

SEALS FOR LINEAR MOVEMENTS

TC4



DESCRIPTION

The TC4 profile is a shaft seal composed of a single metal cage with a rubber coating and a double sealing lip with an 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
- 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
- Power-assisted 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	-	-

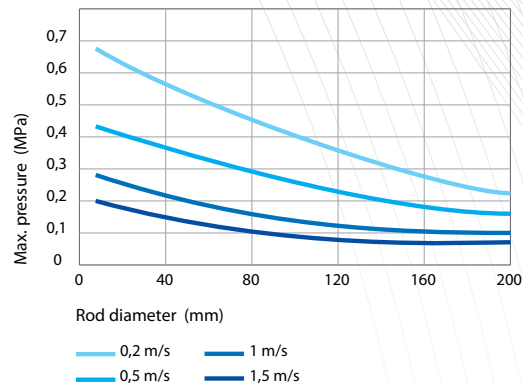
Tolerance for the inside diameter of the seal (Ød)

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

DIMENSIONS

Part number	Rod diameter Ød1	Housing diameter ØD1	Seal height H1
TC4 5 x 13 x 5	5.00	13.00	5.00
TC4 6 x 16 x 6.5	6.00	16.00	6.50
TC4 7 x 14 x 4	7.00	14.00	4.00
TC4 7 x 16 x 7	7.00	16.00	7.00
TC4 8 x 14 x 4	8.00	14.00	4.00
TC4 8 x 16 x 7.5	8.00	16.00	7.50
TC4 8 x 16 x 9	8.00	16.00	9.00
TC4 8 x 17 x 10	8.00	17.00	10.00
TC4 8 x 18 x 7	8.00	18.00	7.00
TC4 8 x 20 x 10	8.00	20.00	10.00
TC4 8 x 22 x 10	8.00	22.00	10.00
TC4 8 x 22 x 11	8.00	22.00	11.00
TC4 8 x 28 x 11	8.00	28.00	11.00
TC4 9 x 21 x 10	9.00	21.00	10.00
TC4 10 x 20 x 8	10.00	20.00	8.00
TC4 10 x 20 x 9.5	10.00	20.00	9.50
TC4 10 x 20 x 10.5	10.00	20.00	10.50
TC4 10 x 21 x 7.5	10.00	21.00	7.50
TC4 10 x 21 x 10	10.00	21.00	10.00
TC4 10 x 22 x 7	10.00	22.00	7.00
TC4 10 x 22 x 10	10.00	22.00	10.00
TC4 10 x 22 x 11	10.00	22.00	11.00
TC4 10 x 24 x 8	10.00	24.00	8.00
TC4 10 x 28 x 13.4	10.00	28.00	13.40
TC4 10 x 30 x 12	10.00	30.00	12.00
TC4 10 x 32 x 12	10.00	32.00	12.00
TC4 10 x 32 x 13.4	10.00	32.00	13.40
TC4 10 x 37 x 12	10.00	37.00	12.00
TC4 11 x 28 x 13.4	11.00	28.00	13.40
TC4 12 x 25 x 7	12.00	25.00	7.00
TC4 12 x 28 x 7	12.00	28.00	7.00
TC4 12 x 30 x 7	12.00	30.00	7.00
TC4 12 x 32 x 10	12.00	32.00	10.00
TC4 12 x 33 x 10	12.00	33.00	10.00
TC4 12 x 34 x 12	12.00	34.00	12.00
TC4 12 x 37 x 12	12.00	37.00	12.00
TC4 12 x 40 x 12	12.00	40.00	12.00
TC4 13 x 22 x 7	13.00	22.00	7.00
TC4 14 x 24 x 7	14.00	24.00	7.00
TC4 14 x 28 x 7	14.00	28.00	7.00
TC4 14 x 28 x 13.4	14.00	28.00	13.40
TC4 15 x 24 x 5.5	15.00	24.00	5.50
TC4 16 x 36 x 12	16.00	36.00	12.00
TC4 18 x 30 x 6	18.00	30.00	6.00
TC4 19 x 32 x 8	19.00	32.00	8.00
TC4 20 x 30 x 5.5	20.00	30.00	5.50
TC4 20 x 35 x 7	20.00	35.00	7.00
TC4 20 x 40 x 10	20.00	40.00	10.00
TC4 20 x 45 x 10	20.00	45.00	10.00
TC4 22 x 40 x 10	22.00	40.00	10.00
TC4 22 x 42 x 11	22.00	42.00	11.00
TC4 22 x 47 x 8	22.00	47.00	8.00
TC4 24 x 35 x 10.5	24.00	35.00	10.50

Part number	Rod diameter Ød1	Housing diameter ØD1	Seal height H1
TC4 25 x 36 x 5	25.00	36.00	5.00
TC4 25 x 42 x 6.5	25.00	42.00	6.50
TC4 25 x 50 x 15	25.00	50.00	15.00
TC4 26 x 37 x 10.5	26.00	37.00	10.50
TC4 26 x 40 x 8	26.00	40.00	8.00
TC4 27 x 39 x 10.5	27.00	39.00	10.50
TC4 27 x 40 x 10.5	27.00	40.00	10.50
TC4 28 x 38 x 6.2	28.00	38.00	6.20
TC4 30 x 40 x 7	30.00	40.00	7.00
TC4 30 x 42 x 7	30.00	42.00	7.00
TC4 30 x 42 x 10.5	30.00	42.00	10.50
TC4 30 x 42 x 11	30.00	42.00	11.00
TC4 30 x 43 x 8.5	30.00	43.00	8.50
TC4 31 x 41 x 9.1	31.00	41.00	9.10
TC4 31 x 43 x 10	31.00	43.00	10.00
TC4 32 x 42 x 7	32.00	42.00	7.00
TC4 32 x 43 x 10.5	32.00	43.00	10.50
TC4 32 x 43 x 12.5	32.00	43.00	12.50
TC4 32 x 44 x 6.7	32.00	44.00	6.70
TC4 32 x 44 x 10.5	32.00	44.00	10.50
TC4 32 x 45 x 7	32.00	45.00	7.00
TC4 32 x 46 x 11	32.00	46.00	11.00
TC4 32 x 52 x 9	32.00	52.00	9.00
TC4 33 x 45 x 10	33.00	45.00	10.00
TC4 33 x 45 x 11	33.00	45.00	11.00
TC4 33 x 46 x 10.5	33.00	46.00	10.50
TC4 34 x 46 x 10.5	34.00	46.00	10.50
TC4 35 x 47 x 10	35.00	47.00	10.00
TC4 35 x 48 x 8	35.00	48.00	8.00
TC4 35 x 48 x 10.5	35.00	48.00	10.50
TC4 35 x 48 x 11	35.00	48.00	11.00
TC4 36 x 48 x 10.5	36.00	48.00	10.50
TC4 37 x 50 x 11	37.00	50.00	11.00
TC4 38 x 48 x 10	38.00	48.00	10.00
TC4 38 x 50 x 10.5	38.00	50.00	10.50
TC4 40 x 54 x 10	40.00	54.00	10.00
TC4 41 x 53 x 10	41.00	53.00	10.00
TC4 41 x 53 x 10.5	41.00	53.00	10.50
TC4 41 x 53 x 11	41.00	53.00	11.00
TC4 41 x 54 x 11	41.00	54.00	11.00
TC4 42 x 55 x 8.5	42.00	55.00	8.50
TC4 43 x 54 x 9.5	43.00	54.00	9.50
TC4 43 x 54 x 11	43.00	54.00	11.00
TC4 43 x 55 x 9	43.00	55.00	9.00
TC4 43 x 55 x 10.5	43.00	55.00	10.50
TC4 47 x 58 x 10	47.00	58.00	10.00
TC4 48 x 59 x 10	48.00	59.00	10.00
TC4 48 x 60 x 10	48.00	60.00	10.00
TC4 48 x 61 x 11	48.00	61.00	11.00
TC4 49 x 60 x 10	49.00	60.00	10.00
TC4 50 x 57 x 5	50.00	57.00	5.00
TC4 85 x 100 x 18	85.00	100.00	18.00

