

PISTON SEALS

BECA

500-502-504



DESCRIPTION

The BECA 500 - 502 - 504 profiles are double acting composite piston seals composed of a filled PTFE friction ring and pre-tightened rubber O'Ring. They can be assembled in grooves according to standard ISO 7425/1. Option of connecting the seal to 1 or 2 back-up rings.

ADVANTAGES

Optimal sealing in static and dynamic applications

Low friction coefficient; no stick-slip effect

Excellent abrasion and extrusion resistance

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

APPLICATIONS

Mobile hydraulics

Injection presses

Machine tools

Presses

Standard cylinders

MATERIALS

Friction ring

Bronze-filled PTFE

Carbon-filled PTFE

Blue GL PTFE

O'Ring

NBR 70 Shore A

FKM 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	50 MPa
Speed	5 m/s
Media	Mineral hydraulic oils Fire-resistant liquids Biocompatible fluids Water 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		
	10 MPa	20 MPa	40 MPa
2.45	0.30	0.20	0.15
3.75	0.40	0.25	0.15
5.50	0.40	0.25	0.20
7.75	0.50	0.30	0.20
10.50	0.60	0.35	0.25
12.25	0.60	0.35	0.25
14.00	0.70	0.50	0.30
19.00	1.00	0.70	0.60

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

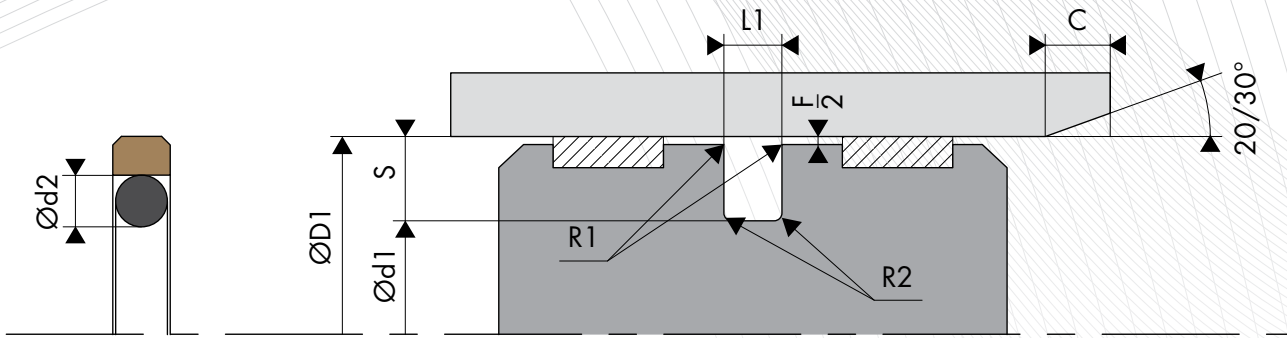
CHAMFERS AND RADIUS

Radial section S	Radius R1	Radius R2	Chamfer C
2.45	0.30	0.40	3.00
3.75	0.30	0.60	3.00
5.50	0.30	1.00	3.00
7.75	0.30	1.30	5.00
10.50	0.30	1.80	6.00
12.25	0.30	1.80	8.00
14.00	0.30	2.50	10.00
19.00	0.30	3.00	12.00

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	Improvements • Wear properties • Compression set 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	Improvements • Wear properties • Mechanical strength 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	Improvements • Wear properties 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	Improvements • Better abrasion resistance • Better dimensional stability at high temperatures 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	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					C6	EPDM 70 Shore A	-45°C/+150°C		
DB	B	PTFE + 60% Bronze	Dark brown	Improvements • Wear properties • Warping resistance and creep strength • Compression resistance 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	
PU	U	Polyurethane	Blue	Strong mechanical resistance Good resistance to wear and abrasion High elasticity modulus	K6	NBR 70 Shore A	-30°C/+90°C		
PUHT	U	High-temperature polyurethane	White or off-white	Good flexibility Very good resistance to ozone and oxidation	K6	NBR 70 Shore A	-30°C/+100°C		

Other grades of materials are available depending on your specificities.



○ INSTALLATION DIMENSIONS

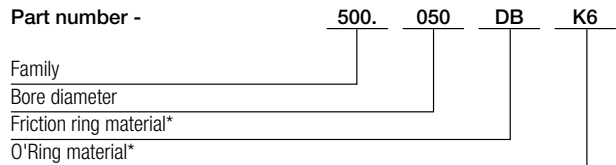
Bore diameter ØD1 H9			Groove diameter	Groove width	Radial section	O'Ring cross-section
BECA 500 Standard range	BECA 502 Light range	BECA 504 Heavy-duty range	Ød1 h9	L1 0/+0.20	S	Ød2
8.0 - 14.9	15.0 - 39.9	---	D1 - 4.90	2.20	2.45	1.78
15.0 - 39.9	40.0 - 79.9	---	D1 - 7.50	3.20	3.75	2.62
40.0 - 79.9	80.0 - 132.9	15.0 - 39.9	D1 - 11.00	4.20	5.50	3.53
80.0 - 132.9	133.0 - 329.9	40.0 - 79.9	D1 - 15.50	6.30	7.75	5.33
133.0 - 329.9	330.0 - 669.9	80.0 - 132.9	D1 - 21.00	8.10	10.50	6.99
330.0 - 669.9	670.0 - 999.9	133.0 - 329.9	D1 - 24.50	8.10	12.25	6.99
670.0 - 999.9	1000.0 - **	330.0 - 669.9	D1 - 28.00	9.50	14.00	8.40
1000.0 - **	---	1000.0 - **	D1 - 38.00	13.80	19.00	12.00

For special applications > 40 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : Friction ring, PTFE + 60% Bronze - Code DB
 _____ : NBR 70 Shore A O'Ring - Code K6
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 39.00 mm
Part number _____ : 500. 050DBK6



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

 DIMENSIONS

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.008	8.00	3.10	2.20
500.010	10.00	5.10	2.20
500.012	12.00	7.10	2.20
500.014	14.00	9.10	2.20
504.015	15.00	4.00	4.20
500.015	15.00	7.50	3.20
502.015	15.00	10.10	2.20
504.016	16.00	5.00	4.20
500.016	16.00	8.50	3.20
502.016	16.00	11.10	2.20
504.018	18.00	7.00	4.20
500.018	18.00	10.50	3.20
502.018	18.00	13.10	2.20
504.020	20.00	9.00	4.20
500.020	20.00	12.50	3.20
502.020	20.00	15.10	2.20
504.021	21.00	10.00	4.20
500.021	21.00	13.50	3.20
502.021	21.00	16.10	2.20
504.022	22.00	11.00	4.20
500.022	22.00	14.50	3.20
502.022	22.00	17.10	2.20
504.024	24.00	13.00	4.20
500.024	24.00	16.50	3.20
502.024	24.00	19.10	2.20
504.025	25.00	14.00	4.20
500.025	25.00	17.50	3.20
502.025	25.00	20.10	2.20
504.028	28.00	17.00	4.20
500.028	28.00	20.50	3.20
502.028	28.00	23.10	2.20
504.030	30.00	19.00	4.20
500.030	30.00	22.50	3.20
502.030	30.00	25.10	2.20
504.032	32.00	21.00	4.20
500.032	32.00	24.50	3.20
502.032	32.00	27.10	2.20
504.035	35.00	24.00	4.20
500.035	35.00	27.50	3.20
502.035	35.00	30.10	2.20
504.036	36.00	25.00	4.20
500.036	36.00	28.50	3.20
502.036	36.00	31.10	2.20
504.038	38.00	27.00	4.20
500.038	38.00	30.50	3.20
502.038	38.00	33.10	2.20
504.040	40.00	24.50	6.30
500.040	40.00	29.00	4.20
502.040	40.00	32.50	3.20
504.042	42.00	26.50	6.30
500.042	42.00	31.00	4.20
502.042	42.00	34.50	3.20
504.045	45.00	29.50	6.30
500.045	45.00	34.00	4.20
502.045	45.00	37.50	3.20
504.048	48.00	32.50	6.30
500.048	48.00	37.00	4.20
502.048	48.00	40.50	3.20
504.050	50.00	34.50	6.30
500.050	50.00	39.00	4.20
502.050	50.00	42.50	3.20
504.052	52.00	36.50	6.30

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.052	52.00	41.00	4.20
502.052	52.00	44.50	3.20
504.053	53.00	37.50	6.30
500.053	53.00	42.00	4.20
502.053	53.00	45.50	3.20
504.055	55.00	39.50	6.30
500.055	55.00	44.00	4.20
502.055	55.00	47.50	3.20
504.057	57.00	41.50	6.30
500.057	57.00	46.00	4.20
502.057	57.00	49.50	3.20
504.058	58.00	42.50	6.30
500.058	58.00	47.00	4.20
502.058	58.00	50.50	3.20
504.060	60.00	44.50	6.30
500.060	60.00	49.00	4.20
502.060	60.00	52.50	3.20
504.062	62.00	46.50	6.30
500.062	62.00	51.00	4.20
502.062	62.00	54.50	3.20
504.063	63.00	47.50	6.30
500.063	63.00	52.00	4.20
502.063	63.00	55.50	3.20
504.065	65.00	49.50	6.30
500.065	65.00	54.00	4.20
502.065	65.00	57.50	3.20
504.068	68.00	52.50	6.30
500.068	68.00	57.00	4.20
502.068	68.00	60.50	3.20
504.070	70.00	54.50	6.30
500.070	70.00	59.00	4.20
502.070	70.00	62.50	3.20
504.072	72.00	56.50	6.30
500.072	72.00	61.00	4.20
502.072	72.00	64.50	3.20
504.075	75.00	59.50	6.30
500.075	75.00	64.00	4.20
502.075	75.00	67.50	3.20
504.080	80.00	59.00	8.10
500.080	80.00	64.50	6.30
502.080	80.00	69.00	4.20
504.082	82.00	61.00	8.10
500.082	82.00	66.50	6.30
502.082	82.00	71.00	4.20
504.085	85.00	64.00	8.10
500.085	85.00	69.50	6.30
502.085	85.00	74.00	4.20
504.087	87.00	66.00	8.10
500.087	87.00	71.50	6.30
502.087	87.00	76.00	4.20
504.090	90.00	69.00	8.10
500.090	90.00	74.50	6.30
502.090	90.00	79.00	4.20
504.092	92.00	71.00	8.10
500.092	92.00	76.50	6.30
502.092	92.00	81.00	4.20
504.095	95.00	74.00	8.10
500.095	95.00	79.50	6.30
502.095	95.00	84.00	4.20
504.100	100.00	79.00	8.10
500.100	100.00	84.50	6.30
502.100	100.00	89.00	4.20

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
504.105	105.00	84.00	8.10
500.105	105.00	89.50	6.30
502.105	105.00	94.00	4.20
504.108	108.00	87.00	8.10
500.108	108.00	92.50	6.30
502.108	108.00	97.00	4.20
504.110	110.00	89.00	8.10
500.110	110.00	94.50	6.30
502.110	110.00	99.00	4.20
504.115	115.00	94.00	8.10
500.115	115.00	99.50	6.30
502.115	115.00	104.00	4.20
504.120	120.00	99.00	8.10
500.120	120.00	104.50	6.30
502.120	120.00	109.00	4.20
504.125	125.00	104.00	8.10
500.125	125.00	109.50	6.30
502.125	125.00	114.00	4.20
504.127	127.00	106.00	8.10
500.127	127.00	111.50	6.30
502.127	127.00	116.00	4.20
504.130	130.00	109.00	8.10
500.130	130.00	114.50	6.30
502.130	130.00	119.00	4.20
504.132	132.00	111.00	8.10
500.132	132.00	116.50	6.30
502.132	132.00	121.00	4.20
504.135	135.00	110.50	8.10
500.135	135.00	114.00	8.10
502.135	135.00	119.50	6.30
504.140	140.00	115.50	8.10
500.140	140.00	119.00	8.10
502.140	140.00	124.50	6.30
504.145	145.00	120.50	8.10
500.145	145.00	124.00	8.10
502.145	145.00	129.50	6.30
504.150	150.00	125.50	8.10
500.150	150.00	129.00	8.10
502.150	150.00	134.50	6.30
504.155	155.00	130.50	8.10
500.155	155.00	134.00	8.10
502.155	155.00	139.50	6.30
504.160	160.00	135.50	8.10
500.160	160.00	139.00	8.10
502.160	160.00	144.50	6.30
504.165	165.00	140.50	8.10
500.165	165.00	144.00	8.10
502.165	165.00	149.50	6.30
504.170	170.00	145.50	8.10
500.170	170.00	149.00	8.10
502.170	170.00	154.50	6.30
504.175	175.00	150.50	8.10
500.175	175.00	154.00	8.10
502.175	175.00	159.50	6.30
504.180	180.00	155.50	8.10
500.180	180.00	159.00	8.10
502.180	180.00	164.50	6.30
504.185	185.00	160.50	8.10
500.185	185.00	164.00	8.10
502.185	185.00	169.50	6.30
504.190	190.00	165.50	8.10
500.190	190.00	169.00	8.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
502.190	190.00	174.50	6.30
504.195	195.00	170.50	8.10
500.195	195.00	174.00	8.10
502.195	195.00	179.50	6.30
504.200	200.00	175.50	8.10
500.200	200.00	179.00	8.10
502.200	200.00	184.50	6.30
504.205	205.00	180.50	8.10
500.205	205.00	184.00	8.10
502.205	205.00	189.50	6.30
504.210	210.00	185.50	8.10
500.210	210.00	189.00	8.10
502.210	210.00	194.50	6.30
504.215	215.00	190.50	8.10
500.215	215.00	194.00	8.10
502.215	215.00	199.50	6.30
504.220	220.00	195.50	8.10
500.220	220.00	199.00	8.10
502.220	220.00	204.50	6.30
504.230	230.00	205.50	8.10
500.230	230.00	209.00	8.10
502.230	230.00	214.50	6.30
504.240	240.00	215.50	8.10
500.240	240.00	219.00	8.10
502.240	240.00	224.50	6.30
504.250	250.00	225.50	8.10
500.250	250.00	229.00	8.10
502.250	250.00	234.50	6.30
504.260	260.00	235.50	8.10
500.260	260.00	239.00	8.10
502.260	260.00	244.50	6.30
504.270	270.00	245.50	8.10
500.270	270.00	249.00	8.10
502.270	270.00	254.50	6.30
504.280	280.00	255.50	8.10
500.280	280.00	259.00	8.10
502.280	280.00	264.50	6.30
504.290	290.00	265.50	8.10
500.290	290.00	269.00	8.10
502.290	290.00	274.50	6.30
504.300	300.00	275.50	8.10
500.300	300.00	279.00	8.10
502.300	300.00	284.50	6.30
504.310	310.00	285.50	8.10
500.310	310.00	289.00	8.10
502.310	310.00	294.50	6.30
504.320	320.00	295.50	8.10
500.320	320.00	299.00	8.10
502.320	320.00	304.50	6.30
504.330	330.00	302.00	9.50
500.330	330.00	305.50	8.10
502.330	330.00	309.00	8.10
504.340	340.00	312.00	9.50
500.340	340.00	315.50	8.10
502.340	340.00	319.00	8.10
504.350	350.00	322.00	9.50
500.350	350.00	325.50	8.10
502.350	350.00	329.00	8.10
504.360	360.00	332.00	9.50
500.360	360.00	335.50	8.10
502.360	360.00	339.00	8.10
504.370	370.00	342.00	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.370	370.00	345.50	8.10
502.370	370.00	349.00	8.10
504.380	380.00	352.00	9.50
500.380	380.00	355.50	8.10
502.380	380.00	359.00	8.10
504.390	390.00	362.00	9.50
500.390	390.00	365.50	8.10
502.390	390.00	369.00	8.10
504.400	400.00	372.00	9.50
500.400	400.00	375.50	8.10
502.400	400.00	379.00	8.10
504.410	410.00	382.00	9.50
500.410	410.00	385.50	8.10
502.410	410.00	389.00	8.10
504.420	420.00	392.00	9.50
500.420	420.00	395.50	8.10
502.420	420.00	399.00	8.10
504.430	430.00	402.00	9.50
500.430	430.00	405.50	8.10
502.430	430.00	409.00	8.10
504.440	440.00	412.00	9.50

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Groove width L1 0/+0.20
500.440	440.00	415.50	8.10
502.440	440.00	419.00	8.10
504.450	450.00	422.00	9.50
500.450	450.00	425.50	8.10
502.450	450.00	429.00	8.10
504.460	460.00	432.00	9.50
500.460	460.00	435.50	8.10
502.460	460.00	439.00	8.10
504.470	470.00	442.00	9.50
500.470	470.00	445.50	8.10
502.470	470.00	449.00	8.10
504.480	480.00	452.00	9.50
500.480	480.00	455.50	8.10
502.480	480.00	459.00	8.10
504.490	490.00	462.00	9.50
500.490	490.00	465.50	8.10
502.490	490.00	469.00	8.10
504.500	500.00	472.00	9.50
500.500	500.00	475.50	8.10
502.500	500.00	479.00	8.10

The figures highlighted in bold correspond to the dimensions for standard ISO 7425/1, with the bore diameters in line with standard ISO 3320. Other intermediate sizes can be provided.