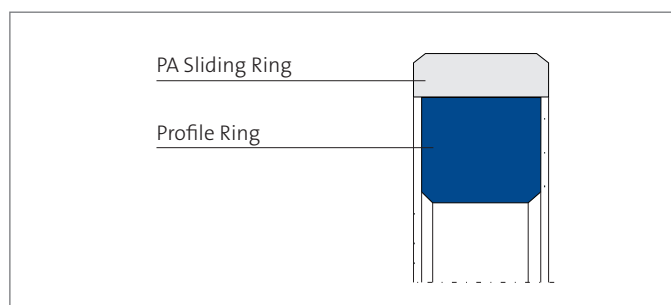


COMPACT SEAL HDP330

The HDP330 piston seal is a two-piece seal set consisting of a PA sliding ring and an elastomer profile ring as an energizing element.



Application

The HDP330 is used in pistons pressurized on both sides. Preferably suitable for construction machinery and agricultural machinery for extreme conditions, such as pressure shocks. Use also in material handling, especially when cold drawn tubes are provided for low cost cylinders. In addition, HDP330 is used in hydraulic pumps, especially for small housings and high pressures.

Material

Sliding Ring

Material	Designation
Fiberglass filled, modified Polyamide	PA 4112

Energizing Element

Material	Designation
Nitrile Rubber	70 NBR 177605

HNBR as an energizing element on request.



VALUE TO THE CUSTOMER

- Well suited for extreme operating conditions, including working pressures up to 60 MPa
- Particularly high abrasion resistance ensures long maintenance intervals, even with lower quality counter surfaces
- Highest resistance to gap extrusion
- Dynamic and static tightness analogous to PTFE piston seals
- Stepped cut in the seal ring simplifies installation in closed piston groove
- Rectangular energizing element generates a constantly high contact pressure and offers high protection against twisting in the installation space
- Mounting in standardized installation spaces according to DIN ISO 7425-1



TECHNICAL PROPERTIES

Operating Conditions

Material	PA 4112 / 70 NBR 177605
Hydraulic Oils, HL, HLP	−30 ... +100 °C
HFA Fluids	+5 ... +55 °C
HFB Fluids	+5 ... +60 °C
HFC Fluids	−30 ... +60 °C
HFD Fluids	–
Water	–
HETG (rape-seed oil)	−30 ... +60 °C
HEES (synth. ester)	−30 ... +80 °C
HEPG (glycol)	−30 ... +80 °C
Mineral Greases	−30 ... +100 °C
Pressure	60 MPa
Sliding Speed	0,8 m/s

The figures given are maximum values and must not be applied simultaneously.

Surface Finish

Roughness Depth	Pressure	R_a	R_{max}
Sliding Surface	≤26 MPa	0,05 ... 0,5 μm	≤5,0 μm
	≤60 MPa	0,05 ... 0,3 μm	≤2,5 μm
Groove		≤1,6 μm	≤6,3 μm
Groove Sides		≤3,0 μm	≤15,0 μm

Material content M_i > 50 % to max. 90 %, with cut depth $c = R_z/2$ and reference line $Cr_{ef} = 0$ %. Rougher surfaces in combination with high stroke frequency can lead to oil reduction in the sealing gap

Gap Dimension

The maximum permissible extrusion gap with a one-sided position of the piston is significantly determined by the maximum operating pressure and the temperature-dependent dimensional stability of the seal material. Please also consult our Technical Manual.

Inst. Dim. L [mm]	Maximum Permissible Gap Dimension [mm] @					
	16 MPa	26 MPa	32 MPa	40 MPa	50 MPa	60 MPa
3,2	0,5	0,5	0,5	0,45	0,35	0,3
4,2	0,55	0,55	0,55	0,5	0,4	0,35
6,3	0,75	0,75	0,75	0,7	0,55	0,5
8,1	1,0	1,0	1,0	0,95	0,75	0,65

These gap dimensions apply to the upper operating temperature of $T_{max} = 100$ °C, the tolerance recommendations for cylinder, groove and guide element. Further information in our technical manual.

Tolerances

Nominal Ø D	D	d
≤250 mm	H9	h9

Design Notes

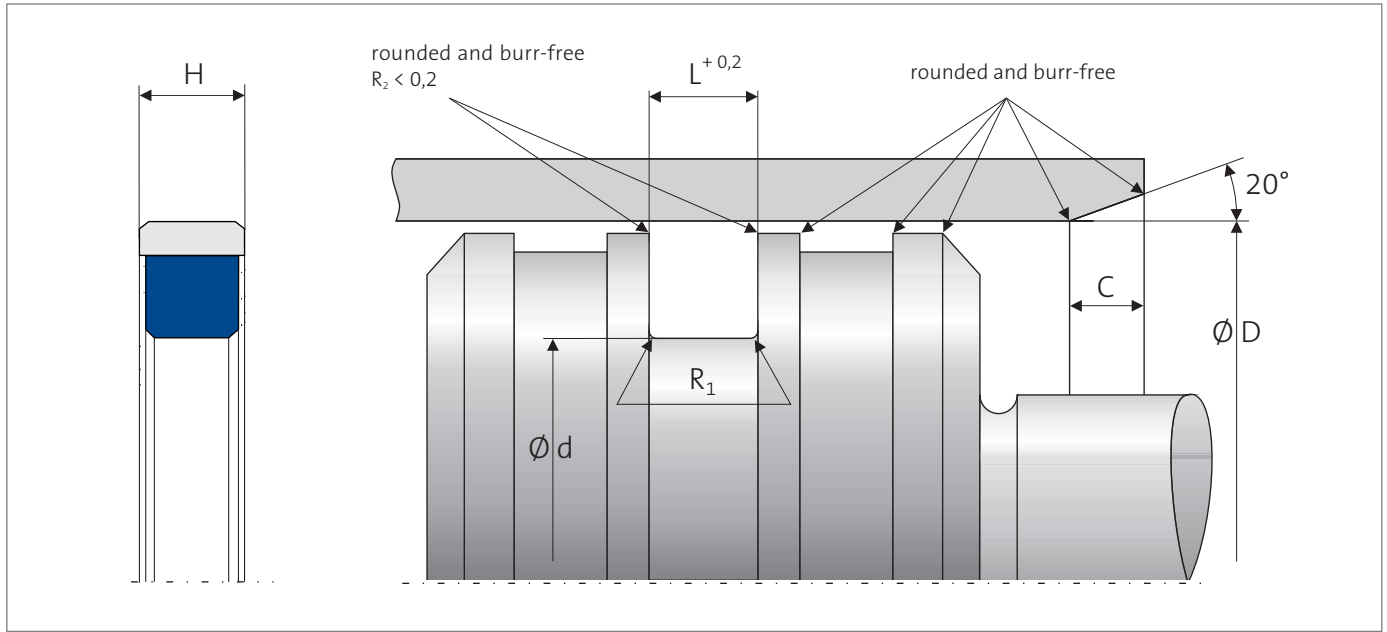
Please note our general design remarks in our Technical Manual.

Installation & Assembly

A prerequisite for the proper functioning of the seal is careful installation. Further information in our Technical Manual.



PISTON DESIGN



The information contained herein is believed to be reliable, but no representation, guarantees or warranties of any kind are made to its accuracy or suitability for any purpose. The information presented herein is based on laboratory testing and does not necessarily indicate end product performance. Full scale testing and end product performance are the responsibility of the user.

www.fst.com