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ECONOMOS®



X-SLIDE seals
standard dimensions catalogue

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Introduction

General description X-SLIDE seal range

ECONOMOS® “X-SLIDE seal range” is the new family of elastomerically energized sealing elements in the special newly developed hard grade polyurethane materials X-ECOPUR®-57D, XH-ECOPUR®-60D and XS-ECOPUR®-57D. Comparable elastomeric energized PTFE sealing elements (with many trade names and brands but mainly known as sliding seals, step seals or composite seals) have been standard sealing elements in hydraulic cylinders for many years. These PTFE sealing systems fulfil the demands of low friction and stick-slip free operation very well, but often they cannot stand up against increasing technological requirements, especially with regard to wear resistance, leakage behaviour and ease of installation and assembly.

The newly developed X-SLIDE seal range meets all the necessary requirements:

- Low friction and no stick-slip behaviour
- Outstanding leakage performance
- Superior extrusion and wear characteristics
- Excellent installation and assembly properties

Due to these criteria, seals based on these special polyurethanes are an ideal replacement for conventional PTFE based composite seals, provided that the temperature range or pressure fluid are within the recommended operating envelope (see technical data on pages 12, 20, 24, 30). In the event that high temperatures or uncommon fluids are used, please see Economos® F-SLIDE seal range on pages 34 - 57.

The improved wear resistance achieved by the use of X-SLIDE seals made from X-ECOPUR® materials will not only lead to extended lifetimes compared to PTFE systems, but also have lower demands of surface roughness. Furthermore, the better extrusion resistance allows larger component tolerances (extrusion gaps) than comparable PTFE seals, which gives our customers the advantage of more economical production of their components.

Owing to the innovative ECONOMOS® manufacturing system, X-SLIDE sealing elements are available in single units as well as short runs on a just-in-time basis. Furthermore, due to the thermoplastic structure of the material, any seal profile can also be produced in high quantities by injection moulding (unlike PTFE), thereby providing significant cost savings.

Summary Seals and sealing elements manufactured from X-ECOPUR® materials are suitable for higher pressures or larger extrusion gaps than PTFE seals and have an outstanding wear resistance leading to longer lifetimes. These benefits along with the installation, assembly, low speed operation and sealability advantages ensure that fluid power sealing has truly entered the 21st century.

Comparison X-ECOPUR® vs. PTFE materials

Material comparison

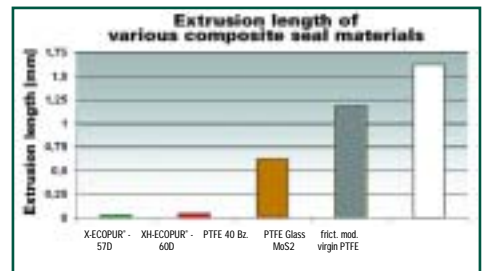
PTFE	TEST PARAMETERS	X-ECOPUR®
+	• Installation properties	+++++
+++++	• Friction / Stick-slip effect	++++
++	• Leakage behaviour	+++++
+++	• Wear characteristics	+++++
+++	• Pressure resistance	+++++

Extensive test rig investigations and finite element analysis have shown that seals based on these special polyurethanes are an ideal replacement of PTFE composite seals for most common fluid power systems.

The following shows a summary of our comparative tests:

Pressure resistance / wear characteristics:

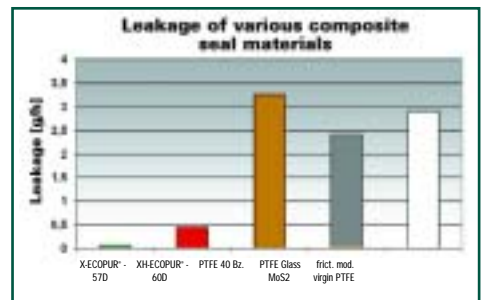
ECONOMOS® X-ECOPUR® variations show superior extrusion and wear characteristics. They are capable of higher pressure ranges and respectively larger extrusion gaps than comparable PTFE systems and have, due to their superior wear characteristics, a higher lifetime.



Extrusion length of composite seal materials

Leakage behaviour:

The requirement of low rod sealing leakage with PTFE seals is normally only obtained by fitting seals in costly multipart solutions (tandem arrangement) or in combination with a secondary lip seal. The superior low leakage-values of ECONOMOS® X-ECOPUR® materials make these seal profiles - even without multipart solutions - ideal for all hydraulic applications.

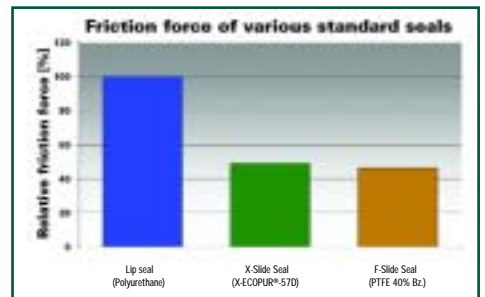


Leakage of various composite seal materials

Friction / Stick-slip effect

Based on the excellent tribological properties of the new X-ECOPUR® grades, the friction force of X-SLIDE seals are on the level of high-grade PTFE seals and less than 50% of standard polyurethane lip seals. Extensive tests showed also that the Stick-Slip performance of the X-SLIDE series is absolutely comparable to standard PTFE sealing systems.

Wherever friction is an issue - X-SLIDE is the right choice.



Relative friction force of standard rod seals (rod Ø50mm)

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Comparison X-ECOPUR® vs. PTFE materials

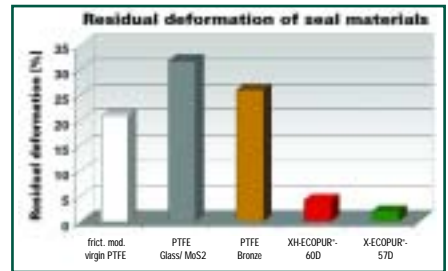
ECONOMOS® vs PTFE

PTFE	TEST PARAMETERS	X-ECOPUR®
+	Installation properties	+++++
+++++	• Friction / Stick-slip effect	++++
++	• Leakage behaviour	+++++
+++	• Wear characteristics	+++++
+++	• Pressure resistance	+++++

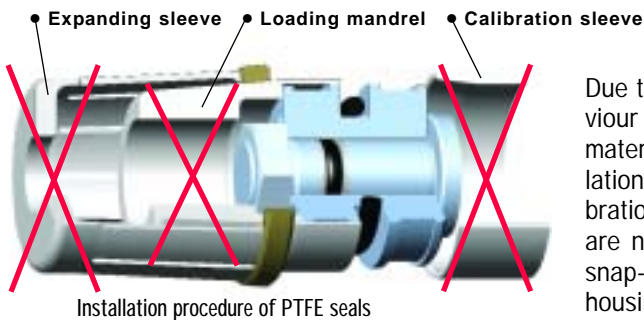
A major factor in the consideration of PTFE sealing systems is the problem associated with installation and assembly. These factors are due to the inert nature of PTFE materials. The elastomeric ECONOMOS® X-SLIDE seals overcome these problem.

The following shows a summary of our comparative tests:

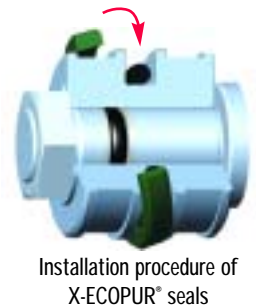
Installation properties / assembly:
 Compared to PTFE solutions, ECONOMOS® X-ECOPUR® composite seals show the same material hardness but considerably lower residual deformation and need lower mounting forces. An additional benefit is the resistance to damage on assembly and installation, which can be a major problem with PTFE compounds. Also, there is no requirement for sizing or calibrating the seals after assembly.



Residual deformation of sealing materials

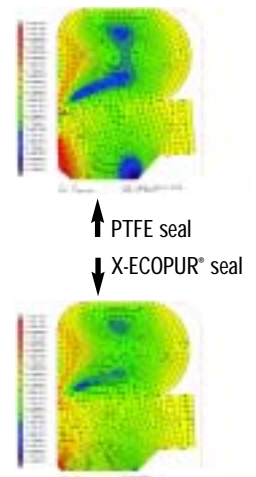


Due to the excellent deformation behaviour of the ECONOMOS® X-ECOPUR® materials, the complex and costly installation tools such as expanding and calibration sleeves and loading mandrels are no longer needed. You can simply snap-in or stretch over the seals into the housing without any tools (see right).







Comparison of X-ECOPUR® and PTFE materials with FEA Analysis

The well known principle of the PTFE - geometry with its step design of the dynamic sealing surface is also used for the new range of X-SLIDE seals, small modifications of the X-ECOPUR® design amplify the improvements which are created by the excellent properties of the material. The pictures (see right) of a FE analysis show the difference. Owing to the higher flexibility of the material compared with PTFE compounds, the new X-SLIDE seals show a very regular stress/strain allocation under a load of up to several hundred bar. The dynamic sealing edge especially is not as highly loaded as at the PTFE design which leads to minimum of wear and a long operation life at simultaneously excellent sealing performance. Also the extrusion endangered heel area of the seal shows a strong stress reduction which leads to an excellent extrusion resistance and an optimised back pumping ability.



Standard material combinations for X-SLIDE seals

Standard material combinations

	X-ECOPUR®-57D / NBR70* <small>green black</small>	-30°C to +100°C	Standard hard grade polyurethane material for mineral oil based hydraulic fluids. Outstanding leakage behaviour, superior extrusion and wear characteristics, very good installation and assembly properties.
	XH-ECOPUR®-60D / NBR70* <small>red black</small>	-20°C to +100°C	Hydrolysis resistant hard grade polyurethane material for water based, flame retardant hydraulic fluids (HFA, HFB) and biologically degradable fluids (bio-oils). Excellent leakage behaviour, superior extrusion and wear characteristics, very good installation and assembly properties.
	XS-ECOPUR®-57D / NBR70* <small>grey black</small>	-20°C to +100°C	Hard grade polyurethane material with additional solid lubricants for under lubricated systems (e.g. pneumatics). Very good leakage behaviour, best extrusion and wear characteristics, excellent installation and assembly properties.
	XG-ECOPUR®-54D / NBR70* <small>red black</small>	-20°C to +100°C	Cast hard grade polyurethane material for large diameter seals (above 600 mm), for water based, flame retardant hydraulic fluids (HFA, HFB) and biologically degradable fluids (bio-oils). Excellent leakage behaviour, superior extrusion and wear characteristics, very good installation and assembly properties.

* ECORUBBER 1 (NBR 85 Shore A) as energiser material for heavy duty design S09-ES, K08-DS

Due to the ECONOMOS® world renowned materials expertise, it is possible to supply many special customised polyurethane and other materials in different colours and hardnesses, for instance; FDA compliant food grade H-ECOPUR® (in red, blue and natural colour). Please consult our technical department for further information.



Materials

Special non-polyurethane material combinations for X-SLIDE seals

Combinations

Special non-polyurethane material combinations

In addition to polyurethane combinations, ECONOMOS® can offer special non polyurethane (ECOWEAR 1000) material to provide the best possible solution for special applications. Mainly used in water applications, food and pharmaceutical industries and in special pneumatic applications.

	ECOWEAR 1000 / NBR70* white / light grey black	-30°C to +80°C	Ultra high molecular weight polyethylene material (UHMWPE) for use in mineral oils, water hydraulics and pneumatics. Good leakage behaviour, good extrusion and wear characteristics, limited temperature resistance compared to X-ECOPUR® materials. Generally harder to install.
	ECOWEAR 1000 / MVQ70** white / light grey reddish brown	-55°C to +80°C	Ultra high molecular weight polyethylene material (UHMWPE) in combination with silicone 'O'ring for food and pharmaceutical applications. Increased low temperature resistance compared to X-ECOPUR® materials. Generally harder to install.

* ECORUBBER 1 (NBR 85 Shore A) as energiser material for heavy duty design S09-ES, K08-DS

** ECOSIL (MVQ 85 Shore A) as energiser material for heavy duty design S09-ES, K08-DS

Recommended rod sealing systems (new design)

recommended

X-SLIDE S09-E seal - special polyurethanes in a hardness of 54 to 60 Shore D

Wiper A11-A - polyurethane in a hardness of 95 Shore A/ 48 Shore D

Guide ring F01 - PTFE-compounds, polyacetal, polyamide or fabric reinforced polyester

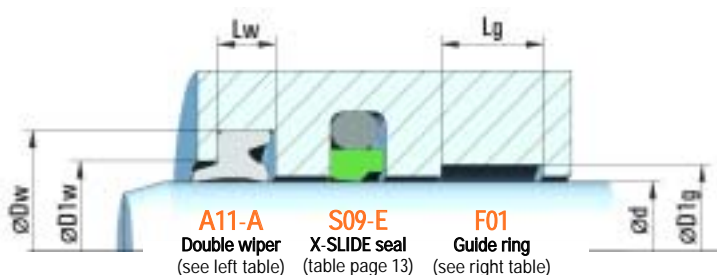
Recommended sealing system 1 (speed up to 5 m/s)

X-SLIDE S09-E seal complemented by a double wiper A11-A, with guide ring F01.

Recommended rod sealing system for standard hydraulic applications in the medium pressure range. The most economic solution with excellent performance.

Wiper A11-A sizes

ød	øD _w	øD1 _w	L _w
6 - 49,9	ød + 8	ød + 4	5,0
50 - 99,9	ød + 10	ød + 5	6,0
above 99,9	ød + 15	ød + 7,5	8,5



Guide ring F01 sizes

ød	øD1 _G	L _G
6 - 29,9	ød + 3	4,0
30 - 49,9	ød + 3	5,6
50 - 99,9	ød + 5	9,7
100 - 800	ød + 5	15
above 800	ød + 8	25

Recommended sealing system 2 (speed up to 1,5 m/s)

X-SLIDE S09-E primary seal - special polyurethanes in a hardness of 54 to 60 Shore D

Lip-seal S01-P - polyurethane in a hardness of 95 Shore A/ 48 Shore D

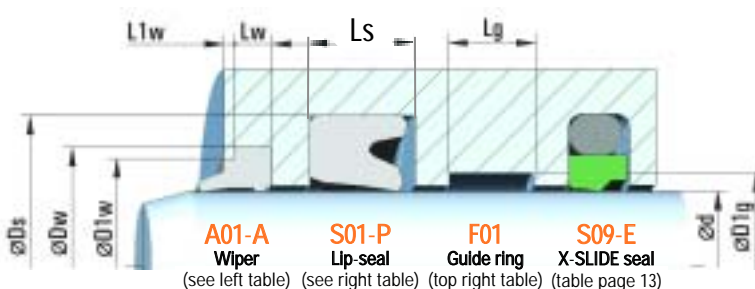
Wiper A01-A - polyurethane in a hardness of 95 Shore A/ 48 Shore D

Guide ring F01 - PTFE-compounds, polyacetal, polyamide or fabric reinforced polyester

X-SLIDE S09-E primary seal followed by a secondary lip-seal S01-P and wiper A01-A, with guide ring F01. Recommended rod sealing system for medium and higher pressure ranges, especially in the event of extremely short, or unusually long strokes. Lip-seal S01-P provides for additional sealing benefits.

Wiper A01-A sizes

ød	øD _w	øD1 _w	L _w	L1 _w
6 - 100	ød + 8	ød + 6	4,0	1,0
100,1-149,9	ød + 12	ød + 9	5,5	1,5
above 149,9	ød + 15	ød + 11	6,5	2,0



Seal S01-P sizes

ød	øD _s	L _s
5 - 24,9	ød+8	6,3
25 - 49,9	ød+10	8
50 - 149,9	ød+15	10
150 - 299,9	ød+20	14
300 - 499,9	ød+25	17
500 - 699,9	ød+30	25
above 699,9	ød+40	32

X-SLIDE S09-E seals - special polyurethanes in a hardness of 54 to 60 Shore D

Wiper A11-A - polyurethane in a hardness of 95 Shore A/ 48 Shore D

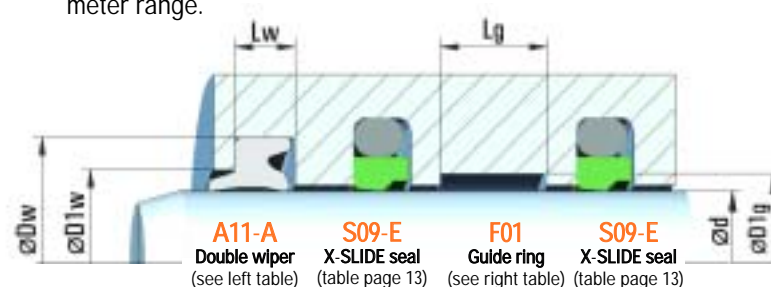
Guide ring F01 - PTFE-compounds, polyacetal, polyamide or fabric reinforced polyester

Recommended sealing system 3 (speed up to 5 m/s)

"Tandem" arrangement of 2 X-SLIDE S09-E seals followed by a double wiper A11-A with guide ring F01. Recommended rod sealing system for higher gliding speeds. Secondary S09-E for additional sealing benefits. Identical design of both seals, easy to install in smaller diameter range.

Wiper A11-A sizes

ød	øD _w	øD1 _w	L _w
6 - 49,9	ød + 8	ød + 4	5,0
50 - 99,9	ød + 10	ød + 5	6,0
above 99,9	ød + 15	ød + 7,5	8,5



Guide ring F01 sizes

ød	øD1 _G	L _G
6 - 29,9	ød + 3	4,0
30 - 49,9	ød + 3	5,6
50 - 99,9	ød + 5	9,7
100 - 800	ød + 5	15
above 800	ød + 8	25

System

Substitution (upgrade of existing systems)

substituted

Possible substitutions

A12-B, A26-F and A27-F are possible substitutions for existing housings.

A12-B recommended for contaminated environments.

A26-F and A27-F are recommended to replace common PTFE wiper profiles.

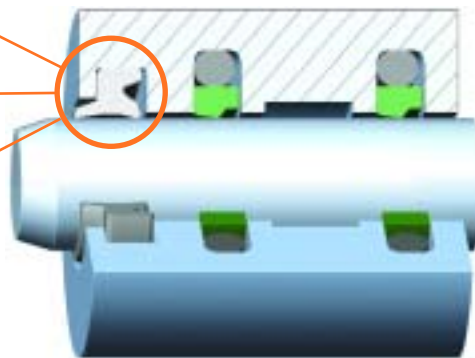
A12-B



A26-F



A27-F



X-SLIDE S09-E - special polyurethanes in a hardness of 54 to 60 Shore D

Wipers A11-A / A12-B - polyurethane in a hardness of 95 Shore A / 48 Shore D

Wipers A26-F / A27-F - special polyurethane in a hardness of 54 to 60 Shore D (or PTFE compound) with NBR/FKM "O"-ring energisers.

Guide ring F01 - PTFE compounds, polyacetal, polyamide or fabric reinforced polyester

Possible substitutions

A02-A, A03-A and A11-A are possible substitutions for existing housings.

A02-A mainly in larger diameter ranges.

A03-A for existing open housings (self retaining).

A11-A double acting wiper for systems with leakage vent between the seals.

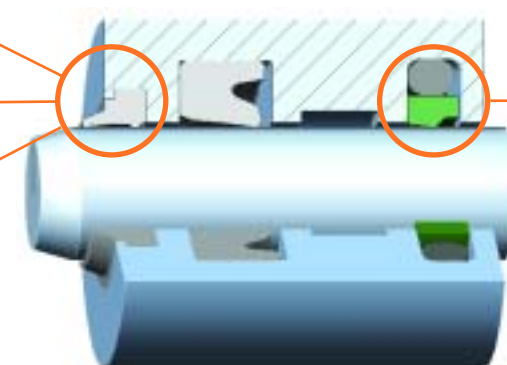
A02-A



A03-A



A11-A



S02-S



Due to the excellent back-pumping ability the X-SLIDE S09-E seal is a suitable replacement for so called "buffer" seals such as S02-S.

X-SLIDE S09-E - special polyurethanes in a hardness of 54 to 60 Shore D

Lip-seal S01-P - polyurethane in a hardness of 95 Shore A / 48 Shore D

Wipers A01-A / A02-A / A11-A - polyurethane in a hardness of 95 Shore A / 48 Shore D

Wiper A03-A - polyurethane in a hardness of 95 Shore A / 48 Shore D with self retaining casing in polyacetal, polyamide or aluminum / steel (above 80 °C)

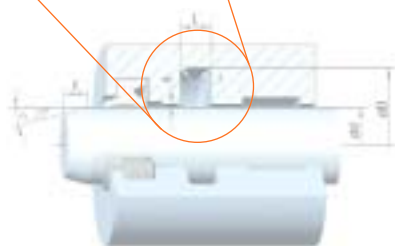
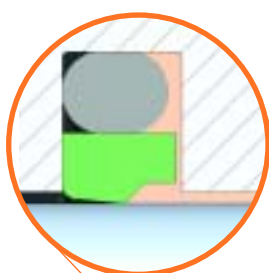
Guide ring F01 - PTFE-compounds, polyacetal, polyamide or fabric reinforced polyester

X-SLIDE seals S09-E description / technical data

S09-E standard

Technical data

Detail X-SLIDE seal S09-E



Pressure:	up to 600 (800) bar / 60 (80) MPa
Speed:	up to 5 m/s
Temperature*:	-30 °C to +100 °C
Media*:	mineral based hydraulic oil fluids flame retardant hydraulic fluids (HFA, HFB) biologically degradable oils (Bio-oils) water
Extrusion gap:	depending on operation pressure and diameter (see table on page 13)

* see material combinations for X-SLIDE seals on pages 8 and 9

The specified data represent maximum values and should not be used simultaneously. If in doubt, please contact our technical department. Please also note our liability exclusion (page 63).

Advantages

- **excellent static and dynamic sealing effect**
- **high wear resistance** (high operational reliability)
- **outstanding extrusion resistance** (allowing higher pressure / larger gap sizes)
- **very good back-pumping ability** (optimised sealing effect, no intermediate drag pressure)
- **compact design** (for small installation height)
- **low friction, superior stick-slip behaviour, high efficiency**
- **easy installation procedure** (due to higher flexibility of X-ECOPUR® materials)
- **quick delivery within days** (or even hours), **not weeks** (depending on diameter and quantity)
- **available as individual single piece or medium lot production**
- **available in large quantities** (injection moulded)
- **available for all diameters up to 3000 mm**

General description

High performance rod sealing systems are essential in almost all equipments. The constantly increasing technological and environmental requirements - especially with regard to sealing effect, wear resistance and installation properties - led ECONOMOS® to develop the special X-SLIDE seal range. These newly developed materials together with the optimised geometric design meet all the above requirements. The hydrodynamic properties in combination with the excellent back-pumping ability of the residual oil film are responsible for the long lifetime and reliable performance of these seals.

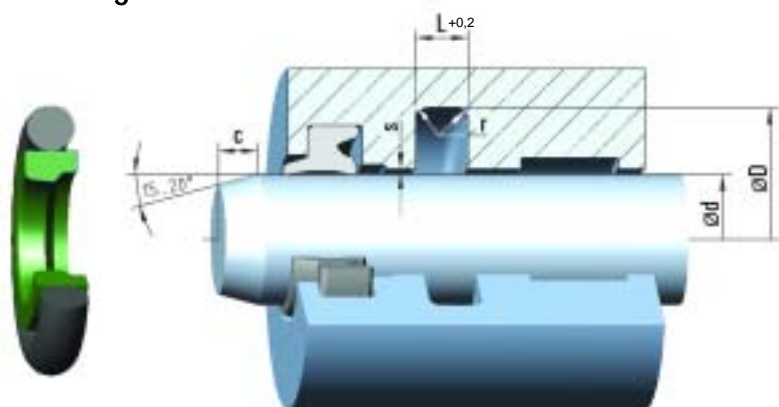
X-SLIDE S09-E seal is the standard single acting rod seal, consisting of a X-ECOPUR® sealing element and an elastomeric 'O' ring energizer element. Interference fit and 'O' ring preload ensure a good initial sealing effect. Increasing system pressure energizes the 'O' ring additionally for higher contact force and proportionally better sealing.

SLIDE

X-SLIDE seals S09-E basic information

dimensions

Housing recommendation



Surface roughness	R tmax (µm)	Ra (µm)
Sliding surface (rod)	≤ 2.5	≤ 0.1 - 0.5
Bottom of groove	≤ 6.3	≤ 1.6
Groove face	≤ 15	≤ 3
bearing area Tp	50% - 95%	

Seal housing tolerances	
Ød	f8
ØD	H10

Table of recommended X-SLIDE seal S09-E standard dimensions

Rod Ø d	Groove Ø D	Height L	Radius r	Lead-in c	O-ring Cord dia.	max. radial extrusion gap "s" *			
						100 bar	200 bar	400 bar	600 bar
3 - 7,9	d + 4,9	2,2	0,4	2,5	1,78	0,3	0,3	0,2	0,1
8 - 18,9	d + 7,3	3,2	0,6	3,5	2,62	0,4	0,3	0,2	0,1
19 - 37,9	d + 10,7	4,2	1,0	4,5	3,53	0,5	0,4	0,3	0,2
38 - 199,9	d + 15,1	6,3	1,3	5,0	5,33	0,5	0,4	0,3	0,2
200 - 255,9	d + 20,5	8,1	1,8	6,0	7,00	0,7	0,5	0,4	0,2
256 - 649,9	d + 24,0	8,1	1,8	8,0	7,00	0,7	0,5	0,4	0,2
650 - 999,9	d + 27,3	9,5	2,5	10,0	8,40	0,8	0,7	0,5	0,3
1000 - 3000	d + 38,0	13,8	3,0	12,0	12,00	1,1	0,8	0,7	0,4

- The above table shows our standard recommendations. Other dimensions - usually known as "light" and "heavy" series - are included in the tables on the following pages.
- For pressure range above 600 (800) bar we can offer special designs with integrated back-up rings (see page 59, special tailored designs). Please contact our technical department.
- * specified extrusion gap valid up to temp. 80 °C, between 80 and 100 °C the gap size has to be lowered by 25%

Ordering example, size listed in "available standard dimensions"

X-SLIDE S09-E, standard application, actual rod diameter: Ød=22 mm, predetermined or chosen housing dimensions (from list "S09-E available standard dimensions") --> ØD=32,7mm, L=4,2mm
required material: XH-ECOPUR® / NBR70 --> **article number:** 2XR0390 (out of list "S09-E available standard dimensions", article-no.-row 2 for material combination XH-PU/NBR70)

Required designation for placing an order: **X-SLIDE S09-E** Seal type **2XR0390** article no.

Ordering example, size NOT listed in "available standard dimensions", eg.: inch dimension

X-SLIDE S09-E, standard application, rod diameter Ød=25,4 mm (1") housing diameter ØD=Ød+10,7 = 36,1mm and housing height L= 4,2 mm (from table "recommended S09-E standard dimensions for diameter range Ød 19 - 37,9 mm), **required material:** XH-ECOPUR® / NBR70 --> **article number:** not available, housing dimension d x D x L followed by material combination should be used for designation:

Required designation for placing an order: **X-SLIDE S09-E** Seal type **25,4 x 36,1 x 4,2mm** housing dimensions **XH-PU / NBR70** material combination

For technical advice related to other housing configurations or non standard applications, please use fax enquiry form for rod seals on page 60.

X-SLIDE seals S09-E available standard dimensions / article numbers



Rod Ø d	Groove Ø D	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
3,0	7,9	2,2	1XR0010	2XR0010	3XR0010	-
4,0	8,9	2,2	1XR0020	2XR0020	3XR0020	-
5,0	9,9	2,2	1XR0030	2XR0030	3XR0030	-
6,0	10,9	2,2	1XR0040	2XR0040	3XR0040	-
6,0*	11,0	2,2	1XR0050	2XR0050	3XR0050	-
7,0	11,9	2,2	1XR0060	2XR0060	3XR0060	-
8,0	12,9	2,2	1XR0070	2XR0070	3XR0070	-
8,0*	13,0	2,2	1XR0080	2XR0080	3XR0080	-
8,0	15,3	3,2	1XR0090	2XR0090	3XR0090	-
9,0	13,9	2,2	1XR0100	2XR0100	3XR0100	-
9,0	16,3	3,2	1XR0110	2XR0110	3XR0110	-
10,0	14,9	2,2	1XR0120	2XR0120	3XR0120	-
10,0*	15,0	2,2	1XR0130	2XR0130	3XR0130	-
10,0	17,3	3,2	1XR0140	2XR0140	3XR0140	-
12,0	16,9	2,2	1XR0150	2XR0150	3XR0150	-
12,0*	17,0	2,2	1XR0160	2XR0160	3XR0160	-
12,0	19,3	3,2	1XR0170	2XR0170	3XR0170	-
12,0*	19,5	3,2	1XR0180	2XR0180	3XR0180	-
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
14,0	18,9	2,2	1XR0190	2XR0190	3XR0190	-
14,0*	19,0	2,2	1XR0200	2XR0200	3XR0200	-
14,0	21,3	3,2	1XR0210	2XR0210	3XR0210	-
14,0*	21,5	3,2	1XR0220	2XR0220	3XR0220	-
15,0	19,9	2,2	1XR0230	2XR0230	3XR0230	-
15,0	22,3	3,2	1XR0240	2XR0240	3XR0240	-
16,0	20,9	2,2	1XR0250	2XR0250	3XR0250	-
16,0	23,3	3,2	1XR0260	2XR0260	3XR0260	-
16,0*	23,5	3,2	1XR0270	2XR0270	3XR0270	-
17,0	21,9	2,2	1XR0280	2XR0280	3XR0280	-
18,0	22,9	2,2	1XR0290	2XR0290	3XR0290	-
18,0	25,3	3,2	1XR0300	2XR0300	3XR0300	-
18,0*	25,5	3,2	1XR0310	2XR0310	3XR0310	-
19,0	29,7	4,2	1XR0320	2XR0320	3XR0320	-
20,0	27,3	3,2	1XR0330	2XR0330	3XR0330	-
20,0*	27,5	3,2	1XR0340	2XR0340	3XR0340	-
20,0	30,7	4,2	1XR0350	2XR0350	3XR0350	-
20,0*	31,0	4,2	1XR0360	2XR0360	3XR0360	-
22,0	29,3	3,2	1XR0370	2XR0370	3XR0370	-
22,0*	29,5	3,2	1XR0380	2XR0380	3XR0380	-
22,0	32,7	4,2	1XR0390	2XR0390	3XR0390	-
22,0*	33,0	4,2	1XR0400	2XR0400	3XR0400	-
24,0	31,3	3,2	1XR0410	2XR0410	3XR0410	-
25,0	32,3	3,2	1XR0420	2XR0420	3XR0420	-
25,0*	32,5	3,2	1XR0430	2XR0430	3XR0430	-
25,0	35,7	4,2	1XR0440	2XR0440	3XR0440	-
25,0*	36,0	4,2	1XR0450	2XR0450	3XR0450	-
26,0	33,3	3,2	1XR0460	2XR0460	3XR0460	-
26,0	36,7	4,2	1XR0470	2XR0470	3XR0470	-
28,0*	39,0	4,2	1XR0480	2XR0480	3XR0480	-
28,0	35,3	3,2	1XR0490	2XR0490	3XR0490	-
28,0	38,7	4,2	1XR0500	2XR0500	3XR0500	-
30,0	37,3	3,2	1XR0510	2XR0510	3XR0510	-
30,0	40,7	4,2	1XR0520	2XR0520	3XR0520	-
32,0	39,3	3,2	1XR0530	2XR0530	3XR0530	-
32,0	42,7	4,2	1XR0540	2XR0540	3XR0540	-

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

X-SLIDE seals S09-E available standard dimensions / article numbers

Rod Ø d	Groove Ø D	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
32,0*	43,0	4,2	1XR0550	2XR0550	3XR0550	-
35,0	42,3	3,2	1XR0560	2XR0560	3XR0560	-
35,0	45,7	4,2	1XR0570	2XR0570	3XR0570	-
36,0	43,3	3,2	1XR0580	2XR0580	3XR0580	-
36,0	46,7	4,2	1XR0590	2XR0590	3XR0590	-
36,0*	47,0	4,2	1XR0600	2XR0600	3XR0600	-
37,0	44,3	3,2	1XR0610	2XR0610	3XR0610	-
37,0	47,7	4,2	1XR0620	2XR0620	3XR0620	-
38,0	48,7	4,2	1XR0630	2XR0630	3XR0630	-
38,0	53,1	6,3	1XR0640	2XR0640	3XR0640	-
40,0	50,7	4,2	1XR0650	2XR0650	3XR0650	-
40,0*	51,0	4,2	1XR0660	2XR0660	3XR0660	-
40,0	55,1	6,3	1XR0670	2XR0670	3XR0670	-
42,0	52,7	4,2	1XR0680	2XR0680	3XR0680	-
42,0	57,1	6,3	1XR0690	2XR0690	3XR0690	-
43,0	53,7	4,2	1XR0700	2XR0700	3XR0700	-
45,0	55,7	4,2	1XR0710	2XR0710	3XR0710	-
45,0*	56,0	4,2	1XR0720	2XR0720	3XR0720	-
45,0	60,1	6,3	1XR0730	2XR0730	3XR0730	-
48,0	58,7	4,2	1XR0740	2XR0740	3XR0740	-
48,0	63,1	6,3	1XR0750	2XR0750	3XR0750	-
50,0	60,7	4,2	1XR0760	2XR0760	3XR0760	-
50,0*	61,0	4,2	1XR0770	2XR0770	3XR0770	-
50,0	65,1	6,3	1XR0780	2XR0780	3XR0780	-
52,0	62,7	4,2	1XR0790	2XR0790	3XR0790	-
52,0	67,1	6,3	1XR0800	2XR0800	3XR0800	-
54,0	69,1	6,3	1XR0810	2XR0810	3XR0810	-
55,0	65,7	4,2	1XR0820	2XR0820	3XR0820	-
55,0	70,1	6,3	1XR0830	2XR0830	3XR0830	-
56,0	66,7	4,2	1XR0840	2XR0840	3XR0840	-
56,0*	67,0	4,2	1XR0850	2XR0850	3XR0850	-
56,0	71,1	6,3	1XR0860	2XR0860	3XR0860	-
56,0*	71,5	6,3	1XR0870	2XR0870	3XR0870	-
56,0	76,5	8,1	1XR0880	2XR0880	3XR0880	-
57,0	72,1	6,3	1XR0890	2XR0890	3XR0890	-
59,0	69,7	4,2	1XR0900	2XR0900	3XR0900	-
60,0	70,7	4,2	1XR0910	2XR0910	3XR0910	-
60,0	75,1	6,3	1XR0920	2XR0920	3XR0920	-
63,0	73,7	4,2	1XR0930	2XR0930	3XR0930	-
63,0*	74,0	4,2	1XR0940	2XR0940	3XR0940	-
63,0	78,1	6,3	1XR0950	2XR0950	3XR0950	-
63,0*	78,5	6,3	1XR0960	2XR0960	3XR0960	-
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
65,0	75,7	4,2	1XR0970	2XR0970	3XR0970	-
65,0	80,1	6,3	1XR0980	2XR0980	3XR0980	-
67,0	77,7	4,2	1XR0990	2XR0990	3XR0990	-
69,0	84,1	6,3	1XR1000	2XR1000	3XR1000	-
70,0	80,7	4,2	1XR1010	2XR1010	3XR1010	-
70,0	85,1	6,3	1XR1020	2XR1020	3XR1020	-
70,0*	85,5	6,3	1XR1030	2XR1030	3XR1030	-
70,0	90,5	8,1	1XR1040	2XR1040	3XR1040	-
72,0	82,7	4,2	1XR1050	2XR1050	3XR1050	-
73,0	88,1	6,3	1XR1060	2XR1060	3XR1060	-
75,0	85,7	4,2	1XR1070	2XR1070	3XR1070	-
75,0	90,1	6,3	1XR1080	2XR1080	3XR1080	-

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements



X-SLIDE seals S09-E available standard dimensions / article numbers



Rod Ø d	Groove Ø D	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
78,0	93,1	6,3	1XR1090	2XR1090	3XR1090	-
80,0	90,7	4,2	1XR1100	2XR1100	3XR1100	-
80,0	95,1	6,3	1XR1110	2XR1110	3XR1110	-
80,0*	95,5	6,3	1XR1120	2XR1120	3XR1120	-
80,0	100,5	8,1	1XR1130	2XR1130	3XR1130	-
82,5	97,6	6,3	1XR1140	2XR1140	3XR1140	-
83,0	93,7	4,2	1XR1150	2XR1150	3XR1150	-
85,0	95,7	4,2	1XR1160	2XR1160	3XR1160	-
85,0	100,1	6,3	1XR1170	2XR1170	3XR1170	-
85,0	105,5	8,1	1XR1180	2XR1180	3XR1180	-
89,0	104,1	6,3	1XR1190	2XR1190	3XR1190	-
90,0	100,7	4,2	1XR1200	2XR1200	3XR1200	-
90,0	105,1	6,3	1XR1210	2XR1210	3XR1210	-
90,0*	105,5	6,3	1XR1220	2XR1220	3XR1220	-
90,0	110,5	8,1	1XR1230	2XR1230	3XR1230	-
92,0	102,7	4,2	1XR1240	2XR1240	3XR1240	-
92,0	107,1	6,3	1XR1250	2XR1250	3XR1250	-
95,0	105,7	4,2	1XR1260	2XR1260	3XR1260	-
<p>NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.</p>						
95,0	110,1	6,3	1XR1270	2XR1270	3XR1270	-
100,0	110,7	4,2	1XR1280	2XR1280	3XR1280	-
100,0	115,1	6,3	1XR1290	2XR1290	3XR1290	-
100,0*	115,5	6,3	1XR1300	2XR1300	3XR1300	-
100,0	120,5	8,1	1XR1310	2XR1310	3XR1310	-
105,0	120,1	6,3	1XR1320	2XR1320	3XR1320	-
105,0	125,5	8,1	1XR1330	2XR1330	3XR1330	-
110,0	120,7	4,2	1XR1340	2XR1340	3XR1340	-
110,0	125,1	6,3	1XR1350	2XR1350	3XR1350	-
110,0*	125,5	6,3	1XR1360	2XR1360	3XR1360	-
110,0	130,5	8,1	1XR1370	2XR1370	3XR1370	-
115,0	130,1	6,3	1XR1380	2XR1380	3XR1380	-
120,0	135,1	6,3	1XR1390	2XR1390	3XR1390	-
120,0	140,5	8,1	1XR1400	2XR1400	3XR1400	-
125,0	140,1	6,3	1XR1410	2XR1410	3XR1410	-
125,0*	140,5	6,3	1XR1420	2XR1420	3XR1420	-
125,0	145,5	8,1	1XR1430	2XR1430	3XR1430	-
127,0	142,1	6,3	1XR1440	2XR1440	3XR1440	-
130,0	145,1	6,3	1XR1450	2XR1450	3XR1450	-
130,0	150,5	8,1	1XR1460	2XR1460	3XR1460	-
132,0	147,1	6,3	1XR1470	2XR1470	3XR1470	-
135,0	145,7	4,2	1XR1480	2XR1480	3XR1480	-
135,0	150,1	6,3	1XR1490	2XR1490	3XR1490	-
137,0	152,1	6,3	1XR1500	2XR1500	3XR1500	-
138,0	153,1	6,3	1XR1510	2XR1510	3XR1510	-
140,0	150,7	4,2	1XR1520	2XR1520	3XR1520	-
140,0	155,1	6,3	1XR1530	2XR1530	3XR1530	-
140,0*	155,5	6,3	1XR1540	2XR1540	3XR1540	-
140,0	160,5	8,1	1XR1550	2XR1550	3XR1550	-
140,5	155,6	6,3	1XR1560	2XR1560	3XR1560	-
145,0	160,1	6,3	1XR1570	2XR1570	3XR1570	-
145,0	165,5	8,1	1XR1580	2XR1580	3XR1580	-
150,0	165,1	6,3	1XR1590	2XR1590	3XR1590	-
150,0	170,5	8,1	1XR1600	2XR1600	3XR1600	-
153,0	168,1	6,3	1XR1610	2XR1610	3XR1610	-
155,0	170,1	6,3	1XR1620	2XR1620	3XR1620	-

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

X-SLIDE seals S09-E available standard dimensions / article numbers

Rod Ø d	Groove Ø D	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
160,0	175,1	6,3	1XR1630	2XR1630	3XR1630	-
160,0*	175,5	6,3	1XR1640	2XR1640	3XR1640	-
160,0	180,5	8,1	1XR1650	2XR1650	3XR1650	-
160,0*	181,0	8,1	1XR1660	2XR1660	3XR1660	-
165,0	180,1	6,3	1XR1670	2XR1670	3XR1670	-
170,0	185,1	6,3	1XR1680	2XR1680	3XR1680	-
170,0	190,5	8,1	1XR1690	2XR1690	3XR1690	-
173,0	188,1	6,3	1XR1700	2XR1700	3XR1700	-
175,0	190,1	6,3	1XR1710	2XR1710	3XR1710	-
180,0	195,1	6,3	1XR1720	2XR1720	3XR1720	-
180,0*	195,5	6,3	1XR1730	2XR1730	3XR1730	-
180,0	200,5	8,1	1XR1740	2XR1740	3XR1740	-
180,0*	201,0	8,1	1XR1750	2XR1750	3XR1750	-
185,0	200,1	6,3	1XR1760	2XR1760	3XR1760	-
185,0	205,5	8,1	1XR1770	2XR1770	3XR1770	-
190,0	205,1	6,3	1XR1780	2XR1780	3XR1780	-
190,0	210,5	8,1	1XR1790	2XR1790	3XR1790	-
195,0	210,1	6,3	1XR1800	2XR1800	3XR1800	-
200,0	215,1	6,3	1XR1810	2XR1810	3XR1810	-
200,0	220,5	8,1	1XR1820	2XR1820	3XR1820	-
200,0*	221,0	8,1	1XR1830	2XR1830	3XR1830	-
205,0	225,5	8,1	1XR1840	2XR1840	3XR1840	-
210,0	230,5	8,1	1XR1850	2XR1850	3XR1850	-
211,0	231,5	8,1	1XR1860	2XR1860	3XR1860	-
212,0	232,5	8,1	1XR1870	2XR1870	3XR1870	-
215,0	235,5	8,1	1XR1880	2XR1880	3XR1880	-
220,0	240,5	8,1	1XR1890	2XR1890	3XR1890	-
220,0*	241,0	8,1	1XR1900	2XR1900	3XR1900	-
225,0	245,5	8,1	1XR1910	2XR1910	3XR1910	-
230,0	245,1	6,3	1XR1920	2XR1920	3XR1920	-
230,0	250,5	8,1	1XR1930	2XR1930	3XR1930	-
235,0	255,5	8,1	1XR1940	2XR1940	3XR1940	-
240,0	260,5	8,1	1XR1950	2XR1950	3XR1950	-
245,0	265,5	8,1	1XR1960	2XR1960	3XR1960	-
250,0	270,5	8,1	1XR1970	2XR1970	3XR1970	-
250,0*	271,0	8,1	1XR1980	2XR1980	3XR1980	-
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
260,0	284,0	8,1	1XR1990	2XR1990	3XR1990	-
265,0	289,0	8,1	1XR2000	2XR2000	3XR2000	-
270,0	290,5	8,1	1XR2010	2XR2010	3XR2010	-
270,0	294,0	8,1	1XR2020	2XR2020	3XR2020	-
275,0	299,0	8,1	1XR2030	2XR2030	3XR2030	-
280,0*	304,5	8,1	1XR2040	2XR2040	3XR2040	-
280,0	304,0	8,1	1XR2050	2XR2050	3XR2050	-
285,0	309,0	8,1	1XR2060	2XR2060	3XR2060	-
290,0	314,0	8,1	1XR2070	2XR2070	3XR2070	-
295,0	319,0	8,1	1XR2080	2XR2080	3XR2080	-
300,0	320,5	8,1	1XR2090	2XR2090	3XR2090	-
300,0	324,0	8,1	1XR2100	2XR2100	3XR2100	-
310,0	334,0	8,1	1XR2110	2XR2110	3XR2110	-
320,0*	344,5	8,1	1XR2120	2XR2120	3XR2120	-
320,0	344,0	8,1	1XR2130	2XR2130	3XR2130	-
330,0	354,0	8,1	1XR2140	2XR2140	3XR2140	-
340,0	364,0	8,1	1XR2150	2XR2150	3XR2150	-
350,0	370,5	8,1	1XR2160	2XR2160	3XR2160	-

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements



X-SLIDE seals S09-E available standard dimensions / article numbers



Rod Ø d	Groove Ø D	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
350,0	374,0	8,1	1XR2170	2XR2170	3XR2170	-
360,0	384,0	8,1	1XR2180	2XR2180	3XR2180	-
360,0*	384,5	8,1	1XR2190	2XR2190	3XR2190	-
365,0	389,0	8,1	1XR2200	2XR2200	3XR2200	-
370,0	394,0	8,1	1XR2210	2XR2210	3XR2210	-
375,0	399,0	8,1	1XR2220	2XR2220	3XR2220	-
380,0	404,0	8,1	1XR2230	2XR2230	3XR2230	-
390,0	414,0	8,1	1XR2240	2XR2240	3XR2240	-
400,0	424,0	8,1	1XR2250	2XR2250	3XR2250	-
410,0	434,0	8,1	1XR2260	2XR2260	3XR2260	-
420,0	444,0	8,1	1XR2270	2XR2270	3XR2270	-
430,0	454,0	8,1	1XR2280	2XR2280	3XR2280	-
435,0	459,0	8,1	1XR2290	2XR2290	3XR2290	-
440,0	464,0	8,1	1XR2300	2XR2300	3XR2300	-
450,0	474,0	8,1	1XR2310	2XR2310	3XR2310	-
460,0	484,0	8,1	1XR2320	2XR2320	3XR2320	-
470,0	494,0	8,1	1XR2330	2XR2330	3XR2330	-
480,0	504,0	8,1	1XR2340	2XR2340	3XR2340	-
<p>NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.</p>						
485,0	509,0	8,1	1XR2350	2XR2350	3XR2350	-
490,0	514,0	8,1	1XR2360	2XR2360	3XR2360	-
500,0	524,0	8,1	1XR2370	2XR2370	3XR2370	-
510,0	534,0	8,1	1XR2380	2XR2380	3XR2380	-
520,0	544,0	8,1	1XR2390	2XR2390	3XR2390	-
525,0	549,0	8,1	1XR2400	2XR2400	3XR2400	-
530,0	554,0	8,1	1XR2410	2XR2410	3XR2410	-
540,0	564,0	8,1	1XR2420	2XR2420	3XR2420	-
550,0	574,0	8,1	1XR2430	2XR2430	3XR2430	-
560,0	584,0	8,1	1XR2440	2XR2440	3XR2440	-
570,0	594,0	8,1	1XR2450	2XR2450	3XR2450	4XR2460
580,0	604,0	8,1	-	-	-	4XR2470
585,0	609,0	8,1	-	-	-	4XR2480
590,0	614,0	8,1	-	-	-	4XR2490
600,0	624,0	8,1	-	-	-	4XR2500
610,0	634,0	8,1	-	-	-	4XR2510
620,0	644,0	8,1	-	-	-	4XR2520
630,0	654,0	8,1	-	-	-	4XR2530
640,0	664,0	8,1	-	-	-	4XR2540
650,0	677,3	9,5	-	-	-	4XR2550
656,0	683,3	9,5	-	-	-	4XR2560
660,0	687,3	9,5	-	-	-	4XR2570
670,0	697,3	9,5	-	-	-	4XR2580
680,0	707,3	9,5	-	-	-	4XR2590
685,0	712,3	9,5	-	-	-	4XR2600
690,0	717,3	9,5	-	-	-	4XR2610
700,0	724,0	8,1	-	-	-	4XR2620
700,0	727,3	9,5	-	-	-	4XR2630
710,0	737,3	9,5	-	-	-	4XR2640
720,0	747,3	9,5	-	-	-	4XR2650
730,0	757,3	9,5	-	-	-	4XR2660
735,0	762,3	9,5	-	-	-	4XR2670
740,0	767,3	9,5	-	-	-	4XR2680
750,0	777,3	9,5	-	-	-	4XR2690
760,0	787,3	9,5	-	-	-	4XR2700
765,0	792,3	9,5	-	-	-	4XR2710

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

X-SLIDE seals S09-E available standard dimensions / article numbers

Rod Ø d	Groove Ø D	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
770,0	797,3	9,5	-	-	-	4XR2720
780,0	807,3	9,5	-	-	-	4XR2730
790,0	817,3	9,5	-	-	-	4XR2740
795,0	822,3	9,5	-	-	-	4XR2750
800,0	827,3	9,5	-	-	-	4XR2760
810,0	837,3	9,5	-	-	-	4XR2770
820,0	847,3	9,5	-	-	-	4XR2780
830,0	857,3	9,5	-	-	-	4XR2790
840,0	867,3	9,5	-	-	-	4XR2800
850,0	877,3	9,5	-	-	-	4XR2810
860,0	887,3	9,5	-	-	-	4XR2820
870,0	897,3	9,5	-	-	-	4XR2830
880,0	907,3	9,5	-	-	-	4XR2840
885,0	912,3	9,5	-	-	-	4XR2850
890,0	917,3	9,5	-	-	-	4XR2860
900,0	927,3	9,5	-	-	-	4XR2870
910,0	937,3	9,5	-	-	-	4XR2880
920,0	947,3	9,5	-	-	-	4XR2890
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
930,0	957,3	9,5	-	-	-	4XR2900
940,0	967,3	9,5	-	-	-	4XR2910
950,0	977,3	9,5	-	-	-	4XR2920
955,0	982,3	9,5	-	-	-	4XR2930
1.000,0	1.038,0	13,8	-	-	-	4XR2940
1.035,0	1.073,0	13,8	-	-	-	4XR2950
1.040,0	1.067,3	9,5	-	-	-	4XR2960
1.040,0	1.078,0	13,8	-	-	-	4XR2970
1.050,0	1.077,3	9,5	-	-	-	4XR2980
1.050,0	1.088,0	13,8	-	-	-	4XR2990
1.100,0	1.138,0	13,8	-	-	-	4XR3000
1.120,0	1.147,3	9,5	-	-	-	4XR3010
1.120,0	1.158,0	13,8	-	-	-	4XR3020
1.200,0	1.227,3	9,5	-	-	-	4XR3030
1.200,0	1.238,0	13,8	-	-	-	4XR3040
1.330,0	1.357,3	9,5	-	-	-	4XR3050
1.330,0	1.368,0	13,8	-	-	-	4XR3060
1.450,0	1.477,3	9,5	-	-	-	4XR3070
1.500,0	1.527,3	9,5	-	-	-	4XR3080
1.500,0	1.538,0	13,8	-	-	-	4XR3090
1.600,0	1.638,0	13,8	-	-	-	4XR3100
2.000,0	2.038,0	13,8	-	-	-	4XR3110
2.600,0	2.638,0	13,8	-	-	-	4XR3120
3.000,0	3.038,0	13,8	-	-	-	

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

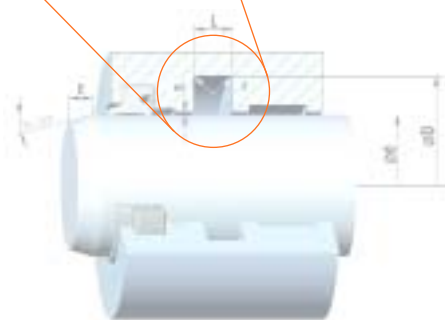
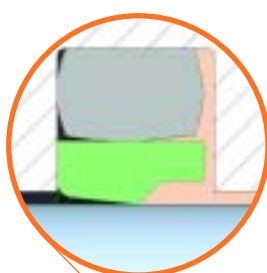


X-SLIDE seals S09-ES description / technical data

S09-FS standa

Technical data

Detail X-SLIDE seal S09-ES



Pressure:	up to 600 (800) bar / 60 (80) MPa
Speed:	up to 5 m/s
Temperature*:	-30 °C to +100 °C
Media*:	mineral based hydraulic oil fluids flame retardant hydraulic fluids (HFA, HFB) biologically degradable oils (Bio-oils) water
Extrusion gap:	depending on operation pressure and diameter (see table on page 21)

* see material combinations for X-SLIDE seals on pages 8 and 9

The specified data represent maximum values and should not be used simultaneously. If in doubt, please contact our technical department. Please also note our liability exclusion (page 63).

Advantages

- **excellent static and dynamic sealing effect**
- **high wear resistance** (high operational reliability)
- **outstanding extrusion resistance** (allowing higher pressure / larger gap sizes)
- **very good back-pumping ability** (optimised sealing effect, no intermediate drag pressure)
- **compact design** (for small installation height)
- **compact, stable square energizer ring profile** (less deformation on pulsating load)
- **easy installation procedure** (due to higher flexibility of X-ECOPUR® materials)
- **quick delivery within days** (or even hours), **not weeks** (depending on diameter and quantity)
- **available as individual single piece or medium lot production**
- **available in large quantities** (injection moulded)
- **available for all diameters up to 1.500 mm**

General description

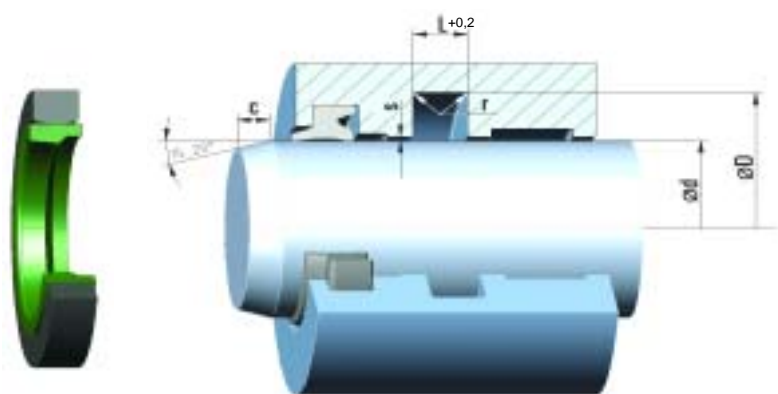
X-SLIDE S09-ES seal is a "heavy duty" single acting rod seal consisting of an X-ECOPUR® sealing element and an elastomeric square profile ring energizer element. Interference fit and preload of energizing element ensures a good initial sealing effect. Designed with a square section energizer ring for increased stability and less deformation of the energizer under pulsating load. The optimised hydrodynamic properties in combination with the excellent back-pumping ability of the residual oil film are responsible for the long lifetime and reliable performance of these seals.

SLIDE

X-SLIDE seals S09-ES basic information

rod dimensions

Housing recommendation



Surface roughness	R tmax (µm)	Ra (µm)
Sliding surface (rod)	≤ 2.5	≤ 0.1 - 0.5
Bottom of groove	≤ 6.3	≤ 1.6
Groove face	≤ 15	≤ 3
bearing area Tp	50% - 95%	

Seal housing tolerances	
ød	f8
øD	H10

Table of recommended X-SLIDE seal S09-ES standard dimensions

Rod Ø d	Groove Ø D	Height L	Radius r	Lead-in c	max. radial extrusion gap "s" *			
					100 bar	200 bar	400 bar	600 bar
5 - 49,9	d + 10	5,0	0,2	4,0	0,5	0,4	0,3	0,2
50 - 59,9	d + 15	7,5	0,3	5,0	0,5	0,4	0,3	0,2
60 - 199,9	d + 20	10,0	0,4	6,0	0,7	0,5	0,4	0,2
200 - 299,9	d + 25	12,5	0,4	8,5	0,8	0,6	0,5	0,3
300 - 529,9	d + 30	15,0	0,8	10,0	0,9	0,7	0,6	0,3
530 - 679,9	d + 35	17,5	1,2	11,5	1,0	0,8	0,7	0,3
680 - 1500	d + 40	20,0	1,2	13,0	1,1	0,9	0,8	0,4

* For pressure range above 600 (800) bar we can offer special designs with integrated back-up rings (see page 59, special tailored designs). Please contact our technical department.
* specified extrusion gap valid up to temp. 80 °C, between 80 and 100 °C the gap size has to be lowered by 25%

Ordering example, size listed in "available standard dimensions"

X-SLIDE S09-ES, standard application, actual rod diameter: Ød=125 mm,
predetermined or chosen housing dimensions (out of list "S09-ES available standard dimensions") --> ØD=145mm, L=10mm
required material: X-ECOPUR® / NBR85 --> **article number:** 1XRH0300 (out of list "S09-ES available standard dimensions",
article-no.-row 1 for material combination X-PU/NBR85)

Required designation for placing an order: **X-SLIDE S09-ES** **1XRH0300**
Seal type article no.

Ordering example, size NOT listed in "available standard dimensions", eg.: inch dimension

X-SLIDE S09-ES, standard application, rod diameter Ød=101,6 mm (4")
housing diameter ØD=Ød+20 = 121,6 mm and housing height L= 10,0 mm (from table "recommended S09-ES standard dimensions for diameter range Ød 60 - 199,9 mm), **required material:** X-ECOPUR® / NBR85 --> **article number:** not available, housing dimension d x D x L followed by material combination should be used for designation:

Required designation for placing an order: **X-SLIDE S09-ES** **101,6 x 121,6 x 10 mm** **X-PU / NBR85**
Seal type housing dimensions material combination

For technical advice related to other housing configurations or non standard applications, please use fax enquiry form for rod seals on page 60.

X-SLIDE seals S09-ES available standard dimensions / article numbers



Rod Ø d	Groove Ø D	Height L	Article-Nr. X-PU/NBR85	Article-Nr. XH-PU/NBR85	Article-Nr. XS-PU/NBR85	Article-Nr. XG-PU/NBR85
5	15	5	1XRH0010	2XRH0010	3XRH0010	-
10	20	5	1XRH0020	2XRH0020	3XRH0020	-
12	22	5	1XRH0030	2XRH0030	3XRH0030	-
16	26	5	1XRH0040	2XRH0040	3XRH0040	-
20	30	5	1XRH0050	2XRH0050	3XRH0050	-
25	35	5	1XRH0060	2XRH0060	3XRH0060	-
28	38	5	1XRH0070	2XRH0070	3XRH0070	-
32	42	5	1XRH0080	2XRH0080	3XRH0080	-
36	46	5	1XRH0090	2XRH0090	3XRH0090	-
40	50	5	1XRH0100	2XRH0100	3XRH0100	-
42	52	5	1XRH0110	2XRH0110	3XRH0110	-
45	55	5	1XRH0120	2XRH0120	3XRH0120	-
48	58	5	1XRH0130	2XRH0130	3XRH0130	-
50,0	65,0	7,5	1XRH0140	2XRH0140	3XRH0140	-
52,0	67,0	7,5	1XRH0150	2XRH0150	3XRH0150	-
54,0	69,0	7,5	1XRH0160	2XRH0160	3XRH0160	-
55,0	70,0	7,5	1XRH0170	2XRH0170	3XRH0170	-
56,0	71,0	7,5	1XRH0180	2XRH0180	3XRH0180	-
60,0	80,0	10	1XRH0190	2XRH0190	3XRH0190	-
63,0	83,0	10	1XRH0200	2XRH0200	3XRH0200	-
65,0	85,0	10	1XRH0210	2XRH0210	3XRH0210	-
70,0	90,0	10	1XRH0220	2XRH0220	3XRH0220	-
75,0	95,0	10	1XRH0230	2XRH0230	3XRH0230	-
80,0	100,0	10	1XRH0240	2XRH0240	3XRH0240	-
85,0	105,0	10	1XRH0250	2XRH0250	3XRH0250	-
90,0	110,0	10	1XRH0260	2XRH0260	3XRH0260	-
95,0	115,0	10	1XRH0270	2XRH0270	3XRH0270	-
100,0	120,0	10	1XRH0280	2XRH0280	3XRH0280	-
110,0	130,0	10	1XRH0290	2XRH0290	3XRH0290	-
125,0	145,0	10	1XRH0300	2XRH0300	3XRH0300	-
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
140,0	160,0	10	1XRH0310	2XRH0310	3XRH0310	-
150,0	170,0	10	1XRH0320	2XRH0320	3XRH0320	-
160,0	180,0	10	1XRH0330	2XRH0330	3XRH0330	-
170,0	175,0	10	1XRH0340	2XRH0340	3XRH0340	-
175,0	195,0	10	1XRH0350	2XRH0350	3XRH0350	-
180,0	200,0	10	1XRH0360	2XRH0360	3XRH0360	-
200,0	225,0	12,5	1XRH0370	2XRH0370	3XRH0370	-
220,0	245,0	12,5	1XRH0380	2XRH0380	3XRH0380	-
230,0	255,0	12,5	1XRH0390	2XRH0390	3XRH0390	-
240,0	265,0	12,5	1XRH0400	2XRH0400	3XRH0400	-
250,0	275,0	12,5	1XRH0410	2XRH0410	3XRH0410	-
270,0	295,0	12,5	1XRH0420	2XRH0420	3XRH0420	-
280,0	305,0	12,5	1XRH0430	2XRH0430	3XRH0430	-
290,0	315,0	12,5	1XRH0440	2XRH0440	3XRH0440	-
300,0	330,0	15	1XRH0450	2XRH0450	3XRH0450	-
310,0	340,0	15	1XRH0460	2XRH0460	3XRH0460	-
320,0	350,0	15	1XRH0470	2XRH0470	3XRH0470	-
325,0	355,0	15	1XRH0480	2XRH0480	3XRH0480	-
330,0	360,0	15	1XRH0490	2XRH0490	3XRH0490	-
340,0	370,0	15	1XRH0500	2XRH0500	3XRH0500	-
350,0	380,0	15	1XRH0510	2XRH0510	3XRH0510	-
360,0	390,0	15	1XRH0520	2XRH0520	3XRH0520	-
380,0	410,0	15	1XRH0530	2XRH0530	3XRH0530	-
390,0	420,0	15	1XRH0540	2XRH0540	3XRH0540	-

X-SLIDE seals S09-ES available standard dimensions / article numbers

Rod Ø d	Groove Ø D	Height L	Article-Nr. X-PU/NBR85	Article-Nr. XH-PU/NBR85	Article-Nr. XS-PU/NBR85	Article-Nr. XG-PU/NBR85
400,0	430,0	15	1XRH0550	2XRH0550	3XRH0550	-
410,0	440,0	15	1XRH0560	2XRH0560	3XRH0560	-
420,0	450,0	15	1XRH0570	2XRH0570	3XRH0570	-
430,0	460,0	15	1XRH0580	2XRH0580	3XRH0580	-
440,0	470,0	15	1XRH0590	2XRH0590	3XRH0590	-
450,0	480,0	15	1XRH0600	2XRH0600	3XRH0600	-
460,0	490,0	15	1XRH0610	2XRH0610	3XRH0610	-
470,0	500,0	15	1XRH0620	2XRH0620	3XRH0620	-
480,0	510,0	15	1XRH0630	2XRH0630	3XRH0630	-
490,0	520,0	15	1XRH0640	2XRH0640	3XRH0640	-
500,0	530,0	15	1XRH0650	2XRH0650	3XRH0650	-
510,0	540,0	15	1XRH0660	2XRH0660	3XRH0660	-

NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.

520,0	550,0	15	1XRH0670	2XRH0670	3XRH0670	-
530,0	565,0	17,5	1XRH0680	2XRH0680	3XRH0680	-
540,0	575,0	17,5	1XRH0690	2XRH0690	3XRH0690	-
550,0	585,0	17,5	1XRH0700	2XRH0700	3XRH0700	-
560,0	595,0	17,5	1XRH0710	2XRH0710	3XRH0710	-
570,0	605,0	17,5	-	-	-	4XRH0630
580,0	615,0	17,5	-	-	-	4XRH0640
590,0	625,0	17,5	-	-	-	4XRH0650
600,0	635,0	17,5	-	-	-	4XRH0660
620,0	655,0	17,5	-	-	-	4XRH0670
650,0	685,0	17,5	-	-	-	4XRH0680
660,0	695,0	17,5	-	-	-	4XRH0690
670,0	705,0	17,5	-	-	-	4XRH0700
680,0	720,0	20	-	-	-	4XRH0710
700,0	740,0	20	-	-	-	4XRH0720
720,0	760,0	20	-	-	-	4XRH0730
740,0	780,0	20	-	-	-	4XRH0740
755,0	795,0	20	-	-	-	4XRH0750
770,0	810,0	20	-	-	-	4XRH0760
800,0	840,0	20	-	-	-	4XRH0770
820,0	860,0	20	-	-	-	4XRH0780
850,0	890,0	20	-	-	-	4XRH0790
900,0	940,0	20	-	-	-	4XRH0800
950,0	990,0	20	-	-	-	4XRH0810
970,0	1.010,0	20	-	-	-	4XRH0820
1.000,0	1.040,0	20	-	-	-	4XRH0830
1.150,0	1.190,0	20	-	-	-	4XRH0840
1.200,0	1.240,0	20	-	-	-	4XRH0850
1.330,0	1.370,0	20	-	-	-	4XRH0860
1.500,0	1.540,0	20	-	-	-	4XRH0870

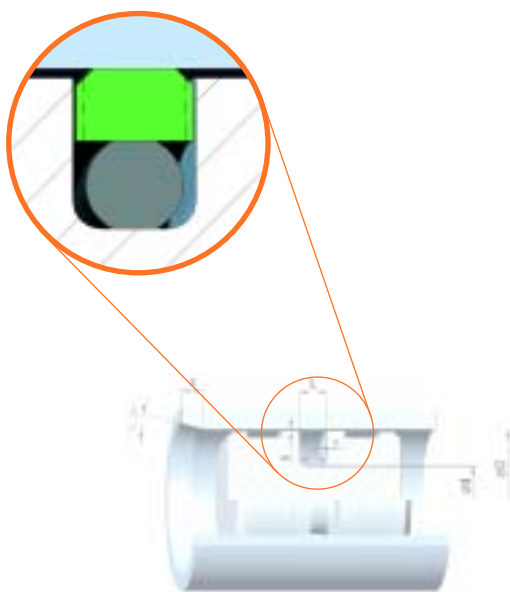


X-SLIDE seals K08-D description / technical data

K08-D standard

Technical data

Detail X-SLIDE seal K08-D



Pressure:	up to 600 (800) bar / 60 (80) MPa
Speed:	up to 5 m/s
Temperature*:	-30 °C to +100 °C
Media*:	mineral based hydraulic oil fluids flame retardant hydraulic fluids (HFA, HFB) biologically degradable oils (Bio-oils) water
Extrusion gap:	depending on operation pressure and diameter (see table on page 25)

* see material combinations for X-SLIDE seals on pages 8 and 9

The specified data represent maximum values and should not be used simultaneously.
If in doubt, please contact our technical department. Please also note our liability exclusion (page 63).

Advantages

- **good static and dynamic sealing effect** (reduced piston drift)
- **high wear resistance** (high operational reliability)
- **outstanding extrusion resistance** (allowing higher pressure / larger gap sizes)
- **compact design** (for small installation height)
- **low friction, superior stick-slip characteristics, high efficiency**
- **easy installation procedure** (due to higher flexibility of X-ECOPUR® materials)
- **fast pressurisation, no "blow-by" effect** (due to implemented lateral slots in sealing ring)
- **quick delivery within days** (or even hours), **not weeks** (depending on diameter and quantity)
- **available as individual single piece or medium lot production**
- **available in large quantities** (injection moulded)
- **available for all diameters up to 3.000 mm**

General description

High performance piston seals are essential in almost all equipments. The constantly increasing technological and environmental requirements - especially with regard to sealing effect, wear resistance and installation properties - led ECONOMOS® to develop the special X-SLIDE seal range. These newly developed materials together with the optimised geometric design meet all the above requirements. Especially on the piston the installation of the seal is not always easy. In the case of conventional PTFE seals, special mounting and calibration tools are necessary; with X-ECOPUR® materials, installation in most cases can be done by hand - no extra tools or calibration necessary.

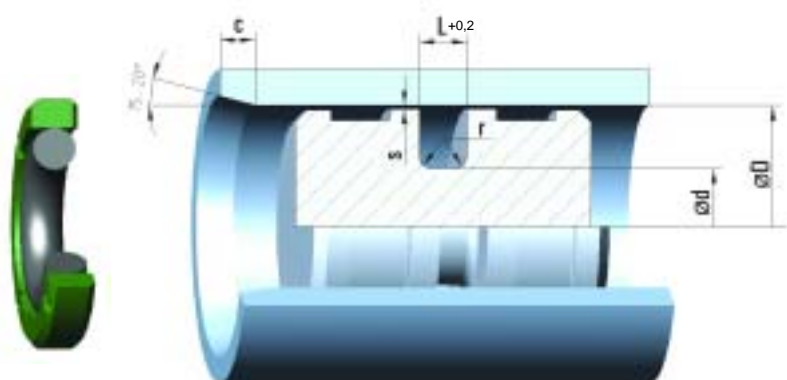
Profile K08-D is the standard double acting piston seal design.

SLIDE

X-SLIDE seals K08-D basic information

Dimensions

Housing recommendation



Surface roughness	R tmax (µm)	Ra (µm)
Sliding surface (rod)	≤ 2.5	≤ 0.1 - 0.5
Bottom of groove	≤ 6.3	≤ 1.6
Groove face	≤ 15	≤ 3
bearing area Tp	50% - 95 %	

Seal housing tolerances	
ød	h10
øD	H9

Table of recommended X-SLIDE seals K08-D standard dimensions

Bore ø D	Groove ø d	Height L	Radius r	Lead-in c	O-ring Cord dia.	max. radial extrusion gap "s" *			
						100 bar	200 bar	400 bar	600 bar
8 - 14,9	D - 4,9	2,2	0,4	2,5	1,78	0,3	0,3	0,2	0,1
15 - 39,9	D - 7,5	3,2	0,6	3,5	2,62	0,4	0,3	0,2	0,1
40 - 79,9	D - 11,0	4,2	1,0	4,5	3,53	0,5	0,4	0,3	0,2
80 - 132,9	D - 15,5	6,3	1,3	5,0	5,3	0,5	0,4	0,3	0,2
133 - 329,9	D - 21,0	8,1	1,8	6,0	7,0	0,7	0,5	0,4	0,2
330 - 669,9	D - 24,5	8,1	1,8	8,0	7,0	0,7	0,5	0,4	0,2
670 - 999,9	D - 28,0	9,5	2,5	10,0	8,4	0,8	0,7	0,5	0,3
1000 - 3000	D - 38,0	13,8	3,0	12,0	12,0	1,1	0,8	0,7	0,4

- The above table shows our standard recommendations. Other dimensions - usually known as "light" and "heavy" series - are included in the tables on the following pages.
- For pressure range above 600 (800) bar we can offer special designs with integrated back-up rings (see page 59, special tailored designs). Please contact our technical department.
- * specified extrusion gap valid up to temp. 80 °C, between 80 and 100 °C the gap size has to be lowered by 25%

Ordering example, size listed in "available standard dimensions"

X-SLIDE K08-D, standard application, actual bore diameter: øD=55 mm,
 predetermined or chosen housing dimensions (from list "K08-D available standard dimensions") --> ød=44,0 mm, L=4,2 mm
required material: XS-ECOPUR / NBR70 --> **article number:** 3XR0390 (from list "K08-D available standard dimensions", article-no.-row 3 for material combination XS-PU/NBR70)

Required designation for placing an order:

X-SLIDE K08-D **3XP0390**
 Seal type article no.

Ordering example, size NOT listed in "available standard dimensions", eg.: inch dimension

X-SLIDE K08-D, standard application, bore diameter øD=203,2 mm (8")
 housing diameter ød=øD - 21,0 = 182,2 mm and housing height L= 8,1 mm (from table "recommended K08-D standard dimensions for diameter range ød 133 - 329,9 mm), **required material:** XS-ECOPUR / NBR70 --> **article number:** not available, housing dimension D x d x L followed by material combination should be used for designation:

Required designation for placing an order:

X-SLIDE K08-D **203,2 x 182,2 x 8,1mm** **XS-PU / NBR70**
 Seal type housing dimensions material combination

For technical advice related to other housing configurations or non standard applications, please use fax enquiry form for piston seals on page 61.

X-SLIDE seals K08-D available standard dimensions / article numbers



Bore Ø D	Groove Ø d	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
8,0	3,1	2,2	1XP0010	2XP0010	3XP0010	-
10,0	5,1	2,2	1XP0020	2XP0020	3XP0020	-
12,0	7,1	2,2	1XP0030	2XP0030	3XP0030	-
14,0	9,1	2,2	1XP0040	2XP0040	3XP0040	-
15,0	7,5	3,2	1XP0050	2XP0050	3XP0050	-
16,0*	11,1	2,2	1XP0060	2XP0060	3XP0060	-
16,0*	8,5	3,2	1XP0070	2XP0070	3XP0070	-
18,0	13,1	2,2	1XP0080	2XP0080	3XP0080	-
18,0	10,5	3,2	1XP0090	2XP0090	3XP0090	-
20,0*	15,1	2,2	1XP0100	2XP0100	3XP0100	-
20,0*	12,5	3,2	1XP0110	2XP0110	3XP0110	-
21,0	13,5	3,2	1XP0120	2XP0120	3XP0120	-
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers						
22,0	17,1	2,2	1XP0130	2XP0130	3XP0130	-
22,0	14,5	3,2	1XP0140	2XP0140	3XP0140	-
24,0	16,5	3,2	1XP0150	2XP0150	3XP0150	-
25,0	20,1	2,2	1XP0160	2XP0160	3XP0160	-
25,0*	17,5	3,2	1XP0170	2XP0170	3XP0170	-
25,0*	14,0	4,2	1XP0180	2XP0180	3XP0180	-
28,0	20,5	3,2	1XP0190	2XP0190	3XP0190	-
30,0	22,5	3,2	1XP0200	2XP0200	3XP0200	-
32,0	27,1	2,2	1XP0210	2XP0210	3XP0210	-
32,0*	24,5	3,2	1XP0220	2XP0220	3XP0220	-
32,0*	21,0	4,2	1XP0230	2XP0230	3XP0230	-
35,0	27,5	3,2	1XP0240	2XP0240	3XP0240	-
35,0	24,0	4,2	1XP0250	2XP0250	3XP0250	-
36,0	28,5	3,2	1XP0260	2XP0260	3XP0260	-
38,0	30,5	3,2	1XP0270	2XP0270	3XP0270	-
39,0	31,5	3,2	1XP0280	2XP0280	3XP0280	-
40,0*	32,5	3,2	1XP0290	2XP0290	3XP0290	-
40,0*	29,0	4,2	1XP0300	2XP0300	3XP0300	-
42,0	31,0	4,2	1XP0310	2XP0310	3XP0310	-
45,0	34,0	4,2	1XP0320	2XP0320	3XP0320	-
48,0	37,0	4,2	1XP0330	2XP0330	3XP0330	-
50,0	42,5	3,2	1XP0340	2XP0340	3XP0340	-
50,0*	39,0	4,2	1XP0350	2XP0350	3XP0350	-
50,0*	34,5	6,3	1XP0360	2XP0360	3XP0360	-
52,0	41,0	4,2	1XP0370	2XP0370	3XP0370	-
53,0	42,0	4,2	1XP0380	2XP0380	3XP0380	-
55,0	44,0	4,2	1XP0390	2XP0390	3XP0390	-
57,0	46,0	4,2	1XP0400	2XP0400	3XP0400	-
58,0	47,0	4,2	1XP0410	2XP0410	3XP0410	-
60,0	49,0	4,2	1XP0420	2XP0420	3XP0420	-
62,0	51,0	4,2	1XP0430	2XP0430	3XP0430	-
63,0*	52,0	4,2	1XP0440	2XP0440	3XP0440	-
63,0*	47,5	6,3	1XP0450	2XP0450	3XP0450	-
65,0	54,0	4,2	1XP0460	2XP0460	3XP0460	-
68,0	57,0	4,2	1XP0470	2XP0470	3XP0470	-
70,0	59,0	4,2	1XP0480	2XP0480	3XP0480	-
70,0	54,5	6,3	1XP0490	2XP0490	3XP0490	-
75,0	64,0	4,2	1XP0500	2XP0500	3XP0500	-
75,0	59,5	6,3	1XP0510	2XP0510	3XP0510	-
79,0	68,0	4,2	1XP0520	2XP0520	3XP0520	-
80,0*	69,0	4,2	1XP0530	2XP0530	3XP0530	-
80,0*	64,5	6,3	1XP0540	2XP0540	3XP0540	-

* Dimensions according to DIN/ISO 7425 Part 1

bold dimensions are common, preferred measurements

X-SLIDE seals K08-D available standard dimensions / article numbers

Bore Ø D	Groove Ø d	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
80,0	59,0	8,1	1XP0550	2XP0550	3XP0550	-
82,5	67,0	6,3	1XP0560	2XP0560	3XP0560	-
85,0	69,5	6,3	1XP0570	2XP0570	3XP0570	-
85,0	64,0	8,1	1XP0580	2XP0580	3XP0580	-
90,0	79,0	4,2	1XP0590	2XP0590	3XP0590	-
90,0	74,5	6,3	1XP0600	2XP0600	3XP0600	-
90,0	69,0	8,1	1XP0610	2XP0610	3XP0610	-
95,0	84,0	4,2	1XP0620	2XP0620	3XP0620	-
95,0	79,5	6,3	1XP0630	2XP0630	3XP0630	-
95,0	74,0	8,1	1XP0640	2XP0640	3XP0640	-
100,0	89,0	4,2	1XP0650	2XP0650	3XP0650	-
100,0*	84,5	6,3	1XP0660	2XP0660	3XP0660	-
100,0	79,0	8,1	1XP0670	2XP0670	3XP0670	-
105,0	94,0	4,2	1XP0680	2XP0680	3XP0680	-
105,0	89,5	6,3	1XP0690	2XP0690	3XP0690	-
105,0	84,0	8,1	1XP0700	2XP0700	3XP0700	-
108,0	92,5	6,3	1XP0710	2XP0710	3XP0710	-
110,0	99,0	4,2	1XP0720	2XP0720	3XP0720	-
110,0	94,5	6,3	1XP0730	2XP0730	3XP0730	-
110,0	89,0	8,1	1XP0740	2XP0740	3XP0740	-
115,0	99,5	6,3	1XP0750	2XP0750	3XP0750	-
115,0	94,0	8,1	1XP0760	2XP0760	3XP0760	-
120,0	109,0	4,2	1XP0770	2XP0770	3XP0770	-
120,0	104,5	6,3	1XP0780	2XP0780	3XP0780	-



NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.

120,0	99,0	8,1	1XP0790	2XP0790	3XP0790	-
125,0	114,0	4,2	1XP0800	2XP0800	3XP0800	-
125,0*	109,5	6,3	1XP0810	2XP0810	3XP0810	-
125,0*	104,0	8,1	1XP0820	2XP0820	3XP0820	-
127,0	111,5	6,3	1XP0830	2XP0830	3XP0830	-
130,0	114,5	6,3	1XP0840	2XP0840	3XP0840	-
130,0	109,0	8,1	1XP0850	2XP0850	3XP0850	-
132,0	121,0	4,2	1XP0860	2XP0860	3XP0860	-
135,0	114,0	8,1	1XP0870	2XP0870	3XP0870	-
140,0	124,5	6,3	1XP0880	2XP0880	3XP0880	-
140,0	119,0	8,1	1XP0890	2XP0890	3XP0890	-
145,0	129,5	6,3	1XP0900	2XP0900	3XP0900	-
145,0	124,0	8,1	1XP0910	2XP0910	3XP0910	-
150,0	134,5	6,3	1XP0920	2XP0920	3XP0920	-
150,0	129,0	8,1	1XP0930	2XP0930	3XP0930	-
155,0	134,0	8,1	1XP0940	2XP0940	3XP0940	-
160,0*	144,5	6,3	1XP0950	2XP0950	3XP0950	-
160,0*	139,0	8,1	1XP0960	2XP0960	3XP0960	-
165,0	144,0	8,1	1XP0970	2XP0970	3XP0970	-
170,0	149,0	8,1	1XP0980	2XP0980	3XP0980	-
175,0	154,0	8,1	1XP0990	2XP0990	3XP0990	-
180,0	164,5	6,3	1XP1000	2XP1000	3XP1000	-
180,0	159,0	8,1	1XP1010	2XP1010	3XP1010	-
185,0	164,0	8,1	1XP1020	2XP1020	3XP1020	-
190,0	169,0	8,1	1XP1030	2XP1030	3XP1030	-
194,0	178,5	6,3	1XP1040	2XP1040	3XP1040	-
195,0	174,0	8,1	1XP1050	2XP1050	3XP1050	-
200,0*	184,5	6,3	1XP1060	2XP1060	3XP1060	-
200,0*	179,0	8,1	1XP1070	2XP1070	3XP1070	-
205,0	184,0	8,1	1XP1080	2XP1080	3XP1080	-

* Dimensions according to DIN/ISO 7425 Part 1

bold dimensions are common, preferred measurements

X-SLIDE seals K08-D available standard dimensions / article numbers



Bore Ø D	Groove Ø d	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
210,0	189,0	8,1	1XP1090	2XP1090	3XP1090	-
215,0	194,0	8,1	1XP1100	2XP1100	3XP1100	-
220,0	199,0	8,1	1XP1110	2XP1110	3XP1110	-
225,0	204,0	8,1	1XP1120	2XP1120	3XP1120	-
230,0	214,5	6,3	1XP1130	2XP1130	3XP1130	-
230,0	209,0	8,1	1XP1140	2XP1140	3XP1140	-
240,0	219,0	8,1	1XP1150	2XP1150	3XP1150	-
250,0	234,5	6,3	1XP1160	2XP1160	3XP1160	-
250,0*	229,0	8,1	1XP1170	2XP1170	3XP1170	-
250,0*	225,5	8,1	1XP1180	2XP1180	3XP1180	-
260,0	239,0	8,1	1XP1190	2XP1190	3XP1190	-
265,0	244,0	8,1	1XP1200	2XP1200	3XP1200	-
<p>NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.</p>						
268,0	247,0	8,1	1XP1210	2XP1210	3XP1210	-
270,0	249,0	8,1	1XP1220	2XP1220	3XP1220	-
280,0	259,0	8,1	1XP1230	2XP1230	3XP1230	-
290,0	269,0	8,1	1XP1240	2XP1240	3XP1240	-
300,0	279,0	8,1	1XP1250	2XP1250	3XP1250	-
300,0	275,5	8,1	1XP1260	2XP1260	3XP1260	-
310,0	289,0	8,1	1XP1270	2XP1270	3XP1270	-
320,0*	299,0	8,1	1XP1280	2XP1280	3XP1280	-
320,0*	295,5	8,1	1XP1290	2XP1290	3XP1290	-
330,0	305,5	8,1	1XP1300	2XP1300	3XP1300	-
340,0	315,5	8,1	1XP1310	2XP1310	3XP1310	-
350,0	325,5	8,1	1XP1320	2XP1320	3XP1320	-
360,0	335,5	8,1	1XP1330	2XP1330	3XP1330	-
370,0	345,5	8,1	1XP1340	2XP1340	3XP1340	-
380,0	355,5	8,1	1XP1350	2XP1350	3XP1350	-
390,0	365,5	8,1	1XP1360	2XP1360	3XP1360	-
400,0*	375,5	8,1	1XP1370	2XP1370	3XP1370	-
410,0	385,5	8,1	1XP1380	2XP1380	3XP1380	-

* Dimensions according to DIN/ISO 7425 Part 1

bold dimensions are common, preferred measurements

X-SLIDE seals K08-D available standard dimensions / article numbers

Bore Ø D	Groove Ø d	Height L	Article-Nr. X-PU/NBR70	Article-Nr. XH-PU/NBR70	Article-Nr. XS-PU/NBR70	Article-Nr. XG-PU/NBR70
420,0	395,5	8,1	1XP1390	2XP1390	3XP1390	-
430,0	405,5	8,1	1XP1400	2XP1400	3XP1400	-
440,0	415,5	8,1	1XP1410	2XP1410	3XP1410	-
450,0	425,5	8,1	1XP1420	2XP1420	3XP1420	-
460,0	435,5	8,1	1XP1430	2XP1430	3XP1430	-
470,0	445,5	8,1	1XP1440	2XP1440	3XP1440	-
480,0	455,5	8,1	1XP1450	2XP1450	3XP1450	-
490,0	465,5	8,1	1XP1460	2XP1460	3XP1460	-
500,0*	475,5	8,1	1XP1470	2XP1470	3XP1470	-
555,0	530,5	8,1	1XP1480	2XP1480	3XP1480	-
600,0	575,5	8,1	-	-	-	4XP1490
640,0	615,5	8,1	-	-	-	4XP1500
660,0	635,5	8,1	-	-	-	4XP1510
700,0	672,0	9,5	-	-	-	4XP1520
710,0	682,0	9,5	-	-	-	4XP1530
740,0	712,0	9,5	-	-	-	4XP1540
780,0	752,0	9,5	-	-	-	4XP1550
800,0	772,0	9,5	-	-	-	4XP1560
900,0	872,0	9,5	-	-	-	4XP1570
1000,0	972,0	9,5	-	-	-	4XP1580
1000,0	962,0	13,8	-	-	-	4XP1590
1050,0	1022,0	9,5	-	-	-	4XP1600
1065,0	1027,0	13,8	-	-	-	4XP1610
1070,0	1032,0	13,8	-	-	-	4XP1620
1200,0	1172,0	9,5	-	-	-	4XP1630
1200,0	1162,0	13,8	-	-	-	4XP1640
1225,0	1187,0	13,8	-	-	-	4XP1650
1500,0	1462,0	13,8	-	-	-	4XP1660
2000,0	1962,0	13,8	-	-	-	4XP1670
2500,0	2462,0	13,8	-	-	-	4XP1680
2700,0	2662,0	13,8	-	-	-	4XP1690
3000,0	2962,0	13,8	-	-	-	4XP1700



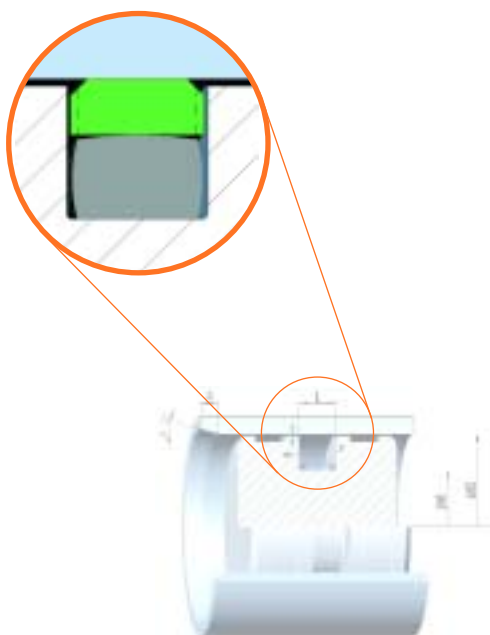
* Dimensions according to DIN/ISO 7425 Part 1
bold dimensions are common, preferred measurements

X-SLIDE seals K08-DS description / technical data

K08-DS standard

Technical data

Detail X-SLIDE seal K08-DS



Pressure:	up to 600 (800) bar / 60 (80) MPa
Speed:	up to 5 m/s
Temperature*:	-30 °C to +100 °C
Media*:	mineral based hydraulic oil fluids flame retardant hydraulic fluids (HFA, HFB) biologically degradable oils (Bio-oils) water
Extrusion gap:	depending on operation pressure and diameter (see table on page 31)

* see material combinations for X-SLIDE seals on pages 8 and 9

The specified data represent maximum values and should not be used simultaneously.
If in doubt, please contact our technical department. Please also note our liability exclusion (page 63).

Advantages

- **good static and dynamic sealing effect** (reduced piston drift)
- **high wear resistance** (high operational reliability)
- **outstanding extrusion resistance** (allowing higher pressure / larger gap sizes)
- **compact design** (for small installation height)
- **compact, stable square energizer ring profile** (less deformation on pulsating load)
- **easy installation procedure** (due to higher flexibility of X-ECOPUR® materials)
- **fast pressurisation, no "blow-by" effect** (due to implemented lateral slots in sealing ring)
- **quick delivery within days** (or even hours), **not weeks** (depending on diameter and quantity)
- **available as individual single piece or medium lot production**
- **available in large quantities** (injection moulded)
- **available for all diameters up to 1.500 mm**

General description

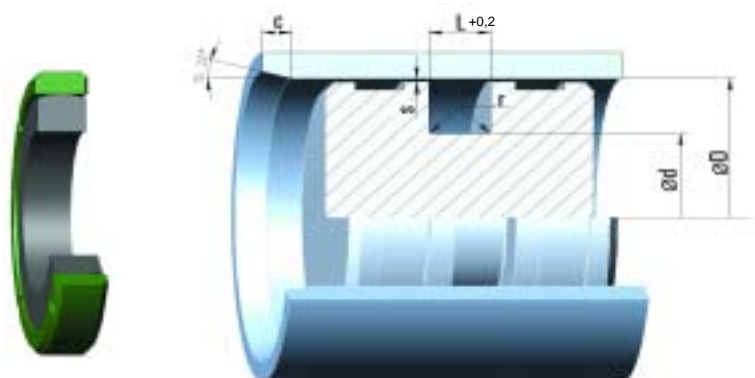
X-SLIDE K08-DS seal is a "heavy duty" double acting piston seal consisting of an X-ECOPUR® sealing element and an elastomeric square profile ring energizer element. Interference fit and preload of energizing element ensures a good initial sealing effect. Designed with a square section energizer ring for increased stability and less deformation of the energizer. Especially on the piston, the installation of the seal is not always easy. In the case of conventional PTFE seals, special mounting and calibration tools are necessary with X-ECOPUR® materials, installation in most cases can be done by hand - no extra tools or calibration necessary.

SLIDE

X-SLIDE seals K08-DS basic information

Standard dimensions

Housing recommendation



Surface roughness	R tmax (µm)	Ra (µm)
Sliding surface (rod)	≤ 2.5	≤ 0.1 - 0.5
Bottom of groove	≤ 6.3	≤ 1.6
Groove face	≤ 15	≤ 3
bearing area Tp	50% - 95%	

Seal housing tolerances		
ød	h10	
øD	H9	

Table of recommended X-SLIDE seals K08-DS standard dimensions

Bore ø D	Groove ø d	Height L	Radius r	Lead-in c	max. radial extrusion gap "s" *			
					100 bar	200 bar	400 bar	600 bar
20 - 49,9	D - 10	5,0	0,3	4,0	0,5	0,4	0,3	0,2
50 - 59,9	D - 15	7,5	0,4	5,0	0,5	0,4	0,3	0,2
60 - 199,9	D - 20	10,0	0,4	6,0	0,7	0,5	0,4	0,2
200 - 299,9	D - 25	12,5	0,4	8,5	0,8	0,6	0,5	0,3
300 - 529,9	D - 30	15,0	0,8	10,0	0,9	0,7	0,6	0,3
530 - 679,9	D - 35	17,5	1,2	13,0	1,0	0,8	0,7	0,3
680 - 1500	D - 40	20,0	1,2	15,0	1,1	0,9	0,8	0,4

* For pressure range above 600 (800) bar we can offer special designs with integrated back-up rings (see page 59, special tailor-made designs). Please contact our technical department.

* specified extrusion gap valid up to temp. 80 °C, between 80 and 100 °C the gap size has to be lowered by 25%

Ordering example, size listed in "available standard dimensions"

X-SLIDE K08-DS, standard application, actual bore diameter: øD=210 mm,
 predetermined or chosen housing dimensions (from list "K08-DS available standard dimensions") --> ød=185 mm, L=12,5 mm
required material: X-ECOPUR / NBR85 --> **article number:** 1XPH0210 (from list "K08-DS available standard dimensions", article-no.-row 1 for material combination X-PU/NBR85)

Required designation for placing an order: **X-SLIDE K08-DS 1XPH0210**
 Seal type article no.

Ordering example, size NOT listed in "available standard dimensions", eg.: inch dimension

X-SLIDE K08-DS, standard application, bore diameter øD=209,55 mm (8 1/4")
 housing diameter ød=øD - 25 = 184,55 mm and housing height L= 12,5 mm (from table "recommended K08-DS standard dimensions for diameter range øD 200 - 299,9 mm), **required material:** X-ECOPUR / NBR85 --> **article number:** not available, housing dimension D x d x L followed by material combination should be used for designation:

Required designation for placing an order: **X-SLIDE K08-DS 209,55 x 184,55 x 12,5mm X-PU / NBR85**
 Seal type housing dimensions material combination

For technical advice related to other housing configurations or non standard applications, please use fax enquiry form for rod seals on page 61.

X-SLIDE seals K08-DS available standard dimensions / article numbers



Bore Ø D	Groove Ø d	Height L	Article-Nr. X-PU/NBR85	Article-Nr. XH-PU/NBR85	Article-Nr. XS-PU/NBR85	Article-Nr. XG-PU/NBR85
20	10	5	1XPH0010	2XPH0010	3XPH0010	-
25	15	5	1XPH0020	2XPH0020	3XPH0020	-
30	20	5	1XPH0030	2XPH0030	3XPH0030	-
32	22	5	1XPH0040	2XPH0040	3XPH0040	-
35	25	5	1XPH0050	2XPH0050	3XPH0050	-
40	30	5	1XPH0060	2XPH0060	3XPH0060	-
45	35	5	1XPH0070	2XPH0070	3XPH0070	-
50	35	7,5	1XPH0080	2XPH0080	3XPH0080	-
55	40	7,5	1XPH0090	2XPH0090	3XPH0090	-
60,0	40,0	10,0	1XPH0100	2XPH0100	3XPH0100	-
63,0	43,0	10,0	1XPH0110	2XPH0110	3XPH0110	-
70,0	50,0	10	1XPH0120	2XPH0120	3XPH0120	-
80,0	60,0	10	1XPH0130	2XPH0130	3XPH0130	-
100,0	80,0	10	1XPH0140	2XPH0140	3XPH0140	-
115,0	95,0	10	1XPH0150	2XPH0150	3XPH0150	-
125,0	105,0	10	1XPH0160	2XPH0160	3XPH0160	-
140,0	120,0	10	1XPH0170	2XPH0170	3XPH0170	-
150,0	130,0	10	1XPH0180	2XPH0180	3XPH0180	-
180,0	160,0	10	1XPH0190	2XPH0190	3XPH0190	-
200,0	175,0	12,5	1XPH0200	2XPH0200	3XPH0200	-
210,0	185,0	12,5	1XPH0210	2XPH0210	3XPH0210	-
220,0	195,0	12,5	1XPH0220	2XPH0220	3XPH0220	-
230,0	205,0	12,5	1XPH0230	2XPH0230	3XPH0230	-
240,0	215,0	12,5	1XPH0240	2XPH0240	3XPH0240	-
<p>NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.</p>						
245,0	220,0	12,5	1XPH0250	2XPH0250	3XPH0250	-
250,0	225,0	12,5	1XPH0260	2XPH0260	3XPH0260	-
260,0	235,0	12,5	1XPH0270	2XPH0270	3XPH0270	-
270,0	245,0	12,5	1XPH0280	2XPH0280	3XPH0280	-
275,0	250,0	12,5	1XPH0290	2XPH0290	3XPH0290	-
280,0	255,0	12,5	1XPH0300	2XPH0300	3XPH0300	-
285,0	255,0	12,5	1XPH0310	2XPH0310	3XPH0310	-
290,0	265,0	12,5	1XPH0320	2XPH0320	3XPH0320	-
300,0	270,0	15	1XPH0330	2XPH0330	3XPH0330	-
305,0	275,0	15	1XPH0340	2XPH0340	3XPH0340	-
310,0	280,0	15	1XPH0350	2XPH0350	3XPH0350	-
320,0	290,0	15	1XPH0360	2XPH0360	3XPH0360	-
330,0	300,0	15	1XPH0370	2XPH0370	3XPH0370	-
340,0	310,0	15	1XPH0380	2XPH0380	3XPH0380	-
350,0	320,0	15	1XPH0390	2XPH0390	3XPH0390	-
360,0	330,0	15	1XPH0400	2XPH0400	3XPH0400	-
370,0	340,0	15	1XPH0410	2XPH0410	3XPH0410	-
380,0	350,0	15	1XPH0420	2XPH0420	3XPH0420	-
390,0	360,0	15	1XPH0430	2XPH0430	3XPH0430	-
400,0	370,0	15	1XPH0440	2XPH0440	3XPH0440	-
410,0	380,0	15	1XPH0450	2XPH0450	3XPH0450	-
420,0	390,0	15	1XPH0460	2XPH0460	3XPH0460	-
430,0	400,0	15	1XPH0470	2XPH0470	3XPH0470	-
450,0	420,0	15	1XPH0480	2XPH0480	3XPH0480	-
480,0	450,0	15	1XPH0490	2XPH0490	3XPH0490	-
490,0	460,0	15	1XPH0500	2XPH0500	3XPH0500	-
500,0	470,0	15	1XPH0510	2XPH0510	3XPH0510	-
520,0	490,0	15	1XPH0520	2XPH0520	3XPH0520	-
530,0	495,0	17,5	1XPH0530	2XPH0530	3XPH0530	-
550,0	515,0	17,5	1XPH0540	2XPH0540	3XPH0540	-

X-SLIDE seals K08-DS available standard dimensions / article numbers

Bore Ø D	Groove Ø d	Height L	Article-Nr. X-PU/NBR85	Article-Nr. XH-PU/NBR85	Article-Nr. XS-PU/NBR85	Article-Nr. XG-PU/NBR85
560,0	525,0	17,5	1XPH0550	2XPH0550	3XPH0550	-
570,0	535,0	17,5	1XPH0560	2XPH0560	3XPH0560	-
580,0	545,0	17,5	1XPH0570	2XPH0570	3XPH0570	-
590,0	555,0	17,5	1XPH0580	2XPH0580	3XPH0580	-
600,0	565,0	17,5	-	-	-	4XPH0590
610,0	575,0	17,5	-	-	-	4XPH0600
620,0	585,0	17,5	-	-	-	4XPH0610
630,0	595,0	17,5	-	-	-	4XPH0620
640,0	605,0	17,5	-	-	-	4XPH0630
650,0	615,0	17,5	-	-	-	4XPH0640
660,0	625,0	17,5	-	-	-	4XPH0650
670,0	635,0	17,5	-	-	-	4XPH0660
680,0	640,0	20	-	-	-	4XPH0670
690,0	650,0	20	-	-	-	4XPH0680
710,0	670,0	20	-	-	-	4XPH0690
720,0	680,0	20	-	-	-	4XPH0700
730,0	690,0	20	-	-	-	4XPH0710
740,0	700,0	20	-	-	-	4XPH0720
750,0	710,0	20	-	-	-	4XPH0730
760,0	720,0	20	-	-	-	4XPH0740
770,0	730,0	20	-	-	-	4XPH0750
780,0	740,0	20	-	-	-	4XPH0760
800,0	760,0	20	-	-	-	4XPH0770
820,0	780,0	20	-	-	-	4XPH0780
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
830,0	790,0	20	-	-	-	4XPH0790
840,0	800,0	20	-	-	-	4XPH0800
850,0	810,0	20	-	-	-	4XPH0810
880,0	840,0	20	-	-	-	4XPH0820
900,0	860,0	20	-	-	-	4XPH0830
920,0	880,0	20	-	-	-	4XPH0840
940,0	900,0	20	-	-	-	4XPH0850
950,0	910,0	20	-	-	-	4XPH0860
965,0	925,0	20	-	-	-	4XPH0870
980,0	940,0	20	-	-	-	4XPH0880
1.000,0	960,0	20	-	-	-	4XPH0890
1.050,0	1.010,0	20	-	-	-	4XPH0900
1.100,0	1.060,0	20	-	-	-	4XPH0910
1.120,0	1.080,0	20	-	-	-	4XPH0920
1.140,0	1.100,0	20	-	-	-	4XPH0930
1.180,0	1.140,0	20	-	-	-	4XPH0940
1.300,0	1.260,0	20	-	-	-	4XPH0950
1.400,0	1.360,0	20	-	-	-	4XPH0960
1.450,0	1.410,0	20	-	-	-	4XPH0970
1.500,0	1.460,0	20	-	-	-	4XPH0980



General description F-SLIDE seal range

Introduction

General description F-SLIDE seal range ECONOMOS® "F-SLIDE seal range" is the standard family of elastomerically energized sealing elements in various PTFE compounds. The vast majority of applications can not only be met, but also improved with our new developed X-SLIDE seal range. However, there are still applications remaining where non-standard operating conditions require PTFE solutions either because of its excellent high temperature resistance or ultimate chemical resistance. The characteristics of PTFE materials do not allow seals made of this material to meet ultimate sealing performance, therefore most rod sealing systems consist of a "tandem arrangement" (two F-SLIDE seals S09-E behind each other) or a combination of a primary F-SLIDE S09-E seal and a secondary polyurethane lip seal style (e.g. ECONOMOS® S01-P profile) to reach acceptable leakage behaviour. For critical sealing applications the use of a double acting wiper behind the seals and a "leakage vent" in between can upgrade the leakage performance.

In the case of standard double acting piston seals which are energized from both sides with the same media, any occurring small leakage is not visible, indeed it could create some additional lubrication for better friction and wear behaviour and is acceptable as long as performance efficiency is not influenced.

If a critical holding function is required, or if the piston seal has to separate different media, an efficient sealing effect can only be reached if an additional elastomeric sealing element is implemented into the PTFE sealing element (see special solutions on page 59).

The combination of our own PTFE manufacturing plant in the ECONOMOS® group and the intensive in-house research and development programme (including material and test rig investigations), assure optimised material characteristics on our standard range of PTFE materials. Additionally we can offer non-standard sealing solutions in special customized compounds.

Further PTFE compounds for F-SLIDE seals Owing to our own PTFE manufacturing plant we are able to offer a wide range of special PTFE compounds, for instance, PTFE filled with various percentages of carbon, graphite, glass fibre, PEEK, polyimide, and many more. Please contact our technical department for more information on which PTFE compound is best suitable for your specific application.





Summary Over many years ECONOMOS® has shown its commitment towards designing and developing the absolute best in materials and profiles. Our highly trained and experienced sales and application engineers are focused on providing answers to your questions and solutions to your specific needs.

aterial

Material combinations for F-SLIDE seals

standard/speci



Standard material combinations

	ECOFLON 2 / NBR70* grey black	-30°C to +100°C	PTFE filled with 15% glass fibre and 5% MoS₂ for mineral oils, hydraulic fluids of the group HFA, HFB, HFC and most biologically degradable fluids (bio-oils). Owing to NBR (Rubber) energizer, limited temperature resistance.
	ECOFLON 2 / FKM70** grey black (brown)	-20°C to +200°C	PTFE filled with 15% glass fibre and 5% MoS₂ for mineral oils, hydraulic fluids of the group HFA, HFB, HFC and most biologically degradable fluids (bio-oils). Owing to FKM (Viton®) energizer, increased temperature resistance.
	ECOFLON 3 / NBR70* light green up to Ø 600 mm black bronze above Ø 600 mm black	-30°C to +100°C	PTFE filled with 40% Bronze Standard material for mineral oil based hydraulic fluids and biologically degradable fluids (Bio-oils). Owing to NBR (Rubber) energizer, limited temperature resistance.
	ECOFLON 3 / FPM70** light green up to Ø 600 mm black (brown) bronze above Ø 600 mm black (brown)	-20°C to +200°C	PTFE filled with 40% Bronze Standard material for mineral oil based hydraulic fluids. Owing to FKM (Viton®) energizer, increased temperature resistance. Suitable for biologically degradable fluids (Bio-oils) and hydraulic fluids of the HFD group.

* ECORUBBER 1 (NBR 85 Shore A) as energiser material for heavy duty design S09-ES, K08-DS

** ECORUBBER 2 (FKM 85 Shore A) as energiser material for heavy duty design S09-ES, K08-DS

Special material combinations

	ECOFLON 4 / NBR70* dark grey black	-30°C to +100°C	PTFE filled with 25% Carbon for mineral oils, hydraulic fluids of the group HFA, HFB, HFC and most biologically degradable fluids (bio-oils). Suitable for soft metal gliding surfaces as well as pneumatic applications. Owing to NBR (Rubber) energizer, limited temperature resistance.
	ECOFLON 4 / FKM70** dark grey black (brown)	-20°C to +200°C	PTFE filled with 25% Carbon for mineral oils, hydraulic fluids of the group HFA, HFB, HFC and most biologically degradable fluids (bio-oils). Suitable for soft metal gliding surfaces as well as pneumatic applications. Owing to FKM (Viton®) energizer, increased temperature resistance.

* ECORUBBER 1 (NBR 85 Shore A) as energiser material for heavy duty design S09-ES, K08-DS

** ECORUBBER 2 (FKM 85 Shore A) as energiser material for heavy duty design S09-ES, K08-DS

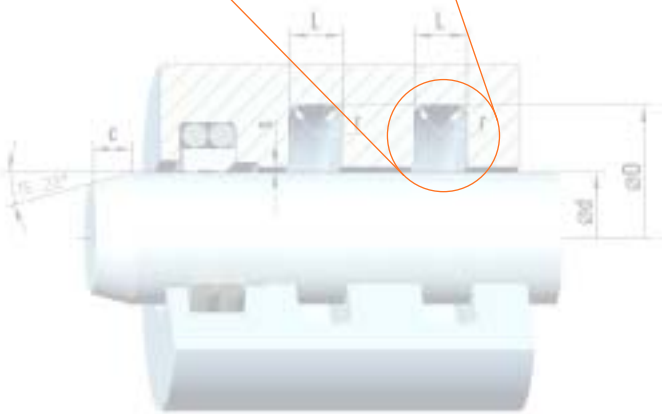
Due to the excellent chemical and temperature resistance of PTFE materials, this group of seals can be "adjusted" to almost every application by selecting the appropriate energizer material. ECONOMOS® can offer, for example, H-NBR, H-NBR low temperature grade, silicone, EPDM, and many more. Please consult our technical department for further information.

F-SLIDE seals S09-E description / technical data

S09-F standard

Technical data

Detail F-SLIDE seal S09-E



Pressure:	up to 600 (800) bar / 60 (80) MPa
Speed:	up to 10 m/s
Temperature*:	-30 °C to +100 °C
Media*:	mineral based hydraulic oil fluids flame retardant hydraulic fluids (HFA, HFB) biologically degradable oils (Bio-oils) water
Extrusion gap:	depending on operation pressure and diameter (see table on page 37)

* see material combinations for F-SLIDE seals on page 35

The specified data represent maximum values and should not be used simultaneously. If in doubt, please contact our technical department. Please also note our liability exclusion (page 63).

Advantages

- **very low friction, superior stick-slip behaviour**
- **no adhesive effect to metal parts after prolonged periods of standstill**
- **suitable for under lubricated systems** (material dependence)
- **excellent temperature resistance** (depending on selected 'O' ring material)
- **excellent chemical resistance** (depending on selected 'O' ring material)
- **compact design** (for small installation height)
- **quick delivery within days** (or even hours), **not weeks** (depending on diameter and quantity)
- **available as individual single piece or medium lot production**
- **available in large quantities**
- **available for all diameters up to 3.000 mm**

General description

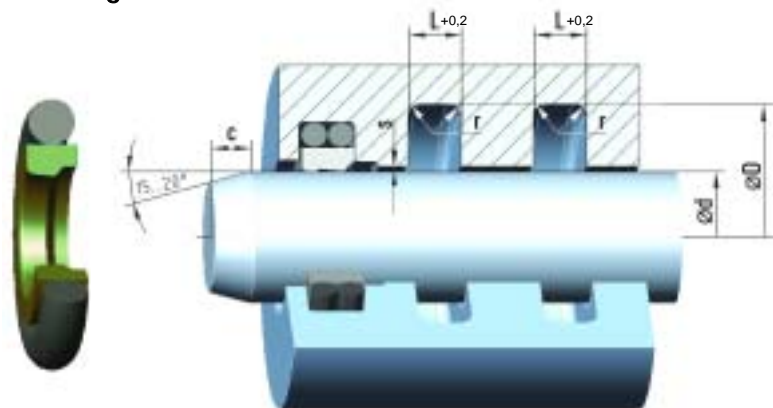
F-SLIDE S09-E seal is the standard single acting rod seal consisting of a PTFE compound sealing element and an elastomeric 'O' ring energizer element. Interference fit and 'O' ring preload ensure a good initial sealing effect. Increasing system pressure further energizes the 'O' ring for higher contact force and proportionally better sealing. By selecting a suitable 'O' ring material, the seal can be "adjusted" to suit various chemical and thermal conditions (see material combinations for F-SLIDE seal on page 35). This seal style is always used in so called "tandem" arrangements or in combination with a lip seal (see page 11).

SLIDE

F-SLIDE seals S09-E basic information

dimensions

Housing recommendation



Surface roughness	R tmax (µm)	Ra (µm)
Sliding surface (rod)	≤ 2.0	≤ 0.05 - 0.3
Bottom of groove	≤ 6.3	≤ 1.6
Groove face	≤ 15	≤ 3
bearing area Tp	50% - 95%	

Seal housing tolerances	
ød	f8
øD	H10

Table of recommended F-SLIDE seals S09-E standard dimensions

Rod Ø d	Groove Ø D	Height L	Radius r	Lead-in c	O-ring Cord dia.	max. radial extrusion gap "s"			
						100 bar	200 bar	400 bar	600 bar
3 - 7,9	d + 4,9	2,2	0,4	2,5	1,78	0,30	0,20	0,15	0,05
8 - 18,9	d + 7,3	3,2	0,6	3,5	2,62	0,40	0,25	0,15	0,05
19 - 37,9	d + 10,7	4,2	1,0	4,5	3,53	0,40	0,25	0,20	0,10
38 - 199,9	d + 15,1	6,3	1,3	5,0	5,33	0,50	0,30	0,20	0,10
200 - 255,9	d + 20,5	8,1	1,8	6,0	7,00	0,60	0,35	0,25	0,15
256 - 649,9	d + 24,0	8,1	1,8	8,0	7,00	0,60	0,35	0,25	0,15
650 - 999,9	d + 27,3	9,5	2,5	10,0	8,40	0,70	0,50	0,30	0,20
1000 - 3000	d + 38,0	13,8	3,0	12,0	12,00	1,00	0,70	0,60	0,30

- The above table shows our standard recommendations. Other dimensions - usually known as "light" and "heavy" series - are included in the tables on the following pages.
- For pressure range above 600 (800) bar we can offer special designs with integrated back-up rings (see page 59, special tailored designs). Please contact our technical department.

Ordering example, size listed in "available standard dimensions"

F-SLIDE S09-E, standard application, actual rod diameter: $\varnothing d = 22$ mm, predetermined or chosen housing dimensions (from list "S09-E available standard dimensions") --> $\varnothing D = 32,7$ mm, $L = 4,2$ mm **required material:** ECOFLON 3 / NBR70 --> **article number:** 3FR0390 (from list "S09-E available standard dimensions", article-no.-row 3 for material combination ECOFLON 3/NBR70)

Required designation for placing an order:

F-SLIDE S09-E **3FR0390**
Seal type article no.

Ordering example, size NOT listed in "available standard dimensions", eg.: inch dimension

F-SLIDE S09-E, standard application, rod diameter $\varnothing d = 25,4$ mm (1") housing diameter $\varnothing D = \varnothing d + 10,7 = 36,1$ mm and housing height $L = 4,2$ mm (from table "recommended S09-E standard dimensions for diameter range $\varnothing d$ 19 - 37,9 mm), **required material:** ECOFLON 3 / NBR70 --> **article number:** not available, housing dimension d x D x L followed by material combination should be used for designation:

Required designation for placing an order:

F-SLIDE S09-E **25,4 x 36,1 x 4,2mm** **FLON 3 / NBR70**
Seal type housing dimensions material combination

For technical advice related to other housing configurations or non standard applications, please use fax enquiry form for rod seals on page 60.

F-SLIDE seals S09-E available standard dimensions / article numbers



Rod Ø d	Groove Ø D	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
3,0	7,9	2,2	1FR0010	2FR0010	3FR0010	4FR0010
4,0	8,9	2,2	1FR0020	2FR0020	3FR0020	4FR0020
5,0	9,9	2,2	1FR0030	2FR0030	3FR0030	4FR0030
6,0	10,9	2,2	1FR0040	2FR0040	3FR0040	4FR0040
6,0*	11,0	2,2	1FR0050	2FR0050	3FR0050	4FR0050
7,0	11,9	2,2	1FR0060	2FR0060	3FR0060	4FR0060
8,0	12,9	2,2	1FR0070	2FR0070	3FR0070	4FR0070
8,0*	13,0	2,2	1FR0080	2FR0080	3FR0080	4FR0080
8,0	15,3	3,2	1FR0090	2FR0090	3FR0090	4FR0090
9,0	13,9	2,2	1FR0100	2FR0100	3FR0100	4FR0100
9,0	16,3	3,2	1FR0110	2FR0110	3FR0110	4FR0110
10,0	14,9	2,2	1FR0120	2FR0120	3FR0120	4FR0120
10,0*	15,0	2,2	1FR0130	2FR0130	3FR0130	4FR0130
10,0	17,3	3,2	1FR0140	2FR0140	3FR0140	4FR0140
12,0	16,9	2,2	1FR0150	2FR0150	3FR0150	4FR0150
12,0*	17,0	2,2	1FR0160	2FR0160	3FR0160	4FR0160
12,0	19,3	3,2	1FR0170	2FR0170	3FR0170	4FR0170
12,0*	19,5	3,2	1FR0180	2FR0180	3FR0180	4FR0180
<p>NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.</p>						
14,0	18,9	2,2	1FR0190	2FR0190	3FR0190	4FR0190
14,0*	19,0	2,2	1FR0200	2FR0200	3FR0200	4FR0200
14,0	21,3	3,2	1FR0210	2FR0210	3FR0210	4FR0210
14,0*	21,5	3,2	1FR0220	2FR0220	3FR0220	4FR0220
15,0	19,9	2,2	1FR0230	2FR0230	3FR0230	4FR0230
15,0	22,3	3,2	1FR0240	2FR0240	3FR0240	4FR0240
16,0	20,9	2,2	1FR0250	2FR0250	3FR0250	4FR0250
16,0	23,3	3,2	1FR0260	2FR0260	3FR0260	4FR0260
16,0*	23,5	3,2	1FR0270	2FR0270	3FR0270	4FR0270
17,0	21,9	2,2	1FR0280	2FR0280	3FR0280	4FR0280
18,0	22,9	2,2	1FR0290	2FR0290	3FR0290	4FR0290
18,0	25,3	3,2	1FR0300	2FR0300	3FR0300	4FR0300
18,0*	25,5	3,2	1FR0310	2FR0310	3FR0310	4FR0310
19,0	29,7	4,2	1FR0320	2FR0320	3FR0320	4FR0320
20,0	27,3	3,2	1FR0330	2FR0330	3FR0330	4FR0330
20,0*	27,5	3,2	1FR0340	2FR0340	3FR0340	4FR0340
20,0	30,7	4,2	1FR0350	2FR0350	3FR0350	4FR0350
20,0*	31,0	4,2	1FR0360	2FR0360	3FR0360	4FR0360
22,0	29,3	3,2	1FR0370	2FR0370	3FR0370	4FR0370
22,0*	29,5	3,2	1FR0380	2FR0380	3FR0380	4FR0380
22,0	32,7	4,2	1FR0390	2FR0390	3FR0390	4FR0390
22,0*	33,0	4,2	1FR0400	2FR0400	3FR0400	4FR0400
24,0	31,3	3,2	1FR0410	2FR0410	3FR0410	4FR0410
25,0	32,3	3,2	1FR0420	2FR0420	3FR0420	4FR0420
25,0*	32,5	3,2	1FR0430	2FR0430	3FR0430	4FR0430
25,0	35,7	4,2	1FR0440	2FR0440	3FR0440	4FR0440
25,0*	36,0	4,2	1FR0450	2FR0450	3FR0450	4FR0450
26,0	33,3	3,2	1FR0460	2FR0460	3FR0460	4FR0460
26,0	36,7	4,2	1FR0470	2FR0470	3FR0470	4FR0470
28,0*	39,0	4,2	1FR0480	2FR0480	3FR0480	4FR0480
28,0	35,3	3,2	1FR0490	2FR0490	3FR0490	4FR0490
28,0	38,7	4,2	1FR0500	2FR0500	3FR0500	4FR0500
30,0	37,3	3,2	1FR0510	2FR0510	3FR0510	4FR0510
30,0	40,7	4,2	1FR0520	2FR0520	3FR0520	4FR0520
32,0	39,3	3,2	1FR0530	2FR0530	3FR0530	4FR0530
32,0	42,7	4,2	1FR0540	2FR0540	3FR0540	4FR0540

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

F-SLIDE seals S09-E available standard dimensions / article numbers

Rod Ø d	Groove Ø D	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
32,0*	43,0	4,2	1FR0550	2FR0550	3FR0550	4FR0550
35,0	42,3	3,2	1FR0560	2FR0560	3FR0560	4FR0560
35,0	45,7	4,2	1FR0570	2FR0570	3FR0570	4FR0570
36,0	43,3	3,2	1FR0580	2FR0580	3FR0580	4FR0580
36,0	46,7	4,2	1FR0590	2FR0590	3FR0590	4FR0590
36,0*	47,0	4,2	1FR0600	2FR0600	3FR0600	4FR0600
37,0	44,3	3,2	1FR0610	2FR0610	3FR0610	4FR0610
37,0	47,7	4,2	1FR0620	2FR0620	3FR0620	4FR0620
38,0	48,7	4,2	1FR0630	2FR0630	3FR0630	4FR0630
38,0	53,1	6,3	1FR0640	2FR0640	3FR0640	4FR0640
40,0	50,7	4,2	1FR0650	2FR0650	3FR0650	4FR0650
40,0*	51,0	4,2	1FR0660	2FR0660	3FR0660	4FR0660
40,0	55,1	6,3	1FR0670	2FR0670	3FR0670	4FR0670
42,0	52,7	4,2	1FR0680	2FR0680	3FR0680	4FR0680
42,0	57,1	6,3	1FR0690	2FR0690	3FR0690	4FR0690
43,0	53,7	4,2	1FR0700	2FR0700	3FR0700	4FR0700
45,0	55,7	4,2	1FR0710	2FR0710	3FR0710	4FR0710
45,0*	56,0	4,2	1FR0720	2FR0720	3FR0720	4FR0720
45,0	60,1	6,3	1FR0730	2FR0730	3FR0730	4FR0730
48,0	58,7	4,2	1FR0740	2FR0740	3FR0740	4FR0740
48,0	63,1	6,3	1FR0750	2FR0750	3FR0750	4FR0750
50,0	60,7	4,2	1FR0760	2FR0760	3FR0760	4FR0760
50,0*	61,0	4,2	1FR0770	2FR0770	3FR0770	4FR0770
50,0	65,1	6,3	1FR0780	2FR0780	3FR0780	4FR0780
52,0	62,7	4,2	1FR0790	2FR0790	3FR0790	4FR0790
52,0	67,1	6,3	1FR0800	2FR0800	3FR0800	4FR0800
54,0	69,1	6,3	1FR0810	2FR0810	3FR0810	4FR0810
55,0	65,7	4,2	1FR0820	2FR0820	3FR0820	4FR0820
55,0	70,1	6,3	1FR0830	2FR0830	3FR0830	4FR0830
56,0	66,7	4,2	1FR0840	2FR0840	3FR0840	4FR0840
56,0*	67,0	4,2	1FR0850	2FR0850	3FR0850	4FR0850
56,0	71,1	6,3	1FR0860	2FR0860	3FR0860	4FR0860
56,0*	71,5	6,3	1FR0870	2FR0870	3FR0870	4FR0870
56,0	76,5	8,1	1FR0880	2FR0880	3FR0880	4FR0880
57,0	72,1	6,3	1FR0890	2FR0890	3FR0890	4FR0890
59,0	69,7	4,2	1FR0900	2FR0900	3FR0900	4FR0900
60,0	70,7	4,2	1FR0910	2FR0910	3FR0910	4FR0910
60,0	75,1	6,3	1FR0920	2FR0920	3FR0920	4FR0920
63,0	73,7	4,2	1FR0930	2FR0930	3FR0930	4FR0930
63,0*	74,0	4,2	1FR0940	2FR0940	3FR0940	4FR0940
63,0	78,1	6,3	1FR0950	2FR0950	3FR0950	4FR0950
63,0*	78,5	6,3	1FR0960	2FR0960	3FR0960	4FR0960
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
65,0	75,7	4,2	1FR0970	2FR0970	3FR0970	4FR0970
65,0	80,1	6,3	1FR0980	2FR0980	3FR0980	4FR0980
67,0	77,7	4,2	1FR0990	2FR0990	3FR0990	4FR0990
69,0	84,1	6,3	1FR1000	2FR1000	3FR1000	4FR1000
70,0	80,7	4,2	1FR1010	2FR1010	3FR1010	4FR1010
70,0	85,1	6,3	1FR1020	2FR1020	3FR1020	4FR1020
70,0*	85,5	6,3	1FR1030	2FR1030	3FR1030	4FR1030
70,0	90,5	8,1	1FR1040	2FR1040	3FR1040	4FR1040
72,0	82,7	4,2	1FR1050	2FR1050	3FR1050	4FR1050
73,0	88,1	6,3	1FR1060	2FR1060	3FR1060	4FR1060
75,0	85,7	4,2	1FR1070	2FR1070	3FR1070	4FR1070
75,0	90,1	6,3	1FR1080	2FR1080	3FR1080	4FR1080



* Dimensions according to DIN/ISO 7425 Part 1
bold dimensions are common, preferred measurements

F-SLIDE seals S09-E available standard dimensions / article numbers



Rod Ø d	Groove Ø D	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
78,0	93,1	6,3	1FR1090	2FR1090	3FR1090	4FR1090
80,0	90,7	4,2	1FR1100	2FR1100	3FR1100	4FR1100
80,0	95,1	6,3	1FR1110	2FR1110	3FR1110	4FR1110
80,0*	95,5	6,3	1FR1120	2FR1120	3FR1120	4FR1120
80,0	100,5	8,1	1FR1130	2FR1130	3FR1130	4FR1130
82,5	97,6	6,3	1FR1140	2FR1140	3FR1140	4FR1140
83,0	93,7	4,2	1FR1150	2FR1150	3FR1150	4FR1150
85,0	95,7	4,2	1FR1160	2FR1160	3FR1160	4FR1160
85,0	100,1	6,3	1FR1170	2FR1170	3FR1170	4FR1170
85,0	105,5	8,1	1FR1180	2FR1180	3FR1180	4FR1180
89,0	104,1	6,3	1FR1190	2FR1190	3FR1190	4FR1190
90,0	100,7	4,2	1FR1200	2FR1200	3FR1200	4FR1200
90,0	105,1	6,3	1FR1210	2FR1210	3FR1210	4FR1210
90,0*	105,5	6,3	1FR1220	2FR1220	3FR1220	4FR1220
90,0	110,5	8,1	1FR1230	2FR1230	3FR1230	4FR1230
92,0	102,7	4,2	1FR1240	2FR1240	3FR1240	4FR1240
92,0	107,1	6,3	1FR1250	2FR1250	3FR1250	4FR1250
95,0	105,7	4,2	1FR1260	2FR1260	3FR1260	4FR1260
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
95,0	110,1	6,3	1FR1270	2FR1270	3FR1270	4FR1270
100,0	110,7	4,2	1FR1280	2FR1280	3FR1280	4FR1280
100,0	115,1	6,3	1FR1290	2FR1290	3FR1290	4FR1290
100,0*	115,5	6,3	1FR1300	2FR1300	3FR1300	4FR1300
100,0	120,5	8,1	1FR1310	2FR1310	3FR1310	4FR1310
105,0	120,1	6,3	1FR1320	2FR1320	3FR1320	4FR1320
105,0	125,5	8,1	1FR1330	2FR1330	3FR1330	4FR1330
110,0	120,7	4,2	1FR1340	2FR1340	3FR1340	4FR1340
110,0	125,1	6,3	1FR1350	2FR1350	3FR1350	4FR1350
110,0*	125,5	6,3	1FR1360	2FR1360	3FR1360	4FR1360
110,0	130,5	8,1	1FR1370	2FR1370	3FR1370	4FR1370
115,0	130,1	6,3	1FR1380	2FR1380	3FR1380	4FR1380
120,0	135,1	6,3	1FR1390	2FR1390	3FR1390	4FR1390
120,0	140,5	8,1	1FR1400	2FR1400	3FR1400	4FR1400
125,0	140,1	6,3	1FR1410	2FR1410	3FR1410	4FR1410
125,0*	140,5	6,3	1FR1420	2FR1420	3FR1420	4FR1420
125,0	145,5	8,1	1FR1430	2FR1430	3FR1430	4FR1430
127,0	142,1	6,3	1FR1440	2FR1440	3FR1440	4FR1440
130,0	145,1	6,3	1FR1450	2FR1450	3FR1450	4FR1450
130,0	150,5	8,1	1FR1460	2FR1460	3FR1460	4FR1460
132,0	147,1	6,3	1FR1470	2FR1470	3FR1470	4FR1470
135,0	145,7	4,2	1FR1480	2FR1480	3FR1480	4FR1480
135,0	150,1	6,3	1FR1490	2FR1490	3FR1490	4FR1490
137,0	152,1	6,3	1FR1500	2FR1500	3FR1500	4FR1500
138,0	153,1	6,3	1FR1510	2FR1510	3FR1510	4FR1510
140,0	150,7	4,2	1FR1520	2FR1520	3FR1520	4FR1520
140,0	155,1	6,3	1FR1530	2FR1530	3FR1530	4FR1530
140,0*	155,5	6,3	1FR1540	2FR1540	3FR1540	4FR1540
140,0	160,5	8,1	1FR1550	2FR1550	3FR1550	4FR1550
140,5	155,6	6,3	1FR1560	2FR1560	3FR1560	4FR1560
145,0	160,1	6,3	1FR1570	2FR1570	3FR1570	4FR1570
145,0	165,5	8,1	1FR1580	2FR1580	3FR1580	4FR1580
150,0	165,1	6,3	1FR1590	2FR1590	3FR1590	4FR1590
150,0	170,5	8,1	1FR1600	2FR1600	3FR1600	4FR1600
153,0	168,1	6,3	1FR1610	2FR1610	3FR1610	4FR1610
155,0	170,1	6,3	1FR1620	2FR1620	3FR1620	4FR1620

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

F-SLIDE seals S09-E available standard dimensions / article numbers

Rod Ø d	Groove Ø D	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
160,0	175,1	6,3	1FR1630	2FR1630	3FR1630	4FR1630
160,0*	175,5	6,3	1FR1640	2FR1640	3FR1640	4FR1640
160,0	180,5	8,1	1FR1650	2FR1650	3FR1650	4FR1650
160,0*	181,0	8,1	1FR1660	2FR1660	3FR1660	4FR1660
165,0	180,1	6,3	1FR1670	2FR1670	3FR1670	4FR1670
170,0	185,1	6,3	1FR1680	2FR1680	3FR1680	4FR1680
170,0	190,5	8,1	1FR1690	2FR1690	3FR1690	4FR1690
173,0	188,1	6,3	1FR1700	2FR1700	3FR1700	4FR1700
175,0	190,1	6,3	1FR1710	2FR1710	3FR1710	4FR1710
180,0	195,1	6,3	1FR1720	2FR1720	3FR1720	4FR1720
180,0*	195,5	6,3	1FR1730	2FR1730	3FR1730	4FR1730
180,0	200,5	8,1	1FR1740	2FR1740	3FR1740	4FR1740
180,0*	201,0	8,1	1FR1750	2FR1750	3FR1750	4FR1750
185,0	200,1	6,3	1FR1760	2FR1760	3FR1760	4FR1760
185,0	205,5	8,1	1FR1770	2FR1770	3FR1770	4FR1770
190,0	205,1	6,3	1FR1780	2FR1780	3FR1780	4FR1780
190,0	210,5	8,1	1FR1790	2FR1790	3FR1790	4FR1790
195,0	210,1	6,3	1FR1800	2FR1800	3FR1800	4FR1800
200,0	215,1	6,3	1FR1810	2FR1810	3FR1810	4FR1810
200,0	220,5	8,1	1FR1820	2FR1820	3FR1820	4FR1820
200,0*	221,0	8,1	1FR1830	2FR1830	3FR1830	4FR1830
205,0	225,5	8,1	1FR1840	2FR1840	3FR1840	4FR1840
210,0	230,5	8,1	1FR1850	2FR1850	3FR1850	4FR1850
211,0	231,5	8,1	1FR1860	2FR1860	3FR1860	4FR1860
212,0	232,5	8,1	1FR1870	2FR1870	3FR1870	4FR1870
215,0	235,5	8,1	1FR1880	2FR1880	3FR1880	4FR1880
220,0	240,5	8,1	1FR1890	2FR1890	3FR1890	4FR1890
220,0*	241,0	8,1	1FR1900	2FR1900	3FR1900	4FR1900
225,0	245,5	8,1	1FR1910	2FR1910	3FR1910	4FR1910
230,0	245,1	6,3	1FR1920	2FR1920	3FR1920	4FR1920
230,0	250,5	8,1	1FR1930	2FR1930	3FR1930	4FR1930
235,0	255,5	8,1	1FR1940	2FR1940	3FR1940	4FR1940
240,0	260,5	8,1	1FR1950	2FR1950	3FR1950	4FR1950
245,0	265,5	8,1	1FR1960	2FR1960	3FR1960	4FR1960
250,0	270,5	8,1	1FR1970	2FR1970	3FR1970	4FR1970
250,0*	271,0	8,1	1FR1980	2FR1980	3FR1980	4FR1980
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
260,0	284,0	8,1	1FR1990	2FR1990	3FR1990	4FR1990
265,0	289,0	8,1	1FR2000	2FR2000	3FR2000	4FR2000
270,0	290,5	8,1	1FR2010	2FR2010	3FR2010	4FR2010
270,0	294,0	8,1	1FR2020	2FR2020	3FR2020	4FR2020
275,0	299,0	8,1	1FR2030	2FR2030	3FR2030	4FR2030
280,0*	304,5	8,1	1FR2040	2FR2040	3FR2040	4FR2040
280,0	304,0	8,1	1FR2050	2FR2050	3FR2050	4FR2050
285,0	309,0	8,1	1FR2060	2FR2060	3FR2060	4FR2060
290,0	314,0	8,1	1FR2070	2FR2070	3FR2070	4FR2070
295,0	319,0	8,1	1FR2080	2FR2080	3FR2080	4FR2080
300,0	320,5	8,1	1FR2090	2FR2090	3FR2090	4FR2090
300,0	324,0	8,1	1FR2100	2FR2100	3FR2100	4FR2100
310,0	334,0	8,1	1FR2110	2FR2110	3FR2110	4FR2110
320,0*	344,5	8,1	1FR2120	2FR2120	3FR2120	4FR2120
320,0	344,0	8,1	1FR2130	2FR2130	3FR2130	4FR2130
330,0	354,0	8,1	1FR2140	2FR2140	3FR2140	4FR2140
340,0	364,0	8,1	1FR2150	2FR2150	3FR2150	4FR2150
350,0	370,5	8,1	1FR2160	2FR2160	3FR2160	4FR2160



* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

F-SLIDE seals S09-E available standard dimensions / article numbers



Rod Ø d	Groove Ø D	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
350,0	374,0	8,1	1FR2170	2FR2170	3FR2170	4FR2170
360,0	384,0	8,1	1FR2180	2FR2180	3FR2180	4FR2180
360,0*	384,5	8,1	1FR2190	2FR2190	3FR2190	4FR2190
365,0	389,0	8,1	1FR2200	2FR2200	3FR2200	4FR2200
370,0	394,0	8,1	1FR2210	2FR2210	3FR2210	4FR2210
375,0	399,0	8,1	1FR2220	2FR2220	3FR2220	4FR2220
380,0	404,0	8,1	1FR2230	2FR2230	3FR2230	4FR2230
390,0	414,0	8,1	1FR2240	2FR2240	3FR2240	4FR2240
400,0	424,0	8,1	1FR2250	2FR2250	3FR2250	4FR2250
410,0	434,0	8,1	1FR2260	2FR2260	3FR2260	4FR2260
420,0	444,0	8,1	1FR2270	2FR2270	3FR2270	4FR2270
430,0	454,0	8,1	1FR2280	2FR2280	3FR2280	4FR2280
435,0	459,0	8,1	1FR2290	2FR2290	3FR2290	4FR2290
440,0	464,0	8,1	1FR2300	2FR2300	3FR2300	4FR2300
450,0	474,0	8,1	1FR2310	2FR2310	3FR2310	4FR2310
460,0	484,0	8,1	1FR2320	2FR2320	3FR2320	4FR2320
470,0	494,0	8,1	1FR2330	2FR2330	3FR2330	4FR2330
480,0	504,0	8,1	1FR2340	2FR2340	3FR2340	4FR2340
<p>NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.</p>						
485,0	509,0	8,1	1FR2350	2FR2350	3FR2350	4FR2350
490,0	514,0	8,1	1FR2360	2FR2360	3FR2360	4FR2360
500,0	524,0	8,1	1FR2370	2FR2370	3FR2370	4FR2370
510,0	534,0	8,1	1FR2380	2FR2380	3FR2380	4FR2380
520,0	544,0	8,1	1FR2390	2FR2390	3FR2390	4FR2390
525,0	549,0	8,1	1FR2400	2FR2400	3FR2400	4FR2400
530,0	554,0	8,1	1FR2410	2FR2410	3FR2410	4FR2410
540,0	564,0	8,1	1FR2420	2FR2420	3FR2420	4FR2420
550,0	574,0	8,1	1FR2430	2FR2430	3FR2430	4FR2430
560,0	584,0	8,1	1FR2440	2FR2440	3FR2440	4FR2440
570,0	594,0	8,1	1FR2450	2FR2450	3FR2450	4FR2450
580,0	604,0	8,1	1FR2460	2FR2460	3FR2460	4FR2460
585,0	609,0	8,1	1FR2470	2FR2470	3FR2470	4FR2470
590,0	614,0	8,1	1FR2480	2FR2480	3FR2480	4FR2480
600,0	624,0	8,1	1FR2490	2FR2490	3FR2490	4FR2490
610,0	634,0	8,1	1FR2500	2FR2500	3FR2500	4FR2500
620,0	644,0	8,1	1FR2510	2FR2510	3FR2510	4FR2510
630,0	654,0	8,1	1FR2520	2FR2520	3FR2520	4FR2520
640,0	664,0	8,1	1FR2530	2FR2530	3FR2530	4FR2530
650,0	677,3	9,5	1FR2540	2FR2540	3FR2540	4FR2540
656,0	683,3	9,5	1FR2550	2FR2550	3FR2550	4FR2550
660,0	687,3	9,5	1FR2560	2FR2560	3FR2560	4FR2560
670,0	697,3	9,5	1FR2570	2FR2570	3FR2570	4FR2570
680,0	707,3	9,5	1FR2580	2FR2580	3FR2580	4FR2580
685,0	712,3	9,5	1FR2590	2FR2590	3FR2590	4FR2590
690,0	717,3	9,5	1FR2600	2FR2600	3FR2600	4FR2600
700,0	724,0	8,1	1FR2610	2FR2610	3FR2610	4FR2610
700,0	727,3	9,5	1FR2620	2FR2620	3FR2620	4FR2620
710,0	737,3	9,5	1FR2630	2FR2630	3FR2630	4FR2630
720,0	747,3	9,5	1FR2640	2FR2640	3FR2640	4FR2640
730,0	757,3	9,5	1FR2650	2FR2650	3FR2650	4FR2650
735,0	762,3	9,5	1FR2660	2FR2660	3FR2660	4FR2660
740,0	767,3	9,5	1FR2670	2FR2670	3FR2670	4FR2670
750,0	777,3	9,5	1FR2680	2FR2680	3FR2680	4FR2680
760,0	787,3	9,5	1FR2690	2FR2690	3FR2690	4FR2690
765,0	792,3	9,5	1FR2700	2FR2700	3FR2700	4FR2700

* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

F-SLIDE seals S09-E available standard dimensions / article numbers

Rod Ø d	Groove Ø D	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
770,0	797,3	9,5	1FR2710	2FR2710	3FR2710	4FR2710
780,0	807,3	9,5	1FR2720	2FR2720	3FR2720	4FR2720
790,0	817,3	9,5	1FR2730	2FR2730	3FR2730	4FR2730
795,0	822,3	9,5	1FR2740	2FR2740	3FR2740	4FR2740
800,0	827,3	9,5	1FR2750	2FR2750	3FR2750	4FR2750
810,0	837,3	9,5	1FR2760	2FR2760	3FR2760	4FR2760
820,0	847,3	9,5	1FR2770	2FR2770	3FR2770	4FR2770
830,0	857,3	9,5	1FR2780	2FR2780	3FR2780	4FR2780
840,0	867,3	9,5	1FR2790	2FR2790	3FR2790	4FR2790
850,0	877,3	9,5	1FR2800	2FR2800	3FR2800	4FR2800
860,0	887,3	9,5	1FR2810	2FR2810	3FR2810	4FR2810
870,0	897,3	9,5	1FR2820	2FR2820	3FR2820	4FR2820
880,0	907,3	9,5	1FR2830	2FR2830	3FR2830	4FR2830
885,0	912,3	9,5	1FR2840	2FR2840	3FR2840	4FR2840
890,0	917,3	9,5	1FR2850	2FR2850	3FR2850	4FR2850
900,0	927,3	9,5	1FR2860	2FR2860	3FR2860	4FR2860
910,0	937,3	9,5	1FR2870	2FR2870	3FR2870	4FR2870
920,0	947,3	9,5	1FR2880	2FR2880	3FR2880	4FR2880



NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.

930,0	957,3	9,5	1FR2890	2FR2890	3FR2890	4FR2890
940,0	967,3	9,5	1FR2900	2FR2900	3FR2900	4FR2900
950,0	977,3	9,5	1FR2910	2FR2910	3FR2910	4FR2910
955,0	982,3	9,5	1FR2920	2FR2920	3FR2920	4FR2920
1.000,0	1.038,0	13,8	1FR2930	2FR2930	3FR2930	4FR2930
1.035,0	1.073,0	13,8	1FR2940	2FR2940	3FR2940	4FR2940
1.040,0	1.067,3	9,5	1FR2950	2FR2950	3FR2950	4FR2950
1.040,0	1.078,0	13,8	1FR2960	2FR2960	3FR2960	4FR2960
1.050,0	1.077,3	9,5	1FR2970	2FR2970	3FR2970	4FR2970
1.050,0	1.088,0	13,8	1FR2980	2FR2980	3FR2980	4FR2980
1.100,0	1.138,0	13,8	1FR2990	2FR2990	3FR2990	4FR2990
1.120,0	1.147,3	9,5	1FR3000	2FR3000	3FR3000	4FR3000
1.120,0	1.158,0	13,8	1FR3010	2FR3010	3FR3010	4FR3010
1.200,0	1.227,3	9,5	1FR3020	2FR3020	3FR3020	4FR3020
1.200,0	1.238,0	13,8	1FR3030	2FR3030	3FR3030	4FR3030
1.330,0	1.357,3	9,5	1FR3040	2FR3040	3FR3040	4FR3040
1.330,0	1.368,0	13,8	1FR3050	2FR3050	3FR3050	4FR3050
1.450,0	1.477,3	9,5	1FR3060	2FR3060	3FR3060	4FR3060
1.500,0	1.527,3	9,5	1FR3070	2FR3070	3FR3070	4FR3070
1.500,0	1.538,0	13,8	1FR3080	2FR3080	3FR3080	4FR3080
1.600,0	1.638,0	13,8	1FR3090	2FR3090	3FR3090	4FR3090
2.000,0	2.038,0	13,8	1FR3100	2FR3100	3FR3100	4FR3100
2.600,0	2.638,0	13,8	1FR3110	2FR3110	3FR3110	4FR3110
3.000,0	3.038,0	13,8	1FR3120	2FR3120	3FR3120	4FR3120

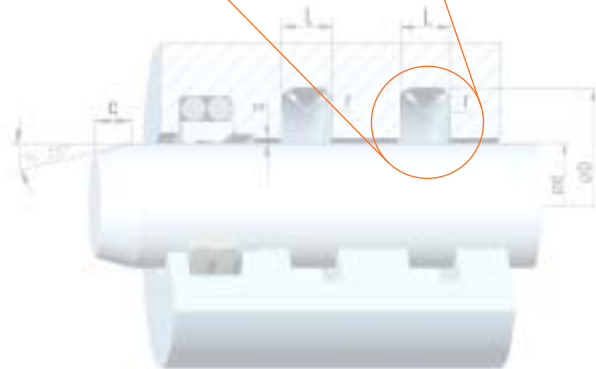
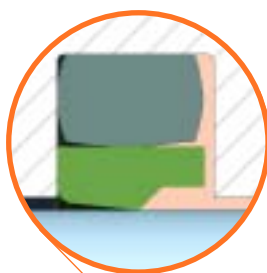
* Dimensions according to DIN/ISO 7425 Part 2
bold dimensions are common, preferred measurements

F-SLIDE seals S09-ES description / technical data

S09-FS standa

Technical data

Detail F-SLIDE seal S09-ES



Pressure:	up to 600 (800) bar / 60 (80) MPa
Speed:	up to 10 m/s
Temperature*:	-30 °C to +100 °C
Media*:	mineral based hydraulic oil fluids flame retardant hydraulic fluids (HFA, HFB) biologically degradable oils (Bio-oils) water
Extrusion gap:	depending on operation pressure and diameter (see table on page 45)

* see material combinations for F-SLIDE seals on page 35

The specified data represent maximum values and should not be used simultaneously. If in doubt, please contact our technical department. Please also note our liability exclusion (page 63).

Advantages

- **very low friction, superior stick-slip behaviour**
- **no adhesive effect to metal parts after prolonged periods of standstill**
- **suitable for under lubricated systems** (material dependence)
- **excellent temperature resistance** (depending on selected 'O'ring material)
- **excellent chemical resistance** (depending on selected 'O'ring material)
- **compact design** (for small installation height)
- **compact, stable square energizer ring profile** (less deformation on pulsating load)
- **quick delivery within days** (or even hours), **not weeks** (depending on diameter and quantity)
- **available as individual single piece or medium lot production**
- **available in large quantities**
- **available for all diameters up to 1.500 mm**

General description

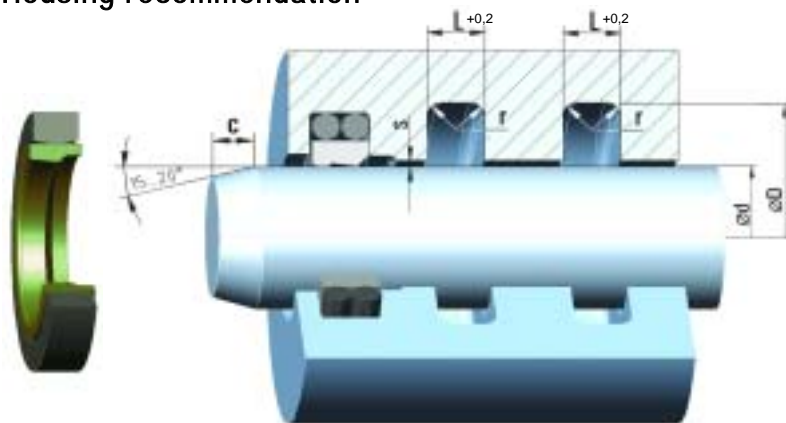
F-SLIDE S09-ES seal is a "heavy duty" single acting rod seal consisting of a PTFE compound sealing element and an elastomeric square profile energizer element. Interference fit and preload of energizing element ensure a good sealing effect. Designed with a square energizer profile ring for increased stability and reduced deformation of the energizer ring under pulsating load. By selecting a suitable energizer material, the seal can be "adjusted" to suit various chemical and thermal conditions (see material combinations for F-SLIDE seal on page 35). This seal style is generally used in so called "tandem" arrangements or in combination with a lip seal (see page 11).

SLIDE

F-SLIDE seals S09-ES basic information

rod dimensions

Housing recommendation



Surface roughness	R tmax (µm)	Ra (µm)
Sliding surface (rod)	≤ 2.0	≤ 0.05 - 0.3
Bottom of groove	≤ 6.3	≤ 1.6
Groove face	≤ 15	≤ 3
bearing area Tp	50% - 95%	

Seal housing tolerances	
ød	f8
øD	H10

Table of recommended F-SLIDE seals S09-ES standard dimensions

Rod ø d	Groove ø D	Height L	Radius r	Lead-in c	max. radial extrusion gap "s"			
					100 bar	200 bar	400 bar	600 bar
5 - 49,9	d + 10	5,0	0,2	4,0	0,40	0,30	0,20	0,10
50 - 59,9	d + 15	7,5	0,3	5,0	0,50	0,30	0,20	0,10
60 - 199,9	d + 20	10,0	0,4	6,0	0,60	0,40	0,25	0,15
200 - 299,9	d + 25	12,5	0,4	8,5	0,60	0,40	0,25	0,15
300 - 529,9	d + 30	15,0	0,8	10,0	0,70	0,50	0,30	0,20
530 - 679,9	d + 35	17,5	1,2	11,5	0,80	0,60	0,50	0,20
680 - 1500	d + 40	20,0	1,2	13,0	1,00	0,70	0,60	0,30

• For pressure range above 600 (800) bar we can offer special designs with integrated back-up rings (see page 59, special tailored designs). Please contact our technical department.

Ordering example, size listed in "available standard dimensions"

F-SLIDE S09-ES, standard application, actual rod diameter: ød=125 mm,
 predetermined or chosen housing dimensions (from list "S09-ES available standard dimensions") --> øD=145mm, L=10mm **required material:** ECOFLON 2 / FKM85 --> **article number:** 2FRH0300 (out of list "S09-ES available standard dimensions", article-no.-row 2 for material combination ECOFLON 2/FKM85)

Required designation for placing an order: **F-SLIDE S09-ES 2FRH0300**
Seal type article no.

Ordering example, size NOT listed in "available standard dimensions", eg.: inch dimension

F-SLIDE S09-ES, standard application, rod diameter ød=101,6 mm (4")
 housing diameter øD=ød+20 = 121,6 mm and housing height L= 10,0 mm (from table "recommended S09-ES standard dimensions for diameter range ød 60 - 199,9 mm), **required material:** ECOFLON 2 / NBR85 --> **article number:** not available, housing dimension d x D x L followed by material combination should be used for designation:

Required designation for placing an order: **F-SLIDE S09-ES 101,6 x 121,6 x 10 mm FLON 2 / NBR85**
Seal type housing dimensions material combination

For technical advice related to other housing configurations or non standard applications, please use fax enquiry form for rod seals on page 60.

F-SLIDE seals S09-ES available standard dimensions / article numbers



Rod Ø d	Groove Ø D	Height L	Article-Nr. Flon2/NBR85	Article-Nr. Flon 2/FKM85	Article-Nr. Flon 3/NBR85	Article-Nr. Flon 3/FKM85
5	15	5	1FRH0010	2FRH0010	3FRH0010	-
10	20	5	1FRH0020	2FRH0020	3FRH0020	-
12	22	5	1FRH0030	2FRH0030	3FRH0030	-
16	26	5	1FRH0040	2FRH0040	3FRH0040	-
20,0	30,0	5	1FRH0050	2FRH0050	3FRH0050	-
25,0	35,0	5	1FRH0060	2FRH0060	3FRH0060	-
28,0	38,0	5	1FRH0070	2FRH0070	3FRH0070	-
32,0	42,0	5	1FRH0080	2FRH0080	3FRH0080	-
36,0	46,0	5	1FRH0090	2FRH0090	3FRH0090	-
40,0	50,0	5	1FRH0100	2FRH0100	3FRH0100	-
42,0	52,0	5	1FRH0110	2FRH0110	3FRH0110	-
45,0	55,0	5	1FRH0120	2FRH0120	3FRH0120	-
48,0	58,0	5	1FRH0130	2FRH0130	3FRH0130	-
50,0	65,0	7,5	1FRH0140	2FRH0140	3FRH0140	-
52,0	67,0	7,5	1FRH0150	2FRH0150	3FRH0150	-
54,0	69,0	7,5	1FRH0160	2FRH0160	3FRH0160	-
55,0	70,0	7,5	1FRH0170	2FRH0170	3FRH0170	-
56,0	71,0	7,5	1FRH0180	2FRH0180	3FRH0180	-
60,0	80,0	10	1FRH0190	2FRH0190	3FRH0190	-
63,0	83,0	10	1FRH0200	2FRH0200	3FRH0200	-
65,0	85,0	10	1FRH0210	2FRH0210	3FRH0210	-
70,0	90,0	10	1FRH0220	2FRH0220	3FRH0220	-
75,0	95,0	10	1FRH0230	2FRH0230	3FRH0230	-
80,0	100,0	10	1FRH0240	2FRH0240	3FRH0240	-
85,0	105,0	10	1FRH0250	2FRH0250	3FRH0250	-
90,0	110,0	10	1FRH0260	2FRH0260	3FRH0260	-
95,0	115,0	10	1FRH0270	2FRH0270	3FRH0270	-
100,0	120,0	10	1FRH0280	2FRH0280	3FRH0280	-
110,0	130,0	10	1FRH0290	2FRH0290	3FRH0290	-
125,0	145,0	10	1FRH0300	2FRH0300	3FRH0300	-
<p>NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.</p>						
140,0	160,0	10	1FRH0310	2FRH0310	3FRH0310	-
150,0	170,0	10	1FRH0320	2FRH0320	3FRH0320	-
160,0	180,0	10	1FRH0330	2FRH0330	3FRH0330	-
170,0	175,0	10	1FRH0340	2FRH0340	3FRH0340	-
175,0	195,0	10	1FRH0350	2FRH0350	3FRH0350	-
180,0	200,0	10	1FRH0360	2FRH0360	3FRH0360	-
200,0	225,0	12,5	1FRH0370	2FRH0370	3FRH0370	-
220,0	245,0	12,5	1FRH0380	2FRH0380	3FRH0380	-
230,0	255,0	12,5	1FRH0390	2FRH0390	3FRH0390	-
240,0	265,0	12,5	1FRH0400	2FRH0400	3FRH0400	-
250,0	275,0	12,5	1FRH0410	2FRH0410	3FRH0410	-
270,0	295,0	12,5	1FRH0420	2FRH0420	3FRH0420	-
280,0	305,0	12,5	1FRH0430	2FRH0430	3FRH0430	-
290,0	315,0	12,5	1FRH0440	2FRH0440	3FRH0440	-
300,0	330,0	15	1FRH0450	2FRH0450	3FRH0450	-
310,0	340,0	15	1FRH0460	2FRH0460	3FRH0460	-
320,0	350,0	15	1FRH0470	2FRH0470	3FRH0470	-
325,0	355,0	15	1FRH0480	2FRH0480	3FRH0480	-
330,0	360,0	15	1FRH0490	2FRH0490	3FRH0490	-
340,0	370,0	15	1FRH0500	2FRH0500	3FRH0500	-
350,0	380,0	15	1FRH0510	2FRH0510	3FRH0510	-
360,0	390,0	15	1FRH0520	2FRH0520	3FRH0520	-
380,0	410,0	15	1FRH0530	2FRH0530	3FRH0530	-
390,0	420,0	15	1FRH0540	2FRH0540	3FRH0540	-

F-SLIDE seals S09-ES available standard dimensions / article numbers

Rod Ø d	Groove Ø D	Height L	Article-Nr. Flon 2/NBR85	Article-Nr. Flon 2/FKM85	Article-Nr. Flon 3/NBR85	Article-Nr. Flon 3/FKM85
400,0	430,0	15	1FRH0550	2FRH0550	3FRH0550	-
410,0	440,0	15	1FRH0560	2FRH0560	3FRH0560	-
420,0	450,0	15	1FRH0570	2FRH0570	3FRH0570	-
430,0	460,0	15	1FRH0580	2FRH0580	3FRH0580	-
440,0	470,0	15	1FRH0590	2FRH0590	3FRH0590	-
450,0	480,0	15	1FRH0600	2FRH0600	3FRH0600	-
460,0	490,0	15	1FRH0610	2FRH0610	3FRH0610	-
470,0	500,0	15	1FRH0620	2FRH0620	3FRH0620	-
480,0	510,0	15	-	-	-	4FRH0630
490,0	520,0	15	-	-	-	4FRH0640
500,0	530,0	15	-	-	-	4FRH0650
510,0	540,0	15	-	-	-	4FRH0660
520,0	550,0	15	-	-	-	4FRH0670
530,0	565,0	17,5	-	-	-	4FRH0680
540,0	575,0	17,5	-	-	-	4FRH0690
550,0	585,0	17,5	-	-	-	4FRH0700
560,0	595,0	17,5	-	-	-	4FRH0710
570,0	605,0	17,5	-	-	-	4FRH0720
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
580,0	615,0	17,5	-	-	-	4FRH0730
590,0	625,0	17,5	-	-	-	4FRH0740
600,0	635,0	17,5	-	-	-	4FRH0750
620,0	655,0	17,5	-	-	-	4FRH0760
650,0	685,0	17,5	-	-	-	4FRH0770
660,0	695,0	17,5	-	-	-	4FRH0780
670,0	705,0	17,5	-	-	-	4FRH0790
680,0	720,0	20	-	-	-	4FRH0800
700,0	740,0	20	-	-	-	4FRH0810
720,0	760,0	20	-	-	-	4FRH0820
740,0	780,0	20	-	-	-	4FRH0830
755,0	795,0	20	-	-	-	4FRH0840
770,0	810,0	20	-	-	-	4FRH0850
800,0	840,0	20	-	-	-	4FRH0860
820,0	860,0	20	-	-	-	4FRH0870
850,0	890,0	20	-	-	-	4FRH0880
900,0	940,0	20	-	-	-	4FRH0890
950,0	990,0	20	-	-	-	4FRH0900
970,0	1.010,0	20	-	-	-	4FRH0910
1.000,0	1.040,0	20	-	-	-	4FRH0920
1.150,0	1.190,0	20	-	-	-	4FRH0930
1.200,0	1.240,0	20	-	-	-	4FRH0940
1.330,0	1.370,0	20	-	-	-	4FRH0950
1.500,0	1.540,0	20	-	-	-	4FRH0960

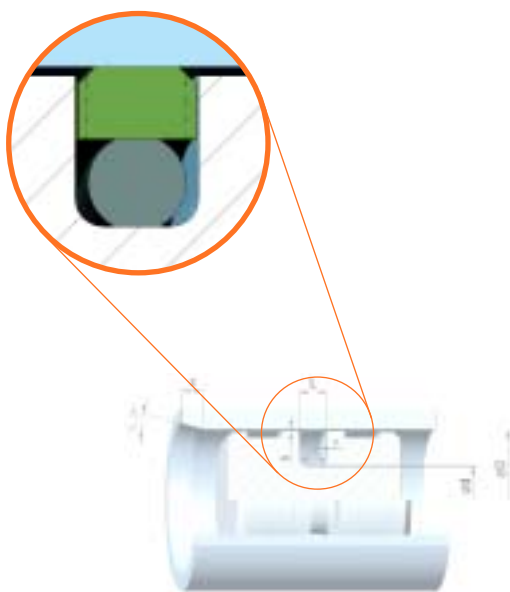


F-SLIDE seals K08-D description / technical data

K08-D standard

Technical data

Detail F-SLIDE seal K08-D



Pressure:	up to 600 (800) bar / 60 (80) MPa
Speed:	up to 10 m/s
Temperature*:	-30 °C to +100 °C
Media*:	mineral based hydraulic oil fluids flame retardant hydraulic fluids (HFA, HFB) biologically degradable oils (Bio-oils) water
Extrusion gap:	depending on operation pressure and diameter (see table on page 49)

* see material combinations for F-SLIDE seals on page 35

The specified data represent maximum values and should not be used simultaneously. If in doubt, please contact our technical department. Please also note our liability exclusion (page 63).

Advantages

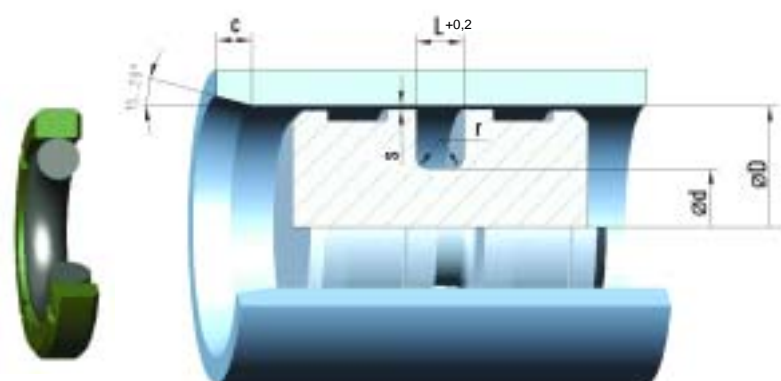
- **very low friction, superior stick-slip behaviour**
- **no adhesive effect to metal parts after prolonged periods of standstill**
- **suitable for under lubricated systems** (material dependent)
- **excellent temperature resistance** (depending on selected 'O'ring material)
- **excellent chemical resistance** (depending on selected 'O'ring material)
- **compact design** (for small installation height)
- **fast pressurisation, no "blow-by" effect** (due to implemented lateral slots in sealing ring)
- **quick delivery within days** (or even hours), **not weeks** (depending on diameter and quantity)
- **available as individual single piece or limited-lot production**
- **available in large quantities**
- **available for all diameters up to 3.000 mm**

General description

F-SLIDE K08-D seal is a double acting piston seal consisting of a PTFE compound sealing element and an elastomeric 'O'ring energizer element. Interference fit and 'O'ring preload ensure a good initial sealing effect. Increasing system pressure energizes the 'O'ring additionally for higher contact force and proportionally better sealing. By selecting suitable 'O'ring materials, the seal can be "adjusted" to suit various chemical and thermal conditions. (see material combinations for F-SLIDE seal on page 35). Profile K08-D is the standard double acting piston seal design.

F-SLIDE seals K08-D basic information

Housing recommendation



Surface roughness	R tmax (µm)	Ra (µm)
Sliding surface (rod)	≤ 2.0	≤ 0.05 - 0.3
Bottom of groove	≤ 6.3	≤ 1.6
Groove face	≤ 15	≤ 3
bearing area Tp	50% - 95%	

Seal housing tolerances

ød	h10
øD	H9

Table of recommended F-SLIDE seal K08-D standard dimensions

Bore Ø D	Groove Ø d	Height L	Radius r	Lead-in c	O-ring Cord dia.	max. radial extrusion gap "s"			
						100 bar	200 bar	400 bar	600 bar
8 - 14,9	D - 4,9	2,2	0,4	2,5	1,78	0,30	0,20	0,15	0,05
15 - 39,9	D - 7,5	3,2	0,6	3,5	2,62	0,40	0,25	0,15	0,05
40 - 79,9	D - 11,0	4,2	1,0	4,5	3,53	0,40	0,25	0,20	0,10
80 - 132,9	D - 15,5	6,3	1,3	5,0	5,33	0,50	0,30	0,20	0,10
133 - 329,9	D - 21,0	8,1	1,8	6,0	7,0	0,60	0,35	0,25	0,15
330 - 669,9	D - 24,5	8,1	1,8	8,0	7,0	0,60	0,35	0,25	0,15
670 - 999,9	D - 28,0	9,5	2,5	10,0	8,4	0,70	0,50	0,30	0,20
1000 - 3000	D - 38,0	13,8	3,0	12,0	12,0	1,00	0,70	0,60	0,30

- The above table shows our standard recommendations. Other dimensions - usually known as "light" and "heavy" series - are included in the tables on the following pages.
- For pressure range above 600 (800) bar we can offer special designs with integrated back-up rings (see page 59, special tailor-made designs). Please contact our technical department.

Ordering example, size listed in "available standard dimensions"

F-SLIDE K08-D, standard application, actual bore diameter: $\varnothing D=55$ mm,
predetermined or chosen housing dimensions (from list "K08-D available standard dimensions") --> $\varnothing d=44,0$ mm, $L=4,2$ mm
required material: ECOFLON 2 / NBR70 --> article number: 1FP0390 (from list "K08-D available standard dimensions", article-no.-row 1 for material combination ECOFLON 2/NBR70)

Required designation for placing an order:

F-SLIDE K08-D **1FP0390**
Seal type article no.

Ordering example, size NOT listed in "available standard dimensions", eg.: inch dimension

F-SLIDE K08-D, standard application, bore diameter $\varnothing D=203,2$ mm (8")
housing diameter $\varnothing d=\varnothing D - 21,0 = 182,2$ mm and housing height $L= 8,1$ mm (from table "recommended K08-D standard dimensions for diameter range $\varnothing d$ 133 - 329,9 mm), required material: ECOFLON 2 / NBR70 --> article number: not available, housing dimension $D \times d \times L$ followed by material combination should be used for designation:

Required designation for placing an order:

F-SLIDE K08-D **203,2 x 182,2 x 8,1mm** **FLON 2 / NBR70**
Seal type housing dimensions material combination

For technical advice related to other housing configurations or non standard applications, please use fax enquiry form for rod seals on page 61.

F-SLIDE seals K08-D available standard dimensions / article numbers



Bore Ø D	Groove Ø d	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
8,0	3,1	2,2	1FP0010	2FP0010	3FP0010	4FP0010
10,0	5,1	2,2	1FP0020	2FP0020	3FP0020	4FP0020
12,0	7,1	2,2	1FP0030	2FP0030	3FP0030	4FP0030
14,0	9,1	2,2	1FP0040	2FP0040	3FP0040	4FP0040
15,0	7,5	3,2	1FP0050	2FP0050	3FP0050	4FP0050
16,0*	11,1	2,2	1FP0060	2FP0060	3FP0060	4FP0060
16,0*	8,5	3,2	1FP0070	2FP0070	3FP0070	4FP0070
18,0	13,1	2,2	1FP0080	2FP0080	3FP0080	4FP0080
18,0	10,5	3,2	1FP0090	2FP0090	3FP0090	4FP0090
20,0*	15,1	2,2	1FP0100	2FP0100	3FP0100	4FP0100
20,0*	12,5	3,2	1FP0110	2FP0110	3FP0110	4FP0110
21,0	13,5	3,2	1FP0120	2FP0120	3FP0120	4FP0120
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
22,0	17,1	2,2	1FP0130	2FP0130	3FP0130	4FP0130
22,0	14,5	3,2	1FP0140	2FP0140	3FP0140	4FP0140
24,0	16,5	3,2	1FP0150	2FP0150	3FP0150	4FP0150
25,0	20,1	2,2	1FP0160	2FP0160	3FP0160	4FP0160
25,0*	17,5	3,2	1FP0170	2FP0170	3FP0170	4FP0170
25,0*	14,0	4,2	1FP0180	2FP0180	3FP0180	4FP0180
28,0	20,5	3,2	1FP0190	2FP0190	3FP0190	4FP0190
30,0	22,5	3,2	1FP0200	2FP0200	3FP0200	4FP0200
32,0	27,1	2,2	1FP0210	2FP0210	3FP0210	4FP0210
32,0*	24,5	3,2	1FP0220	2FP0220	3FP0220	4FP0220
32,0*	21,0	4,2	1FP0230	2FP0230	3FP0230	4FP0230
35,0	27,5	3,2	1FP0240	2FP0240	3FP0240	4FP0240
35,0	24,0	4,2	1FP0250	2FP0250	3FP0250	4FP0250
36,0	28,5	3,2	1FP0260	2FP0260	3FP0260	4FP0260
38,0	30,5	3,2	1FP0270	2FP0270	3FP0270	4FP0270
39,0	31,5	3,2	1FP0280	2FP0280	3FP0280	4FP0280
40,0*	32,5	3,2	1FP0290	2FP0290	3FP0290	4FP0290
40,0*	29,0	4,2	1FP0300	2FP0300	3FP0300	4FP0300
42,0	31,0	4,2	1FP0310	2FP0310	3FP0310	4FP0310
45,0	34,0	4,2	1FP0320	2FP0320	3FP0320	4FP0320
48,0	37,0	4,2	1FP0330	2FP0330	3FP0330	4FP0330
50,0	42,5	3,2	1FP0340	2FP0340	3FP0340	4FP0340
50,0*	39,0	4,2	1FP0350	2FP0350	3FP0350	4FP0350
50,0*	34,5	6,3	1FP0360	2FP0360	3FP0360	4FP0360
52,0	41,0	4,2	1FP0370	2FP0370	3FP0370	4FP0370
53,0	42,0	4,2	1FP0380	2FP0380	3FP0380	4FP0380
55,0	44,0	4,2	1FP0390	2FP0390	3FP0390	4FP0390
57,0	46,0	4,2	1FP0400	2FP0400	3FP0400	4FP0400
58,0	47,0	4,2	1FP0410	2FP0410	3FP0410	4FP0410
60,0	49,0	4,2	1FP0420	2FP0420	3FP0420	4FP0420
62,0	51,0	4,2	1FP0430	2FP0430	3FP0430	4FP0430
63,0*	52,0	4,2	1FP0440	2FP0440	3FP0440	4FP0440
63,0*	47,5	6,3	1FP0450	2FP0450	3FP0450	4FP0450
65,0	54,0	4,2	1FP0460	2FP0460	3FP0460	4FP0460
68,0	57,0	4,2	1FP0470	2FP0470	3FP0470	4FP0470
70,0	59,0	4,2	1FP0480	2FP0480	3FP0480	4FP0480
70,0	54,5	6,3	1FP0490	2FP0490	3FP0490	4FP0490
75,0	64,0	B6,3	1FP0500	2FP0500	3FP0500	4FP0500
75,0	59,5	4,2	1FP0510	2FP0510	3FP0510	4FP0510
79,0	68,0	4,2	1FP0520	2FP0520	3FP0520	4FP0520
80,0*	69,0	6,3	1FP0530	2FP0530	3FP0530	4FP0530
80,0*	64,5	8,1	1FP0540	2FP0540	3FP0540	4FP0540

* Dimensions according to DIN/ISO 7425 Part 1
bold dimensions are common, preferred measurements

F-SLIDE seals K08-D available standard dimensions / article numbers

Bore Ø D	Groove Ø d	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
80,0	59,0	6,3	1FP0550	2FP0550	3FP0550	4FP0550
82,5	67,0	6,3	1FP0560	2FP0560	3FP0560	4FP0560
85,0	69,5	8,1	1FP0570	2FP0570	3FP0570	4FP0570
85,0	64,0	4,2	1FP0580	2FP0580	3FP0580	4FP0580
90,0	79,0	6,3	1FP0590	2FP0590	3FP0590	4FP0590
90,0	74,5	8,1	1FP0600	2FP0600	3FP0600	4FP0600
90,0	69,0	4,2	1FP0610	2FP0610	3FP0610	4FP0610
95,0	84,0	6,3	1FP0620	2FP0620	3FP0620	4FP0620
95,0	79,5	8,1	1FP0630	2FP0630	3FP0630	4FP0630
95,0	74,0	4,2	1FP0640	2FP0640	3FP0640	4FP0640
100,0	89,0	6,3	1FP0650	2FP0650	3FP0650	4FP0650
100,0*	84,5	8,1	1FP0660	2FP0660	3FP0660	4FP0660
100,0	79,0	4,2	1FP0670	2FP0670	3FP0670	4FP0670
105,0	94,0	6,3	1FP0680	2FP0680	3FP0680	4FP0680
105,0	89,5	8,1	1FP0690	2FP0690	3FP0690	4FP0690
105,0	84,0	6,3	1FP0700	2FP0700	3FP0700	4FP0700
108,0	92,5	4,2	1FP0710	2FP0710	3FP0710	4FP0710
110,0	99,0	6,3	1FP0720	2FP0720	3FP0720	4FP0720
110,0	94,5	8,1	1FP0730	2FP0730	3FP0730	4FP0730
110,0	89,0	6,3	1FP0740	2FP0740	3FP0740	4FP0740
115,0	99,5	8,1	1FP0750	2FP0750	3FP0750	4FP0750
115,0	94,0	4,2	1FP0760	2FP0760	3FP0760	4FP0760
120,0	109,0	6,3	1FP0770	2FP0770	3FP0770	4FP0770
120,0	104,5	8,1	1FP0780	2FP0780	3FP0780	4FP0780



NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.

120,0	99,0	4,2	1FP0790	2FP0790	3FP0790	4FP0790
125,0	114,0	6,3	1FP0800	2FP0800	3FP0800	4FP0800
125,0*	109,5	8,1	1FP0810	2FP0810	3FP0810	4FP0810
125,0*	104,0	6,3	1FP0820	2FP0820	3FP0820	4FP0820
127,0	111,5	6,3	1FP0830	2FP0830	3FP0830	4FP0830
130,0	114,5	8,1	1FP0840	2FP0840	3FP0840	4FP0840
130,0	109,0	4,2	1FP0850	2FP0850	3FP0850	4FP0850
132,0	121,0	8,1	1FP0860	2FP0860	3FP0860	4FP0860
135,0	114,0	6,3	1FP0870	2FP0870	3FP0870	4FP0870
140,0	124,5	8,1	1FP0880	2FP0880	3FP0880	4FP0880
140,0	119,0	6,3	1FP0890	2FP0890	3FP0890	4FP0890
145,0	129,5	8,1	1FP0900	2FP0900	3FP0900	4FP0900
145,0	124,0	6,3	1FP0910	2FP0910	3FP0910	4FP0910
150,0	134,5	8,1	1FP0920	2FP0920	3FP0920	4FP0920
150,0	129,0	8,1	1FP0930	2FP0930	3FP0930	4FP0930
155,0	134,0	6,3	1FP0940	2FP0940	3FP0940	4FP0940
160,0*	144,5	8,1	1FP0950	2FP0950	3FP0950	4FP0950
160,0*	139,0	8,1	1FP0960	2FP0960	3FP0960	4FP0960
165,0	144,0	8,1	1FP0970	2FP0970	3FP0970	4FP0970
170,0	149,0	8,1	1FP0980	2FP0980	3FP0980	4FP0980
175,0	154,0	6,3	1FP0990	2FP0990	3FP0990	4FP0990
180,0	164,5	8,1	1FP1000	2FP1000	3FP1000	4FP1000
180,0	159,0	8,1	1FP1010	2FP1010	3FP1010	4FP1010
185,0	164,0	8,1	1FP1020	2FP1020	3FP1020	4FP1020
190,0	169,0	6,3	1FP1030	2FP1030	3FP1030	4FP1030
194,0	178,5	8,1	1FP1040	2FP1040	3FP1040	4FP1040
195,0	174,0	6,3	1FP1050	2FP1050	3FP1050	4FP1050
200,0*	184,5	8,1	1FP1060	2FP1060	3FP1060	4FP1060
200,0*	179,0	8,1	1FP1070	2FP1070	3FP1070	4FP1070
205,0	184,0	8,1	1FP1080	2FP1080	3FP1080	4FP1080

* Dimensions according to DIN/ISO 7425 Part 1
bold dimensions are common, preferred measurements

F-SLIDE seals K08-D available standard dimensions / article numbers



Bore Ø D	Groove Ø d	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
210,0	189,0	8,1	1FP1090	2FP1090	3FP1090	4FP1090
215,0	194,0	8,1	1FP1100	2FP1100	3FP1100	4FP1100
220,0	199,0	8,1	1FP1110	2FP1110	3FP1110	4FP1110
225,0	204,0	6,3	1FP1120	2FP1120	3FP1120	4FP1120
230,0	214,5	8,1	1FP1130	2FP1130	3FP1130	4FP1130
230,0	209,0	8,1	1FP1140	2FP1140	3FP1140	4FP1140
240,0	219,0	6,3	1FP1150	2FP1150	3FP1150	4FP1150
250,0	234,5	8,1	1FP1160	2FP1160	3FP1160	4FP1160
250,0*	229,0	8,1	1FP1170	2FP1170	3FP1170	4FP1170
250,0*	225,5	8,1	1FP1180	2FP1180	3FP1180	4FP1180
260,0	239,0	8,1	1FP1190	2FP1190	3FP1190	4FP1190
265,0	244,0	8,1	1FP1200	2FP1200	3FP1200	4FP1200
NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.						
268,0	247,0	8,1	1FP1210	2FP1210	3FP1210	4FP1210
270,0	249,0	8,1	1FP1220	2FP1220	3FP1220	4FP1220
280,0	259,0	8,1	1FP1230	2FP1230	3FP1230	4FP1230
290,0	269,0	8,1	1FP1240	2FP1240	3FP1240	4FP1240
300,0	279,0	8,1	1FP1250	2FP1250	3FP1250	4FP1250
300,0	275,5	8,1	1FP1260	2FP1260	3FP1260	4FP1260
310,0	289,0	8,1	1FP1270	2FP1270	3FP1270	4FP1270
320,0*	299,0	8,1	1FP1280	2FP1280	3FP1280	4FP1280
320,0*	295,5	8,1	1FP1290	2FP1290	3FP1290	4FP1290
330,0	305,5	8,1	1FP1300	2FP1300	3FP1300	4FP1300
340,0	315,5	8,1	1FP1310	2FP1310	3FP1310	4FP1310
350,0	325,5	8,1	1FP1320	2FP1320	3FP1320	4FP1320
360,0	335,5	8,1	1FP1330	2FP1330	3FP1330	4FP1330
370,0	345,5	8,1	1FP1340	2FP1340	3FP1340	4FP1340
380,0	355,5	8,1	1FP1350	2FP1350	3FP1350	4FP1350
390,0	365,5	8,1	1FP1360	2FP1360	3FP1360	4FP1360
400,0*	375,5	8,1	1FP1370	2FP1370	3FP1370	4FP1370
410,0	385,5	8,1	1FP1380	2FP1380	3FP1380	4FP1380
420,0	395,5	8,1	1FP1390	2FP1390	3FP1390	4FP1390
430,0	405,5	8,1	1FP1400	2FP1400	3FP1400	4FP1400
440,0	415,5	8,1	1FP1410	2FP1410	3FP1410	4FP1410
450,0	425,5	8,1	1FP1420	2FP1420	3FP1420	4FP1420
460,0	435,5	8,1	1FP1430	2FP1430	3FP1430	4FP1430
470,0	445,5	8,1	1FP1440	2FP1440	3FP1440	4FP1440
480,0	455,5	8,1	1FP1450	2FP1450	3FP1450	4FP1450
490,0	465,5	8,1	1FP1460	2FP1460	3FP1460	4FP1460
500,0*	475,5	8,1	1FP1470	2FP1470	3FP1470	4FP1470
555,0	530,5	8,1	1FP1480	2FP1480	3FP1480	4FP1480
600,0	575,5	8,1	1FP1490	2FP1490	3FP1490	4FP1490
640,0	615,5	8,1	1FP1500	2FP1500	3FP1500	4FP1500
660,0	635,5	9,5	1FP1510	2FP1510	3FP1510	4FP1510
700,0	672,0	9,5	1FP1520	2FP1520	3FP1520	4FP1520
710,0	682,0	9,5	1FP1530	2FP1530	3FP1530	4FP1530
740,0	712,0	9,5	1FP1540	2FP1540	3FP1540	4FP1540
780,0	752,0	9,5	1FP1550	2FP1550	3FP1550	4FP1550
800,0	772,0	9,5	1FP1560	2FP1560	3FP1560	4FP1560
900,0	872,0	9,5	1FP1570	2FP1570	3FP1570	4FP1570
1000,0	972,0	13,8	1FP1580	2FP1580	3FP1580	4FP1580
1000,0	962,0	9,5	1FP1590	2FP1590	3FP1590	4FP1590
1050,0	1022,0	13,8	1FP1600	2FP1600	3FP1600	4FP1600
1065,0	1027,0	13,8	1FP1610	2FP1610	3FP1610	4FP1610
1070,0	1032,0	9,5	1FP1620	2FP1620	3FP1620	4FP1620

* Dimensions according to DIN/ISO 7425 Part 1
bold dimensions are common, preferred measurements

F-SLIDE seals K08-D available standard dimensions / article numbers

Bore Ø D	Groove Ø d	Height L	Article-Nr. Flon 2/NBR70	Article-Nr. Flon 2/FKM70	Article-Nr. Flon 3/NBR70	Article-Nr. Flon 3/FKM70
1200,0	1172,0	13,8	1FP1630	2FP1630	3FP1630	4FP1630
1200,0	1162,0	13,8	1FP1640	2FP1640	3FP1640	4FP1640
1225,0	1187,0	13,8	1FP1650	2FP1650	3FP1650	4FP1650
1500,0	1462,0	13,8	1FP1660	2FP1660	3FP1660	4FP1660
2000,0	1962,0	13,8	1FP1670	2FP1670	3FP1670	4FP1670
2500,0	2462,0	13,8	1FP1680	2FP1680	3FP1680	4FP1680
2700,0	2662,0	13,8	1FP1690	2FP1690	3FP1690	4FP1690
3000,0	2962,0	13,8	1FP1700	2FP1700	3FP1700	4FP1700



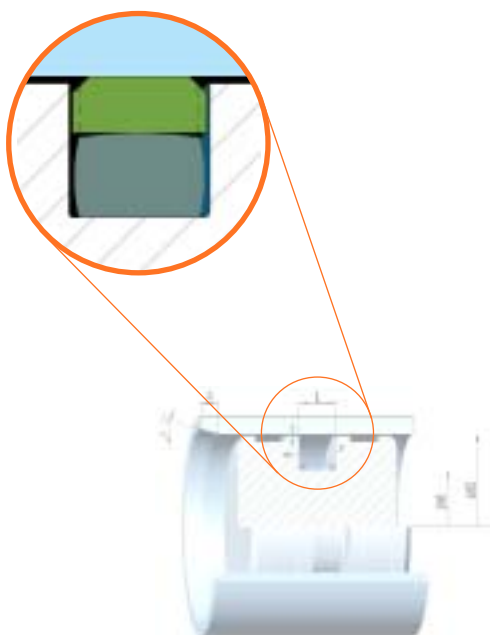
* Dimensions according to DIN/ISO 7425 Part 1
bold dimensions are common, preferred measurements

F-SLIDE seals K08-DS description / technical data

K08-DS standard

Technical data

Detail F-SLIDE seal K08-DS



Pressure:	up to 600 (800) bar / 60 (80) MPa
Speed:	up to 10 m/s
Temperature*:	-30 °C to +100 °C
Media*:	mineral based hydraulic oil fluids flame retardant hydraulic fluids (HFA, HFB) biologically degradable oils (Bio-oils) water
Extrusion gap:	depending on operation pressure and diameter (see table on page 55)

* see material combinations for F-SLIDE seals on page 35

The specified data represent maximum values and should not be used simultaneously.
If in doubt, please contact our technical department. Please also note our liability exclusion (page 63).

Advantages

- **very low friction, superior stick-slip behaviour**
- **no adhesive effect to metal parts after prolonged periods of standstill**
- **suitable for under lubricated systems** (material dependent)
- **excellent temperature resistance** (depending on selected 'O'ring material)
- **excellent chemical resistance** (depending on selected 'O'ring material)
- **compact design** (for small installation height)
- **compact, stable square energizer ring profile** (less deformation on pulsating load)
- **fast pressurisation, no "blow-by" effect** (due to implemented lateral slots in sealing ring)
- **quick delivery within days** (or even hours), **not weeks** (depending on diameter and quantity)
- **available as individual single piece or limited-lot production**
- **available in large quantities**
- **available for all diameters up to 1.500 mm**

General description

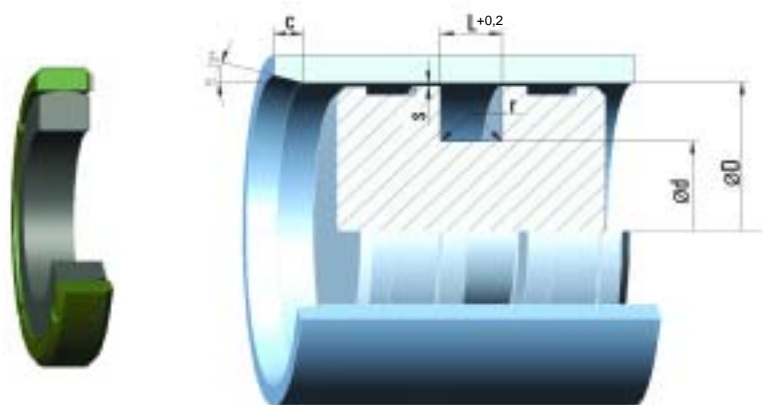
F-SLIDE K08-DS seal is a "heavy duty" double acting piston seal consisting of a PTFE compound sealing element and an elastomeric square profile energizer element. Interference fit and preload of energizing element ensures a good initial sealing effect. Designed with a square energizer profile ring for increased stability and reduced deformation of the energizer ring under pulsating load. By selecting a suitable energizer material, the seal can be "adjusted" to suit various chemical and thermal conditions (see material combinations for F-SLIDE seal on page 35).

SLIDE

F-SLIDE seals K08-DS basic information

Standard dimensions

Housing recommendation



Surface roughness	R tmax (µm)	Ra (µm)
Sliding surface (rod)	≤ 2.0	≤ 0.05 - 0.3
Bottom of groove	≤ 6.3	≤ 1.6
Groove face	≤ 15	≤ 3
bearing area Tp	50% - 95%	

Seal housing tolerances	
Ød	h10
ØD	H9

Table of recommended K08-DS standard dimensions

Bore Ø D	Groove Ø d	Height L	Radius r	Lead-in c	max. radial extrusion gap "s"			
					100 bar	200 bar	400 bar	600 bar
20 - 49,9	D - 10	5,0	0,3	4,0	0,40	0,30	0,20	0,10
50 - 59,9	D - 15	7,5	0,4	5,0	0,50	0,30	0,20	0,10
60 - 199,9	D - 20	10,0	0,4	6,0	0,60	0,40	0,25	0,15
200 - 299,9	D - 25	12,5	0,4	8,5	0,60	0,40	0,25	0,15
300 - 529,9	D - 30	15,0	0,8	10,0	0,70	0,50	0,30	0,20
530 - 679,9	D - 35	17,5	1,2	13,0	0,80	0,60	0,50	0,20
680 - 1500	D - 40	20,0	1,2	15,0	1,00	0,70	0,60	0,30

* For pressure range above 600 (800) bar we can offer special designs with integrated back-up rings (see page 59, special tailor-made designs). Please contact our technical department.

Ordering example, size listed in "available standard dimensions"

F-Slide K08-DS, standard application, actual bore diameter: $\varnothing D=210$ mm, predetermined or chosen housing dimensions (from list "K08-DS available standard dimensions") --> $\varnothing d=185$ mm, $L=12,5$ mm
required material: ECOFLON 3 / FKM85 --> **article number:** 4FPH0210 (from list "K08-DS available standard dimensions", article-no.-row 4 for material combination ECOFLON 3/FKM85)

Required designation for placing an order: **F-SLIDE K08-DS** **4FPH0210**
Seal type article no.

Ordering example, size NOT listed in "available standard dimensions", eg.: inch dimension

F-Slide K08-DS, standard application, bore diameter $\varnothing D=209,55$ mm (8 1/4") housing diameter $\varnothing d=\varnothing D - 25 = 184,55$ mm and housing height $L= 12,5$ mm (from table "recommended K08-DS standard dimensions for diameter range $\varnothing D$ 200 - 299,9 mm), **required material:** ECOFLON 2 / NBR85 --> **article number:** not available, housing dimension D x d x L followed by material combination should be used for designation:

Required designation for placing an order: **F-SLIDE K08-DS** **209,55 x 184,55 x 12,5mm** **FLON 2 / NBR85**
Seal type housing dimensions material combination

For technical advice related to other housing configurations or non standard applications, please use fax enquiry form for rod seals on page 61.

F-SLIDE seals K08-DS available standard dimensions / article numbers



Bore Ø D	Groove Ø d	Height L	Article-Nr. Flon 2/NBR85	Article-Nr. Flon 2/FKM85	Article-Nr. Flon 3/NBR85	Article-Nr. Flon 3/FKM85
20,0	10,0	5,0	1FPH0010	2FPH0010	3FPH0010	4FPH0010
25,0	15,0	5,0	1FPH0020	2FPH0020	3FPH0020	4FPH0020
30,0	20,0	5	1FPH0030	2FPH0030	3FPH0030	4FPH0030
32,0	22,0	5	1FPH0040	2FPH0040	3FPH0040	4FPH0040
35,0	25,0	5	1FPH0050	2FPH0050	3FPH0050	4FPH0050
40,0	30,0	5	1FPH0060	2FPH0060	3FPH0060	4FPH0060
45,0	35,0	5	1FPH0070	2FPH0070	3FPH0070	4FPH0070
50,0	35,0	7,5	1FPH0080	2FPH0080	3FPH0080	4FPH0080
55,0	40,0	7,5	1FPH0090	2FPH0090	3FPH0090	4FPH0090
60,0	40,0	10	1FPH0100	2FPH0100	3FPH0100	4FPH0100
63,0	43,0	10	1FPH0110	2FPH0110	3FPH0110	4FPH0110
70,0	50,0	10	1FPH0120	2FPH0120	3FPH0120	4FPH0120
80,0	60,0	10	1FPH0130	2FPH0130	3FPH0130	4FPH0130
100,0	80,0	10	1FPH0140	2FPH0140	3FPH0140	4FPH0140
115,0	95,0	10	1FPH0150	2FPH0150	3FPH0150	4FPH0150
125,0	105,0	10	1FPH0160	2FPH0160	3FPH0160	4FPH0160
140,0	120,0	10	1FPH0170	2FPH0170	3FPH0170	4FPH0170
150,0	130,0	10	1FPH0180	2FPH0180	3FPH0180	4FPH0180
180,0	160,0	10	1FPH0190	2FPH0190	3FPH0190	4FPH0190
200,0	175,0	12,5	1FPH0200	2FPH0200	3FPH0200	4FPH0200
210,0	185,0	12,5	1FPH0210	2FPH0210	3FPH0210	4FPH0210
220,0	195,0	12,5	1FPH0220	2FPH0220	3FPH0220	4FPH0220
230,0	205,0	12,5	1FPH0230	2FPH0230	3FPH0230	4FPH0230
240,0	215,0	12,5	1FPH0240	2FPH0240	3FPH0240	4FPH0240
245,0	220,0	12,5	1FPH0250	2FPH0250	3FPH0250	4FPH0250
250,0	225,0	12,5	1FPH0260	2FPH0260	3FPH0260	4FPH0260
260,0	235,0	12,5	1FPH0270	2FPH0270	3FPH0270	4FPH0270
270,0	245,0	12,5	1FPH0280	2FPH0280	3FPH0280	4FPH0280
275,0	250,0	12,5	1FPH0290	2FPH0290	3FPH0290	4FPH0290
280,0	255,0	12,5	1FPH0300	2FPH0300	3FPH0300	4FPH0300
<p>NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.</p>						
285,0	255,0	12,5	1FPH0310	2FPH0310	3FPH0310	4FPH0310
290,0	265,0	12,5	1FPH0320	2FPH0320	3FPH0320	4FPH0320
300,0	270,0	15	1FPH0330	2FPH0330	3FPH0330	4FPH0330
305,0	275,0	15	1FPH0340	2FPH0340	3FPH0340	4FPH0340
310,0	280,0	15	1FPH0350	2FPH0350	3FPH0350	4FPH0350
320,0	290,0	15	1FPH0360	2FPH0360	3FPH0360	4FPH0360
330,0	300,0	15	1FPH0370	2FPH0370	3FPH0370	4FPH0370
340,0	310,0	15	1FPH0380	2FPH0380	3FPH0380	4FPH0380
350,0	320,0	15	1FPH0390	2FPH0390	3FPH0390	4FPH0390
360,0	330,0	15	1FPH0400	2FPH0400	3FPH0400	4FPH0400
370,0	340,0	15	1FPH0410	2FPH0410	3FPH0410	4FPH0410
380,0	350,0	15	1FPH0420	2FPH0420	3FPH0420	4FPH0420
390,0	360,0	15	1FPH0430	2FPH0430	3FPH0430	4FPH0430
400,0	370,0	15	1FPH0440	2FPH0440	3FPH0440	4FPH0440
410,0	380,0	15	1FPH0450	2FPH0450	3FPH0450	4FPH0450
420,0	390,0	15	1FPH0460	2FPH0460	3FPH0460	4FPH0460
430,0	400,0	15	1FPH0470	2FPH0470	3FPH0470	4FPH0470
450,0	420,0	15	1FPH0480	2FPH0480	3FPH0480	4FPH0480
480,0	450,0	15	1FPH0490	2FPH0490	3FPH0490	4FPH0490
490,0	460,0	15	1FPH0500	2FPH0500	3FPH0500	4FPH0500
500,0	470,0	15	1FPH0510	2FPH0510	3FPH0510	4FPH0510
520,0	490,0	15	1FPH0520	2FPH0520	3FPH0520	4FPH0520
530,0	495,0	17,5	1FPH0530	2FPH0530	3FPH0530	4FPH0530
550,0	515,0	17,5	1FPH0540	2FPH0540	3FPH0540	4FPH0540

F-SLIDE seals K08-DS available standard dimensions / article numbers

Bore Ø D	Groove Ø d	Height L	Article-Nr. Flon 2/NBR85	Article-Nr. Flon 2/FKM85	Article-Nr. Flon 3/NBR85	Article-Nr. Flon 3/FKM85
560,0	525,0	17,5	1FPH0550	2FPH0550	3FPH0550	4FPH0550
570,0	535,0	17,5	1FPH0560	2FPH0560	3FPH0560	4FPH0560
580,0	545,0	17,5	1FPH0570	2FPH0570	3FPH0570	4FPH0570
590,0	555,0	17,5	1FPH0580	2FPH0580	3FPH0580	4FPH0580
600,0	565,0	17,5	1FPH0590	2FPH0590	3FPH0590	4FPH0590
610,0	575,0	17,5	1FPH0600	2FPH0600	3FPH0600	4FPH0600
620,0	585,0	17,5	1FPH0610	2FPH0610	3FPH0610	4FPH0610
630,0	595,0	17,5	1FPH0620	2FPH0620	3FPH0620	4FPH0620
640,0	605,0	17,5	1FPH0630	2FPH0630	3FPH0630	4FPH0630
650,0	615,0	17,5	1FPH0640	2FPH0640	3FPH0640	4FPH0640
660,0	625,0	17,5	1FPH0650	2FPH0650	3FPH0650	4FPH0650
670,0	635,0	17,5	1FPH0660	2FPH0660	3FPH0660	4FPH0660
680,0	640,0	20	1FPH0670	2FPH0670	3FPH0670	4FPH0670
690,0	650,0	20	1FPH0680	2FPH0680	3FPH0680	4FPH0680
710,0	670,0	20	1FPH0690	2FPH0690	3FPH0690	4FPH0690
720,0	680,0	20	1FPH0700	2FPH0700	3FPH0700	4FPH0700
730,0	690,0	20	1FPH0710	2FPH0710	3FPH0710	4FPH0710
740,0	700,0	20	1FPH0720	2FPH0720	3FPH0720	4FPH0720
750,0	710,0	20	1FPH0730	2FPH0730	3FPH0730	4FPH0730
760,0	720,0	20	1FPH0740	2FPH0740	3FPH0740	4FPH0740
770,0	730,0	20	1FPH0750	2FPH0750	3FPH0750	4FPH0750
780,0	740,0	20	1FPH0760	2FPH0760	3FPH0760	4FPH0760
800,0	760,0	20	1FPH0770	2FPH0770	3FPH0770	4FPH0770
820,0	780,0	20	1FPH0780	2FPH0780	3FPH0780	4FPH0780



NOTE: due to our innovative manufacturing process we are able to produce any other dimension in between this standard diameter range. For further information please contact our application engineers.

830,0	790,0	20	1FPH0790	2FPH0790	3FPH0790	4FPH0790
840,0	800,0	20	1FPH0800	2FPH0800	3FPH0800	4FPH0800
850,0	810,0	20	1FPH0810	2FPH0810	3FPH0810	4FPH0810
880,0	840,0	20	1FPH0820	2FPH0820	3FPH0820	4FPH0820
900,0	860,0	20	1FPH0830	2FPH0830	3FPH0830	4FPH0830
920,0	880,0	20	1FPH0840	2FPH0840	3FPH0840	4FPH0840
940,0	900,0	20	1FPH0850	2FPH0850	3FPH0850	4FPH0850
950,0	910,0	20	1FPH0860	2FPH0860	3FPH0860	4FPH0860
965,0	925,0	20	1FPH0870	2FPH0870	3FPH0870	4FPH0870
980,0	940,0	20	1FPH0880	2FPH0880	3FPH0880	4FPH0880
1.000,0	960,0	20	1FPH0890	2FPH0890	3FPH0890	4FPH0890
1.050,00	1.010,00	20	1FPH0900	2FPH0900	3FPH0900	4FPH0900
1.100,00	1.060,00	20	1FPH0910	2FPH0910	3FPH0910	4FPH0910
1.120,00	1.080,00	20	1FPH0920	2FPH0920	3FPH0920	4FPH0920
1.140,00	1.100,00	20	1FPH0930	2FPH0930	3FPH0930	4FPH0930
1.180,00	1.140,00	20	1FPH0940	2FPH0940	3FPH0940	4FPH0940
1.300,00	1.260,00	20	1FPH0950	2FPH0950	3FPH0950	4FPH0950
1.400,00	1.360,00	20	1FPH0960	2FPH0960	3FPH0960	4FPH0960
1.450,00	1.410,00	20	1FPH0970	2FPH0970	3FPH0970	4FPH0970
1.500,00	1.460,00	20	1FPH0980	2FPH0980	3FPH0980	4FPH0980

Tailormade X(F)-SLIDE seal range

Special solutions

Tailormade X-SLIDE and F-SLIDE solutions

When choosing a seal company to do business with, several issues need to be considered: quality, speed, reliability of delivery, and the overall performance of the sealing product. Clearly, not only does ECONOMOS® have strengths in these areas, but it can also enhance your satisfaction, because apart from delivering 'standard' seals and components - backed up by first class application advice - it can also design solutions that are tailor-made to your particular application, thus maximising the performance of your product.

Below are some examples of additional ranges and tailor-made solutions.

Additional standard piston seal range

K08-E



Standard single acting piston seal

K08-ES



Standard heavy duty single acting piston seal

K08-P



Standard polyurethane double acting piston seal

Additional standard rod seal range

S09-D



Standard double acting rod seal

S09-DS



Standard heavy duty double acting rod seal



eccatals

Tailormade sealing solutions (digest)

ions tailormade

Tailormade piston seal solutions

Special



integrated back up-ring for higher pressure / larger gaps

Special



integrated elastomeric seal for better sealing effect / media separation

Special



integrated "lip seal section" for increased flexibility / faster pressurisation

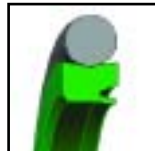
Tailormade rod seal solutions

Special



integrated back up-ring for higher pressure / larger gaps

Special



integrated "lip seal section" for increased flexibility / faster pressurisation

Special



integrated elastomer seal for better sealing effect / media separation



Please send this enquiry to your nearest ECONOMOS subsidiary. You will find the respective addresses at the back covers flap.

Company _____

Address _____

ZIP Code _____ **City** _____ **Date** _____

Phone _____ **Fax** _____

Contact person _____ **Dpmt.** _____

Required Service Housing and seal recommendation

Offer for _____ pcs. / estim. yearly demand _____

Others _____

Description of application _____

Operating conditions:

linear  spiral  static  

rotating  oscillating 

single acting double acting

Current seal type _____

Material _____

Manufacturer _____

Manufacturers seal code _____

	Min.	Nominal	Max.
Temp			
Pressure			
Stroke			
Speed			
Gap "s"			
Media:			
Sliding surface material:			
Surface hardness:			
Surface roughness:			

Additional comments: _____

Problem with actual seal

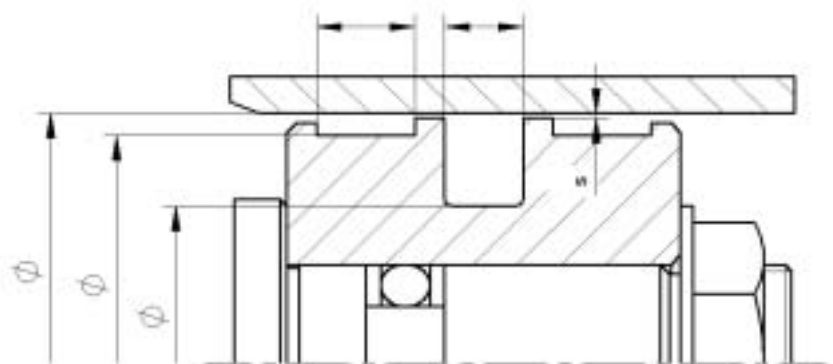
Delivery Mounting

Material Leakage

Lifetime Wear

Measurements

Customer Service



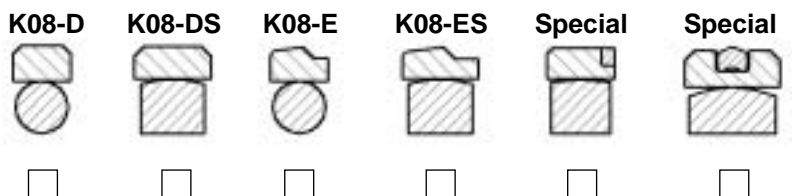
I want to use:

X-SLIDE seals (Polyurethane)
excellent sealing and mounting properties

F-SLIDE seals (PTFE)
excellent chemical and temp. resistance

Please indicate most suitable profile

I selected following seal profile:



ECONOMOS® total standard profile seal range

Total seal range



For all non standard profiles and our free seal design and advisory services, please contact your local ECONOMOS® office.

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Trade marks TM, liability exclusion

Trade marks

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HEADQUARTERS

Economos Austria GmbH.
Gabelhoferstr. 25
A-8750 Judenburg
Phone: +43 3572 82555
Fax: +43 3572 82555-58
E-mail: judenburg@economos.com
Internet: <http://www.economos.com>

Sales Eastern Europe & Ex-SU

Economos Austria GmbH.
Iz NO Sud, Str. 1, Obj. 50
A-2351 Wr. Neudorf
Phone: +43 2236 62207
Fax: +43 2236 62207-7
E-mail: sales.east@economos.com
Internet: <http://www.economos.com>

ECONOMOS® Subsidiaries worldwide

AUSTRIA

Economos Dichtungstechnik GmbH.
Madstein am Ort 9
A-8770 St. Michael
Phone: +43 3843 51150
Fax: +43 3843 51155
E-mail: st.michael@economos.com
Internet: <http://www.economos.at>

AUSTRALIA

Economos Australia Pty. Ltd.
2/107 Beaconsfield Street
Silverwater NSW 2128
Phone: +61 2 9748 7466
Fax: +61 2 9748 7006
E-mail: australia@economos.com
Internet: <http://www.economos.com>

ARGENTINA

Seal Jet Economos S.A.
Tucumán 4140
(3000) Santa Fe, Argentina
Phone: +54 342 455 3644
Fax: +54 342 453 0299
E-mail: sealjet.argentina@economos.com
Internet: <http://www.economos.com>

BELGIUM

Economos Belgium N.V.
Industriezone 5 Mollem 36
B-1730 Asse
Phone: +32 24 523600
Fax: +32 24 523518
E-mail: belgium@economos.com
Internet: <http://www.economos.be>

CANADA

Economos Canada Inc.
5777 Coopers Avenue
Mississauga, Ontario L4Z 1R9
Phone: +1 905 712 1600
Fax: +1 905 712 1606
E-mail: canada.sales@economos.com
Internet: <http://www.economos.ca>

CHINA

Economos (Qingdao) Seal Tech Co. Ltd
Southern side of Zhuzhou Road,
266101 Qingdao, China
Phone: +86 532 88702609 / 88701660
Fax: +86 532 88702325
E-mail: china.sales@economos.com
Internet: <http://www.economos.cn>

CZECH REPUBLIC

Economos Riha CZ, s.r.o.
Cernokostelecká 128/161
102 00 Praha 10
Phone: +420 267 900 711
Fax: +420 267 900 741
E-mail: praha@economos.cz
Internet: <http://www.economos.cz>

FRANCE

Economos France S.A.
Parc d'activités des Arpents
24 rue du Pré des Aulnes
F-77341 Pontault Combault
Phone: +33 1 60 348502
Fax: +33 1 60 348537
E-mail: iledefrance@economos.com
Internet: <http://www.economos.fr>

GERMANY

Economos Deutschland GmbH.
Robert-Bosch-Strasse 11
D-74321 Bietigheim-Bissingen
Phone: +49 7142 5930
Fax: +49 7142 593110
E-mail: bietigheim@economos.com
Internet: <http://www.economos.de>

ITALY

Economos Italia S.r.l.
Via E. Fermi 42
I-37136 Verona
Phone: +39 045 8622406
Fax: +39 045 8648623
E-mail: italia@economos.com
Internet: <http://www.economos.it>

INDIA

Economos India Private Ltd.
16, Phase IV, Okhla Industrial Estate
New Delhi 110020, India
Phone: +91 11 55640248
Fax: +91 11 26932612
E-mail: india@economos.com
Internet: <http://www.economos.com>

JAPAN

Economos Japan K.K.
MT No. 2 Build. 4-19-2,
Shimomaruko, Ohta-ku
Tokyo 146-0092, Japan
Phone: +81 3 5732 3301
Fax: +81 3 5732 3303
E-mail: tokyo@economos.com
Internet: <http://www.economos.jp>

MALAYSIA

Economos Malaysia Sdn. Bhd.
No 12, Jalan PJS 7/21,
Bandar Sunway, Petaling Jaya,
46150 Selangor Darul Ehsan, Malaysia
Phone: +603 56382848
Fax: +603 56312248
E-mail: malaysia@economos.com
Internet: <http://www.economos.com>

NETHERLANDS

Economos Interplastics NL B.V.
Twekkeler-es 28
7547 SM Enschede
Phone: +31 53 432962
Fax: +31 53 4325617
E-mail: interplastics@economos.com
Internet: <http://www.economos.com>

PHILIPPINES

Economos Philippines Co. Ltd.
107 Epifanio Delos Santos Avenue (EDSA)
1550 Mandaluyong City, Philippines
Phone: +63 2 717 1724
Fax: +63 2 717 1725
E-mail: philippines@economos.com
Internet: <http://www.economos.ph>

POLAND

Economos Polska Sp.z.o.o.
Ul. Zimowa 41
PL-40-318 Katowice, Polska
Phone: +48 32 352 7800
Fax: +48 32 352 7801
E-mail: polska@economos.com
Internet: <http://www.economos.pl>

SLOVENIA

Economos d.o.o.
Ptujška c. 343
2000 Maribor
Phone: +386 2 629 52 76
Fax: +386 2 629 52 77
E-mail: maribor@economos.com
Internet: <http://www.economos.com>

SPAIN

Economos España, S.L.
Polig. Ind. Cova Solera, c/Paris, 1 - 7, Bajos A
E-08191 Rubí (Barcelona)
Phone: +34 93 5873510
Fax: +34 93 5873511
E-mail: spain@economos.com
Internet: <http://www.economos.es>

SWEDEN

Economos Sverige AB
Hammarby fabriksväg 29 - 31
120 33 Stockholm, Sweden
Phone: +46 84 620180
Fax: +46 84 620140
E-mail: sweden@economos.com
Internet: <http://www.economos.se>

SWITZERLAND

Economos Schweiz GmbH
Hungerbuelstrasse 17
CH-8500 Frauenfeld
Phone: +41 52 7212021
Fax: +41 52 7215521
E-mail: swiss@economos.com
Internet: <http://www.economos.ch>

THAILAND

Econosto (Thailand) Limited
99/28-31 Soi Wat Ladprao,
Ladprao Road, Ladprao
Bangkok 10230, Thailand
Phone: +66 (0)2 9316868 / 79
Fax: +66 (0)2 9316880 / 1
E-mail: econthai@econostothai.com
Internet: <http://www.econostothai.com>

UKRAINE

Economos Ukraine
Ul. O. Teligi, 15A
04112 Kiev, Ukraine
Phone: +380 444401181
Fax: +380 444407556
E-mail: economos@svitonline.com
Internet: <http://www.economos.com.ua>

UNITED KINGDOM

Economos UK Ltd.
83 Buckingham Avenue
Slough, Berkshire
SL1 4PN
Phone: +44 1753 696565
Fax: +44 1753 696192
E-mail: uk.sales@economos.com
Internet: <http://www.economos.co.uk>

USA

Economos USA Inc.
26820 Fargo Avenue
Cleveland, OH 44146
Phone: +1 216 3782600
Fax: +1 216 3782606
E-mail: usa@economos.com
Internet: <http://www.economosusa.com>

www.economos.com
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ECONOMOS®



Owner, editor and publisher:

Economos Austria Gesellschaft m.b.H.

Headquarters

Gabelhoferstraße 25

A-8750 Judenburg

phone: +43 3572 825550

fax: +43 3572 42520

Email: judenburg@economos.com

Internet: www.economos.com

Design: G. Sterba, Marketing Dpmt.

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