



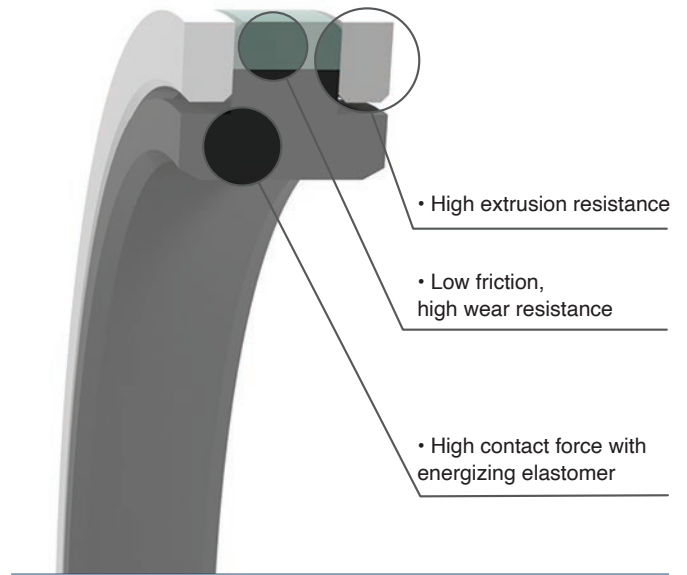
►K19

Heavy Duty Piston Seal

K19 is a double-acting piston seal consisting of a PTFE sealing ring, an elastomer energizer, and two thermoplastic backup rings. Designed for heavy-duty applications, it offers reliable performance under high pressure and large extrusion gaps. The backup rings can be manufactured from various thermoplastic materials with enhanced mechanical properties depending on system requirements.

The elastomer energizer provides consistent preload over time, while its optimized geometry ensures even force distribution on the PTFE ring. This design helps maintain stable sealing performance and prevents rotation within the groove.

- High extrusion resistance
- Low friction, high wear resistance
- High contact force with energizing elastomer



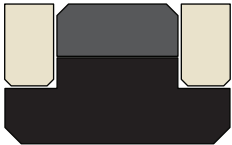
K19X Ultimate Piston Seal

- Wide operating temperature range (-40/+150 °C)
- Operates under pressures up to 600 bar

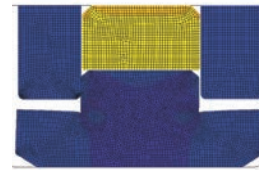
HB8005 Low Temperature HNBR

PT6023 Abrasion Resistant Carbon Fiber Filled Modified PTFE

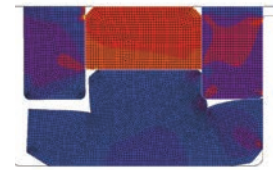
PA9910 High Temperature Resistant PA



K19 Finite Element Analysis



Pressure: 0 bar
Extrusion gap «S»: 0.5 mm



Pressure: 250 bar
Extrusion gap «S»: 0.5 mm

Finite Element Analysis (FEA) results demonstrate that K19 features a reliable design and material structure, even under high extrusion gaps and elevated pressure conditions. In systems where extrusion gaps are large and temperatures are high, the use of alternative material types ensures extended service life.

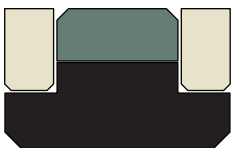
K19L Low Temperature Piston Seal

- Wide operating temperature range (-40/+120 °C)
- Operates under pressures up to 600 bar

NB8010 Low Temperature NBR

PT6003 High Performance Bronze Filled PTFE

PA9910 High Temperature Resistant PA



► K19

Heavy Duty Piston Seal



Advantages

- Good sealing effect
- High extrusion resistance
- Low friction, free of stick slip
- Long service life
- High sliding speed

Application

- Construction machinery
- Excavators
- Presses
- Injection moulding machines
- Heavy duty hydraulic cylinders

Operating Conditions (PT6003)

MOTION:	Linear
PRESSURE (bar):	400 bar (max)
SPEED (m/s):	1.5 m/s (max)
TEMPERATURE (°C):	-30/+100 °C
MEDIA TYPE:	Mineral Oils

NOTE: It is recommended to choose K19X for high temperature applications and K19L for low temperature applications. NOTE: The above values (speed, pressure, temperature) are maximum values, all cannot be used at the same time.

Operating Conditions (PT5505)

MOTION:	Linear	
PRESSURE (bar):	400 bar (max)	
SPEED (m/s):	1.5 m/s (max)	
TEMPERATURE (°C):	+5/+60 °C	-30/+60 °C
MEDIA TYPE:	HFA/HFB	HFC

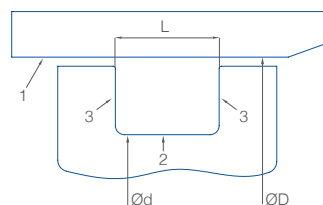
NOTE: The are the values for PTFE ring with PT5505 material and elastomer ring with NB8001 material. The above values (speed, pressure, temperature) are maximum values, all cannot be used at the same time.

Material Information

Sealing Ring	Energizer Ring	Back-up Ring	Remarks
PTFE-PT6003	Elastomer-NB8001	POM PM9901	Standard produced material code
PTFE-PT6023	Elastomer-HB8005	Thermoplastic PA9910	K19X is recommended for high temperature applications.
PTFE-PT6003	Elastomer-NB8010	Thermoplastic PA9910	K19X is recommended for low temperature applications.

Note: In the special application conditions (temperature, media, etc.) Can be produced from different materials. Table 2.6 for details, you can refer to Table 2.7 and Table 2.8, or you can contact the sales department.

Surface Roughness



	1 (rod)	2 (groove base)	3 (groove flanks)
Ra	0.1-0.3 µm	0.2-1.6 µm	0.2-3.2 µm
Rmax	< 2 µm	< 6.3 µm	< 15 µm
Rmr	When C = 0.25xRz on the dynamic work surface and reference line C _{ref} = 5% , the working surface contact area should be approximately between 60% and 90%.		

Sample Design



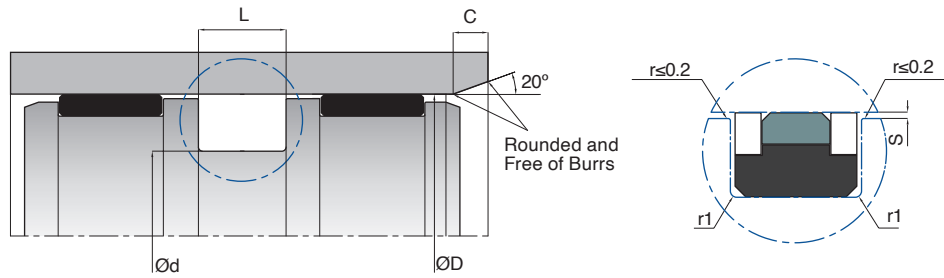
NOTES: In heavy duty applications, together with composite bearings at the piston head, it is recommended to add PTFE guide elements to both sides of the piston head to protect the main seal from contamination in the oil.

Installation Information

Using piston seal installation tools is recommended. Particularly, it should be avoided that the outer surface of the PTFE ring component of the sealing element is damaged. It is very important that the assembly tools must be of soft material and have no sharp edges. Before installation the sealing element must be oiled with system oil. In case of conical installation tool is not in use, tube chamfers should be according to catalogue values. (See Installation instructions - Page 51-57)



K19 Heavy Duty Piston Seal



Cross Section (mm)	Max. Permissible Sealing Gap Value "S _{max} " (mm) for K19					The S _{max} value given here should be calculated from the extrusion gap formula on page 64. It is recommended to select the extrusion gap value below S _{max} values.
	160 bar	250 bar	320 bar	400 bar	600 bar	
≤7.5	0.8	0.7	0.5	0.4	0.25	
≤11.5	1.2	1	0.6	0.5	0.3	

KASTAŞ NO	D (H8)	d (h9)	L (+0.2/-0)	r1	C	KASTAŞ CODE
K19 050-036	50	36	9	0.3	6.5	10003511
K19 055-041	55	41	9	0.3	6.5	10003513
K19 060-046	60	46	9	0.3	6.5	10003514
K19 060-050	60	50	8	0.3	5	10003518
K19 063-048	63	48	11	0.5	7.5	10003519
K19 065-050	65	50	11	0.5	7.5	10003520
K19 070-055	70	55	11	0.5	7.5	10003522
K19 075-060	75	60	11	0.5	7.5	10003525
K19 080-065	80	65	11	0.5	7.5	10003528
K19 085-070	85	70	11	0.5	7.5	10003532
K19 090-075	90	75	11	0.5	7.5	10003533
K19 095-080	95	80	11	0.5	7.5	10003537
K19 100-085	100	85	12.5	0.5	7.5	10003539
K19 105-090	105	90	12.5	0.5	7.5	10003544
K19 105-090/1	105	90	13.5	0.5	7.5	10003547
K19 105-090/2	105	90	14	0.5	7.5	10003548
K19 110-095	110	95	12.5	0.5	7.5	10003549
K19 115-100	115	100	12.5	0.5	7.5	10003553
K19 120-105	120	105	12.5	0.6	7.5	10003556
K19 125-102	125	102	16	0.6	11.5	10003560
K19 125-110	125	110	12.5	0.6	7.5	10003565
K19 130-107	130	107	16	0.6	11.5	10003566
K19 135-112	135	112	16	0.6	11.5	10003568
K19 140-117	140	117	16	0.6	11.5	10003570
K19 145-122	145	122	16	0.6	11.5	10003577
K19 150-127	150	127	16	0.6	11.5	10003579
K19 150-130	150	130	18	0.6	10.5	10003581
K19 150-135	150	135	12.5	0.6	7.5	10003582
K19 155-132	155	132	16	0.6	11.5	10003583
K19 160-137	160	137	16	0.6	11.5	10003584
K19 160-141.5	160	141.5	19	0.6	10.5	10003588
K19 160-145	160	145	12.5	0.6	7.5	10003589
K19 165-142	165	142	16	0.6	11.5	10003590
K19 165-145	165	145	17	0.6	10.5	10003592
K19 170-147	170	147	16	0.6	11.5	10003593
K19 170-155	170	155	16	0.6	7.5	10003594
K19 180-157	180	157	16	0.6	11.5	10003595
K19 180-160	180	160	18	0.6	10.5	10003597
K19 200-177	200	177	16	0.6	11.5	10003600
K19 225-202	225	202	16	0.6	11.5	10003605
K19 240-217	240	217	16	0.6	11.5	10003607
K19 260-232	260	232	17.5	0.6	10.5	10003610
K19 270-242	270	242	17.5	0.6	10.5	10003611
K19 280-252	280	252	17.5	0.6	10.5	10003612
K19 290-270	290	270	16	0.6	10.5	10003613
K19 360-332	360	332	17.5	0.6	10.5	10003614