7300800
85.0	90.0	5.6	2.50	GR6500850
85.0	90.0	9.7	2.50	GR6900850
90.0	95.0	5.6	2.50	GR6500900
90.0	95.0	9.7	2.50	GR6900900
90.0	95.0	15.0	2.50	GR7300900
95.0	100.0	5.6	2.50	GR6500950
95.0	100.0	9.7	2.50	GR6900950
95.0	100.0	15.0	2.50	GR7300950
100.0	105.0	5.6	2.50	GR6501000
100.0	105.0	9.7	2.50	GR6901000
100.0	105.0	15.0	2.50	GR7301000



Dimensions				Part No.
Rod Diameter	Groove Diameter	Groove Width	Thick-ness	
d _N f8/h9	D ₂ H8	L ₂ +0.2	W	
105.0	110.0	9.7	2.50	GR6901050
105.0	110.0	15.0	2.50	GR7301050
110.0	115.0	9.7	2.50	GR6901100
110.0	115.0	15.0	2.50	GR7301100
115.0	120.0	9.7	2.50	GR6901150
115.0	120.0	15.0	2.50	GR7301150
120.0	125.0	5.6	2.50	GR6501200
120.0	125.0	9.7	2.50	GR6901200
120.0	125.0	15.0	2.50	GR7301200
125.0	130.0	9.7	2.50	GR6901250
125.0	130.0	15.0	2.50	GR7301250
130.0	135.0	15.0	2.50	GR7301300
135.0	140.0	15.0	2.50	GR7301350
140.0	145.0	9.7	2.50	GR6901400
140.0	145.0	15.0	2.50	GR7301400
150.0	155.0	15.0	2.50	GR7301500
155.0	160.0	15.0	2.50	GR7301550
160.0	165.0	9.7	2.50	GR6901600
160.0	165.0	15.0	2.50	GR7301600
170.0	175.0	15.0	2.50	GR7301700
180.0	185.0	9.7	2.50	GR6901800
180.0	185.0	15.0	2.50	GR7301800
190.0	195.0	15.0	2.50	GR7301900
195.0	200.0	15.0	2.50	GR7301950
200.0	205.0	15.0	2.50	GR7302000
200.0	205.0	25.0	2.50	GR7502000
210.0	215.0	15.0	2.50	GR7302100
220.0	225.0	15.0	2.50	GR7302200
220.0	225.0	25.0	2.50	GR7502200
230.0	235.0	25.0	2.50	GR7502300
240.0	245.0	25.0	2.50	GR7502400
250.0	255.0	15.0	2.50	GR7302500
250.0	255.0	25.0	2.50	GR7502500
280.0	285.0	15.0	2.50	GR7302800
280.0	285.0	25.0	2.50	GR7502800
280.0	288.0	25.0	4.00	GR9802800
300.0	305.0	25.0	2.50	GR7503000
320.0	325.0	15.0	2.50	GR7303200
320.0	325.0	25.0	2.50	GR7503200

Dimensions				Part No.
Rod Diameter	Groove Diameter	Groove Width	Thick-ness	
d _N f8/h9	D ₂ H8	L ₂ +0.2	W	
320.0	328.0	25.0	4.00	GR9803200
350.0	355.0	25.0	2.50	GR7503500
360.0	365.0	15.0	2.50	GR7303600
360.0	365.0	25.0	2.50	GR7503600
360.0	368.0	25.0	4.00	GR9803600
400.0	405.0	25.0	2.50	GR7504000
400.0	408.0	25.0	4.00	GR9804000
800.0	805.0	25.0	2.50	GR7508000
800.0	808.0	25.0	4.00	GR9808000
1000.0	1005.0	25.0	2.50	GR75X1000
1000.0	1008.0	25.0	4.00	GR98X1000
2600.0	2605.0	25.0	2.50	GR75X2600
4200.0	4205.0	25.0	2.50	GR75X4200

Zurcon® Z80 is not available as GR98 and GR98X
(Thickness W=4.0 mm)

All sizes printed in bold type conform to ISO 10766 and should be preferred for use.

All intermediate sizes not contained in the table are available upon request.

The Order No. can be formed from the example below.

Ordering Example

Slydring® for rod diameter d_N = 63.0 mm
Series GR 65 from Table XIII
Groove width: 5.60 mm, ring thickness: 2.50 mm

Material: Turcite® T47
(other materials see Table I)

Standard design: With angle cut and teardrop structure
Design code: 0

Part No.: GR6500630 (from Table XVII)

Order No.

GR65

0

0630

-

T47

Serial No.

Design code, standard

Rod diameter x 10

Quality Index (Standard)

Material No.



Ordering Example for $d_N \geq 1000$ mm

Slydring® for rod diameter $d_N = 2600.0$ mm
Series GR75X from Table XIII
Groove width: 25.00 mm, ring thickness: 2.50 mm

Part No.: GR75X2600 (from Table XVII)

Order No.	GR75X	0	2600	-	T47
Serial No.					
Design code, standard					
Rod diameter x 1*					
Quality Index (Standard)					
Material No.					

* For diameters ≥ 1000.0 mm multiply only by factor 1.



■ HiMod® Slydring® for Piston and Rod

Description

HiMod® Slydring® are made in special, modified thermo-plastic material and can be used in hydraulic cylinders for medium to high loads. Three different grades of material are available:

HiMod® HM061,
PO-POG2 A special glass fibre reinforced
polyacetal

HiMod® HM062 A special glass fibre reinforced
heat-stabilised polyamid with
PTFE filler

HiMod® HM063 A special glass fibre reinforced
heat-stabilised polyamid

Slydring® in material HM061 (PO-POG2), HM062 and HM063 are injection moulded to finish parts (mould necessary), a wide range of standard sizes (see Tables XXIII and XXIV) are available. Additionally, further non-standard sizes are available on request. Polypac and Sealing Parts process wear rings of material HM061 - with the following designations:

Polypac: PO (POM/GL/BK)
Sealing Parts: POG2 (Wearite)

Application Examples

HiMod® Slydring® (HM061, 062, 063) is generally utilized in a wide range of hydraulic equipment such as:

- Standard hydraulic cylinder, medium range
- Truck tail lift
- Telescopic cylinders
- Truck cranes
- Forklift truck
- Stabiliser cylinders
- Agriculture equipment
- Construction machinery

Materials

HiMod® HM061-POG2-PO

HiMod® HM061 is a polyacetal (POM) based material with glass fibres.

Former B+S compound designation: Zurcon Z61

Advantages:

- Favourable price/performance ratio
- High compressive strength
- Easy installation on pistons and glands (gland bore > 40 mm)
- High wear resistance
- Water absorption 0.2 %
- High stiffness.

Technical Data

Velocity, reciprocating: Max. 0.8 m/s

Temperature: -40°C to +110°C

Load: Max. 40 N/mm² at 25°C.
(Values for size and quantity
calculation including
safety factor).

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.



HiMod® HM062

HM062 is a polyamid (PA 66) based material with glass fibres and PTFE filler. The material is heat stabilised.

Former material designation
(Polypac material code: PA 299A 207AFT 15).

Advantages:

- Good price/performance ratio
- High compressive strength even at high temperatures
- High wear resistance
- Easy installation on pistons and glands
(gland bore > 30 mm)
- Low friction
- For operation under poor lubrication.

Technical Data

Velocity, reciprocating: Max. 1.0 m/s
Temperature: -40°C to +130°C
Load: Max. 75 N/mm² at 60°C
 (Values for size and quantity
 calculation including
 safety factor).

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.

HiMod® HM063

HM063 is a polyamid (PA 66) based material with glass fibres. The material is heat stabilised.

Former material designation
(Polypac: PA 299A-207AB)

Advantages:

- Good price/performance ratio
- High compressive strength even at high temperatures
- High wear resistance
- Easy installation on pistons and glands
(gland bore > 30 mm)
- Low friction

Technical Data

Velocity, reciprocating: Max. 1.0 m/s
Temperature: -40°C to +130°C
Load: Max. 75 N/mm² at 60°C
 (Values for size and quantity
 calculation including
 safety factor).

Table XVIII Serial Numbers for HiMod®
Injection Moulded Slydring®

Piston Serial No.	Rod Serial No.	Groove Width	Ring Thick- ness
In Material HiMod® HM061 HM062 HM063	In Material HiMod® HM061 HM062 HM063	L ₂	W
GP49	GR49	9.70	2.00
GP51	GR51	10.20	2.00
GP53	GR53	15.20	2.00
GP54	GR54	20.30	2.00
GP65	GR65	5.60	2.50
GP69	GR69	9.70	2.50
GP73	GR73	15.00	2.50
GPN1	GRN1	9.70	3.00
GPN3	GRN3	12.80	3.00
GPN4	GRN4	19.20	3.00

All Slydring® have chamfered edges, thus preventing impermissible edge forces in the corner radii of the grooves.



■ Installation Recommendation, HiMod® Slydring® for Piston According to ISO 10766 Groove Dimension

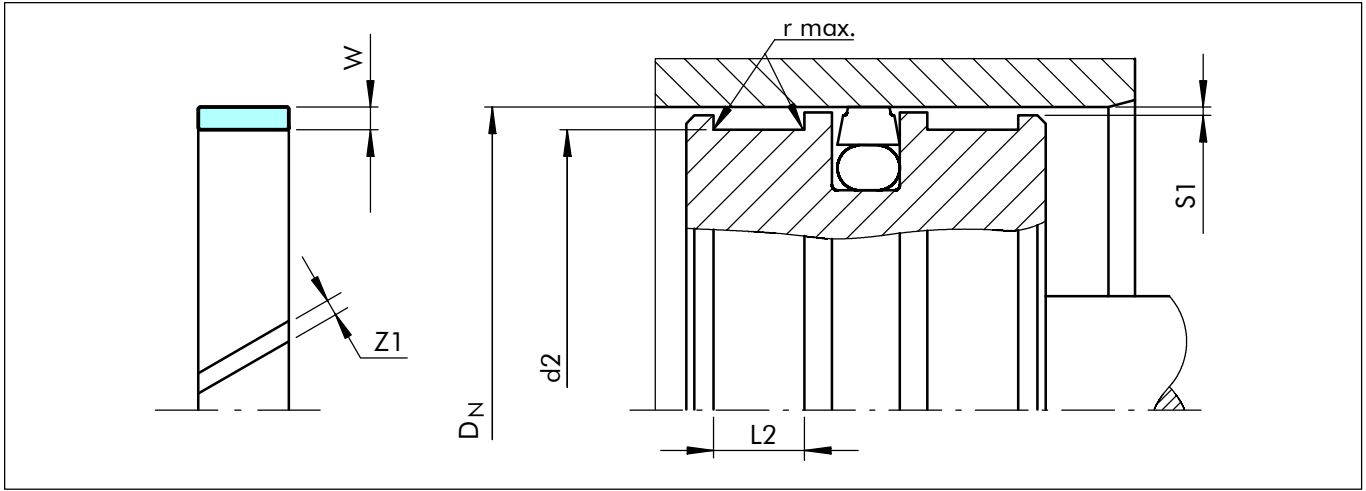


Figure 11 Installation drawing

Table XIX Installation Dimensions

Serial No.	Bore Diameter ¹⁾	Groove Diameter	Groove Width	Ring Thickness	Ring Gap
	D _N H9	d ₂ h8	L ₂ +0.2	W	Z ₁
GP41	8 - 20.0	D _N -3.10	2.50	1.55	2
GP43	10 - 50.0	D _N -3.10	4.00	1.55	2 - 2.5
GP65	16 - 140.0	D _N -5.00	5.60	2.50	2 - 2.5
GP69	60 - 220.0	D _N -5.00	9.70	2.50	2,5 - 3
GP73	130 - 300.0	D _N -5.00	15.00	2.50	3
GP75	280 - 300.0	D _N -5.00	25.00	2.50	3

¹⁾ Recommended diameter ranges.

For Slydring® to other standards, e.g French standard NF E 48-037, please contact us.

Table XX Recommended Radii for Groove Dia.

D _N	r max.
8 - 250	0.2
>250	0.4

Table XXI Radial Clearance S1 ²⁾

Bore Dia. D _N	S1 min.	S1 max.
8 - 20	0.20	0.30
20 - 100	0.25	0.40
101 - 250	0.30	0.60
251 - 300	0.40	0.80

²⁾ Specifications valid only in the area of the Slydring®, but not for the seal area.

Table XXII Surface Roughness

Parameter	Mating Surface μm	Groove Surface μm
	HiMod® Materials	
R _{max}	1.00 - 4.00	< 16.0
R _z DIN	0.63 - 2.50	< 10.0
R _a	0.10 - 0.40	< 2.5



Table XXIII Slydring® for Piston

Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.
Bore Diameter	Groove Diameter	Groove Width	Thickness		HiMod®	
D _N H9	d ₂ h8	L ₂ +0.2	W		HM061 HM062 HM063	POG2
8.0	4.9	2.5	1.55	GP4100080	●	
12.0	8.9	4.0	1.55	GP4300120	●	
16.0	12.9	4.0	1.55	GP4300160	●	
16.0	11.0	9.7	2.50	GP6900160	●	
18.0	13.0	9.7	2.50	GP6900180	●	
20.0	16.9	4.0	1.55	GP4300200	●	
20.0	15.0	9.7	2.50	GP6900200	●	
22.0	17.0	9.7	2.50	GP6900220	●	
24.0	19.0	9.7	2.50	GP6900240	●	
25.0	21.9	4.0	1.55	GP4300250	●	WR 20 25 5.6 WR 20 25 9.7
25.0	20.0	5.6	2.50	GP6500250	●	
25.0	20.0	9.7	2.50	GP6900250	●	
26.0	21.0	9.7	2.50	GP6900260	●	WR 22 27 5.6 WR 22 27 9.7
27.0	22.0	5.6	2.50	GP6500270	●	
27.0	22.0	9.7	2.50	GP6900270	●	
28.0	23.0	9.7	2.50	GP6900280	●	WR 25 30 5.6 WR 25 30 9.7
30.0	25.0	5.6	2.50	GP6500300	●	
30.0	25.0	9.7	2.50	GP6900300	●	
32.0	28.9	4.0	1.55	GP4300320	●	WR 27 32 5.6 WR 27 32 9.7
32.0	27.0	5.6	2.50	GP6500320	●	
32.0	27.0	9.7	2.50	GP6900320	●	
33.0	28.0	5.6	2.50	GP6500330	●	WR 28 33 5.6
35.0	31.9	4.0	1.55	GP4300350	●	WR 30 35 5.6 WR 30 35 9.7
35.0	30.0	5.6	2.50	GP6500350	●	
35.0	30.0	9.7	2.50	GP6900350	●	
36.0	31.0	9.7	2.50	GP6900360	●	WR 32 37 5.6 WR 32 37 9.7
37.0	32.0	5.6	2.50	GP6500370	●	
37.0	32.0	9.7	2.50	GP6900370	●	
38.0	33.0	9.7	2.50	GP6900380	●	WR 35 40 5.6 WR 35 40 9.7
40.0	35.0	5.6	2.50	GP6500400	●	
40.0	35.0	9.7	2.50	GP6900400	●	
41.0	36.0	5.6	2.50	GP6500410	●	WR 36 41 5.6
41.0	36.0	9.7	2.50	GP6900410	●	WR 36 41 9.7
42.0	37.0	9.7	2.50	GP6900420	●	WR 40 45 5.6 WR 40 45 9.7
45.0	40.0	5.6	2.50	GP6500450	●	
45.0	40.0	9.7	2.50	GP6900450	●	
45.0	40.0	15.0	2.50	GP7300450	●	
46.0	41.0	9.7	2.50	GP6900460	●	
47.0	42.0	9.7	2.50	GP6900470	●	

● B+S sizes available, same Ref. as Part No.

All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.
Bore Diameter	Groove Diameter	Groove Width	Thickness		HiMod®	
D _N H9	d ₂ h8	L ₂ +0.2	W		HM061 HM062 HM063	POG2
48.0	43.0	5.6	2.50	GP6500480	●	WR 43 48 5.6
49.0	44.0	9.7	2.50	GP6900490	●	
50.0	45.0	5.6	2.50	GP6500500	●	WR 45 50 5.6
50.0	45.0	9.7	2.50	GP6900500	●	WR 45 50 9.7
50.0	45.0	15.0	2.50	GP7300500	●	
52.0	47.0	5.6	2.50	GP6500520	●	
52.0	47.0	9.7	2.50	GP6900520	●	
55.0	50.0	5.6	2.50	GP6500550	●	WR 50 55 5.6
55.0	50.0	9.7	2.50	GP6900550	●	WR 50 55 9.7
55.0	50.0	15.0	2.50	GP7300550	●	
57.0	52.0	5.6	2.50	GP6500570	●	
57.0	52.0	9.7	2.50	GP6900570	●	
58.0	53.0	9.7	2.50	GP6900580	●	
60.0	55.0	5.6	2.50	GP6500600	●	WR 55 60 5.6
60.0	55.0	9.7	2.50	GP6900600	●	WR 55 60 9.7
61.0	56.0	5.6	2.50	GP6500610	●	WR 56 61 5.6
61.0	56.0	9.7	2.50	GP6900610	●	WR 56 61 9.7
63.0	58.0	5.6	2.50	GP6500630	●	WR 58 63 5.6
63.0	58.0	9.7	2.50	GP6900630	●	WR 58 63 9.7
65.0	60.0	5.6	2.50	GP6500650	●	WR 60 65 5.6
65.0	60.0	9.7	2.50	GP6900650	●	WR 60 65 9.7
65.0	60.0	15.0	2.50	GP7300650	●	
66.0	61.0	9.7	2.50	GP6900660	●	
68.0	63.0	5.6	2.50	GP6500680	●	WR 63 68 5.6
68.0	63.0	9.7	2.50	GP6900680	●	WR 63 68 9.7
68.0	63.0	15.0	2.50	GP7300680	●	
70.0	65.0	5.6	2.50	GP6500700	●	WR 65 70 5.6
70.0	65.0	9.7	2.50	GP6900700	●	WR 65 70 9.7
72.0	67.0	5.6	2.50	GP6500720	●	WR 67 72 5.6
75.0	70.0	5.6	2.50	GP6500750	●	WR 70 75 5.6
75.0	70.0	9.7	2.50	GP6900750	●	WR 70 75 9.7
75.0	70.0	15.0	2.50	GP7300750	●	
75.0	70.0	25.0	2.50	GP7500750	●	
77.0	72.0	9.7	2.50	GP6900770	●	
80.0	75.0	5.6	2.50	GP6500800	●	WR 75 80 5.6
80.0	75.0	9.7	2.50	GP6900800	●	WR 75 80 9.7
85.0	80.0	5.6	2.50	GP6500850	●	WR 80 85 5.6
85.0	80.0	9.7	2.50	GP6900850	●	WR 80 85 9.7
85.0	80.0	15.0	2.50	GP7300850	●	

● B+S sizes available, same Ref. as Part No. All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.
Bore Diameter	Groove Diameter	Groove Width	Thickness		HiMod®	
D _N H9	d ₂ h8	L ₂ +0.2	W		HM061 HM062 HM063	POG2
88.0	83.0	15.0	2.50	GP7300880	●	WR 85 90 5.6
90.0	85.0	5.6	2.50	GP6500900	●	
90.0	85.0	9.7	2.50	GP6900900	●	
90.0	85.0	15.0	2.50	GP7300900	●	WR 90 95 5.6 WR 90 95 9.7
95.0	90.0	5.6	2.50	GP6500950	●	
95.0	90.0	9.7	2.50	GP6900950	●	
97.0	92.0	9.7	2.50	GP6900970	●	WR 95 100 5.6 WR 95 100 9.7
100.0	95.0	5.6	2.50	GP6501000	●	
100.0	95.0	9.7	2.50	GP6901000	●	
100.0	95.0	15.0	2.50	GP7301000	●	WR 100 105 5.6 WR 100 105 9.7
105.0	100.0	5.6	2.50	GP6501050	●	
105.0	100.0	9.7	2.50	GP6901050	●	
105.0	100.0	15.0	2.50	GP7301050	●	
110.0	105.0	9.7	2.50	GP6901100	●	
110.0	105.0	15.0	2.50	GP7301100	●	
115.0	110.0	9.7	2.50	GP6901150	●	
115.0	110.0	15.0	2.50	GP7301150	●	
120.0	115.0	9.7	2.50	GP6901200	●	
120.0	115.0	15.0	2.50	GP7301200	●	WR 120 125 5.6 WR 120 125 9.7
125.0	120.0	5.6	2.50	GP6501250	●	
125.0	120.0	9.7	2.50	GP6901250	●	
125.0	120.0	15.0	2.50	GP7301250	●	
130.0	125.0	15.0	2.50	GP7301300	●	
135.0	130.0	15.0	2.50	GP7301350	●	
140.0	135.0	9.7	2.50	GP6901400	●	
140.0	135.0	15.0	2.50	GP7301400	●	
145.0	140.0	15.0	2.50	GP7301450	●	
160.0	155.0	15.0	2.50	GP7301600	●	
200.0	195.0	15.0	2.50	GP7302000	●	
215.0	210.0	15.0	2.50	GP7302150	●	

● B+S sizes available, same Ref. as Part No.

All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.



Ordering Example

Slydring® for bore diameter $D_N = 100.0$ mm
Series GP69 from Table XIX
Groove width: 9.70 mm, ring thickness: 2.50 mm

Material: HiMod® HM061
(other materials see Tabel I)

Standard design: With angle cut
Design code: 0

Order No.: GP6901000-HM061 (from Table XXIII)

Order No.	GP69	0	1000	-	HM061
Serial No.					
Design code, standard					
Bore diameter x 10					
Quality Index (Standard)					
Material No.					

Ordering Example

For Sealing Parts Slydring® Ref. No. WR 95 100 9.7
Bore diameter $D_N = 100.0$ mm
Groove width: 9.70 mm, ring thickness: 2.50 mm

Material: POG2

Standard design: With angle cut
Design code: 0

Order No.: GP6901000-POG2

Order No.	GP69	0	1000	-	POG2
Serial No.					
Design code, standard					
Bore diameter x 10					
Quality Index (Standard)					
Material No.					



■ Installation Recommendation, HiMod® Slydring® for Piston
Non ISO 10766 Groove Dimension

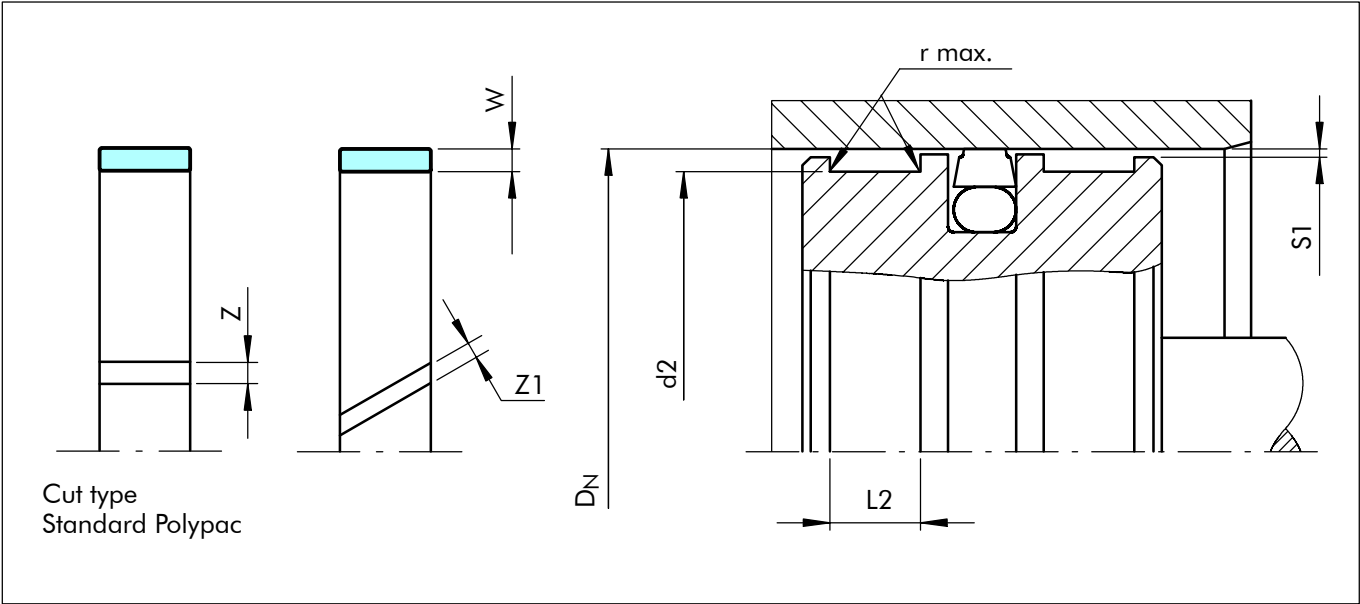


Figure 12 Installation drawing

Table XXIV Slydring® for Piston

Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
Bore Diameter	Groove Diameter	Groove Width	Thickness		HiMod®		
D _N H11	d ₂ h9	L ₂ +0.2	W		HM061/HM062 /HM063	POG2	PO
16.0	12.0	9.7	2.00	GP4900160	●	WRE 16	E/DWR 16/2
18.0	14.0	9.7	2.00	GP4900180	●	WRE 18	
20.0	16.0	9.7	2.00	GP4900200	●	WRE 20	E/DWR 20/2
22.0	18.0	9.7	2.00	GP4900220	●	WRE 22	
24.0	20.0	9.7	2.00	GP4900240		WRE 24	
25.0	21.0	9.7	2.00	GP4900250		WRE 25	E/DWR 25/2
26.0	22.0	9.7	2.00	GP4900260		WRE 26	
27.0	23.0	9.7	2.00	GP4900270		WRE 27	
28.0	24.0	9.7	2.00	GP4900280		WRE 28	
30.0	26.0	9.7	2.00	GP4900300		WRE 30	E/DWR 30/2
32.0	28.0	9.7	2.00	GP4900320		WRE 32	E/DWR 32/2
35.0	31.0	9.7	2.00	GP4900350		WRE 35	E/DWR 35/2
36.0	32.0	9.7	2.00	GP4900360		WRE 36	
38.0	34.0	9.7	2.00	GP4900380		WRE 38	
39.0	35.0	9.7	2.00	GP4900390	●		
40.0	36.0	9.7	2.00	GP4900400		WRE 40	E/DWR 40/2
42.0	38.0	9.7	2.00	GP4900420		WRE 42	
44.0	40.0	9.7	2.00	GP4900440	●		

● B+S sizes available, same Ref. as Part No.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.	
Bore Diameter	Groove Diameter	Groove Width	Thickness		HiMod®			
D _N H11	d ₂ h9	L ₂ +0.2	W		HM061/HM062 /HM063	POG2	PO	
45.0	41.0	9.7	2.00	GP4900450	●	WRE 45	E/DWR 45/2	
46.0	42.0	9.7	2.00	GP4900460		WRE 46		
49.0	45.0	9.7	2.00	GP4900490				
50.0	46.0	9.7	2.00	GP4900500	●	WRE 50	E/DWR 50	
50.0	46.0	10.0	2.00	GP5100500	●			
50.0	44.0	9.7	3.00	GPN100500	●			
52.0	46.0	12.8	3.00	GPN300520	●	WRE 52		
54.0	50.0	9.7	2.00	GP4900540				
55.0	51.0	9.7	2.00	GP4900550		●		
55.0	51.0	10.0	2.00	GP5100550	●	WRE 55	E/DWR 55	
55.0	49.0	12.8	3.00	GPN300550	●			
59.0	55.0	9.7	2.00	GP4900590	●			
60.0	56.0	9.7	2.00	GP4900600	●	WRE 60	E/DWR 60	
60.0	54.0	12.8	3.00	GPN300600	●			
62.0	56.0	12.8	3.00	GPN300620				WRE 62
63.0	57.0	12.8	3.00	GPN300630	●	WRE 63	E/DWR 65	
65.0	61.0	9.7	2.00	GP4900650	●			
65.0	59.0	12.8	3.00	GPN300650	●	WRE 65		
70.0	64.0	12.8	3.00	GPN300700	●	WRE 70	E/DWR 70	
74.0	70.0	9.7	2.00	GP4900740	●	WRE 75	E/DWR 75	
75.0	71.0	9.7	2.00	GP4900750	●			
75.0	71.0	15.0	2.00	GP5300750	●			
75.0	69.0	12.8	3.00	GPN300750	●	WRE 75		
80.0	76.0	9.7	2.00	GP4900800	●	WRE 80	E/DWR 80	
80.0	74.0	12.8	3.00	GPN300800	●			
84.0	80.0	15.0	2.00	GP5300840	●			
85.0	81.0	9.7	2.00	GP4900850	●	WRE 85	E/DWR 85	
85.0	79.0	12.8	3.00	GPN300850	●			
90.0	84.0	12.8	3.00	GPN300900	●			WRE 90
93.0	87.0	12.8	3.00	GPN300930		WRE 93	E/DWR 90	
94.0	90.0	15.0	2.00	GP5300940	●	WRE 95	E/DWR 95	
95.0	91.0	9.7	2.00	GP4900950	●			
95.0	89.0	12.8	3.00	GPN300950	●			
95.0	91.0	15.0	2.00	GP5300950	●	WRE 100	E/DWR 100	
99.0	95.0	9.7	2.00	GP4900990	●			
100.0	96.0	9.7	2.00	GP4901000	●			
100.0	94.0	12.8	3.00	GPN301000	●	WRE 100		
100.0	96.0	15.0	2.00	GP5301000	●	WRE 100	E/DWR 100	
104.0	100.0	20.0	2.00	GP5401040	●			

● B+S sizes available, same Ref. as Part No.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
Bore Diameter	Groove Diameter	Groove Width	Thickness		HiMod®		
D _N H11	d ₂ h9	L ₂ +0.2	W		HM061/HM062 /HM063	POG2	PO
105.0	99.0	12.8	3.00	GPN301050	●	WRE 105	E/DWR 105
105.0	101.0	15.0	2.00	GP5301050			
110.0	104.0	12.8	3.00	GPN301100		WRE 110	E/DWR 110
110.0	106.0	15.0	2.00	GP5301100	●		
110.0	106.0	20.0	2.00	GP5401100			
112.0	106.0	12.8	3.00	GPN301120		WRE 112	
114.0	110.0	20.0	2.00	GP5401140	●		
115.0	109.0	12.8	3.00	GPN301150		WRE 115	E/DWR 115
115.0	111.0	15.0	2.00	GP5301150			
120.0	114.0	12.8	3.00	GPN301200	●	WRE 120	E/DWR 120
125.0	119.0	12.8	3.00	GPN301250		WRE 125	E/DWR 125
125.0	121.0	15.0	2.00	GP5301250			
130.0	124.0	12.8	3.00	GPN301300	●	WRE 130	E/DWR 130
130.0	126.0	20.0	2.00	GP5401300			
135.0	129.0	12.8	3.00	GPN301350		WRE 135	E/DWR 135
140.0	134.0	12.8	3.00	GPN301400	●	WRE 140	E/DWR 140
140.0	136.0	15.0	2.00	GP5301400			
145.0	139.0	12.8	3.00	GPN301450		WRE 145	E/DWR 145
150.0	144.0	12.8	3.00	GPN301500	●	WRE 150	E/DWR 150
150.0	146.0	20.0	2.00	GP5401500			
155.0	149.0	19.2	3.00	GPN401550		WRE 155	E/DWR 155
160.0	154.0	19.2	3.00	GPN401600	●	WRE 160	E/DWR 160
165.0	159.0	19.2	3.00	GPN401650		WRE 165	E/DWR 165
170.0	164.0	19.2	3.00	GPN401700		WRE 170	E/DWR 170
170.0	166.0	20.0	2.00	GP5401700	●		
175.0	169.0	19.2	3.00	GPN401750		WRE 175	E/DWR 175
180.0	174.0	19.2	3.00	GPN401800		WRE 180	E/DWR 180
180.0	176.0	20.0	2.00	GP5401800	●		
185.0	179.0	19.2	3.00	GPN401850		WRE 185	E/DWR 185
190.0	184.0	19.2	3.00	GPN401900		WRE 190	E/DWR 190
195.0	189.0	19.2	3.00	GPN401950		WRE 195	E/DWR 195
200.0	194.0	19.2	3.00	GPN402000		WRE 200	E/DWR 200
205.0	199.0	19.2	3.00	GPN402050			E/DWR 205
210.0	204.0	19.2	3.00	GPN402100		WRE 210	E/DWR 210
215.0	209.0	19.2	3.00	GPN402150			E/DWR 215
220.0	214.0	19.2	3.00	GPN402200		WRE 220	E/DWR 220
225.0	219.0	19.2	3.00	GPN402250			E/DWR 225
230.0	224.0	19.2	3.00	GPN402300		WRE 230	E/DWR 230
235.0	229.0	19.2	3.00	GPN402350			E/DWR 235

● B+S sizes available, same Ref. as Part No.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
Bore Diameter	Groove Diameter	Groove Width	Thickness		HiMod®		
D _N H11	d ₂ h9	L ₂ +0.2	W		HM061/HM062 /HM063	POG2	PO
240.0	234.0	19.2	3.00	GPN402400		WRE 240	E/DWR 240
245.0	239.0	19.2	3.00	GPN402450			E/DWR 245
250.0	244.0	19.2	3.00	GPN402500		WRE 250	E/DWR 250
250.0	246.0	20.0	2.00	GP5402500	●		
255.0	249.0	19.2	3.00	GPN402550			E/DWR 255
260.0	254.0	19.2	3.00	GPN402600		WRE 260	E/DWR 260
265.0	259.0	19.2	3.00	GPN402650			E/DWR 265
270.0	264.0	19.2	3.00	GPN402700		WRE 270	E/DWR 270
275.0	269.0	19.2	3.00	GPN402750			E/DWR 275
280.0	274.0	19.2	3.00	GPN402800		WRE 280	E/DWR 280
285.0	279.0	19.2	3.00	GPN402850			E/DWR 285
290.0	284.0	19.2	3.00	GPN402900		WRE 290	E/DWR 290
295.0	289.0	19.2	3.00	GPN402950			E/DWR 295
300.0	294.0	19.2	3.00	GPN403000		WRE 300	E/DWR 300

● B+S sizes available, same Ref. as Part No.

Table XXV Radial Clearance S1

Bore Dia. D _N	S1 min.	S1 max.
8 - 20	0.20	0.30
20 - 100	0.25	0.40
101 - 250	0.30	0.60
251 - 300	0.40	0.80

S1 Specifications valid only in the area of the Slydring®, but not for the seal area.



Ordering Example

Slydring® for bore diameter $D_N = 20.0$ mm
Series GP49 from Table XVIII
Groove width: 9.70 mm, ring thickness: 2.00 mm

Material: HiMod® HM061
(other materials see Tabel I)

Standard design: With angle cut
Design code: 0

Order No.: GP4900200-HM061 (from Table XXIV)

Order No.	GP49	0	0200	-	HM061
Serial No.					
Design code, standard					
Bore diameter x 10					
Quality Index (Standard)					
Material No.					

Ordering Example

For Sealing Parts Slydring® Ref. No. WRE20
Bore diameter $D_N = 20.0$ mm
Groove width: 9.70 mm, ring thickness: 2.00 mm

Material: POG2

Standard design: With angle cut
Design code: 0

Order No.: GP4900200-POG2

Order No.	GP49	0	0200	-	POG2
Serial No.					
Design code, standard					
Bore diameter x 10					
Quality Index (Standard)					
Material No.					

Ordering Example

For Polypac Slydring® Ref. No. E/DWR 20/2
Bore diameter $D_N = 20.0$ mm
Groove width: 9.70 mm, ring thickness: 2.00 mm

Material: PO

Standard design: With straight cut
Design code: D

Order No.: GP49D0200-PO

Order No.	GP49	D	0200	-	PO
Serial No.					
Design code, standard					
Bore diameter x 10					
Quality Index (Standard)					
Material No.					



■ Installation Recommendation, HiMod® Slydring® for Rod
According to ISO 10766 Groove Dimension

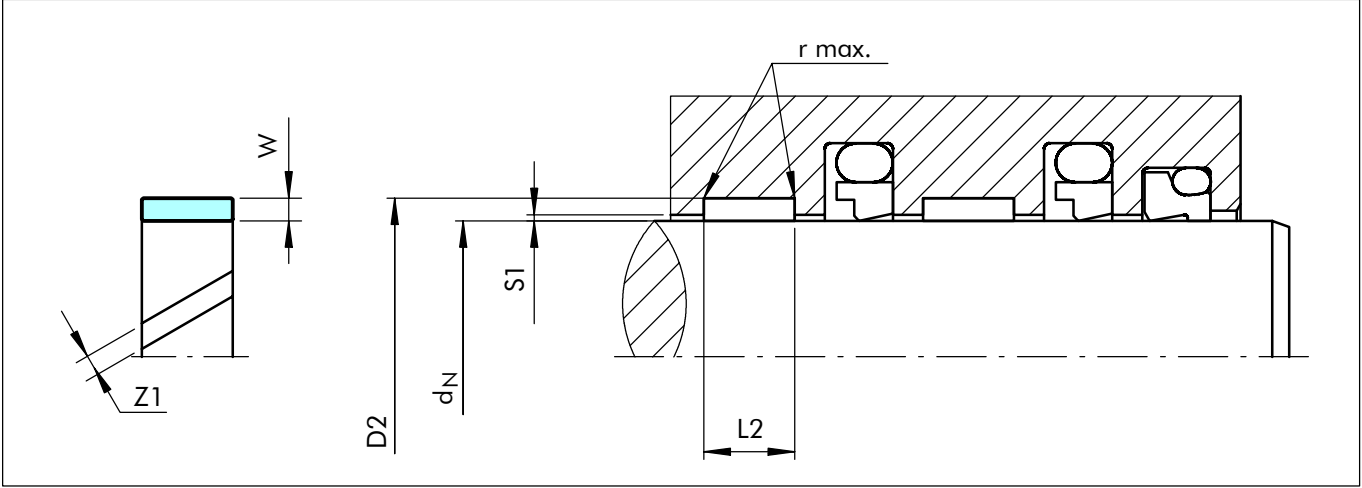


Figure 13 Installation drawing

Table XXVI Installation Dimensions

Serial No.	Rod Diameter ¹⁾	Groove Diameter	Groove Width	Ring Thickness	Ring Gap
	d _N f8/h9	D ₂ H8	L ₂ +0.2	W	Z ₁
GR41	8 - 20.0	d _N +3.10	2.50	1.55	2
GR43	10 - 50.0	d _N +3.10	4.00	1.55	2 - 2.5
GR65	15 - 140.0	d _N +5.00	5.60	2.50	2 - 2.5
GR69	20 - 220.0	d _N +5.00	9.70	2.50	3
GR73	80 - 300.0	d _N +5.00	15.00	2.50	3
GR75	200 - 300.0	d _N +5.00	25.00	2.50	3

¹⁾ Recommended diameter ranges.

For Slydring® to other standards, e.g French standard NF E 48-037, please contact us.

Table XXVII Recommended Radii for Groove Dia.

d _N	r max.
8 - 250	0.2
>250	0.4

Table XXVIII Radial Clearance S1 ²⁾

Rod Dia. d _N	S1 min.	S1 max.
8 - 20	0.20	0.30
20 - 100	0.25	0.40
101 - 250	0.30	0.60
251 - 300	0.40	0.80

²⁾ Specifications valid only in the area of the Slydring®, but not for the seal area.

Table XXIX Surface Roughness

Parameter	Mating Surface μm	Groove Surface μm
	HiMod® Materials	
R _{max}	1.00 - 4.00	< 16.0
R _z DIN	0.63 - 2.50	< 10.0
R _a	0.10 - 0.40	< 2.5



Table XXX Slydring® for Rods

Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.
Rod Diameter	Groove Diameter	Groove Width	Thickness		HiMod®	
d _N f8/h9	D ₂ H8	L ₂ +0.2	W		HM061 HM062 HM063	POG2
8.0	11.1	2.5	1.55	GR4100080	●	
12.0	15.1	4.0	1.55	GR4300120	●	
15.0	18.1	4.0	1.55	GR4300150	●	
16.0	19.1	4.0	1.55	GR4300160	●	
18.0	21.1	4.0	1.55	GR4300180	●	
20.0	23.1	4.0	1.55	GR4300200	●	
20.0	25.0	5.6	2.50	GR6500200	●	WR 20 25 5.6
20.0	25.0	9.7	2.50	GR6900200	●	WR 20 25 9.7
22.0	27.0	5.6	2.50	GR6500220	●	WR 22 27 5.6
22.0	27.0	9.7	2.50	GR6900220	●	WR 22 27 9.7
25.0	28.1	4.0	1.55	GR4300250	●	
25.0	30.0	5.6	2.50	GR6500250	●	WR 25 30 5.6
25.0	30.0	9.7	2.50	GR6900250	●	WR 25 30 9.7
27.0	32.0	5.6	2.50	GR6500270	●	WR 27 32 5.6
27.0	32.0	9.7	2.50	GR6900270	●	WR 27 32 9.7
28.0	31.1	4.0	1.55	GR4300280	●	
28.0	33.0	5.6	2.50	GR6500280	●	WR 28 33 5.6
28.0	33.0	9.7	2.50	GR6900280	●	
30.0	35.0	5.6	2.50	GR6500300	●	WR 30 35 5.6
30.0	35.0	9.7	2.50	GR6900300	●	WR 30 35 9.7
32.0	37.0	5.6	2.50	GR6500320	●	WR 32 37 5.6
32.0	37.0	9.7	2.50	GR6900320	●	WR 32 37 9.7
35.0	40.0	5.6	2.50	GR6500350	●	WR 35 40 5.6
35.0	40.0	9.7	2.50	GR6900350	●	WR 35 40 9.7
36.0	41.0	5.6	2.50	GR6500360	●	WR 36 41 5.6
36.0	41.0	9.7	2.50	GR6900360	●	WR 36 41 9.7
40.0	45.0	5.6	2.50	GR6500400	●	WR 40 45 5.6
40.0	45.0	9.7	2.50	GR6900400	●	WR 40 45 9.7
40.0	45.0	15.0	2.50	GR7300400	●	
42.0	47.0	9.7	2.50	GR6900420	●	
44.0	49.0	9.7	2.50	GR6900440	●	
43.0	48.0	5.6	2.50	GR6500430	●	WR 43 48 5.6
45.0	50.0	5.6	2.50	GR6500450	●	WR 45 50 5.6
45.0	50.0	9.7	2.50	GR6900450	●	WR 45 50 9.7
45.0	50.0	15.0	2.50	GR7300450	●	
47.0	52.0	5.6	2.50	GR6500470	●	
47.0	52.0	9.7	2.50	GR6900470	●	
50.0	55.0	5.6	2.50	GR6500500	●	WR 50 55 5.6
50.0	55.0	9.7	2.50	GR6900500	●	WR 50 55 9.7

● B+S sizes available, same Ref. as Part No. All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.
Rod Diameter	Groove Diameter	Groove Width	Thickness		HiMod®	
d _N f8/h9	D ₂ H8	L ₂ +0.2	W		HM061 HM062 HM063	POG2
50.0	55.0	15.0	2.50	GR7300500	●	
52.0	57.0	5.6	2.50	GR6500520	●	
52.0	57.0	9.7	2.50	GR6900520	●	
53.0	58.0	9.7	2.50	GR6900530	●	
55.0	60.0	5.6	2.50	GR6500550	●	WR 55 60 5.6
55.0	60.0	9.7	2.50	GR6900550	●	WR 55 60 9.7
56.0	61.0	5.6	2.50	GR6500560	●	WR 56 61 5.6
56.0	61.0	9.7	2.50	GR6900560	●	WR 56 61 9.7
58.0	63.0	5.6	2.50	GR6500580	●	WR 58 63 5.6
58.0	63.0	9.7	2.50	GR6900580	●	WR 58 63 9.7
60.0	65.0	5.6	2.50	GR6500600	●	WR 60 65 5.6
60.0	65.0	9.7	2.50	GR6900600	●	WR 60 65 9.7
60.0	65.0	15.0	2.50	GR7300600	●	
61.0	66.0	9.7	2.50	GR6900610	●	
63.0	68.0	5.6	2.50	GR6500630	●	WR 63 68 5.6
63.0	68.0	9.7	2.50	GR6900630	●	WR 63 68 9.7
63.0	68.0	15.0	2.50	GR7300630	●	
65.0	70.0	5.6	2.50	GR6500650	●	WR 65 70 5.6
65.0	70.0	9.7	2.50	GR6900650	●	WR 65 70 9.7
67.0	72.0	5.6	2.50	GR6500670	●	
70.0	75.0	5.6	2.50	GR6500700	●	WR 70 75 5.6
70.0	75.0	9.7	2.50	GR6900700	●	WR 70 75 9.7
70.0	75.0	15.0	2.50	GR7300700	●	
72.0	77.0	9.7	2.50	GR6900720	●	
75.0	80.0	5.6	2.50	GR6500750	●	WR 75 80 5.6
75.0	80.0	9.7	2.50	GR6900750	●	WR 75 80 9.7
75.0	80.0	15.0	2.50	GR7300750	●	
80.0	85.0	5.6	2.50	GR6500800	●	WR 80 85 5.6
80.0	85.0	9.7	2.50	GR6900800	●	WR 80 85 9.7
80.0	85.0	15.0	2.50	GR7300800	●	
83.0	88.0	15.0	2.50	GR7300830	●	
85.0	90.0	5.6	2.50	GR6500850	●	WR 85 90 5.6
85.0	90.0	9.7	2.50	GR6900850	●	
85.0	90.0	15.0	2.50	GR7300850	●	
90.0	95.0	5.6	2.50	GR6500900	●	WR 90 95 5.6
90.0	95.0	9.7	2.50	GR6900900	●	WR 90 95 9.7
92.0	97.0	9.7	2.50	GR6900920	●	
92.0	97.0	25.0	2.50	GR7500920	●	
95.0	100.0	5.6	2.50	GR6500950	●	WR 95 100 5.6

● B+S sizes available, same Ref. as Part No. All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.
Rod Diameter	Groove Diameter	Groove Width	Thickness		HiMod®	
d _N f8/h9	D ₂ H8	L ₂ +0.2	W		HM061 HM062 HM063	POG2
95.0	100.0	9.7	2.50	GR6900950	●	WR 95 100 9.7
95.0	100.0	15.0	2.50	GR7300950	●	
100.0	105.0	5.6	2.50	GR6501000	●	WR 100 105 5.6
100.0	105.0	9.7	2.50	GR6901000	●	WR 100 105 9.7
100.0	105.0	15.0	2.50	GR7301000	●	
105.0	110.0	9.7	2.50	GR6901050	●	WR 105 110 9.7
105.0	110.0	15.0	2.50	GR7301050	●	
110.0	115.0	9.7	2.50	GR6901100	●	
110.0	115.0	15.0	2.50	GR7301100	●	
115.0	120.0	9.7	2.50	GR6901150	●	
115.0	120.0	15.0	2.50	GR7301150	●	
120.0	125.0	5.6	2.50	GR6501200	●	WR 120 125 5.6
120.0	125.0	9.7	2.50	GR6901200	●	WR 120 125 9.7
120.0	125.0	15.0	2.50	GR7301200	●	
125.0	130.0	15.0	2.50	GR7301250	●	
130.0	135.0	15.0	2.50	GR7301300	●	
135.0	140.0	9.7	2.50	GR6901350	●	
135.0	140.0	15.0	2.50	GR7301350	●	
140.0	145.0	15.0	2.50	GR7301400	●	
155.0	160.0	15.0	2.50	GR7301550	●	
195.0	200.0	15.0	2.50	GR7301950	●	
210.0	215.0	15.0	2.50	GR7302100	●	

● B+S sizes available, same Ref. as Part No.

All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.



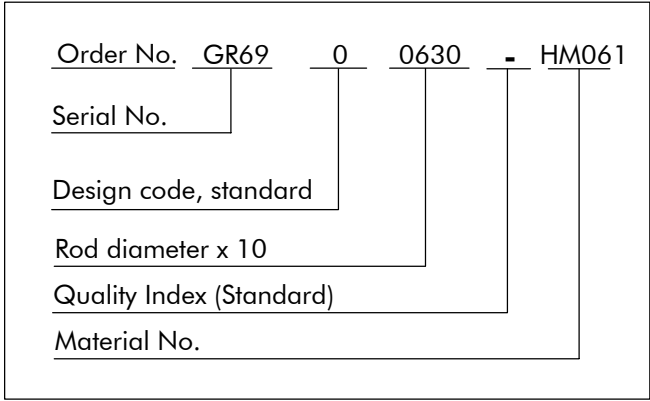
Ordering Example

Slydring® for rod diameter d_N = 63.0 mm
Series GR69 from Table XXVI
Groove width: 9.70 mm, ring thickness: 2.50 mm

Material: HiMod® HM061
(other materials see Table I)

Standard design: With angle cut
Design code: 0

Order No.: GR6900630-HM061
(from Table XXX)



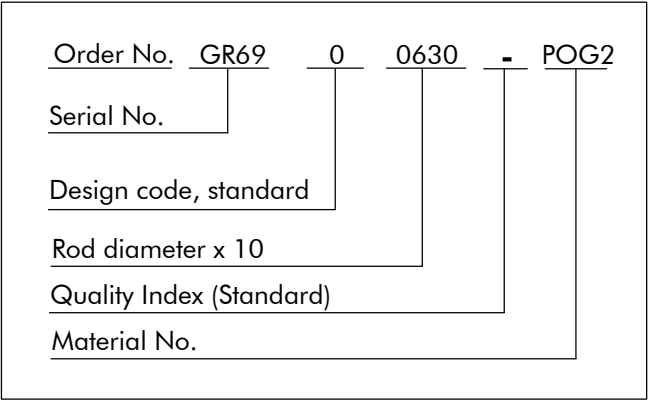
Ordering Example

For Sealing Part Slydring® Ref. No. WR 63 68 9.7
Rod diameter d_N = 63.0 mm
Groove width: 9.70 mm, ring thickness: 2.50 mm

Material: POG2
(other materials see Table I)

Standard design: With angle cut
Design code: 0

Order No.: GR6900630-POG2
(from Table XXX)





■ Installation Recommendation, HiMod® Slydring® for Rod
Non ISO 10766 Groove Dimension

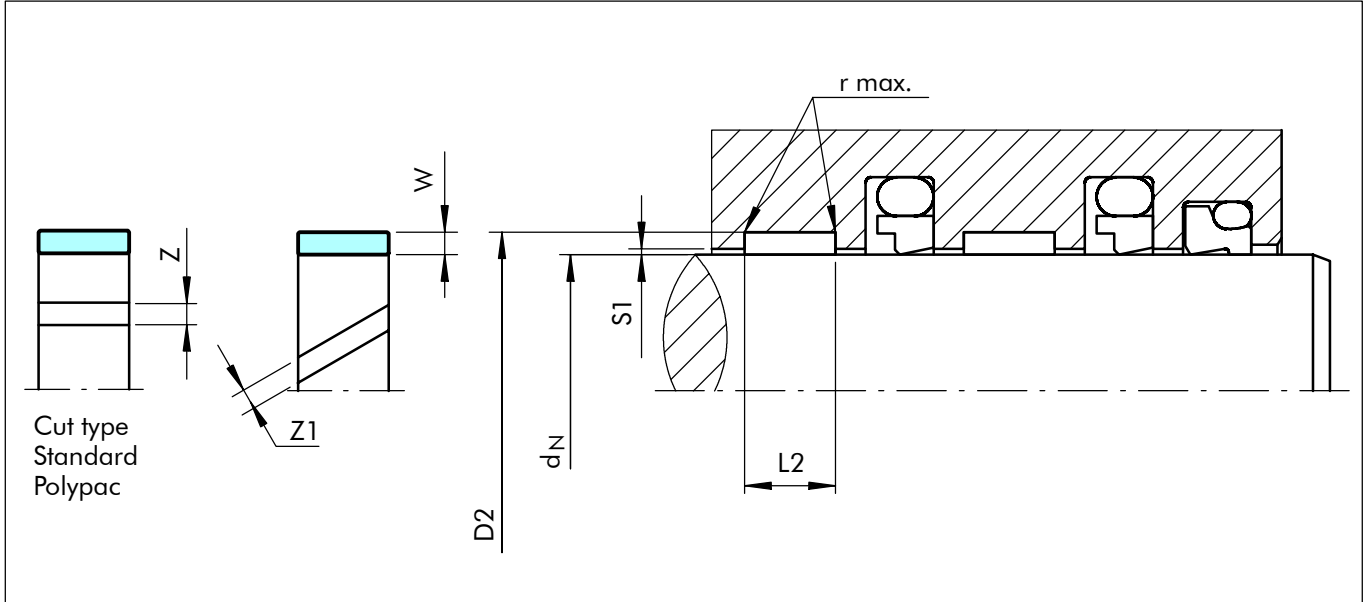


Figure 14 Installation drawing

Table XXXI Slydring® for Rod

Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
Rod Diameter	Groove Diameter	Groove Width	Thickness		HiMod®		
d _N h11	D ₂ H8	L ₂ +0.2	W		HM061/HM062 /HM063	POG2	PO
12.0	16.0	9.7	2.00	GR4900120		WRI 12	I/DWR 12/2
14.0	18.0	9.7	2.00	GR4900140		WRI 14	I/DWR 14/2
15.0	19.0	9.7	2.00	GR4900150		WRI 15	
16.0	20.0	9.7	2.00	GR4900160		WRI 16	I/DWR 16/2
18.0	22.0	9.7	2.00	GR4900180		WRI 18	I/DWR 18/2
20.0	24.0	9.7	2.00	GR4900200		WRI 20	I/DWR 20/2
22.0	26.0	9.7	2.00	GR4900220		WRI 22	I/DWR 22/2
24.0	28.0	9.7	2.00	GR4900240		WRI 24	
25.0	29.0	9.7	2.00	GR4900250		WRI 25	I/DWR 25/2
26.0	30.0	9.7	2.00	GR4900260		WRI 26	I/DWR 26/2
28.0	32.0	9.7	2.00	GR4900280		WRI 28	I/DWR 28/2
30.0	34.0	9.7	2.00	GR4900300		WRI 30	I/DWR 30/2
32.0	36.0	9.7	2.00	GR4900320		WRI 32	I/DWR 32/2
34.0	38.0	9.7	2.00	GR4900340		WRI 34	
35.0	39.0	9.7	2.00	GR4900350	●	WRI 35	I/DWR 35/2
36.0	40.0	9.7	2.00	GR4900360		WRI 36	I/DWR 36/2
37.0	41.0	9.7	2.00	GR4900370		WRI 37	
38.0	42.0	9.7	2.00	GR4900380		WRI 38	I/DWR 38/2

● B+S sizes available, same Ref. as Part No.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
Rod Diameter	Groove Diameter	Groove Width	Thickness		HiMod®		
d _N h11	D ₂ H8	L ₂ +0.2	W		HM061/HM062 /HM063	POG2	PO
40.0	44.0	9.7	2.00	GR4900400	●	WRI 40	I/DWR 40/2
42.0	46.0	9.7	2.00	GR4900420		WRI 42	
45.0	49.0	9.7	2.00	GR4900450	●		
45.0	51.0	9.7	3.00	GRN100450	●	WRI 45	I/DWR 45
46.0	50.0	9.7	2.00	GR4900460	●		
46.0	52.0	9.7	3.00	GRN100460		WRI 46	I/DWR 46
48.0	54.0	9.7	3.00	GRN100480		WRI 48	I/DWR 48
50.0	54.0	9.7	2.00	GR4900500	●		
50.0	56.0	9.7	3.00	GRN100500	●	WRI 50	I/DWR 50
51.0	55.0	10.0	2.00	GR5100510	●		
52.0	58.0	9.7	3.00	GRN100520		WRI 52	
53.0	59.0	9.7	3.00	GRN100530		WRI 53	I/DWR 53
55.0	59.0	9.7	2.00	GR4900550	●		
55.0	61.0	9.7	3.00	GRN100550	●	WRI 55	I/DWR 55
56.0	62.0	12.8	3.00	GRN300560		WRI 56	
58.0	64.0	12.8	3.00	GRN300580		WRI 58	
60.0	64.0	9.7	2.00	GR4900600	●		
60.0	66.0	12.8	3.00	GRN300600	●	WRI 60	I/DWR 60
61.0	67.0	12.8	3.00	GRN300610		WRI 61	
62.0	68.0	12.8	3.00	GRN300620		WRI 62	
63.0	69.0	12.8	3.00	GRN300630		WRI 63	I/DWR 63
65.0	71.0	12.8	3.00	GRN300650		WRI 65	I/DWR 65
66.0	72.0	12.8	3.00	GRN300660		WRI 66	
67.0	73.0	12.8	3.00	GRN300670		WRI 67	
70.0	74.0	9.7	2.00	GR4900700	●		
70.0	76.0	12.8	3.00	GRN300700	●	WRI 70	I/DWR 70
71.0	75.0	15.0	2.00	GR5300710	●		
72.0	78.0	12.8	3.00	GRN300720	●	WRI 72	
73.0	79.0	12.8	3.00	GRN300730		WRI 73	
75.0	81.0	12.8	3.00	GRN300750	●	WRI 75	I/DWR 75
76.0	82.0	12.8	3.00	GRN300760		WRI 76	
78.0	84.0	12.8	3.00	GRN300780		WRI 78	
80.0	84.0	9.7	2.00	GR4900800	●		
80.0	86.0	12.8	3.00	GRN300800	●	WRI 80	I/DWR 80
80.0	84.0	15.0	2.00	GR5300800	●		
82.0	88.0	12.8	3.00	GRN300820		WRI 82	
85.0	91.0	12.8	3.00	GRN300850	●	WRI 85	I/DWR 85
86.0	92.0	12.8	3.00	GRN300860	●	WRI 86	
90.0	96.0	12.8	3.00	GRN300900	●	WRI 90	I/DWR 90

● B+S sizes available, same Ref. as Part No.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
Rod Diameter	Groove Diameter	Groove Width	Thickness		HiMod®		
d _N h11	D ₂ H8	L ₂ +0.2	W		HM061/HM062 /HM063	POG2	PO
90.0	94.0	15.0	2.00	GR5300900	●		
91.0	97.0	12.8	3.00	GRN300910		WRI 91	
92.0	98.0	12.8	3.00	GRN300920		WRI 92	
93.0	99.0	12.8	3.00	GRN300930		WRI 93	
95.0	99.0	9.7	2.00	GR4900950	●		
95.0	101.0	12.8	3.00	GRN300950		WRI 95	I/DWR 95
96.0	100.0	15.0	2.00	GR5300960	●		
99.0	105.0	12.8	3.00	GRN300990		WRI 99	
100.0	104.0	9.7	2.00	GR4901000	●		
100.0	106.0	12.8	3.00	GRN301000	●	WRI 100	I/DWR 100
100.0	104.0	20.0	2.00	GR5401000	●		
101.0	105.0	15.0	2.00	GR5301010	●		
105.0	111.0	12.8	3.00	GRN301050	●	WRI 105	I/DWR 105
106.0	110.0	15.0	2.00	GR5301060	●		
110.0	116.0	12.8	3.00	GRN301100	●	WRI 110	I/DWR 110
110.0	114.0	20.0	2.00	GR5401100	●		
111.0	115.0	15.0	2.00	GR5301110	●		
113.0	119.0	12.8	3.00	GRN301130		WRI 113	
115.0	121.0	12.8	3.00	GRN301150	●	WRI 115	I/DWR 115
118.0	124.0	12.8	3.00	GRN301180		WRI 118	
120.0	126.0	12.8	3.00	GRN301200	●	WRI 120	I/DWR 120
121.0	125.0	15.0	2.00	GR5301210	●		
125.0	131.0	12.8	3.00	GRN301250	●	WRI 125	I/DWR 125
126.0	130.0	20.0	2.00	GR5401260	●		
130.0	136.0	12.8	3.00	GRN301300	●	WRI 130	I/DWR 130
135.0	141.0	12.8	3.00	GRN301350	●	WRI 135	I/DWR 135
136.0	140.0	15.0	2.00	GR5301360	●		
140.0	146.0	12.8	3.00	GRN301400		WRI 140	I/DWR 140
141.0	147.0	12.8	3.00	GRN301410		WRI 141	
142.0	148.0	12.8	3.00	GRN301420		WRI 142	
143.0	149.0	12.8	3.00	GRN301430		WRI 143	
145.0	151.0	12.8	3.00	GRN301450		WRI 145	I/DWR 145
146.0	150.0	20.0	2.00	GR5401460	●		
150.0	156.0	12.8	3.00	GRN301500		WRI 150	I/DWR 150
155.0	161.0	19.2	3.00	GRN401550		WRI 155	I/DWR 155
160.0	166.0	19.2	3.00	GRN401600	●	WRI 160	I/DWR 160
162.0	168.0	19.2	3.00	GRN401620		WRI 162	
165.0	171.0	19.2	3.00	GRN401650		WRI 165	I/DWR 165
166.0	170.0	20.0	2.00	GR5401660	●		

● B+S sizes available, same Ref. as Part No.



Dimensions				Part No.	B+S Ref.	Sealing Parts Ref. No.	Polypac Ref. No.
Rod Diameter	Groove Diameter	Groove Width	Thickness		HiMod®		
d _N h11	D ₂ H8	L ₂ +0.2	W		HM061/HM062 /HM063	POG2	PO
170.0	176.0	19.2	3.00	GRN401700	●	WRI 170	I/DWR 170
175.0	181.0	19.2	3.00	GRN401750		WRI 175	I/DWR 175
176.0	180.0	20.0	2.00	GR5401760	●		
180.0	186.0	19.2	3.00	GRN401800		WRI 180	I/DWR 180
185.0	191.0	19.2	3.00	GRN401850		WRI 185	I/DWR 185
190.0	196.0	19.2	3.00	GRN401900		WRI 190	I/DWR 190
195.0	201.0	19.2	3.00	GRN401950		WRI 195	I/DWR 195
200.0	206.0	19.2	3.00	GRN402000		WRI 200	I/DWR 200
205.0	211.0	19.2	3.00	GRN402050		WRI 205	I/DWR 205
210.0	216.0	19.2	3.00	GRN402100		WRI 210	I/DWR 210
215.0	221.0	19.2	3.00	GRN402150		WRI 215	I/DWR 215
220.0	226.0	19.2	3.00	GRN402200		WRI 220	I/DWR 220
225.0	231.0	19.2	3.00	GRN402250		WRI 225	I/DWR 225
230.0	236.0	19.2	3.00	GRN402300		WRI 230	I/DWR 230
235.0	241.0	19.2	3.00	GRN402350		WRI 235	I/DWR 235
240.0	246.0	19.2	3.00	GRN402400		WRI 240	I/DWR 240
245.0	251.0	19.2	3.00	GRN402450		WRI 245	I/DWR 245
246.0	250.0	20.0	2.00	GR5402460	●		
248.0	254.0	19.2	3.00	GRN402480		WRI 248	
250.0	256.0	19.2	3.00	GRN402500		WRI 250	I/DWR 250
255.0	261.0	19.2	3.00	GRN402550			I/DWR 255
260.0	266.0	19.2	3.00	GRN402600		WRI 260	I/DWR 260
265.0	271.0	19.2	3.00	GRN402650			I/DWR 265
270.0	276.0	19.2	3.00	GRN402700		WRI 270	I/DWR 270
275.0	281.0	19.2	3.00	GRN402750			I/DWR 275
280.0	286.0	19.2	3.00	GRN402800		WRI 280	I/DWR 280
285.0	291.0	19.2	3.00	GRN402850			I/DWR 285
290.0	296.0	19.2	3.00	GRN402900		WRI 290	I/DWR 290
295.0	301.0	19.2	3.00	GRN402950			I/DWR 295

● B+S sizes available, same Ref. as Part No.

Table XXXII Radial Clearance S1

Rod Dia. d _N	S1 min.	S1 max.
8 - 20	0.20	0.30
20 - 100	0.25	0.40
101 - 250	0.30	0.60
251 - 500	0.40	0.80
501 - 1000	0.50	1.10
>1001	0.60	1.20

S1 Specifications valid only in the area of the Slydring®, but not for the seal area.



Ordering Example

Slydring® for rod diameter $d_N = 40.0\text{ mm}$
Series GR49 from Table XVIII
Groove width: 9.70 mm, ring thickness: 2.00 mm

Material: HiMod® HM061
(other materials see Tabel I)

Standard design: With angle cut
Design code: 0

Order No.: GR4900400-HM061 (from Table XXXI)

Order No.	GR49	0	0400	-	HM061
Serial No.					
Design code, standard					
Rod diameter x 10					
Quality Index (Standard)					
Material No.					

Ordering Example

For Sealing Parts Slydring® Ref. No. WRI40
Rod diameter $d_N = 40.0\text{ mm}$
Groove width: 9.70 mm, ring thickness: 2.00 mm

Material: POG2
(other materials see Tabel I)

Standard design: With angle cut
Design code: 0

Order No.: GR4900400-POG2 (from Table XXXI)

Order No.	GR49	0	0400	-	POG2
Serial No.					
Design code, standard					
Rod diameter x 10					
Quality Index (Standard)					
Material No.					

Ordering Example

For Polypac Slydring® Ref. No. I/DWR 40/2
Rod diameter $d_N = 40.0\text{ mm}$
Groove width: 9.70 mm, ring thickness: 2.00 mm

Material: PO
(other materials see Tabel I)

Standard design: With straight cut
Design code: D

Order No.: GR49D0400-PO
(from Table XXXI)

Order No.	GR49	D	0400	-	PO
Serial No.					
Design code, standard					
Rod diameter x 10					
Quality Index (Standard)					
Material No.					



■ Luytex® Slydring® for Piston and Rod

Description

Luytex® Slydring® of fabric reinforced composite materials is used in hydraulic cylinders exposed to high loads that can occur e.g. in mobile hydraulics and presses. The high compressive strength, good sliding behaviour and the exceptional wear resistant properties ensure a long service life.

Slydring® of Luytex® fabric composite materials is produced as standard from tubular material. It is manufactured with a angle cut and already has the necessary gap "Z".

For large diameters > 300 mm, sections or segments can be produced from Luytex® C320, C380 strip material. This offers economical solutions for non-standard diameters or when quantities are limited. Strip material is coiled to a diameter of 200 to 300 mm and can be ordered either:

- cut and finished to the required length (see page 6)
- coils at full lengths of 2 m or 3 m (see next page)

Strip material requires more care in fitting, in particular if the diameter is below 200 to 300 mm.

Advantages

- Dimensionally stable and vibration absorbing
- Even distribution of high radial forces
- Good sliding and dry running properties
- High wear resistance
- Good wiping effect
- Long service life.

Application Examples

Luytex® Slydring is widely used as a bearing element for heavy duty hydraulic equipment:

- Hydraulic actuators
- Mobile hydraulics
- Excavators
- Construction equipment
- Forrestry machinery
- Mining
- Steel mills
- Presses
- Water locks
- Marine engineering

Technical Data

Velocity: Up to 1 m/s, with reciprocating movements

Temperature: - 60°C to + 120°C

Compressive strength under dynamic operating conditions (C380, C320, C931): 100 N/mm²

Compressive strength, static, embedded (C380, C320): > 300 N/mm²

Compressive strength, static, embedded (C931): 270 N/mm²

The permissible bearing load in service is dependent a/o. from operating temperature. If the operating temperature is in the range of 80 to 130°C a de-rating formula is applicable.

Please contact your local B+S company for further details.

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.

Materials

Luytex® C320

Luytex® C320 is a fabric composite material made of a thermosetting polymer, reinforced by a fine plastic mesh and lubricant additives impregnated throughout the material. It has a very high resistance to wear, good dry-running properties and dampens vibrations. C320 has a dark gray colour

Luytex® C380

Luytex C380 is the standard material, this turquoise coloured composite is a further development of the proven C320. It is most versatile; suitable for all commonly used hydraulic fluids such as mineral or synthetic oils, as well as water based fluids. It is an excellent electrical insulator and features enhanced sliding properties in various media.

Luytex® C931

A composite of phenolic resin impregnated into a fine cotton fabric. The material stiffness is higher than C380 / C320. The use in water based fluids is not recommended. C931 has a yellow-brown colour.

Polypac material code: 102



**Table XXXIII Serial Numbers for Luytex®
Slydring® finished parts,
ready to fit**

Piston Serial No.	Rod Serial No.	Groove Width L ₂	Ring Thickness W
GP43	GR43	4.00	1.55
GP65	GR65	5.60	2.50
GP69	GR69	9.70	2.50
GP73	GR73	15.00	2.50
GP75	GR75	25.00	2.50
GP75X	GR75X	15.00	2.50
GP98	GR98	25.00	4.00
GP98X	GR98X	25.00	4.00

Note that customer specific sizes can be supplied without tooling costs.

**Table XXXIV Serial Numbers for coiled strip
material C380 or C320**

Thickness	Groove Width	2m length	3m length
2.50	9.70	GM69A0000	--
2.50	15.00	GM73A0000	GM7330000
2.50	25.00	GM75A0000	GM753000
4.00	25.00	GM9820000	GM9830000

Installation Recommendations

In order to protect the seal and guide system against ingress of foreign particles, we recommend the use of Turcite® Slydring® in combination with Luytex® Slydring®. The larger face area of these rings (Series GP 99 from Table IV) embeds the contaminant particles existing in the system and keeps them away from the actual guides and seals (Figure 15). The gap increase between the bottom and the rod side allows the particles to become embedded on the face side.

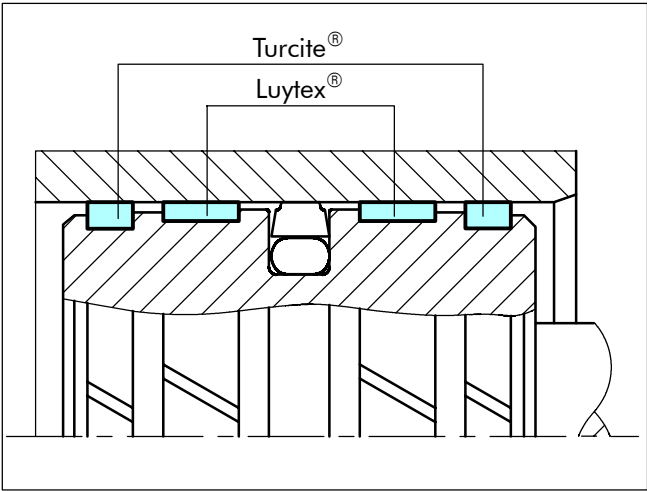


Figure 15 Arrangement of the Slydring® on the piston



■ Installation Recommendation, Luytex® Slydring® for Piston According to ISO 10766 Groove Dimension

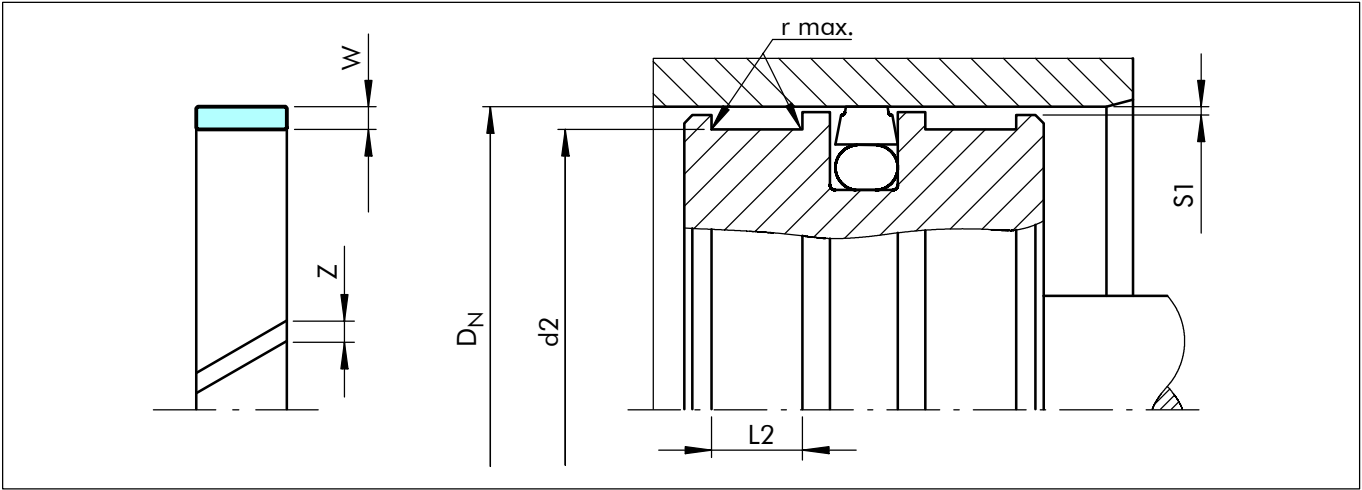


Figure 16 Installation drawing

Table XXXV Installation Dimensions

Serial No.	Bore Diameter ¹⁾	Groove Diameter	Groove Width	Ring Thickness	Ring Gap ³⁾
	D _N H9	d ₂ h8	L ₂ +0.2	W	Z
GP43	10 - 50.0	D _N -3.10	4.00	1.55	1 - 3
GP65	16 - 125.0	D _N -5.00	5.60	2.50	2 - 6
GP69	25 - 250.0	D _N -5.00	9.70	2.50	2 - 9
GP73	80 - 500.0	D _N -5.00	15.00	2.50	4 - 17
GP75	125 - 999.9	D _N -5.00	25.00	2.50	6 - 33
GP75X	1000 - 1500.0	D _N -5.00	25.00	2.50	33 - 48
GP98	280 - 999.9	D _N -8.00	25.00	4.00	10 - 33
GP98X	1000 - 1500.0	D _N -8.00	25.00	4.00	33 - 48

¹⁾ Recommended diameter ranges. ³⁾ Calculation of the linear length, see page 8.

For Slydring® to other standards, e.g French standard NF E 48-037, please contact us.

Table XXXVI Recommended Radii for Groove Dia.

D _N	r max.
8 - 250	0.2
>250	0.4

Radial clearance S1

The minimum radial gap is to be calculated taking into account;

- the fitting tolerances of the hardware
- the tolerance on the ring thickness
- an allowance for wear
- in case of high radial loads an allowance for elastic deformation
- a safety margin to avoid metal-to-metal contact

The gaps S1 can be chosen larger than near to the seal (attention: take care of gap dimension for the seal) thus allowing slight tilting of the piston, still without metal-to-metal contact.

It also allows foreign particles to be wiped away by the Slydring® rather than being squeezed between the metal

components. The slot 'Z' allows fluid to pass across the ring thus preventing fluid pressure build-up which might cause extrusion of the guide ring. To ensure the ring cannot escape out of the groove it is recommended to observe following radial gap sizes as maximum:

- 0.50 mm for GP43 (1.55 mm thickness)
- 0.90 mm for GP65 to GP75 (2.50 mm thickness)
- 1.50 mm for GP98 and GP98X (4.00 mm thickness)

Table XXXVII Surface Roughness

Parameter	Mating Surface μm	Groove Surface μm
	Luytex® Materials	
R _{max}	1.00 - 4.00	< 16.0
R _z DIN	0.63 - 2.50	< 10.0
R _a	0.10 - 0.40	< 2.5



Table XXXVIII Slydring® for Pistons

Dimensions				Part No.	Luytex® Material Ref.	
Bore Diameter	Groove Diameter	Groove Width	Thickness		C320/C380	C931
D _N H9	d ₂ h8	L ₂ +0.2	W			
16.0	11.0	5.6	2.50	GP6500160	●	-
18.0	13.0	5.6	2.50	GP6500180	●	-
20.0	15.0	5.6	2.50	GP6500200	●	●
22.0	17.0	5.6	2.50	GP6500220	●	-
25.0	20.0	5.6	2.50	GP6500250	●	●
25.0	20.0	9.7	2.50	GP6900250	●	-
27.0	22.0	5.6	2.50	GP6500270	●	-
27.0	22.0	9.7	2.50	GP6900270	●	-
28.0	23.0	5.6	2.50	GP6500280	●	-
30.0	25.0	5.6	2.50	GP6500300	●	-
30.0	25.0	9.7	2.50	GP6900300	●	-
32.0	28.9	4.0	1.55	GP4300320	●	-
32.0	27.0	5.6	2.50	GP6500320	●	-
32.0	27.0	9.7	2.50	GP6900320	●	-
33.0	28.0	5.6	2.50	GP6500330	●	-
35.0	30.0	5.6	2.50	GP6500350	●	-
35.0	30.0	9.7	2.50	GP6900350	●	-
36.0	31.0	5.6	2.50	GP6500360	●	-
37.0	32.0	5.6	2.50	GP6500370	●	-
37.0	32.0	9.7	2.50	GP6900370	●	-
40.0	36.9	4.0	1.55	GP4300400	●	-
40.0	35.0	5.6	2.50	GP6500400	●	●
40.0	35.0	9.7	2.50	GP6900400	●	●
41.0	36.0	5.6	2.50	GP6500410	●	-
41.0	36.0	9.7	2.50	GP6900410	●	-
42.0	37.0	5.6	2.50	GP6500420	●	-
45.0	40.0	5.6	2.50	GP6500450	●	-
45.0	40.0	9.7	2.50	GP6900450	●	-
48.0	43.0	5.6	2.50	GP6500480	●	-
50.0	45.0	5.6	2.50	GP6500500	●	●
50.0	45.0	9.7	2.50	GP6900500	●	●
52.0	47.0	5.6	2.50	GP6500520	●	-
55.0	50.0	5.6	2.50	GP6500550	●	-
55.0	50.0	9.7	2.50	GP6900550	●	-
56.0	51.0	5.6	2.50	GP6500560	●	-
60.0	55.0	5.6	2.50	GP6500600	●	●
60.0	55.0	9.7	2.50	GP6900600	●	●
61.0	56.0	5.6	2.50	GP6500610	●	-
61.0	56.0	9.7	2.50	GP6900610	●	-
63.0	58.0	5.6	2.50	GP6500630	●	●
63.0	58.0	9.7	2.50	GP6900630	●	●
65.0	60.0	5.6	2.50	GP6500650	●	-

● Available sizes - On request All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.



Dimensions				Part No.	Luytex® Material Ref.	
Bore Diameter	Groove Diameter	Groove Width	Thickness			
D _N H9	d ₂ h8	L ₂ +0.2	W		C320/C380	C931
65.0	60.0	9.7	2.50	GP6900650	●	-
68.0	63.0	5.6	2.50	GP6500680	●	-
68.0	63.0	9.7	2.50	GP6900680	●	-
70.0	65.0	5.6	2.50	GP6500700	●	-
70.0	65.0	9.7	2.50	GP6900700	●	●
72.0	67.0	5.6	2.50	GP6500720	●	-
72.0	67.0	5.6	2.50	GP6500720	●	-
74.0	69.0	5.6	2.50	GP6500740	●	-
75.0	70.0	5.6	2.50	GP6500750	●	-
75.0	70.0	9.7	2.50	GP6900750	●	●
80.0	75.0	5.6	2.50	GP6500800	●	●
80.0	75.0	9.7	2.50	GP6900800	●	●
84.0	79.0	15.0	2.50	GP7300840	●	-
85.0	80.0	5.6	2.50	GP6500850	●	-
85.0	80.0	9.7	2.50	GP6900850	●	●
90.0	85.0	5.6	2.50	GP6500900	●	●
90.0	85.0	9.7	2.50	GP6900900	●	●
95.0	90.0	5.6	2.50	GP6500950	●	-
95.0	90.0	9.7	2.50	GP6900950	●	●
100.0	95.0	5.6	2.50	GP6501000	●	●
100.0	95.0	9.7	2.50	GP6901000	●	●
100.0	95.0	15.0	2.50	GP7301000	●	-
105.0	100.0	5.6	2.50	GP6501050	●	-
105.0	100.0	9.7	2.50	GP6901050	●	-
110.0	105.0	9.7	2.50	GP6901100	●	●
115.0	110.0	9.7	2.50	GP6901150	●	-
120.0	115.0	9.7	2.50	GP6901200	●	●
125.0	120.0	5.6	2.50	GP6501250	●	●
125.0	120.0	9.7	2.50	GP6901250	●	●
125.0	120.0	15.0	2.50	GP7301250	●	-
125.0	120.0	25.0	2.50	GP7501250	●	-
130.0	125.0	9.7	2.50	GP6901300	●	-
130.0	125.0	15.0	2.50	GP7301300	●	●
135.0	130.0	9.7	2.50	GP6901350	●	-
135.0	130.0	15.0	2.50	GP7301350	●	●
140.0	135.0	9.7	2.50	GP6901400	●	●
140.0	135.0	15.0	2.50	GP7301400	●	●
150.0	145.0	15.0	2.50	GP7301500	●	●
150.0	145.0	25.0	2.50	GP7501500	●	-
160.0	155.0	9.7	2.50	GP6901600	●	●
160.0	155.0	15.0	2.50	GP7301600	●	●
170.0	165.0	15.0	2.50	GP7301700	●	●

● Available sizes - On request All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.



Dimensions				Part No.	Luytex® Material Ref.	
Bore Diameter	Groove Diameter	Groove Width	Thickness			
D _N H9	d ₂ h8	L ₂ +0.2	W		C320/C380	C931
180.0	175.0	9.7	2.50	GP6901800	●	●
180.0	175.0	15.0	2.50	GP7301800	●	●
180.0	175.0	25.0	2.50	GP7501800	●	-
190.0	185.0	15.0	2.50	GP7301900	●	●
200.0	195.0	9.7	2.50	GP6902000	●	●
200.0	195.0	15.0	2.50	GP7302000	●	●
200.0	195.0	25.0	2.50	GP7502000	●	-
210.0	205.0	15.0	2.50	GP7302100	●	-
220.0	215.0	9.7	2.50	GP6902200	●	●
220.0	215.0	15.0	2.50	GP7302200	●	●
220.0	215.0	25.0	2.50	GP7502200	●	-
230.0	225.0	15.0	2.50	GP7302300	●	-
240.0	235.0	15.0	2.50	GP7302400	●	-
240.0	235.0	25.0	2.50	GP7502400	●	-
250.0	245.0	9.7	2.50	GP6902500	●	●
250.0	245.0	15.0	2.50	GP7302500	●	●
260.0	255.0	25.0	2.50	GP7502600	●	-
280.0	275.0	9.7	2.50	GP6902800	●	-
280.0	275.0	15.0	2.50	GP7302800	●	●
280.0	272.0	25.0	4.00	GP9802800	●	-
300.0	295.0	15.0	2.50	GP7303000	●	-
300.0	295.0	25.0	2.50	GP7503000	●	-
320.0	315.0	15.0	2.50	GP7303200	●	-
320.0	315.0	25.0	2.50	GP7503200	●	-
320.0	312.0	25.0	4.00	GP9803200	●	-
350.0	345.0	25.0	2.50	GP7503500	●	-
360.0	355.0	15.0	2.50	GP7303600	●	-
360.0	355.0	25.0	2.50	GP7503600	●	-
360.0	352.0	25.0	4.00	GP9803600	●	-
400.0	395.0	15.0	2.50	GP7304000	●	-
400.0	395.0	25.0	2.50	GP7504000	●	-
400.0	392.0	25.0	4.00	GP9804000	●	-
420.0	415.0	25.0	2.50	GP7504200	●	-
450.0	445.0	15.0	2.50	GP7304500	●	-
450.0	445.0	25.0	2.50	GP7504500	●	-
450.0	442.0	25.0	4.00	GP9804500	●	-
500.0	495.0	15.0	2.50	GP7305000	●	-
500.0	495.0	25.0	2.50	GP7505000	●	-
500.0	492.0	25.0	4.00	GP9805000	●	-
1000.0	995.0	25.0	2.50	GP75X1000	●	●
1200.0	1195.0	25.0	2.50	GP75X1200	●	●
1500.0	1495.0	25.0	2.50	GP75X1500	●	-

● Available sizes - On request All sizes printed in **bold** type conform to ISO 10766 and should be preferred for use.

Additional sizes not covered by this list are also held in stock. Also please note that customer specific sizes can be supplied without tooling costs.



Ordering Example

Slydring® for bore diameter D_N = 100.0 mm
Series GP 69 from Table XXXV
Groove width: 9.7 mm, ring thickness: 2.50 mm

Material: Luytex® C320
(other materials see Tabel I)

Standard design: With angle cut
Design code: 0

Part No.: GP6901000
(from Table XXXVIII)

Order No.	GP69	0	1000	-	C320
Serial No.					
Design code, standard					
Bore diameter x 10					
Quality Index (Standard)					
Material No.					

The Order No. can be formed from the example above.

Ordering Example

Slydring® for bore diameter D_N = 100.0 mm
Series GP 69 from Table XXXV
Groove width: 9.7 mm, ring thickness: 2.50 mm

Material: Luytex® C931
Polypac Ref. 102

Standard design: With angle cut
Design code: 0

Part No.: GP6901000
(from Table XXXVIII)

Order No.	GP69	0	1000	-	C931
Serial No.					
Design code, standard					
Bore diameter x 10					
Quality Index (Standard)					
Material No.					
Polypac Ref. E/GT 100 x 95 - 9,7/102					

Ordering Example for diameter > 1000 mm

Slydring® for bore diameter D_N = 1200.0 mm
Series GP75X from Table XXXV
Groove width: 25.0 mm, ring thickness: 2.50 mm

Material: Luytex® C380

Part No.: GP75X1200
(from Table XXXVIII)

Order No.	GP75X	0	1200	-	C380
Serial No.					
Design code, standard					
Bore diameter x 1*					
Quality Index (Standard)					
Material No.					

* For diameters ≥ 1000.0 mm multiply only by factor 1.

Please Note

Luytex® Slydring® for pistons can be used as rod guide ring, f.inst.

GP69 0 1000 - C320

is identical and can be replaced with

GR69 0 0950 - C320



■ Installation Recommendation, Luytex® Slydring® for Rod According to ISO 10766 Groove Dimension

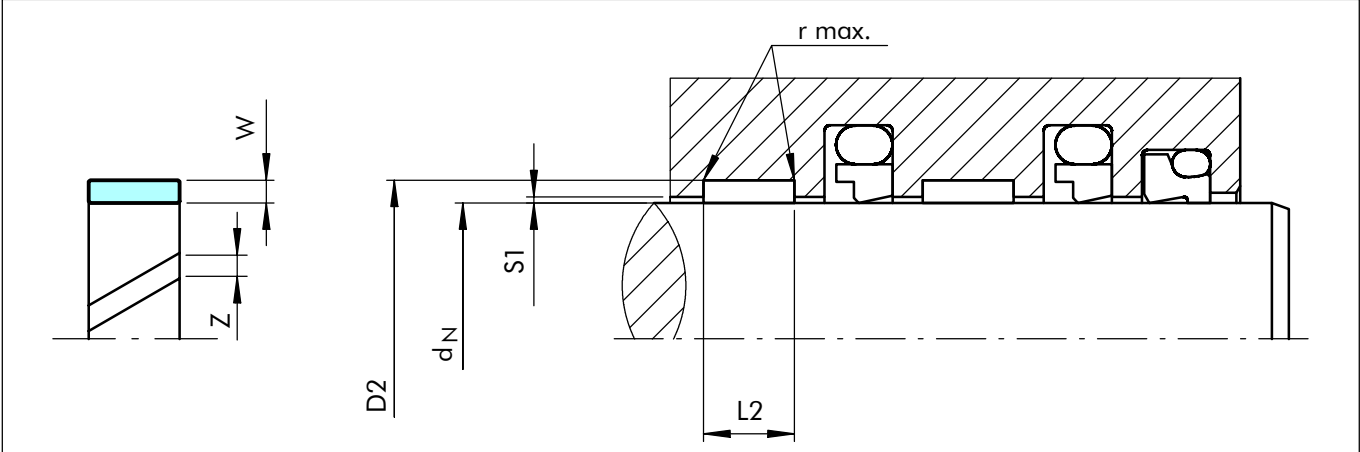


Figure 17 Installation drawing

Table XXXIX Installation Dimensions

Serial No.	Rod Diameter ¹⁾	Groove Diameter	Groove Width	Ring Thickness	Ring Gap ³⁾
	d _N f8/h9	D ₂ H8	L ₂ +0.2	W	Z
GR43	8 - 50.0	d _N +3.10	4.00	1.55	1 - 3
GR65	16 - 140.0	d _N +5.00	5.60	2.50	2 - 6
GR69	25 - 250.0	d _N +5.00	9.70	2.50	2 - 9
GR73	75 - 500.0	d _N +5.00	15.00	2.50	4 - 17
GR75	120 - 999.9	d _N +5.00	25.00	2.50	5 - 33
GR75X	1000-1500.0	d _N +5.00	25.00	2.50	33- 49
GR98	280 - 999.9	d _N +8.00	25.00	4.00	10 - 33
GR98X	1000-1500.0	d _N +8.00	25.00	4.00	33 - 49

¹⁾ Recommended diameter ranges. ³⁾ Calculation of the linear length, see page 8.
For Slydring® to other standards, e.g French standard NF E 48-037, please contact us.

Table XL Recommended Radii for Groove Dia.

d _N	r max.
8 - 250	0.2
>250	0.4

Radial clearance S1

- The minimum radial gap is to be calculated taking into account;
- the fitting tolerances of the hardware
 - the tolerance on the ring thickness
 - an allowance for wear
 - in case of high radial loads an allowance for elastic deformation
 - a safety margin to avoid metal-to-metal contact

The gaps S1 can be chosen larger than near to the seal (attention: take care of gap dimension for the seal) thus allowing slight bending of the rod, still without metal-to-metal contact. It also allows foreign particles to be wiped

away by the Slydring® rather than being squeezed between the metal components (see page 8). The slot 'Z' allows fluid to pass across the ring thus preventing fluid pressure build-up which might cause extrusion of the guide ring. To ensure the ring cannot escape out of the groove it is recommended to observe following radial gap sizes as maximum:

- 0.50 mm for GR43 (1.55 mm thickness)
- 0.90 mm for GR65 to GR75 (2.50 mm thickness)
- 1.50 mm for GR98 and GR98X (4.00 mm thickness)

Table XLI Surface Roughness

Parameter	Mating Surface μm	Groove Surface μm
	Luytex® Materials	
R _{max}	1.00 - 4.00	< 16.0
R _z DIN	0.63 - 2.50	< 10.0
R _a	0.10 - 0.40	< 2.5



Table XLII Slydring® for Rods

Dimensions				Part No.	Luytex® Material ref.	
Rod Diameter	Groove Diameter	Groove Width	Thickness		C320/C380	C931
d _N f8/h9	D ₂ H8	L ₂ +0.2	W			
11.0	14.1	4.0	1.55	GR4300110	●	-
15.0	18.1	4.0	1.55	GR4300150	●	-
16.0	21.0	5.6	2.50	GR6500160	●	●
18.0	23.0	5.6	2.50	GR6500180	●	●
20.0	25.0	5.6	2.50	GR6500200	●	●
22.0	27.0	5.6	2.50	GR6500220	●	●
22.0	27.0	9.7	2.50	GR6900220	●	●
25.0	30.0	9.7	2.50	GR6900250	●	●
27.0	32.0	9.7	2.50	GR6900270	●	-
28.0	31.1	4.0	1.55	GR4300280	●	-
28.0	33.0	5.6	2.50	GR6500280	●	●
28.0	33.0	9.7	2.50	GR6900280	●	●
30.0	35.0	5.6	2.50	GR6500300	●	●
30.0	35.0	9.7	2.50	GR6900300	●	●
32.0	37.0	5.6	2.50	GR6500320	●	●
32.0	37.0	9.7	2.50	GR6900320	●	●
35.0	40.0	9.7	2.50	GR6900350	●	●
36.0	41.0	5.6	2.50	GR6500360	●	●
36.0	41.0	9.7	2.50	GR6900360	●	●
36.0	41.0	15.0	2.50	GR7300360	●	-
40.0	45.0	5.6	2.50	GR6500400	●	●
40.0	45.0	9.7	2.50	GR6900400	●	●
40.0	45.0	15.0	2.50	GR7300400	●	●
42.0	47.0	5.6	2.50	GR6500420	●	●
43.0	48.0	5.6	2.50	GR6500430	●	-
45.0	50.0	5.6	2.50	GR6500450	●	●
45.0	50.0	9.7	2.50	GR6900450	●	●
45.0	50.0	15.0	2.50	GR7300450	●	●
48.0	53.0	5.6	2.50	GR6500480	●	●
48.0	53.0	9.7	2.50	GR6900480	●	●
50.0	55.0	5.6	2.50	GR6500500	●	●
50.0	55.0	9.7	2.50	GR6900500	●	●
52.0	57.0	5.6	2.50	GR6500520	●	●
52.0	57.0	9.7	2.50	GR6900520	●	●
55.0	60.0	5.6	2.50	GR6500550	●	●
55.0	60.0	9.7	2.50	GR6900550	●	●
55.0	60.0	15.0	2.50	GR7500550	●	-
56.0	61.0	5.6	2.50	GR6500560	●	●
56.0	61.0	9.7	2.50	GR6900560	●	●
58.0	63.0	5.6	2.50	GR6500580	●	●
58.0	63.0	9.7	2.50	GR6900580	●	●
60.0	65.0	5.6	2.50	GR6500600	●	●

● Available sizes - Not available All sizes printed in bold type conform to ISO 10766 and should be preferred for use.



Dimensions				Part No.	Luytex® Material ref.	
Rod Diameter	Groove Diameter	Groove Width	Thickness			
d _N f8/h9	D ₂ H8	L ₂ +0.2	W		C320/C380	C931
60.0	65.0	9.7	2.50	GR6900600	●	●
60.0	65.0	15.0	2.50	GR7300600	●	-
63.0	68.0	5.6	2.50	GR6500630	●	●
63.0	68.0	9.7	2.50	GR6900630	●	●
63.0	68.0	15.0	2.50	GR7300630	●	●
65.0	70.0	5.6	2.50	GR6500650	●	●
65.0	70.0	9.7	2.50	GR6900650	●	●
70.0	75.0	5.6	2.50	GR6500700	●	●
70.0	75.0	9.7	2.50	GR6900700	●	●
70.0	75.0	15.0	2.50	GR7300700	●	●
75.0	80.0	5.6	2.50	GR6500750	●	●
75.0	80.0	9.7	2.50	GR6900750	●	●
75.0	80.0	15.0	2.50	GR7300750	●	●
80.0	85.0	5.6	2.50	GR6500800	●	●
80.0	85.0	9.7	2.50	GR6900800	●	●
80.0	85.0	15.0	2.50	GR7300800	●	●
85.0	90.0	5.6	2.50	GR6500850	●	●
85.0	90.0	9.7	2.50	GR6900850	●	●
90.0	95.0	5.6	2.50	GR6500900	●	●
90.0	95.0	9.7	2.50	GR6900900	●	●
90.0	95.0	15.0	2.50	GR7300900	●	●
95.0	100.0	5.6	2.50	GR6500950	●	●
95.0	100.0	9.7	2.50	GR6900950	●	●
95.0	100.0	15.0	2.50	GR7300950	●	●
100.0	105.0	5.6	2.50	GR6501000	●	●
100.0	105.0	9.7	2.50	GR6901000	●	●
100.0	105.0	15.0	2.50	GR7301000	●	●
105.0	110.0	9.7	2.50	GR6901050	●	●
105.0	110.0	15.0	2.50	GR7301050	●	●
110.0	115.0	9.7	2.50	GR6901100	●	●
110.0	115.0	15.0	2.50	GR7301100	●	●
115.0	120.0	9.7	2.50	GR6901150	●	●
115.0	120.0	15.0	2.50	GR7301150	●	●
120.0	125.0	9.7	2.50	GR6901200	●	●
120.0	125.0	15.0	2.50	GR7301200	●	●
125.0	130.0	9.7	2.50	GR6901250	●	●
125.0	130.0	15.0	2.50	GR7301250	●	●
130.0	135.0	15.0	2.50	GR7301300	●	●
135.0	140.0	15.0	2.50	GR7301350	●	●
140.0	145.0	9.7	2.50	GR6901400	●	●
140.0	145.0	15.0	2.50	GR7301400	●	●
150.0	155.0	15.0	2.50	GR7301500	●	●

● Available sizes

- Not available

All sizes printed in bold type conform to ISO 10766 and should be preferred for use.



Dimensions				Part No.	Luytex® Material ref.	
Rod Diameter	Groove Diameter	Groove Width	Thickness		C320/C380	C931
d _N f8/h9	D ₂ H8	L ₂ +0.2	W			
155.0	160.0	15.0	2.50	GR7301550	●	●
160.0	165.0	9.7	2.50	GR6901600	●	●
160.0	165.0	15.0	2.50	GR7301600	●	●
170.0	175.0	15.0	2.50	GR7301700	●	●
180.0	185.0	9.7	2.50	GR6901800	●	●
180.0	185.0	15.0	2.50	GR7301800	●	●
190.0	195.0	15.0	2.50	GR7301900	●	●
195.0	200.0	15.0	2.50	GR7301950	●	●
200.0	205.0	15.0	2.50	GR7302000	●	●
200.0	205.0	25.0	2.50	GR7502000	●	●
210.0	215.0	15.0	2.50	GR7302100	●	●
220.0	225.0	15.0	2.50	GR7302200	●	●
220.0	225.0	25.0	2.50	GR7502200	●	●
230.0	235.0	25.0	2.50	GR7502300	●	●
240.0	245.0	25.0	2.50	GR7502400	●	●
250.0	255.0	15.0	2.50	GR7302500	●	●
250.0	255.0	25.0	2.50	GR7502500	●	●
280.0	285.0	15.0	2.50	GR7302800	●	●
280.0	285.0	25.0	2.50	GR7502800	●	●
280.0	288.0	25.0	4.00	GR9802800	●	●
300.0	305.0	25.0	2.50	GR7503000	●	●
320.0	325.0	15.0	2.50	GR7303200	●	●
320.0	325.0	25.0	2.50	GR7503200	●	●
320.0	328.0	25.0	4.00	GR9803200	●	●
350.0	355.0	25.0	2.50	GR7503500	●	●
360.0	365.0	15.0	2.50	GR7303600	●	●
360.0	365.0	25.0	2.50	GR7503600	●	●
360.0	368.0	25.0	4.00	GR9803600	●	●
400.0	405.0	25.0	2.50	GR7504000	●	●
400.0	408.0	25.0	4.00	GR9804000	●	●
800.0	805.0	25.0	2.50	GR7508000	●	●
800.0	808.0	25.0	4.00	GR9808000	●	●
1000.0	1005.0	25.0	2.50	GR75X1000	●	●
1000.0	1008.0	25.0	4.00	GR98X1000	●	●
1200.0	1205.0	25.0	2.50	GR75X1200	●	●
1500.0	1505.0	25.0	2.50	GR75X1500	●	-

● Available sizes - Not available All sizes printed in bold type conform to ISO 10766 and should be preferred for use.
Additional sizes not covered by this list are also held in stock. Also please note that customer specific sizes can be supplied without tooling costs.



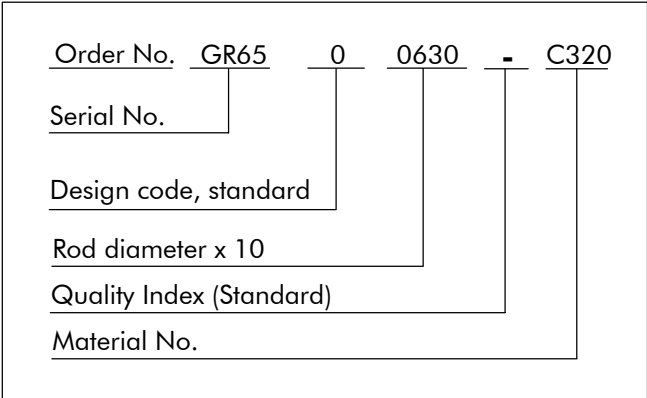
Ordering Example

Slydring® for rod diameter $d_N = 63.0$ mm
Series GR 65 from Table XXXIX
Groove width: 5.6 mm, ring thickness: 2.50 mm

Material: Luytex® C320
(other materials see Table I)

Standard design: With angle cut
Design code: 0

Part No.: GR6500630
(from Table XLII)



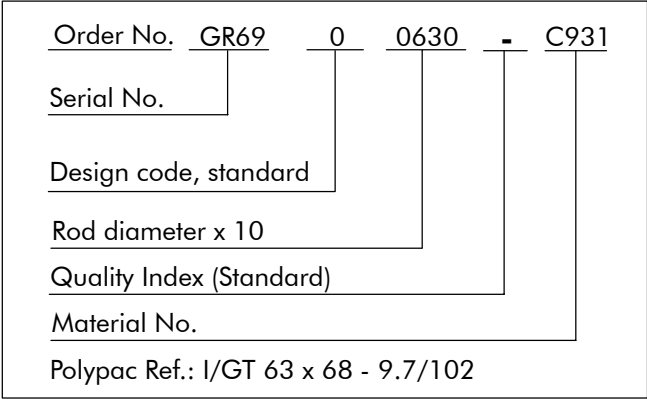
Ordering Example

Slydring® for rod diameter $d_N = 63.0$ mm
Series GR 69 from Table XXXIX
Groove width: 9.7 mm, ring thickness: 2.50 mm

Material: Luytex® C931
Polypac Ref. 102

Standard design: With angle cut
Design code: 0

Part No.: GR6500630
(from Table XLII)

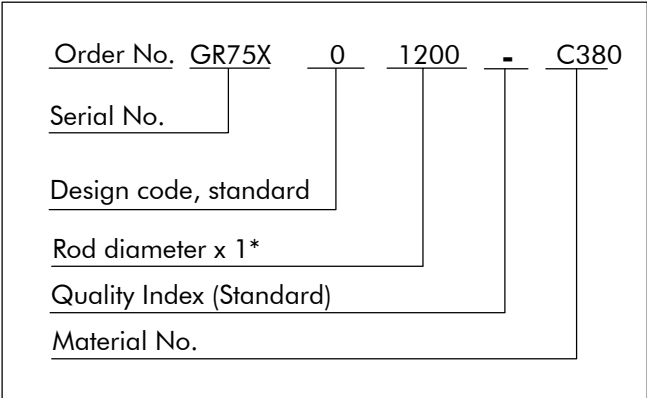


Ordering Example for diameter >1000 mm

Slydring® for rod diameter $d_N = 1200.0$ mm
Series GR 75X from Table XXXIX
Groove width: 25.0 mm, ring thickness: 2.50 mm

Material: Luytex® C380

Part No.: GR75X1200
(from Table XLII)



* For diameters ≥ 1000.0 mm multiply only by factor 1.

Please Note

Luytex® Slydring® for rods can be used as piston guide ring, f.inst.

GR65 0 0630 - C320

is identical and can be replaced with

GP65 0 0680 - C320

