

SEALS FOR LINEAR MOVEMENTS

TCW4

DESCRIPTION

The TCW4 profile is a shaft seal composed of a single metal cage with rubber grooves on the outside of the cage and a double sealing lip with integrated spring, suitable for linear movements.

ADVANTAGES

- Very good static sealing
- Very good thermal expansion compensation
- Greater roughness is allowed in the housing
- Reduced risk of corrosion
- Easy to assemble with very limited bounce-back effect
- Sealing for low and high viscosity fluids
- Modern primary sealing lip with low radial forces
- Protection against undesirable air contaminants
- Sealing lips designed for linear movements

APPLICATIONS

- All types of linear applications
- Shock absorbers
- Steering

MATERIALS

Rubber

FKM 75 - 80 Shore A
HNBR 75 - 80 Shore A
NBR 75 - 80 Shore A

Metal cage

Steel - AISI 1010
Steel - DC01 C490
Steel - DC01 C590

Spring

Steel - AISI 1070 - 1090
Stainless steel - AISI 316

SEAL DESIGN

Tolerance for the outside diameter of the seal (ØD)

Bore diameter ØD1 (mm)	Apparent metal cage	Rubber coating	Coating with grooves
ØD1 ≤ 50.0	+0.10 / +0.20	+0.15 / +0.30	+0.20 / +0.40
50.0 < ØD1 ≤ 80.0	+0.13 / +0.23	+0.20 / +0.35	+0.25 / +0.45
80.0 < ØD1 ≤ 120.0	+0.15 / +0.25	+0.20 / +0.35	+0.25 / +0.45
120.0 < ØD1 ≤ 180.0	+0.18 / +0.28	+0.25 / +0.45	+0.30 / +0.55
180.0 < ØD1 ≤ 300.0	+0.20 / +0.30	+0.25 / +0.45	+0.30 / +0.55
300.0 < ØD1 ≤ 500.0	+0.23 / +0.35	+0.30 / +0.55	+0.35 / +0.65
500.0 < ØD1 ≤ 630.0	+0.23 / +0.35	+0.35 / +0.65	+0.40 / +0.75

Roundness tolerance

Bore diameter ØD1 (mm)	Apparent metal cage	Rubber coating
ØD1 ≤ 50.0	0.18	0.25
50.0 < ØD1 ≤ 80.0	0.25	0.35
80.0 < ØD1 ≤ 120.0	0.30	0.50
120.0 < ØD1 ≤ 180.0	0.40	0.65
180.0 < ØD1 ≤ 300.0	0.25% of the outside diameter	0.80
300.0 < ØD1 ≤ 500.0	0.25% of the outside diameter	1.00
500.0 < ØD1 ≤ 630.0	-	-

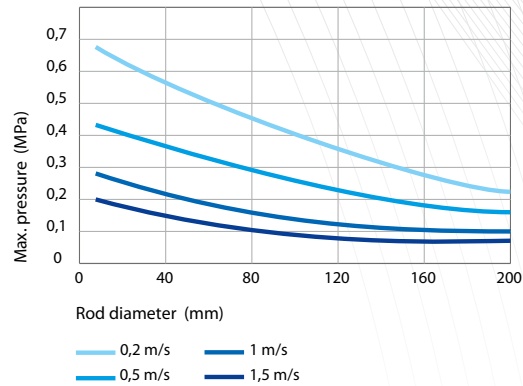
Tolerance for the inside diameter of the seal (Ød)

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

● TECHNICAL DATA

Speed / Pressure ratio

We recommend using seals designed for linear movements at maximum speed of 1.5 m/sec and pressures that do not exceed 0.65 MPa. These approximate values cannot be interpreted at the same time.



Temperature / Media

Media		Maximum temperature depending on the materials						
		ACM	AEM	EPDM	FKM	HNBR	NBR	VMQ
Mineral oils	Hydraulic oils	+130°C	+130°C	–	+170°C	+130°C	+100°C	+150°C
	Greases	–	+130°C	–	–	+100°C	+90°C	–
Fire-resistant fluids	HFA group - Emulsion with more than 80% water	–	–	–	–	+70°C	+70°C	+60°C
	HFB group - Opposite solution (water in oil)	–	–	–	–	+70°C	+70°C	+60°C
	HFC group - Polymer aqueous solution	–	–	+60°C	–	+70°C	+70°C	–
	HFD group - Water-free synthetic fluids	–	–	–	+150°C	–	–	–
Other fluids	EL + L heating oil	–	–	–	–	+100°C	+90°C	–
	Air	+150°C	+150°C	+150°C	+200°C	+130°C	+100°C	+200°C
	Water	–	–	+150°C	+100°C	+100°C	+90°C	–
	Water for washing	–	–	+130°C	+100°C	+100°C	+90°C	–
Temperature range	Min.	-25°C	-40°C	-45°C	-20°C	-30°C	-30°C	-60°C
	Max.	+150°C	+150°C	+150°C	+200°C	+150°C	+100°C	+200°C