Plain Bearing Pressure (p·v Value)

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

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

Overall assessment: pass - all three criteria (bearing pressure, sliding velocity, p·v value) are within the allowable range.

Inputs

Radial force F	? ? ? N
Bearing diameter d	? ? ? mm
Bearing width b	? ? ? mm
Operating mode	? ? ?
Speed n	? ? ? 1/min
Bearing material	? ? ?
Allowable bearing pressure p_allow	? ? ? N/mm²
Allowable sliding velocity v_allow	? ? ? m/s
Allowable p·v value	? ? ? N/mm²·m/s

Results

Projected area A = d·b	? ? ? mm²
Bearing pressure p = F/A	? ? ? N/mm²
Sliding velocity v	? ? ? m/s
p·v value	? ? ? N/mm²·m/s

Assessment

Criterion	Value	Limit	Status
Bearing pressure p <= p_allow	? ? ? N/mm²	? ? ? N/mm²	● PASS
Sliding velocity v <= v_allow	? ? ? m/s	? ? ? m/s	● PASS
p·v value <= (p·v)_allow	? ? ? N/mm²·m/s	? ? ? N/mm²·m/s	● PASS

Calculation basis

p·v rating method (Roloff/Matek) for maintenance-free dry-sliding/mixed-friction plain bearings, not a hydrodynamic verification (Sommerfeld number, DIN 31652 is a separate method). The projected area A = d·b gives the bearing pressure p = F/A. The sliding velocity is the circumferential velocity v = pi·d·n/60000 for rotating operation, or the average v = phi_rad·d·f/60000 for oscillating (swinging) operation (phi_rad = phi·pi/180, f the double-stroke frequency per minute, forward and return per double stroke). The p·v value is the product p·v and a measure of wear and heating. All three values are rated individually against the material's allowable values: utilization up to ? ? ?% pass, 80 to ? ? ?% marginal, above that fail; the overall rating is the worst of the three individual ratings. Temperature and break-in effects are manufacturer-specific and not part of this calculation.