Locking Assembly / Keyless Locking Device

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

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

Overall assessment: pass - the chosen locking assembly transmits the operating torque (and the axial force, if given) within the allowable utilization.

Inputs

Operating torque M_t	? ? ? Nm
Axial force F_ax	? ? ? N
Application factor K_A	? ? ?
Shaft diameter d_W	? ? ? mm
Friction face length l_F	? ? ? mm
Friction coefficient μ	? ? ?
Nominal torque M_KN (catalogue)	? ? ? Nm
Allowable axial force F_axN (catalogue)	? ? ? N

Results

required nominal torque M_KN,req = M_t·K_A	? ? ? Nm
torque utilization A_M = M_t·K_A/M_KN	? ? ?
axial force utilization A_F = F_ax·K_A/F_axN	? ? ?
total utilization A = A_M + A_F	? ? ?
required interface pressure p_req (informational value)	? ? ? N/mm²
transmittable torque M_t,allow = M_KN/K_A	? ? ? Nm

Utilization verification

Criterion	Value	Limit	Status
A <= 1.0	? ? ?	? ? ?	● WARN

Calculation basis

Catalogue sizing of a friction-fit shaft-hub connection with a locking assembly (keyless locking device) per Roloff/Matek. The operating torque M_t is scaled up by the application factor K_A (uniform ? ? ?, light shocks ? ? ?, moderate shocks ? ? ?, heavy shocks ? ? ?) to a required nominal torque M_KN,req = M_t·K_A and utilized against the catalogue nominal torque M_KN of the chosen locking assembly (A_M). An additional axial force F_ax is added conservatively and linearly (A_F = F_ax·K_A/F_axN, only when F_axN is known); A = A_M + A_F. The required interface pressure p_req = 2·M_t·K_A·1000/(μ·pi·d_W²·l_F) is an informational value for hub strength, not a derivation from material and geometry data as with an interference fit. Runout tolerance, allowable shaft misalignment and the number of locking assemblies required are governed by the catalogue and are not part of this calculation.

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