Parallel Key Verification

Sample document with complete example values. It shows the report the purchased export produces for YOUR input - it is not itself a report for any part.

Project: Sample project | Part/Position: no real part | Prepared by: Sample, not released

Key A 12x8x80, d = 40 mm

Overall assessment: OK (bearing pressure verification at shaft and hub satisfied)

Inputs

Shaft diameter d	40 mm
Nominal torque T	500 Nm
Application factor K_A	1
Number of keys i	1
Key form	A
Key length l	80 mm
Shaft strength (Re or Rm)	490 N/mm²
Hub strength (Re or Rm)	295 N/mm²
Key strength	430 N/mm²

Key per DIN 6885-1 (high form)

Cross-section b x h	12 x 8 mm
Keyway depth, shaft t1	5 mm
Keyway depth, hub t2	3.3 mm

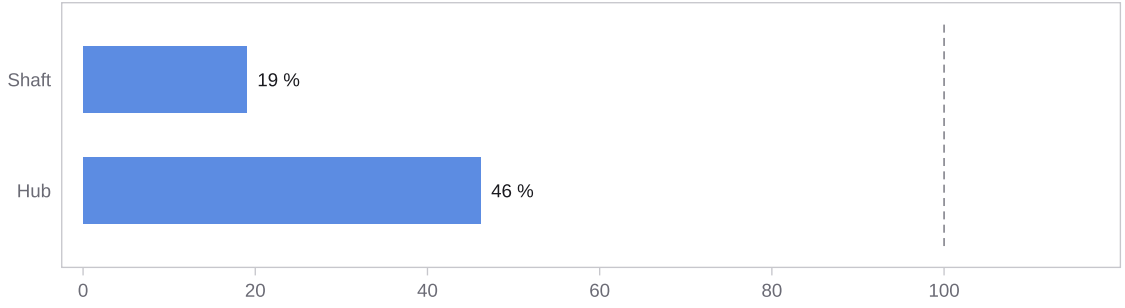
Results

Quantity	Value
Equivalent torque K_A·T	500 Nm
Circumferential force F_u	25,000 N
Load-bearing fraction φ	1
Load-carrying length l_tr	68 mm
Shear stress in the key cross-section (informative)	30.6 N/mm²

Bearing pressure verification

Criterion	Value	Limit	Status
Bearing pressure, shaft p <= p_perm	73.5 N/mm²	387 N/mm²	● OK
Bearing pressure, hub p <= p_perm	122.5 N/mm²	265.5 N/mm²	● OK

Bearing pressure utilization



Required minimum length

Required load-carrying length l_tr,req	31.4 mm
Required total length l_req	43.4 mm
Smallest suitable standard length	45 mm

Notes

Effective length above 1.3 · d: the additional length hardly increases the capacity because of the uneven load distribution.

Calculation basis

Bearing pressure verification per DIN 6892 (simplified method C) with key geometry per DIN 6885-1, high form. The circumferential force from the equivalent torque K_A·T is reacted through the load-carrying keyway flanks; the bearing pressure is verified at the shaft (load-carrying height t1) and hub (load-carrying height h - t1) against 0.9·Re of the weaker contact partner in each case. With two keys, a load-bearing fraction of 0.75 is assumed. The required length results from the governing (weaker) contact.

About this sample

All values on these pages come from a freely chosen example calculation and belong to no real part. The purchased export contains the same sections with your input, your header data (project, part, prepared by) and as searchable text. Pricing and scope: maschinenbaurechner.de/en/pricing