



The chamfered guiding tape profile FS is specially designed for use in hydraulic cylinders. This profile offers important features in comparison to the alternative standard profile F3.

The chamfers

- compensate for the rounding in the bottom/top of the groove.
- support easy installation of hardware e.g. the cylinder tube. It functions as an additional “lead-in chamfer”.
- reduce the risk of cold-flow extrusion in the gap between the hardware.
- support the lubrication oil film between the guiding element and the opposing dynamic surface hardware.

Advantages

- Vibration absorption effect.
- Very good emergency running properties in low-lube conditions.
- High load capacity (compressive strength), low wear and reduced friction due to special bronze additive in PTFE material.
- Dimensions according to ISO 10766.
- Also available as bulk material.
- Suitable for cylinder repairs.
- Ideally suited for large-diameter.
- Bulk material.
- Installation in closed and undercut housings.

Range of Application

Operating temperature	-100 to +200 °C
Surface speed	≤ 5.0 m/s

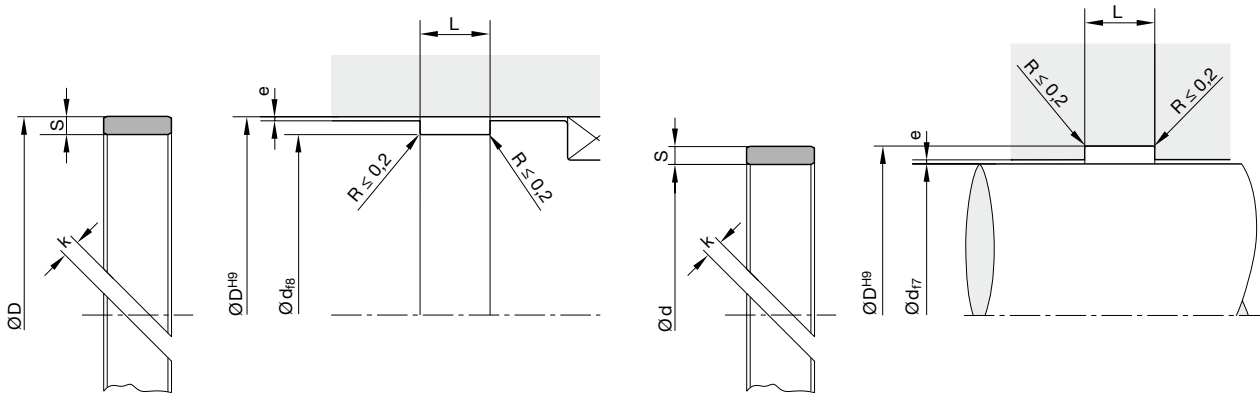
Compounds

Standard: Polon® 052, PTFE + 40 % bronze
 On request: Polon® 062, PTFE + 60 % bronze

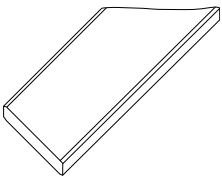
For cylinders made of alloys, light metal and high-grade steel, we recommend the use of compound Polon® 033 (PTFE + 25 % carbon).

Installation

The gap dimensions “e” guarantee optimum service life of the guiding tapes. For the seals, however, the gaps as mentioned on the respective catalogue pages are to be considered when it is essential to observe full operating conditions (“Field of Application”) for the seals.

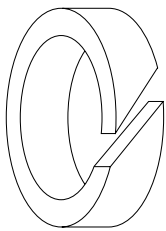


Surfaces

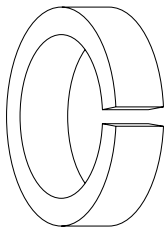


Guiding tape FS:
smooth (standard)

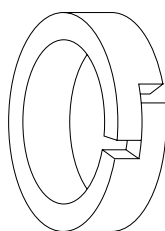
Type of cut



Type A
angle cut

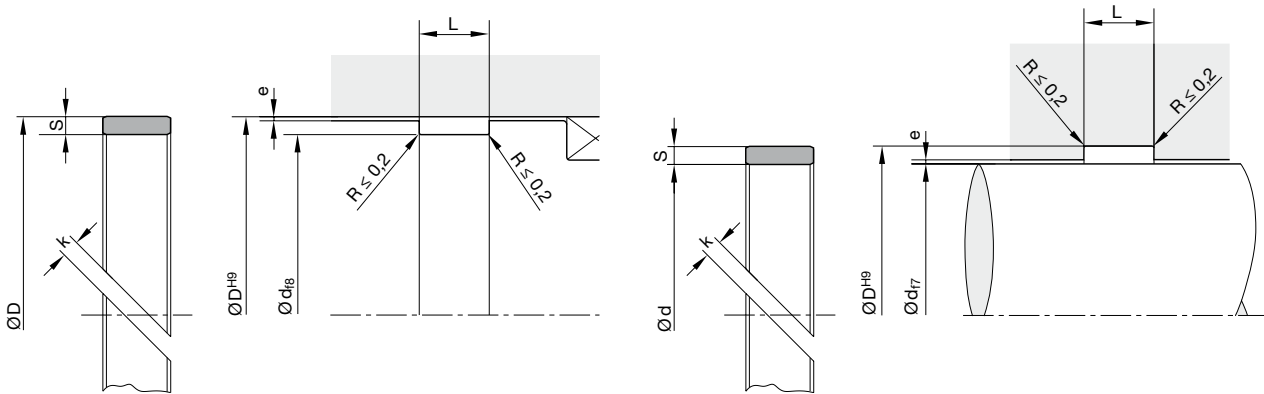


Type S
straight cut



Type Z
step cut

Types A and S are used for bearings where it is imperative that the system pressure is carried on to the seals. They are designed as “open bearing” with a well defined gap. Type Z is a closed bearing, which in certain applications is used as a combined seal and bearing.



Housing dimensions

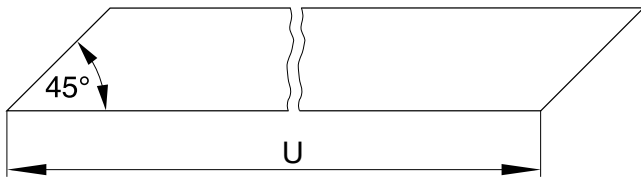
Series No.	Recommended Ø range d/D (mm)	Guiding tape		Groove		
		S (mm)	L (mm)	d (mm)	D (mm)	e (mm)
15063	≤ 50	1.50 ^{+0.02} _{-0.03}	6.3 ^{+0.1}	D - 3.0	d + 3.0	0.25
15100	≤ 50	1.50 ^{+0.02} _{-0.03}	10.0 ^{+0.1}	D - 3.0	d + 3.0	0.25
20063	≤ 50	2.00 ^{+0.02} _{-0.03}	6.3 ^{+0.1}	D - 4.0	d + 4.0	0.30
20081	≤ 50	2.00 ^{+0.02} _{-0.03}	8.1 ^{+0.1}	D - 4.0	d + 4.0	0.30
20097	> 50	2.00 ^{+0.02} _{-0.03}	9.7 ^{+0.1}	D - 4.0	d + 4.0	0.30
20150	> 50	2.00 ^{-0.05}	15.0 ^{+0.2}	D - 4.0	d + 4.0	0.30
20200	> 50	2.00 ^{-0.05}	20.0 ^{+0.2}	D - 4.0	d + 4.0	0.30
25042	> 50	2.50 ^{-0.05}	4.2 ^{+0.1}	D - 5.0	d + 5.0	0.40
25056	> 50	2.50 ^{-0.05}	5.6 ^{+0.1}	D - 5.0	d + 5.0	0.40
25063	> 50	2.50 ^{-0.05}	6.3 ^{+0.1}	D - 5.0	d + 5.0	0.40
25081	> 50	2.50 ^{-0.05}	8.1 ^{+0.1}	D - 5.0	d + 5.0	0.40
25097	> 50	2.50 ^{-0.05}	9.7 ^{+0.1}	D - 5.0	d + 5.0	0.40
25150	> 50	2.50 ^{-0.05}	15.0 ^{+0.2}	D - 5.0	d + 5.0	0.40
25200	> 50	2.50 ^{-0.05}	20.0 ^{+0.2}	D - 5.0	d + 5.0	0.40
25250	> 50	2.50 ^{-0.05}	25.0 ^{+0.2}	D - 5.0	d + 5.0	0.40
25300	> 50	2.50 ^{-0.05}	30.0 ^{+0.2}	D - 5.0	d + 5.0	0.40

Ordering example piston guidance

Mating surface steel
 Surface smooth
 Piston diameter 80 mm
 Groove 2.5 x 9.7 mm

a) by the metre FS 0000 052 25097 A (9.7 x 2.5)
 b) cut to length FS 0800 052 25097 A (9.7 x 2.5 x 239.0)
 FS Profile
 0800 Piston diameter x 10 (by the meter: 0000)
 052 Compound
 25097 Series no.

Calculation of the stretched length "U"



The length "U" of the tape is to be calculated from the mean circumferential length less the clearance at the joint "k". The k values stated in the table are based on a temperature rise of 120 °C.

Cyl. Ø D ^{H8}	Stretched length U			Gap
	Rod Ø d _{r7}	Piston	Rod	Tol. k
≤ 45				± 0.25 1.8
> 45				± 0.40 3.5
> 80				± 0.60 4.4
> 100				± 0.80 5.6
> 125				± 1.00 6.6
> 150				± 1.20 8.0
> 180				± 1.40 9.5
> 215				± 1.60 12.0
> 270				± 1.80 15.5
> 330				± 2.00 19.0

$U = \pi \cdot (D-S) \cdot k$	$U = \pi \cdot (d+S) \cdot k$
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Selection of the axial guiding width L

Choose the appropriate curve for the applicable guide tolerances. Note that the more precise the guidance the lower the value for the selected eps.

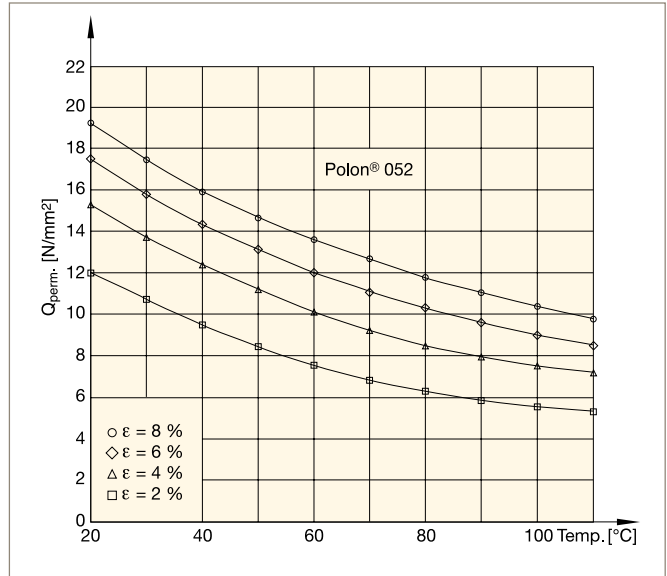
The following formula provides the minimum guidance width:

$$L \geq \frac{F}{Q (d_i - k \cdot \sqrt{2})}$$

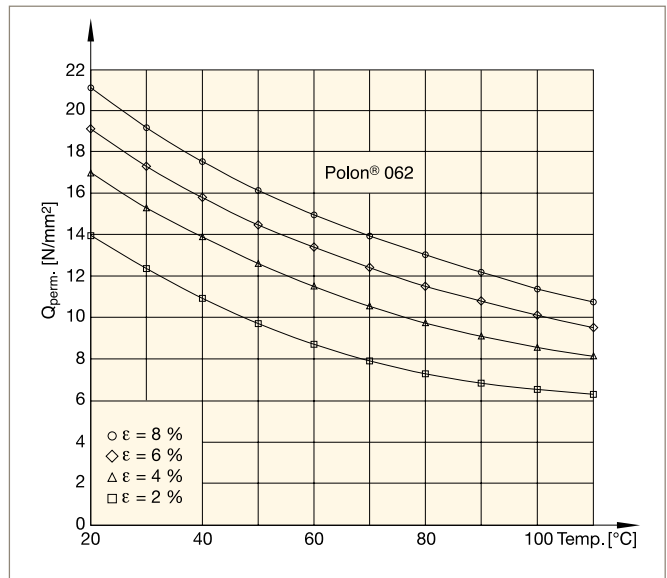
- d = inner diameter [mm]
- k = gap [mm]
- L = guidance width [mm]
- Q_{perm.} = permissible specific load [N/mm²]
- F = lateral force [N]

We recommend that the largest possible guidance length always be used even if the calculation yields a smaller value.

Permissible specific load Q_{perm.} in relation to temperature t and the respective permanent set ε for the compounds Polon® 052:



Permissible specific load Q_{perm.} in relation to temperature t and the respective permanent set ε for the compounds Polon® 062:



Guiding tapes