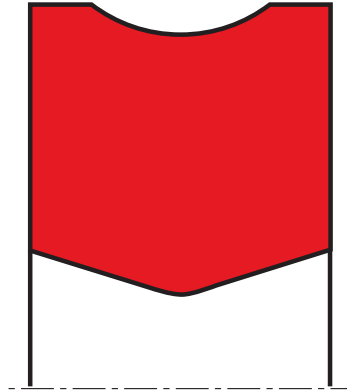


rod seal S35-P

seal spec



description

compact rod seal with almost no dead spots as required for applications in food and pharma industry, also commonly used as O-Ring replacement, because design with interference fit on outside diameter maintains non-twisting in dynamic applications.

- asymmetric double-acting rod compact seal. the preload is achieved by the internal stress of the seal material.
- interference fit on the outside diameter.
- various materials are available for different purposes.
- snaps into simple grooves (see notes on installation).
- good sealing effect across a wide temperature range.
- for pressures up to 400 bar as a seal between pressurised space and atmosphere or between pressurised spaces.
- good sealing in the low pressure range.
- excellent static sealing.
- only few dead spots.
- the housing grooves are same as housing grooves for O-rings (see "range of profile sizes")
- no twisting in dynamic applications.
- space-saving design.

application



not bolded symbols; please consult our technical for application limitations

category of profile

machined or molded/standard/trade product.

double acting

the S35-P seal is designed for use as a piston seal.

area of application: hydraulics

- static and dynamic seals in hydraulic systems.
- use in systems with O-ring grooves instead of O-rings in case of stability problems (twisting) or "pumping".
- for food and pharma applications or as a valve seal.

note

- decreasing preload in rotary applications is necessary because of high friction.
- a design in rubber materials is not recommendable because of the geometry (use S20-R).

function

S35-P profiles are compact seals designed to seal pressurised space against the atmosphere or between pressurised spaces mainly for reciprocating movements, but for slight rotations as well. the design is based on application in standard hydraulic systems with conventional hydraulic oils. the operating parameters are as defined in the sealing data sheet and material data. requirements deviating from these parameters can be met to a certain degree by changing the geometry in the software program.

**operating parameters & material**

diameter range: up to 600 mm

material	temperature	max. surface speed	max. pressure ¹	hydrolysis	dry running	wear resistance
s-mart PU	-30 °C ... +110 °C	0,4 m/s	400 bar (40 MPa)	-	+	++
s-mart HPU	-20 °C ... +110 °C	0,4 m/s	400 bar (40 MPa)	++	+	++
s-mart LTPU	-50 °C ... +110 °C	0,4 m/s	400 bar (40 MPa)	-	+	++
s-mart SPU	-20 °C ... +110 °C	0,5 m/s	400 bar (40 MPa)	++	++	++
s-mart GPU	-30 °C ... +110 °C	0,4 m/s	400 bar (40 MPa)	++	+	++

the stated operation conditions represent general indications. it is recommended not to use all maximum values simultaneously.

surface speed limits apply only to the presence of adequate lubrication film.

¹ pressure ratings are dependent on the size of the extrusion gap.

++ ... particularly suitable o ... conditional suitable
+ ... suitable - ... not suitable

for detailed information regarding chemical resistance please refer to our „list of resistance“. for increased chemical and thermal resistance rubber materials in other sealing systems are to be preferred, attention should be paid to restrictions for pressure range and wear resistance. for higher gliding speeds another system should be used (e.g. PTFE materials).

gap dimension

operating pressure	cs = (ØD - Ød)/2 mm					
	4	5	7,5	10	12,5	15
	safe extrusion gap (mm)					
100 bar (10 MPa)	0,18	0,22	0,32	0,38	0,45	0,53
200 bar (20 MPa)	0,12	0,16	0,25	0,33	0,40	0,45
300 bar (30 MPa)	0,07	0,13	0,21	0,28	0,36	0,42
400 bar (40 MPa)	0,05	0,10	0,19	0,26	0,33	0,39

important note:

the above data are maximum value and can't be used at the same time. e.g. the maximum operating speed depend on material type, pressure, temperature and gap value. temperature range also dependent on medium.

the table applies to an operating temperature of 70 °C.

surface quality

surface roughness	Rtmax (µm)	Ra (µm)
sliding surface	≤2,5	≤0,1-0,5
bottom of groove	≤6,3	≤1,6
groove face	≤15	≤3

tolerance recommendation

seal housing tolerances	
Ød	f8
ØD	H10

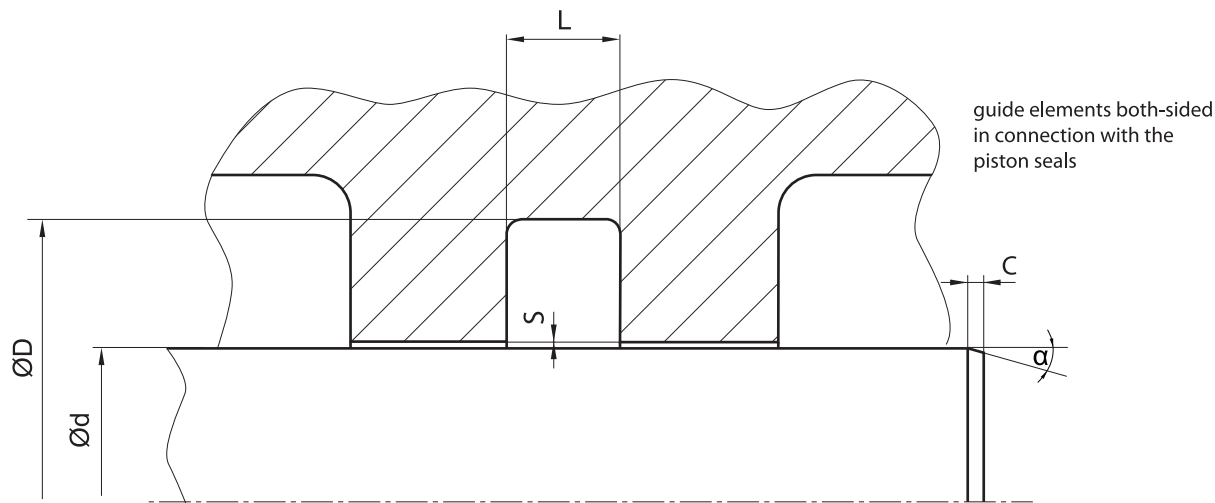
mode of installation

for inside diameters of 25 mm or more, and dependant on the radial cross section (cs), the seal can be snapped into the housing.

Ød	type of installation
≤ 4•cs	open mounting space required
> 4•cs ≤ 6•cs	snap mounting with tool
> 6•cs	snap mounting by hand



recommended mounting space:



recommended guide tolerance D1:

in most cases the guiding elements are integrated in the piston seal system on both sides. if not use below recommendations for D1 (=inside diameter of the guiding elements):

d f8 [mm]	p ≤ 100 [bar]	100 < p ≤ 200 [bar]	p > 200 [bar]
≤ 100	H10	H8	H8
> 100 ≤ 200	H10	H8	H7
>200	H9	H8	H7

insertion chamfer:

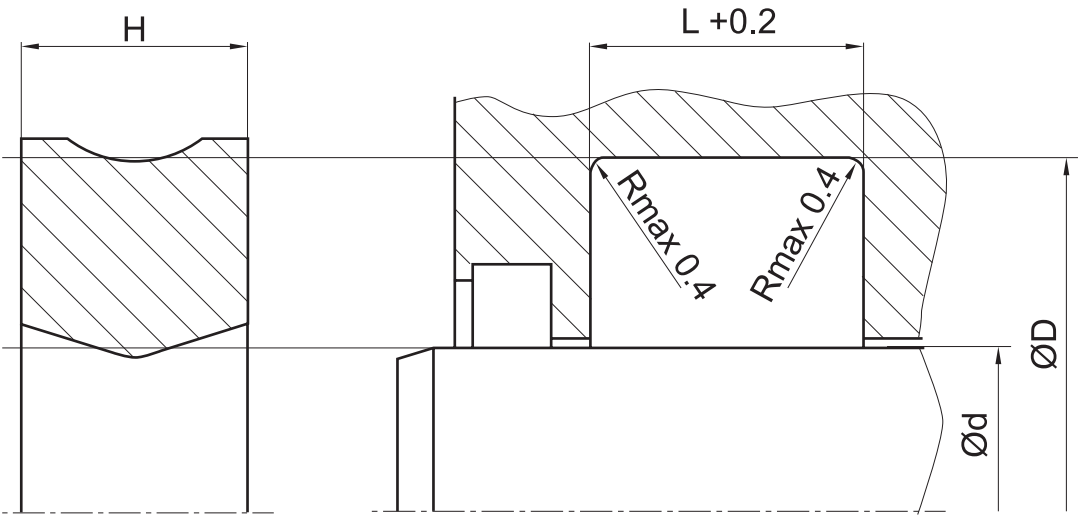
in order to avoid damage to the rod seal during installation, the piston rod is to be chamfered and rounded as shown in the “recommended mounting space” drawing. the size of chamfer depends on the seal type and profile width.

cs (mm)	c (mm)	
	α = 15° ... 20°	α = 20° ... 30°
(2)	2	1
(3)	3	1,5
4	3,5	2
5	4	2,5
6	4,5	3
7,5	5	4
10	6	5
12,5	8,5	6,5
15	10	7,5
20	13	10



seal & housing recommendations

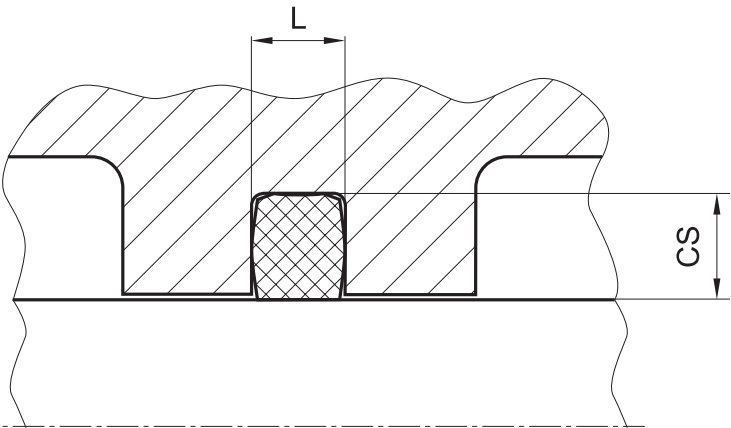
please note that we are able to produce those profiles to your specific need or any non standard housing. for detail measurements, please see seal-mart catalog...



we recommed the following values for cross sections and housing heights in accordance to the diameter range:

Ød [mm]	cs = (ØD - Ød)/2 [mm]	L [mm]
5 – 9.9	2.5	4
10 – 24.9	3	4.5
25 – 49.9	4	5.5
50 – 99.9	5	6.5
100 – 149.9	7.5	9.5
150 – 299.9	10	12.5
300 – 499.9	12.5	15
500 – 700	15	17.5
>700	20	22

fitted:



don't hesitate to contact our technical department for further information or for special requirements (temperature, speed etc.), so that suitable materials and/or designs can be recommended.