

PISTON SEALS

BECA

540-549



DESCRIPTION

The BECA 540 profile is a single acting piston seal composed of a profiled, filled PTFE U-ring type seal and a V-spring that is resistant to corrosion.

The BECA 549 profile is specially designed for applications where the seal is in contact with food products. It is characterised by a silicone overmoulding on the inside of the seal, which completely hides the V-spring, thus preventing impurities from accumulating in this hard-to-clean area.

ADVANTAGES

- Wide temperature range and excellent chemical resistance
- Low friction coefficient; no stick-slip effect
- Excellent abrasion resistance
- Good dimensional stability
- Non-toxic material

APPLICATIONS

- Food & Beverage
- Medical
- Pharmaceutical
- Static hydraulics

MATERIALS

- Profiled seal**
 - Carbon-filled PTFE
 - Blue GL PTFE
 - PE-UHMW
- V-Shaped spring**
 - Stainless steel

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

TECHNICAL DATA

Temperature	-200°C / +260°C
Pressure	30 MPa
Speed	15 m/s
Media	Practically all types of fluids, and chemical and gas products

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	30 MPa
1.45	0.20	0.10	0.08	0.05
2.25	0.25	0.15	0.10	0.07
3.10	0.35	0.20	0.15	0.08
4.70	0.50	0.25	0.20	0.10
6.10	0.60	0.30	0.25	0.12
9.50	0.90	0.50	0.40	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

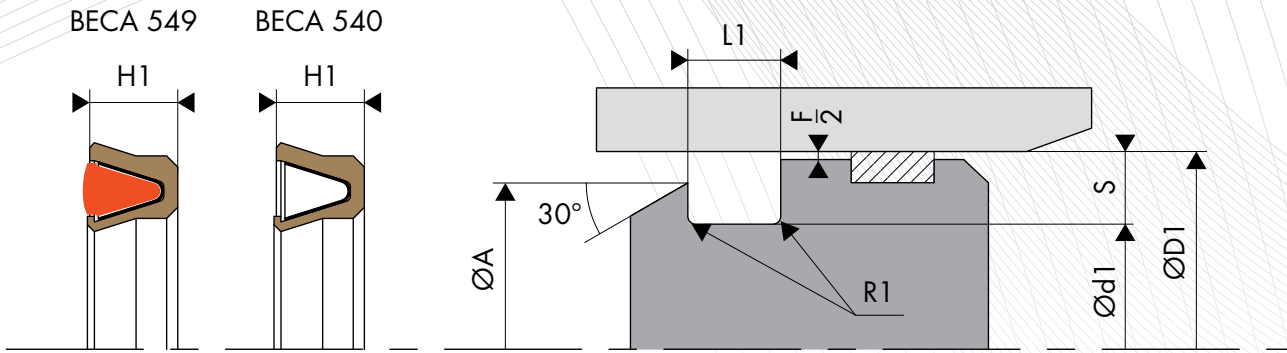
CHAMFERS AND RADIUS

Radial section S	Radius R1	Chamfer C
1.45	0.40	3.00
2.25	0.40	3.00
3.10	0.60	3.00
4.70	0.80	3.00
6.10	0.80	3.50
9.50	0.80	6.50

TABLE MATERIALS

Profiled seal					V-spring			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	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
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	I	X10 Cr Ni 18-8	-200°C/+260°C	
CG	C	PTFE + 23% Carbon + 2% Graphite	Black	Good resistance to chemical products Thermal and electrical conductivity Anti-static High-performing in compression-based dynamic applications	I	X10 Cr Ni 18-8	-200°C/+260°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	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
VM	M	PTFE + 15 % Glass + 5% MOS2	Grey	Maintains its chemical and dielectric properties Well-suited to applications with rotational and simultaneous alternating movements	I	X10 Cr Ni 18-8	-200°C/+260°C	
DX	X	PTFE GL Blue + Glass + Metal oxides	Turquoise blue	Resistance to compression Resistance to wear Excellent chemical stability Good thermal conductivity	I	X10 Cr Ni 18-8	-200°C/+260°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	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Stainless steel Chrome steel Aluminium Bronze Cast iron Treated surface
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	I	X10 Cr Ni 18-8	-200°C/+260°C	
K2	K	PTFE + 20% Ekonol	Light brown	Use up to +300°C Good friction coefficient and low permeability	I	X10 Cr Ni 18-8	-200°C/+260°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	I	X10 Cr Ni 18-8	-200°C/+260°C	Steel Chrome steel Cast iron
B4	B	PTFE + 40% Bronze	Dark brown	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	I	X10 Cr Ni 18-8	-200°C/+260°C	
HG	HG	PE-UHMW	White or off-white	Excellent wear resistance on contact with water and air	I	X10 Cr Ni 18-8	-70°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

Series	Bore diameter ØD1 H9		Groove diameter	Groove width	Radial section	Step height
	Standard range	Extended range	Ød1 h9	L1 0/+0.20	S	ØD1 - A
540.0*	6.0 - 13.9	6.0 - 40.0	D1 - 2.90	2.40	1.45	0.4
540.1	14.0 - 24.9	10.0 - 200.0	D1 - 4.50	3.60	2.25	0.6
540.2	25.0 - 45.9	16.0 - 400.0	D1 - 6.20	4.80	3.10	0.7
540.3	46.0 - 124.9	28.0 - 700.0	D1 - 9.40	7.10	4.70	0.8
540.4	125.0 - 999.9	45.0 - 999.9	D1 - 12.20	9.50	6.10	0.9
540.5	1000.0 - 2500.0	100.0 - 2500.0	D1 - 19.00	15.00	9.50	0.9

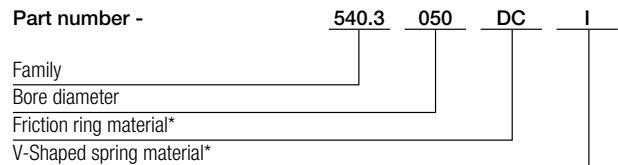
For special applications > 30 MPa, we recommend using an H8/f8 tolerance (bore/piston) or selecting other, more suitable materials. Please contact our experts.

*Only BECA 540.0 profiles are fitted with an O'Ring instead of a V-spring.

○ EXAMPLE OF CODIFICATION

STANDARD CODIFICATION

Materials _____ : PTFE + 25% Carbon profiled seal - Code DC
 _____ : Stainless steel V-Shaped spring - Code I
Bore diameter _____ : ØD1 = 50.00 mm
Groove diameter _____ : Ød1 + 40.60 mm
Part number _____ : 540.3050DCI



* 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	Seal height H1	Groove width L1 0/+0.20
540.0008	8.00	5.10	2.10	2.40
540.0010	10.00	7.10	2.10	2.40
540.0012	12.00	9.10	2.10	2.40
540.1014	14.00	9.50	3.30	3.60
540.1015	15.00	10.50	3.30	3.60
540.1016	16.00	11.50	3.30	3.60
540.1017	17.00	12.50	3.30	3.60
540.1018	18.00	13.50	3.30	3.60
540.1020	20.00	15.50	3.30	3.60
540.1022	22.00	17.50	3.30	3.60
540.1024	24.00	19.50	3.30	3.60
540.2025	25.00	18.80	4.40	4.80
540.2026	26.00	19.80	4.40	4.80
540.2028	28.00	21.80	4.40	4.80
540.2030	30.00	23.80	4.40	4.80
540.2032	32.00	25.80	4.40	4.80
540.2035	35.00	28.80	4.40	4.80
540.2384	38.40	32.20	4.40	4.80
540.2040	40.00	33.80	4.40	4.80
540.2042	42.00	35.80	4.40	4.80
540.2045	45.00	38.80	4.40	4.80
540.3046	46.00	36.60	6.50	7.10
540.3048	48.00	38.60	6.50	7.10
540.3049	49.00	39.60	6.50	7.10
540.3050	50.00	40.60	6.50	7.10
540.3052	52.00	42.60	6.50	7.10
540.3053	53.00	43.60	6.50	7.10
540.3055	55.00	45.60	6.50	7.10
540.3056	56.00	46.60	6.50	7.10
540.3058	58.00	48.60	6.50	7.10
540.3060	60.00	50.60	6.50	7.10
540.3061	61.00	51.60	6.50	7.10
540.3063	63.00	53.60	6.50	7.10
540.3064	64.00	54.60	6.50	7.10
540.3065	65.00	55.60	6.50	7.10
540.3067	67.00	57.60	6.50	7.10
540.3068	68.00	58.60	6.50	7.10
540.3070	70.00	60.60	6.50	7.10
540.3072	72.00	62.60	6.50	7.10
540.3074	74.00	64.60	6.50	7.10
540.3075	75.00	65.60	6.50	7.10
540.3078	78.00	68.60	6.50	7.10
540.3080	80.00	70.60	6.50	7.10
540.3083	83.00	73.60	6.50	7.10
540.3085	85.00	75.60	6.50	7.10
540.3086	86.00	76.60	6.50	7.10
540.3090	90.00	80.60	6.50	7.10
540.3092	92.00	82.60	6.50	7.10
540.3095	95.00	85.60	6.50	7.10
540.3098	98.00	88.60	6.50	7.10
540.3100	100.00	90.60	6.50	7.10
540.3105	105.00	95.60	6.50	7.10
540.3108	108.00	98.60	6.50	7.10

Part number	Bore diameter ØD1 H9	Groove diameter Ød1 h9	Seal height H1	Groove width L1 0/+0.20
540.3110	110.00	100.60	6.50	7.10
540.3115	115.00	105.60	6.50	7.10
540.3120	120.00	110.60	6.50	7.10
540.4125	125.00	112.80	8.80	9.50
540.4130	130.00	117.80	8.80	9.50
540.4135	135.00	122.80	8.80	9.50
540.4140	140.00	127.80	8.80	9.50
540.4145	145.00	132.80	8.80	9.50
540.4150	150.00	137.80	8.80	9.50
540.4155	155.00	142.80	8.80	9.50
540.4160	160.00	147.80	8.80	9.50
540.4165	165.00	152.80	8.80	9.50
540.4170	170.00	157.80	8.80	9.50
540.4175	175.00	162.80	8.80	9.50
540.4180	180.00	167.80	8.80	9.50
540.4185	185.00	172.80	8.80	9.50
540.4190	190.00	177.80	8.80	9.50
540.4195	195.00	182.80	8.80	9.50
540.4200	200.00	187.80	8.80	9.50
540.4205	205.00	192.80	8.80	9.50
540.4210	210.00	197.80	8.80	9.50
540.4215	215.00	202.80	8.80	9.50
540.4220	220.00	207.80	8.80	9.50
540.4225	225.00	212.80	8.80	9.50
540.4230	230.00	217.80	8.80	9.50
540.4235	235.00	222.80	8.80	9.50
540.4240	240.00	227.80	8.80	9.50
540.4245	245.00	232.80	8.80	9.50
540.4250	250.00	237.80	8.80	9.50
540.4255	255.00	242.80	8.80	9.50
540.4260	260.00	247.80	8.80	9.50
540.4264	264.00	251.80	8.80	9.50
540.4265	265.00	252.80	8.80	9.50
540.4270	270.00	257.80	8.80	9.50
540.4275	275.00	262.80	8.80	9.50
540.4280	280.00	267.80	8.80	9.50
540.4285	285.00	272.80	8.80	9.50
540.4290	290.00	277.80	8.80	9.50
540.4295	295.00	282.80	8.80	9.50
540.4300	300.00	287.80	8.80	9.50
540.4305	305.00	292.80	8.80	9.50
540.4310	310.00	297.80	8.80	9.50
540.4315	315.00	302.80	8.80	9.50
540.4320	320.00	307.80	8.80	9.50
540.4325	325.00	312.80	8.80	9.50
540.4350	350.00	337.80	8.80	9.50
540.4360	360.00	347.80	8.80	9.50
540.4400	400.00	387.80	8.80	9.50
540.4420	420.00	407.80	8.80	9.50
540.4450	450.00	437.80	8.80	9.50
540.4480	480.00	467.80	8.80	9.50
540.4500	500.00	487.80	8.80	9.50

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