Circlip DIN 471/472 - Groove Dimensions and Load Capacity

Sample document - numeric values are only included in the purchased Pro export.

Project: _____ Part/Position: _____ Prepared by: _____

Overall assessment: pass - the contact pressure in the groove is within the allowable limit.

Inputs

Ring type	? ? ?
Nominal diameter d1	? ? ? mm
Shaft/hub material	? ? ?
Yield strength Re	? ? ? N/mm²
Axial force F	? ? ? N
required safety factor S	? ? ?
Sharp-edged contact	? ? ?

Groove dimensions (DIN 471/472)

Groove diameter d2	? ? ? mm
Ring thickness s	? ? ? mm
Groove width m	? ? ? mm
Edge distance n (min.)	? ? ? mm

Results

Bearing area A	? ? ? mm²
Contact pressure p = F/A	? ? ? N/mm²
allowable pressure p_allow = Re/S	? ? ? N/mm²

Contact pressure verification

Criterion	Value	Limit	Status
p <= p_allow	? ? ?	? ? ?	● PASS

Notes

The groove weakens the shaft through its notch effect - for the shaft's fatigue verification use the shaft calculator per DIN 743 with the retaining-ring-groove notch case.

The ring's own load capacity F_R as well as tilting and rotational speed limits are manufacturer-specific (retaining ring catalog) and are not calculated here.

Calculation basis

Simplified, static verification of the contact pressure in the retaining ring groove. The projected bearing area is approximated as the annulus between the nominal diameter d1 and the groove diameter d2: A = pi/4·(d1² - d2²) for a shaft ring, A = pi/4·(d2² - d1²) for a bore ring. The contact pressure p = F/A is rated against the allowable pressure p_allow = Re/S, where Re is the yield strength of the shaft/hub material (not the ring itself). Not included: the notch effect of the groove on the shaft's fatigue strength, the ring's own load capacity, and tilting and rotational speed limits of the ring (manufacturer-specific). Applies to static load.

Note: The results are design and orientation aids. They do not replace independent verification, calculation and approval by a qualified person. The terms of use at maschinenbaurechner.de apply.

SAMPLE