

PIN DUST SEALS

VAY



DESCRIPTION

The VAY profile is a pin dust seal or dust cap composed of a rubber sealing lip and a metal cage.

ADVANTAGES

It is suitable for rotating and oscillatory movements
 Efficient barrier against external pollution
 Easy installation with solid foundation

APPLICATIONS

Excavators
 Linkage systems

MATERIALS

Rubber

FKM 70 - 75 Shore A
 HNBR 70 - 75 Shore A
 NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010
 Stainless steel - AISI 304
 Stainless steel - AISI 316

SEAL DESIGN

Tolerance for the outside diameter of the seal (ØD)

Bore diameter ØD1 (mm)	Apparent metal cage
ØD1 ≤ 50.0	+0.10 / +0.20
50.0 < ØD1 ≤ 80.0	+0.13 / +0.23
80.0 < ØD1 ≤ 120.0	+0.15 / +0.25
120.0 < ØD1 ≤ 180.0	+0.18 / +0.28
180.0 < ØD1 ≤ 300.0	+0.20 / +0.30
300.0 < ØD1 ≤ 500.0	+0.23 / +0.35
500.0 < ØD1 ≤ 630.0	+0.23 / +0.35

Roundness tolerance

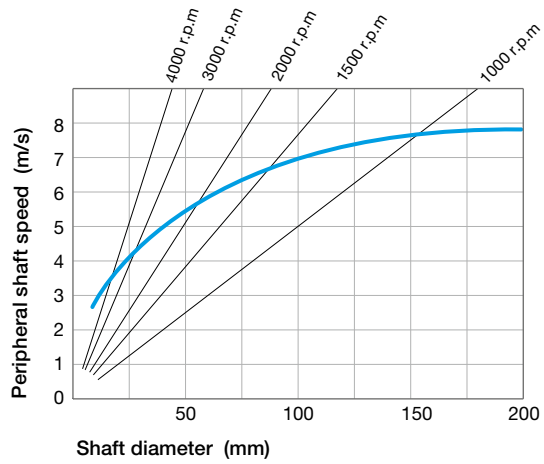
Bore diameter ØD1 (mm)	Apparent metal cage
ØD1 ≤ 50.0	0.18
50.0 < ØD1 ≤ 80.0	0.25
80.0 < ØD1 ≤ 120.0	0.30
120.0 < ØD1 ≤ 180.0	0.40
180.0 < ØD1 ≤ 300.0	0.25% of the outside diameter
300.0 < ØD1 ≤ 500.0	0.25% of the outside diameter
500.0 < ØD1 ≤ 630.0	-

Tolerance for the inside diameter of the seal (Ød)

Free and without constraint, the inside diameter of the sealing lip is always smaller than the diameter of the shaft. The pre-tightening or interference denotes the difference between these two values. Depending on the shaft diameter, the diameter of the sealing lip is generally considered to be less, between 0.8 and 3.5 mm.

TECHNICAL DATA

Speed



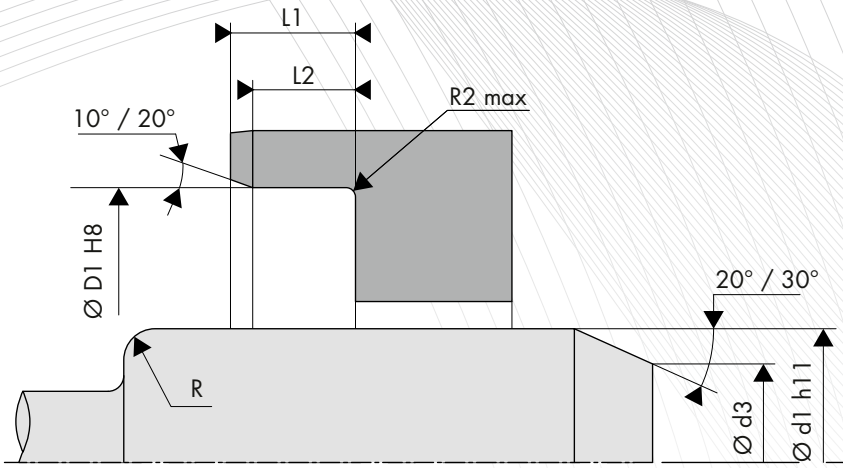
Linear speed calculation:

$$s \text{ (m/s)} = \frac{[\text{shaft } \varnothing \text{ (mm)} \times \text{speed (rpm)} \times \pi]}{60,000}$$

Pressure

The pin dust seals are only used in unpressurised environments.

We recommend using shaft seals with springs for use in pressurised environments between 0.02 and 0.05 MPa (max).



SHAFT DESIGN

Shaft hardness

Rotation speed	Hardness in HRC
$s \leq 4.0$ m/sec	45 HRC
$4.0 < s \leq 10.0$ m/s	55 HRC
$s > 10.0$ m/sec	60 HRC

Surface roughness

Ra *	0.2 to 0.8 μ m
Rz	1.0 to 4.0 μ m
Rmax	≤ 6.3 μ m

*Ra = 0.1 μ m for demanding applications

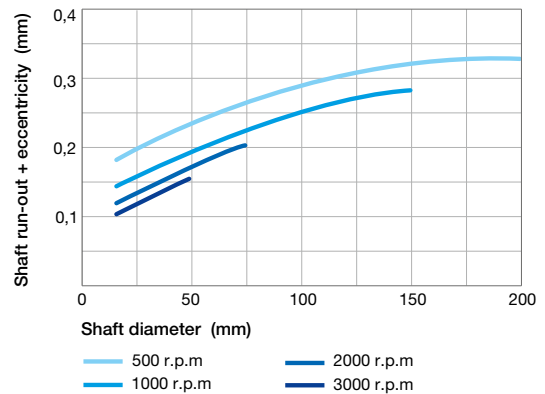
Chamfer and radius

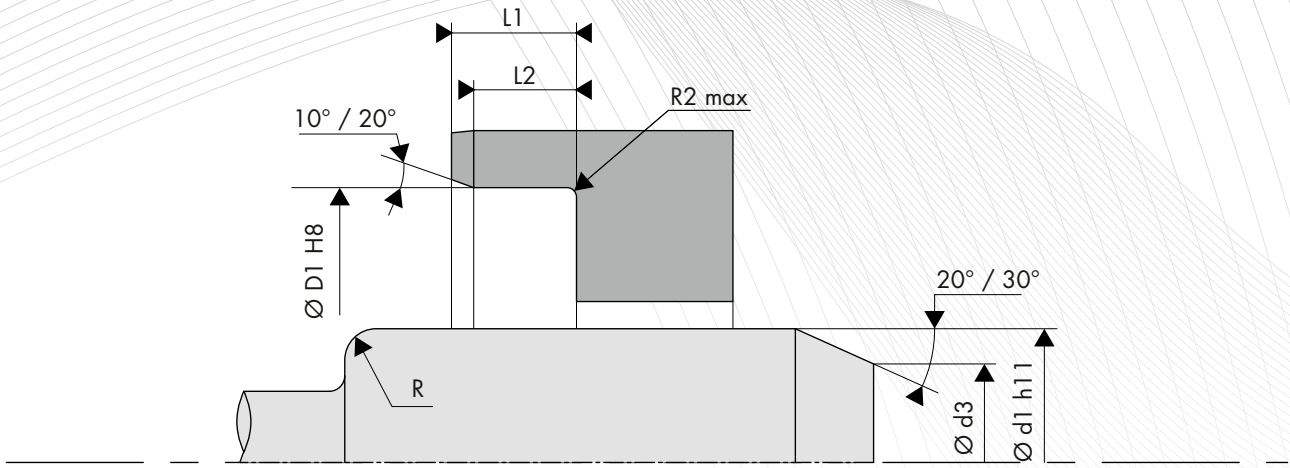
Shaft diameter Ød1 (mm)	Chamfer diameter Ød3 (mm)	Radius R (mm)
$\text{Ød1} \leq 10.0$	$\text{Ød1} - 1.50$	2.00
$10.0 < \text{Ød1} \leq 20.0$	$\text{Ød1} - 2.00$	2.00
$20.0 < \text{Ød1} \leq 30.0$	$\text{Ød1} - 2.50$	3.00
$30.0 < \text{Ød1} \leq 40.0$	$\text{Ød1} - 3.00$	3.00
$40.0 < \text{Ød1} \leq 50.0$	$\text{Ød1} - 3.50$	4.00
$50.0 < \text{Ød1} \leq 70.0$	$\text{Ød1} - 4.00$	4.00
$70.0 < \text{Ød1} \leq 95.0$	$\text{Ød1} - 4.50$	5.00
$95.0 < \text{Ød1} \leq 130.0$	$\text{Ød1} - 5.50$	6.00
$130.0 < \text{Ød1} \leq 240.0$	$\text{Ød1} - 7.00$	8.00
$240.0 < \text{Ød1} \leq 500.0$	$\text{Ød1} - 11.00$	12.00

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h11 (mm)
$\text{Ød1} \leq 3.0$	-0.060 / 0
$3.0 < \text{Ød1} \leq 6.0$	-0.075 / 0
$6.0 < \text{Ød1} \leq 10.0$	-0.090 / 0
$10.0 < \text{Ød1} \leq 18.0$	-0.110 / 0
$18.0 < \text{Ød1} \leq 30.0$	-0.130 / 0
$30.0 < \text{Ød1} \leq 50.0$	-0.160 / 0
$50.0 < \text{Ød1} \leq 80.0$	-0.190 / 0
$80.0 < \text{Ød1} \leq 120.0$	-0.220 / 0
$120.0 < \text{Ød1} \leq 180.0$	-0.250 / 0
$180.0 < \text{Ød1} \leq 250.0$	-0.290 / 0
$250.0 < \text{Ød1} \leq 315.0$	-0.320 / 0
$315.0 < \text{Ød1} \leq 400.0$	-0.360 / 0
$400.0 < \text{Ød1} \leq 500.0$	-0.400 / 0

Shaft run out and eccentricity





HOUSING DESIGN

Surface roughness

Ra	0.8 to 3.2 µm
Rz	6.3 to 16.0 µm
Rmax	≤16.0 µm

Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

Housing radius and width

Height H1 (mm)	Width		Radius R2 max (mm)
	L2 min (H1 x 0.85)	L1 min (H1+0.3)	
4.00	3.40	4.30	0.50
7.00	5.85	7.30	
8.00	6.80	8.30	
10.00	8.50	10.30	

○ DIMENSIONS

Part number	Shaft diameter Ød1 h11	Bore diameter ØD1 H8	Seal height H1
VAY 30 x 40 x 4	30.00	40.00	4.00
VAY 35 x 45 x 4	35.00	45.00	4.00
VAY 38 x 48 x 4	38.00	48.00	4.00
VAY 40 x 50 x 4	40.00	50.00	4.00
VAY 45 x 55 x 4	45.00	55.00	4.00
VAY 45 x 56 x 4	45.00	56.00	4.00
VAY 50 x 60 x 4	50.00	60.00	4.00
VAY 55 x 68 x 4	55.00	68.00	4.00
VAY 60 x 75 x 4	60.00	75.00	4.00
VAY 65 x 80 x 4	65.00	80.00	4.00
VAY 68 x 90 x 4	68.00	90.00	4.00
VAY 70 x 85 x 4	70.00	85.00	4.00
VAY 75 x 90 x 4	75.00	90.00	4.00
VAY 80 x 95 x 4	80.00	95.00	4.00
VAY 85 x 100 x 4	85.00	100.00	4.00
VAY 90 x 105 x 4	90.00	105.00	4.00
VAY 100 x 115 x 4	100.00	115.00	4.00
VAY 100 x 120 x 4	100.00	120.00	4.00
VAY 110 x 125 x 4	110.00	125.00	4.00
VAY 110 x 130 x 4	110.00	130.00	4.00
VAY 120 x 135 x 4	120.00	135.00	4.00