

# GENERAL INFORMATION FOR THE USE OF INTERNAL HUB TO SHAFT CONNECTIONS

Surface finish for shaft and hub bore:  $R_t \leq 16, \mu$

Tolerances:  
(recommended)

1. TAS 3003, 3006, 3012, 3015, RB  
Shaft: h 8  
Bore: H 8
2. TAS 3020  
Shaft: Every fit between h 11 and k 11  
Bore: Every fit between H 11 and N 11

Friction coefficients:

$\mu = 0.12$  for slightly oiled locking assembly  
 $\mu_{tot} = 0.14$  for locking screws

General torque calculation:

$$M_t \approx 9560 \cdot \frac{P}{n} \quad (P \text{ in kW}) \quad [\text{Nm}] \quad 1 \text{ kW} = 1.36 \text{ HP}$$

$$M_t \approx 7026 \cdot \frac{P}{n} \quad (P \text{ in HP}) \quad [\text{Nm}] \quad 1 \text{ HP} = 0.736 \text{ kW}$$

Transmissible torque per locking assembly:

$$M_t = \mu \cdot N \cdot \frac{d}{2} \quad N \text{ [N]} \quad d \text{ [m]}$$

Transmissible axial force per locking assembly:

$$N_{ax} = M_t \cdot \frac{2}{d} \quad N_{ax} \text{ [KN]}, \text{ if } d \text{ [mm]}$$

When torque and axial force act simultaneously, the reduced transmissible torque is:

$$M_R = \sqrt{M_{t \text{ cat.}}^2 - \left(N_{ax} \cdot \frac{d}{2}\right)^2}$$

For the determination of shaft and hub material:

$p_w$  and  $p_N$  have to be  $\leq \sigma_{0.2}$

Legend:

$M_t$  = transmissible torque  
 $M_R$  = reduced transmissible torque  
 $P$  = power  
 $n$  = shaft speed r.p.m.  
 $N$  = nominal force  
 $N_{ax}$  = axial force  
 $d$  = shaft diameter  
 $p_w$  = contact pressure between locking assembly and shaft  
 $p_N$  = contact pressure between locking assembly and hub bore  
 $\sigma_{0.2}$  = stress resulting in a permanent deformation of 0.2%

## $\sigma_{0.2}$ -values of various materials

$\sigma_{0.2}$ [N/mm <sup>2</sup> ]	150	180	200	220	250	270	300	350	400
Material	GG-22	GG-26 GS-38 V2A-S	GG-30 V2A-E V4A-S GTS-35	GS-45 St 35 St 37-3 V4A-E	GS-52 GGG-38 St 42-3 C 22	GGG-42 St 50-2 C 35 AlCuNiC	GS-60 St 60-2 St 55 GTS-45	GS-62 GGG-50 St 70-2 C 45	GS-70 GGG-60 C 60