

COMBI SEALS COMB20



DESCRIPTION

The COMB20 profile is a combi seal composed of a metal cage with a polyurethane coating covering half of the outside of the cage, 2 special type SC shaft seals assembled in opposite side, a compact polyurethane anti-pollution deflector and an additional anti-pollution sealing lip bonded in polyurethane.

ADVANTAGES

- Long lifespan
- Moderate rotation speeds
- Elevated axial displacements
- Strong protection against external dirt
- Increased steering possibilities
- Less sensitive to shaft eccentricities
- Very good static sealing

APPLICATIONS

- Agriculture
- Transmissions
- Rotations during high levels of pollution

MATERIALS

Rubber

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

Deflector

- PU 92 Shore A
- PU 94 Shore A

Metal cage

- Steel - AISI 1010

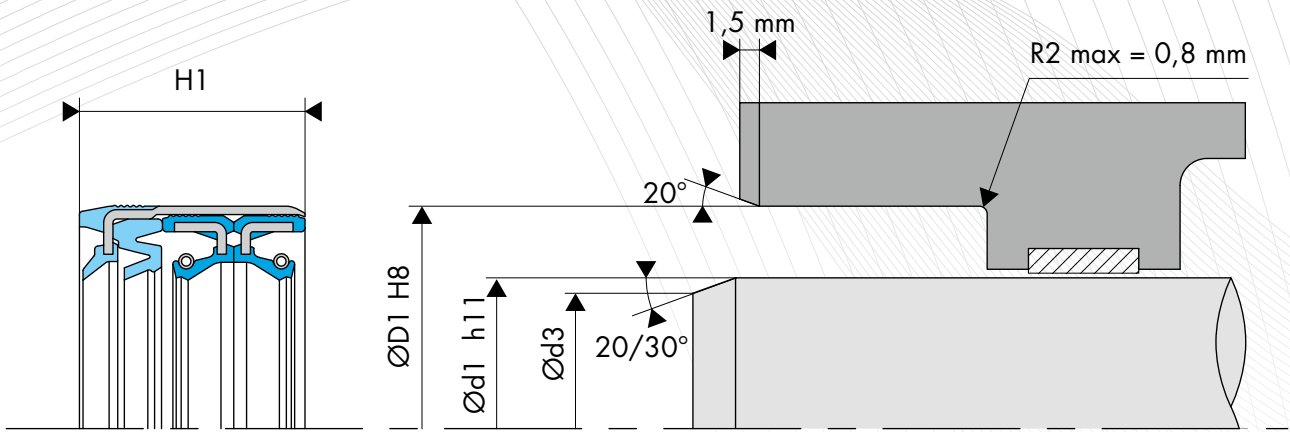
Spring

- Steel - AISI 1070 - 1090

TECHNICAL DATA

| Technical data | NBR 70 - 75 Shore A | FKM 70 - 75 Shore A | ACM 70 - 75 Shore A | HNBR 70 - 75 Shore A |
|-----------------------|---------------------|---------------------|---------------------|----------------------|
| Temperature | -30°C / +80°C | -20°C/+100°C | -25°C/+90°C | -30°C/+90°C |
| Speed | 4 m/s | 6 m/s | 5 m/s | 5 m/s |
| Pressure | 0.02 - 0.05 MPa | 0.02 - 0.05 MPa | 0.02 - 0.05 MPa | 0.02 - 0.05 MPa |
| Accepted axial offset | High | High | High | High |
| Level of pollution | High | High | High | High |

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



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 μm |
| Rz | 1.0 to 4.0 μm |
| Rmax | ≤ 6.3 μm |

*Ra = 0.1 μm for demanding applications

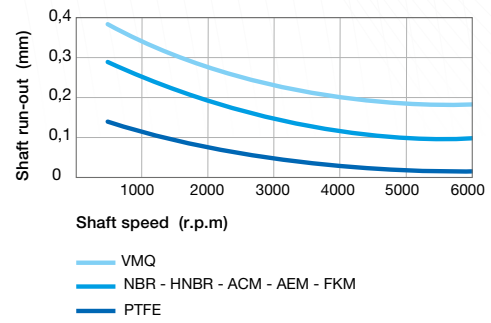
Shaft tolerance

| 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 |

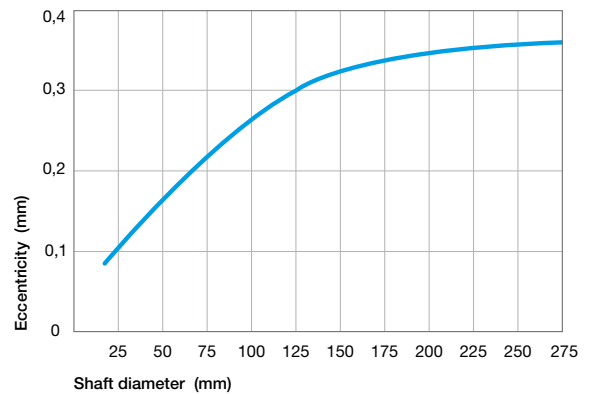
Chamfer

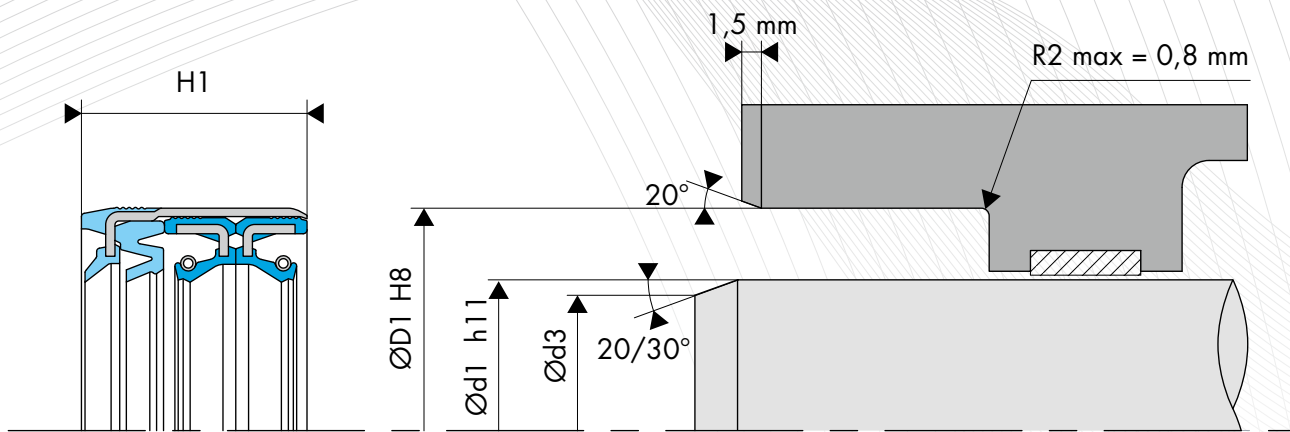
| Shaft diameter Ød1 (mm) | Chamfer diameter Ød3 (mm) |
|----------------------------------|------------------------------------|
| $\text{Ød1} \leq 10.0$ | $\text{Ød1} - 1.50$ |
| $10.0 < \text{Ød1} \leq 20.0$ | $\text{Ød1} - 2.00$ |
| $20.0 < \text{Ød1} \leq 30.0$ | $\text{Ød1} - 2.50$ |
| $30.0 <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

Shaft run out



Eccentricity





HOUSING DESIGN

Surface roughness

| | |
|------|---------------------------|
| Ra | 0,8 to 3,2 μm |
| Rz | 6,3 to 16,0 μm |
| Rmax | $\leq 16,0 \mu\text{m}$ |

Chamfer

| | |
|---------|----------------------|
| Housing | 20° (+/-5°) x 1.5 mm |
|---------|----------------------|

Housing tolerance

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