Linear Guide Life

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

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

Overall assessment: FAIL

Inputs

Type	? ? ?
Reference travel distance L_B	? ? ? km
Dynamic load rating C	? ? ? kN
Equivalent load P	? ? ? kN
Load factor f_w	? ? ?
Motion profile	? ? ?
Target operating hours L_h,target	? ? ? h
Static load rating C0	? ? ? kN
Maximum static load P0	? ? ? kN

Results

Effective load P_eff = f_w·P	? ? ? kN
Nominal life L10	? ? ? km
Average speed v_m	? ? ? m/min
Life L_h	? ? ? h
Life (2000 h/year)	? ? ? a

Evaluation criteria

Criterion	Value	Limit	Status
Life L_h against target operating hours	? ? ? h	? ? ? h	FAIL
Static safety factor S0	? ? ?	? ? ?	PASS

Notes and calculation basis

Nominal life of a profile rail guide using the manufacturer catalogue method (HIWIN/THK/Rexroth), analogous to rolling bearing life per ISO 281, but referenced to a travel distance L_B instead of revolutions: effective load P_eff = f_w·P, nominal life L10 = (C/P_eff)^p·L_B (p = 3 for ball, 10/3 for roller rail guides), average speed from stroke and stroke frequency or given directly, conversion to operating hours, and optionally the static safety factor S0 = C0/P0. Simplifications: combined loads (moments), preload and mounting tolerances remain manufacturer-specific (catalogue) and are not part of this calculation; P is treated as a given equivalent or maximum carriage load. The reference travel distance L_B is manufacturer-specific (commonly ? ? ? km or ? ? ? km) - load ratings from different manufacturers are not comparable without the same reference distance.