

Sealing rings

Sealing rings

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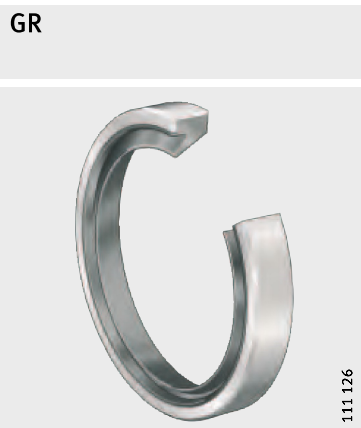
Product overview Sealing rings

Single lip

Angled reinforcing ring encased in rubber



With external steel reinforcement



Double lip



Sealing rings

Features

Sealing rings are designed as contact seals.

They protect the bearing position against contamination, spray water and the excessive loss of grease.

Sealing rings are matched to the small radial dimensions of drawn cup needle roller bearings and needle roller bearings.

They are very easy to fit, since they are simply pressed into the housing bore.

Sealing rings allow circumferential speeds at the seal lip of up to 10 m/s, depending on the surface quality of the shaft.

Sealing rings, single lip

Sealing rings G and GR are single lip seals made from synthetic NBR elastomer (colour: green).

The design GR is suitable for shaft diameters up to 7 mm as standard and has an external steel reinforcement for stiffening purposes.

Sealing rings G are suitable for shaft diameters over 8 mm and have a rubber-encased steel reinforcement for stiffening purposes with a wave-shaped rubber profile. This provides good sealing on the outside diameter. At the same time, it also reduces the forces required for fitting.

Sealing rings, double lip

Sealing rings SD have a contact lip and a non-contact dust shield lip facing the shaft (on the marked side). They comprise two plastic components.

The seal carrier is made from reinforced polyamide (colour: black), while the seal lip area is made from thermoplastic PU elastomer (colour: green).

Sealing rings SD can also be used as wipers on shafts with axial motion. Stroke speeds up to 3 m/s are possible, dependent on the condition of the shaft.

Operating temperature

The permissible temperature is dependent on the interaction between the medium and the temperature and its effect on the sealing ring material. The suitability of the sealing rings should be checked by tests as extremes of operation are approached.



Sealing rings G and GR are suitable for operating temperatures from -30 °C to $+110\text{ °C}$, depending on the medium acting on the sealing ring.

Sealing rings SD are suitable for operating temperatures from -30 °C to $+100\text{ °C}$, depending on the medium acting on the sealing ring.



Sealing rings

Suffixes

Suffixes for available designs: see table.

Available designs

Suffix	Description	Design
FPM	Sealing rings G and GR for temperatures from $-20\text{ }^{\circ}\text{C}$ to $+160\text{ }^{\circ}\text{C}$ or circumferential speeds up to 16 m/s	Special design, available by agreement
HNBR	Sealing rings G and GR for temperatures from $-30\text{ }^{\circ}\text{C}$ to $+140\text{ }^{\circ}\text{C}$ or circumferential speeds up to 12 m/s	

Further information

Further information on sealing rings and the basic principles of sealing ring technology is given in TPI 128, Sealing rings, single lip and double lip.

Design and safety guidelines

Resistance and leakage

Sealing rings are resistant to undoped lubricants with a mineral oil base. For other media, please check the resistance of the sealing rings.

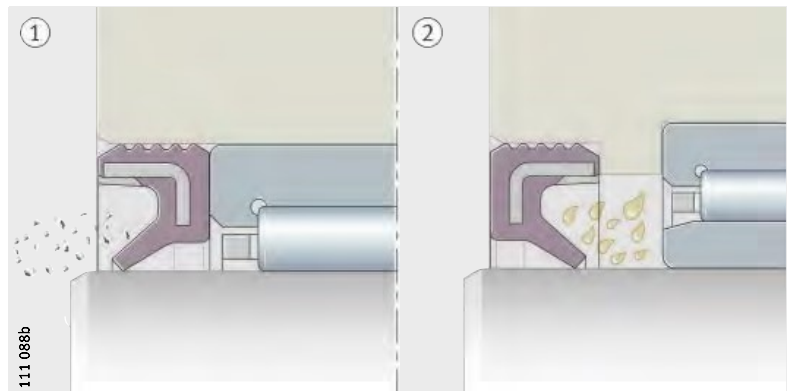
Low leakage rates are possible (grease or fluid film). The sealing effect is aided by a grease collar.

Sealing lip orientation

In order to protect against dust and contamination, the seal lip should face outwards, *Figure 1* ①. In order to prevent egress of lubricant, the seal lip should face inwards, *Figure 1* ②.

- ① Seal lip facing outwards
- ② Seal lip facing inwards

Figure 1
Sealing lip orientation



Shaft and housing design

The sliding surface for the seal lips must be free from cracks and damage such as impact points, scratches, cracks, rust, raised areas.

Tolerances and surface quality

Sealing ring	Shaft movement	Bore tolerance	Shaft		
			Tolerance	Roughness	Hardness
G, GR, SD	Rotation only	G7 to R7	g7 to k7	$0,2 \leq R_a \leq 0,8$	55 HRC or 600 HV
SD	Axial motion			$R_a 0,3$	

In order to protect the sealing lips during fitting, the shaft ends and the housing bore should be chamfered in accordance with DIN 3 760, see table and *Figure 2*.

Chamfer dimensions

Chamfer	$D \leq 30 \text{ mm}$	$D > 30 \text{ mm}$	$d \leq 30 \text{ mm}$	$d > 30 \text{ mm}$
v_{\min}	0,3	1% of D	-	-
w_{\min}	-	-	0,3	0,5

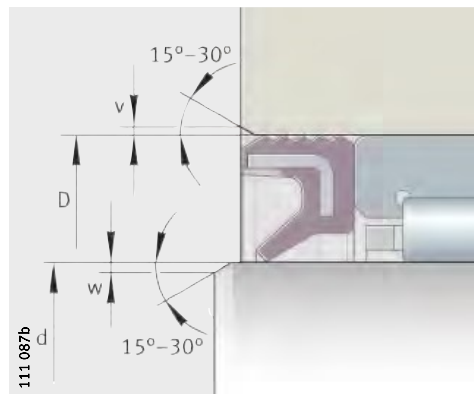
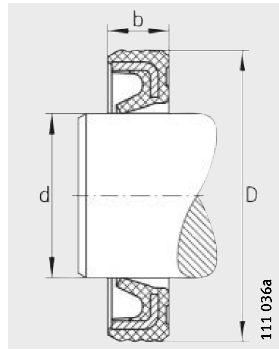


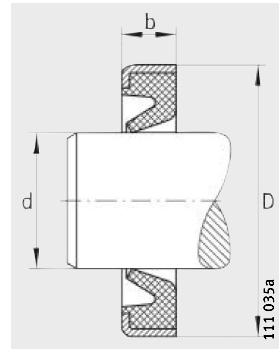
Figure 2
Chamfers on housing bore and shaft end



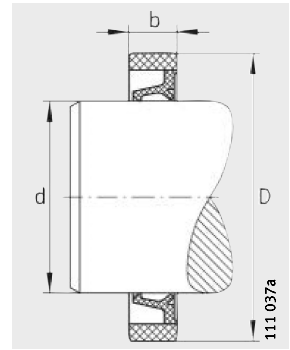
Sealing rings



G



GR



SD

Dimension table · Dimensions in mm

Design			Designation			Mass		
G	GR	SD	d _x	D _x	b ¹⁾	G ≈g	GR ≈g	SD ≈g
-	■ ²⁾	-	4	8	2	-	0,2	-
-	■ ²⁾	-	5	9	2	-	0,2	-
-	■ ²⁾	-	5	10	2	-	0,2	-
-	■ ²⁾	-	6	10	2	-	0,2	-
-	■ ²⁾	-	6	12	2	-	0,4	-
-	■ ²⁾	-	7	11	2	-	0,3	-
-	■ ²⁾	-	7	14	2	-	0,5	-
■ ²⁾	4)	4)	8	12	3	0,4	-	-
■ ²⁾	4)	■ ²⁾	8	15	3	0,7	-	0,3
■ ²⁾	■ ²⁾	4)	9	13	3	0,5	0,5	-
■ ²⁾	4)	4)	9	16	3	0,7	-	-
■ ²⁾	■ ²⁾	4)	10	14	3	0,5	0,5	-
■ ²⁾	4)	■ ²⁾	10	17	3	0,9	-	0,4
■ ²⁾	■ ²⁾	4)	12	16	3	0,6	0,6	-
■ ²⁾	4)	■ ²⁾	12	18	3	0,9	-	-
■ ²⁾	■ ²⁾	■ ²⁾	12	19	3	1	1	0,5
■ ²⁾	4)	4)	13	19	3	0,9	-	-
■ ²⁾	3)	■ ²⁾	14	20	3	1	1	0,5
■ ²⁾	4)	4)	14	21	3	1,1	-	-
■ ²⁾	3)	■ ²⁾	14	22	3	1,3	1,1	0,7
■ ²⁾	3)	■ ²⁾	15	21	3	1	1	0,5
■ ²⁾	3)	■ ²⁾	15	23	3	1,3	1,3	0,7
■ ²⁾	3)	■ ²⁾	16	22	3	1,3	1,3	0,6
■ ²⁾	3)	■ ²⁾	16	24	3	1,3	1,3	0,7
■ ²⁾	4)	4)	16	25	3	1,6	-	-
■ ²⁾	3)	■ ²⁾	17	23	3	1,3	1,3	0,6
■ ²⁾	4)	■ ²⁾	17	25	3	1,5	-	0,8
■ ²⁾	4)	■ ²⁾	18	24	3	1,2	-	0,6
■ ²⁾	4)	■ ²⁾	18	26	4	1,8	-	1,1
■ ²⁾	4)	■ ²⁾	19	27	4	2	-	1,1
■ ²⁾	3)	■ ²⁾	20	26	4	1,8	1,8	0,8
■ ²⁾	3)	■ ²⁾	20	28	4	2,1	2,1	1,1
■ ²⁾	4)	4)	21	29	4	2,2	-	-
■ ²⁾	3)	■ ²⁾	22	28	4	1,8	1,8	0,9
■ ²⁾	3)	■ ²⁾	22	30	4	2,2	2,2	1,3

Dimension table (continued) · Dimensions in mm

Design			Designation			Mass		
G	GR	SD	d _x	D _x	b ¹⁾	G ≈g	GR ≈g	SD ≈g
■ ²⁾	3)	4)	24	32	4	2,5	2,5	-
■ ²⁾	3)	■ ²⁾	25	32	4	2,3	2,3	1,3
■ ²⁾	4)	■ ²⁾	25	33	4	2,5	-	1,3
■ ²⁾	3)	■ ²⁾	25	35	4	2,6	2,6	1,9
■ ²⁾	4)	■ ²⁾	26	34	4	2,6	-	1,4
■ ²⁾	3)	■ ²⁾	28	35	4	2,4	2,4	1,3
■ ²⁾	3)	4)	28	37	4	3,1	3,1	-
■ ²⁾	4)	4)	29	38	4	3,2	-	-
■ ²⁾	3)	■ ²⁾	30	37	4	2,7	2,7	1,3
■ ²⁾	3)	■ ²⁾	30	40	4	3,6	3,6	2,1
■ ²⁾	4)	■ ²⁾	32	42	4	3,7	-	2,4
■ ²⁾	4)	4)	32	45	4	5,1	-	-
■ ²⁾	3)	■ ²⁾	35	42	4	3	4	1,5
■ ²⁾	4)	■ ²⁾	35	45	4	4,1	4,1	2,5
■ ²⁾	4)	■ ²⁾	37	47	4	4	-	2,7
■ ²⁾	4)	■ ²⁾	38	48	4	4,4	-	2,8
■ ²⁾	4)	■ ²⁾	40	47	4	3,3	-	1,7
■ ²⁾	3)	■ ²⁾	40	50	4	4,6	4,6	2,9
■ ²⁾	3)	■ ²⁾	40	52	5	4,8	4,8	4,5
■ ²⁾	3)	■ ²⁾	42	52	4	4,7	4,7	3
■ ²⁾	4)	4)	43	53	4	4,8	-	-
■ ²⁾	3)	■ ²⁾	45	52	4	3,8	3,8	1,9
■ ²⁾	3)	■ ²⁾	45	55	4	5,2	5,2	3,2
■ ²⁾	3)	■ ²⁾	50	58	4	4,5	4,5	2,4
■ ²⁾	3)	■ ²⁾	50	62	5	10,4	10,4	5,5
■ ²⁾	3)	-	55	63	5	7,1	7,1	-
■ ²⁾	3)	-	70	78	5	9	9	-
■ ²⁾	4)	-	80	90	5	13,8	-	-

Special designs, available by agreement.

- 1) Width tolerance +0,1/-0,2.
- 2) ■ = standard range.
- 3) Please enquire on availability.
- 4) Available by agreement for economically viable batch sizes.