

# ROD SEALS

## BECA

### 170-179



#### DESCRIPTION

The BECA 170 - 179 profiles are double acting composite rod seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be mounted in the grooves of the O'Rings. Option of connecting the seal to 1 or 2 back-up rings.

#### ADVANTAGES

Suitable for a reduced size

Low friction coefficient;  
no stick-slip effect

Excellent extrusion and wear resistance

Wide temperature range and excellent chemical resistance, depending on the material selected for the O'Ring

#### APPLICATIONS

Machine tools

Lifting systems

Valves

#### MATERIALS

##### Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Virgin PTFE

##### O'Ring

NBR 70 Shore A

FKM 70 Shore A

VMQ 70 Shore A

Other grades of materials are available. Please refer to the materials table on the next page.

#### TECHNICAL DATA

Temperature	-30°C / +200°C
Pressure	35 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Others (contact our experts)

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.

#### EXTRUSION GAPS

Radial section S	Radial gap F/2			
	2 MPa	10 MPa	20 MPa	35 MPa
1.45	0.10	0.10	0.08	0.05
2.25	0.15	0.15	0.10	0.07
3.10	0.25	0.20	0.15	0.08
4.70	0.35	0.25	0.20	0.10
6.10	0.50	0.30	0.25	0.15
7.50	0.60	0.40	0.30	0.20

#### SURFACE ROUGHNESS

Roughness	Dynamic surface area	Static surface area	Groove flanks
Ra	0.05 - 0.2 µm	≤1.6 µm	≤3.2 µm
Rz	0.4 - 1.6 µm	≤6.3 µm	≤10.0 µm
Rmax	0.63 - 2.5 µm	≤10.0 µm	≤16.0 µm

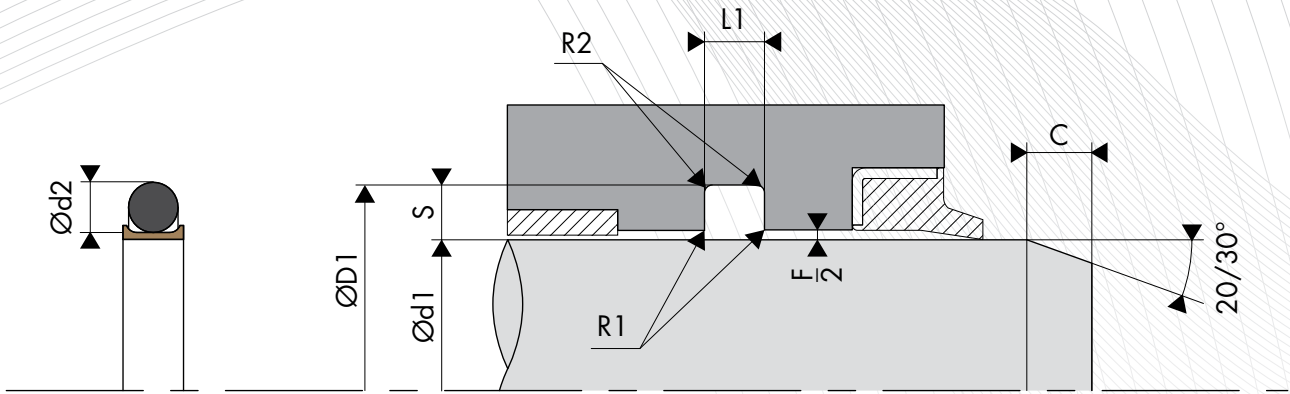
#### CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
1.45	0.30	0.40	3.00
2.25	0.30	0.40	3.00
3.10	0.30	0.60	3.00
4.70	0.30	0.80	3.00
6.10	0.30	0.80	5.00
7.50	0.30	1.00	6.00

TABLE MATERIALS

Friction ring					O'Ring			Mating surface material	
Standard code	ISO code	Material	Colour	Characteristics	Code	Type of material	Service temperature		
DP	P	Virgin PTFE	White	Resistance to chemical products Impermeability Dielectric Non-stick Low friction coefficient Food industry	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
					F6	VMQ 70 Shore A	-60°C/+200°C		
DC	C	PTFE + 25% Carbon	Grey	<b>Improvements</b> • <b>Wear properties</b> • <b>Compression set</b> Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DV	V	PTFE + 25 % Glass	Blue	<b>Improvements</b> • <b>Wear properties</b> • <b>Mechanical strength</b> Slightly more abrasive, however, this is corrected by adding MOS2 Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		Steel Chrome steel Cast iron
					G6	FKM 70 Shore A	-20°C/+200°C		
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Well-suited to applications with rotational and simultaneous alternating movements	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
DG	G	PTFE + 15% Graphite	Black	<b>Improvements</b> • <b>Wear properties</b> Reduced wear on metal parts Self-lubricating Thermal and electrical conductivity Low permeability Good friction coefficient Anti-static High performing in dynamic self-lubricating applications	K6	NBR 70 Shore A	-30°C/+100°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K1	K	PTFE + 10% Ekonol	Light brown	<b>Improvements</b> • <b>Better abrasion resistance</b> • <b>Better dimensional stability at high temperatures</b> Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	<b>Improvements</b> • <b>Wear properties</b> • <b>Warping resistance and creep strength</b> • <b>Compression resistance</b> Self-lubricating Electrical and thermal conductivity Does not alter the metal parts Reduced hold with certain chemical products Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C	Steel Chrome steel Cast iron	
					G6	FKM 70 Shore A	-20°C/+200°C		
B4	B	PTFE + 40% Bronze	Dark brown	Used for high-compression dynamic seals and has a low level of wear	K6	NBR 70 Shore A	-30°C/+100°C		
					G6	FKM 70 Shore A	-20°C/+200°C		
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	K6	NBR 70 Shore A	-30°C/+80°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface	

Other grades of materials are available depending on your specificities.



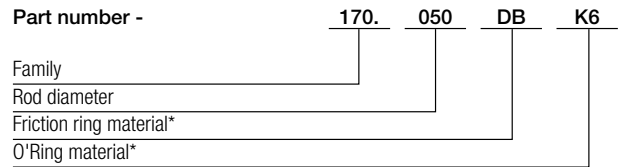
○ INSTALLATION DIMENSIONS

Rod diameter Ød1 f8/h9		Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 170 Standard range	BECA 179 Extended range	ØD1 H9	L1 0/+0.20	S	Ød2
4.0 - 9.9	2.0 - 129.9	d1 + 2.90	2.40	1.45	1.78
10.0 - 19.9	5.0 - 249.9	d1 + 4.50	3.60	2.25	2.62
20.0 - 39.9	5.0 - 449.9	d1 + 6.20	4.80	3.10	3.53
40.0 - 119.9	12.0 - 649.9	d1 + 9.40	7.10	4.70	5.33
120.0 - 649.9	60.0 - 999.9	d1 + 12.20	9.50	6.10	6.99
650.0 - 999.9	110.0 - 999.9	d1 + 15.00	10.00	7.50	8.40

○ EXAMPLE OF CODIFICATION

**STANDARD CODIFICATION**

**Materials** \_\_\_\_\_ : Friction ring, PTFE + 60% Bronze - Code DB  
 \_\_\_\_\_ : NBR 70 Shore A O'Ring - Code K6  
**Rod diameter** \_\_\_\_\_ : Ød1 = 50.00 mm  
**Groove diameter** \_\_\_\_\_ : ØD1 = 59.40 mm  
**Part number** \_\_\_\_\_ : 170. 050DBK6



\* The codes that define the materials are set out in the materials table on the previous page.

## DIMENSIONS

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
170.003	3.00	5.90	2.40
<b>170.004</b>	<b>4.00</b>	<b>6.90</b>	<b>2.40</b>
<b>170.005</b>	<b>5.00</b>	<b>7.90</b>	<b>2.40</b>
<b>170.006</b>	<b>6.00</b>	<b>8.90</b>	<b>2.40</b>
170.007	7.00	9.90	2.40
<b>170.008</b>	<b>8.00</b>	<b>10.90</b>	<b>2.40</b>
170.009	9.00	11.90	2.40
<b>170.010</b>	<b>10.00</b>	<b>14.50</b>	<b>3.60</b>
<b>170.012</b>	<b>12.00</b>	<b>16.50</b>	<b>3.60</b>
<b>170.014</b>	<b>14.00</b>	<b>18.50</b>	<b>3.60</b>
170.015	15.00	19.50	3.60
<b>170.016</b>	<b>16.00</b>	<b>20.50</b>	<b>3.60</b>
<b>170.018</b>	<b>18.00</b>	<b>22.50</b>	<b>3.60</b>
<b>170.020</b>	<b>20.00</b>	<b>26.20</b>	<b>4.80</b>
<b>170.022</b>	<b>22.00</b>	<b>28.20</b>	<b>4.80</b>
<b>170.025</b>	<b>25.00</b>	<b>31.20</b>	<b>4.80</b>
<b>170.028</b>	<b>28.00</b>	<b>34.20</b>	<b>4.80</b>
170.030	30.00	36.20	4.80
<b>170.032</b>	<b>32.00</b>	<b>38.20</b>	<b>4.80</b>
170.035	35.00	41.20	4.80
<b>170.036</b>	<b>36.00</b>	<b>42.20</b>	<b>4.80</b>
170.038	38.00	44.20	4.80
<b>170.040</b>	<b>40.00</b>	<b>49.40</b>	<b>7.10</b>
170.042	42.00	51.40	7.10
<b>170.045</b>	<b>45.00</b>	<b>54.40</b>	<b>7.10</b>
170.048	48.00	57.40	7.10
<b>170.050</b>	<b>50.00</b>	<b>59.40</b>	<b>7.10</b>
170.052	52.00	61.40	7.10
170.055	55.00	64.40	7.10
<b>170.056</b>	<b>56.00</b>	<b>65.40</b>	<b>7.10</b>
170.058	58.00	67.40	7.10
170.060	60.00	69.40	7.10
170.062	62.00	71.40	7.10
<b>170.063</b>	<b>63.00</b>	<b>72.40</b>	<b>7.10</b>
170.065	65.00	74.40	7.10
170.068	68.00	77.40	7.10
<b>170.070</b>	<b>70.00</b>	<b>79.40</b>	<b>7.10</b>
170.075	75.00	84.40	7.10
<b>170.080</b>	<b>80.00</b>	<b>89.40</b>	<b>7.10</b>
170.085	85.00	94.40	7.10
<b>170.090</b>	<b>90.00</b>	<b>99.40</b>	<b>7.10</b>
170.095	95.00	104.40	7.10
<b>170.100</b>	<b>100.00</b>	<b>109.40</b>	<b>7.10</b>
170.105	105.00	114.40	7.10

Part number	Rod diameter Ød1 f8/h9	Groove diameter ØD1 H9	Groove width L1 0/+0.20
<b>170.110</b>	<b>110.00</b>	<b>119.40</b>	<b>7.10</b>
170.115	115.00	124.40	7.10
170.120	120.00	132.20	9.50
<b>170.125</b>	<b>125.00</b>	<b>137.20</b>	<b>9.50</b>
170.130	130.00	142.20	9.50
170.135	135.00	147.20	9.50
<b>170.140</b>	<b>140.00</b>	<b>152.20</b>	<b>9.50</b>
170.145	145.00	157.20	9.50
170.150	150.00	162.20	9.50
170.155	155.00	167.20	9.50
<b>170.160</b>	<b>160.00</b>	<b>172.20</b>	<b>9.50</b>
170.165	165.00	177.20	9.50
170.170	170.00	182.20	9.50
170.175	175.00	187.20	9.50
<b>170.180</b>	<b>180.00</b>	<b>192.20</b>	<b>9.50</b>
170.185	185.00	197.20	9.50
170.190	190.00	202.20	9.50
170.195	195.00	207.20	9.50
<b>170.200</b>	<b>200.00</b>	<b>212.20</b>	<b>9.50</b>
170.205	205.00	217.20	9.50
170.210	210.00	222.20	9.50
170.215	215.00	227.20	9.50
<b>170.220</b>	<b>220.00</b>	<b>232.20</b>	<b>9.50</b>
170.230	230.00	242.20	9.50
170.240	240.00	252.20	9.50
<b>170.250</b>	<b>250.00</b>	<b>262.20</b>	<b>9.50</b>
170.260	260.00	272.20	9.50
170.270	270.00	282.20	9.50
<b>170.280</b>	<b>280.00</b>	<b>292.20</b>	<b>9.50</b>
170.290	290.00	302.20	9.50
170.300	300.00	312.20	9.50
170.310	310.00	322.20	9.50
<b>170.320</b>	<b>320.00</b>	<b>332.20</b>	<b>9.50</b>
170.330	330.00	342.20	9.50
170.340	340.00	352.20	9.50
170.350	350.00	362.20	9.50
<b>170.360</b>	<b>360.00</b>	<b>372.20</b>	<b>9.50</b>
170.370	370.00	382.20	9.50
170.380	380.00	392.20	9.50
170.390	390.00	402.20	9.50
170.400	400.00	412.20	9.50
170.450	450.00	462.20	9.50
170.500	500.00	512.20	9.50

The figures highlighted in bold correspond to the rod diameters that are recommended by standard ISO 3320. Other intermediate sizes can be provided.