

RCC-MR

DESIGN AND CONSTRUCTION RULES FOR MECHANICAL COMPONENTS OF NUCLEAR INSTALLATIONS

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afcen

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A6.5212 **Shear stress on threads: τ_f^N**

- For bolt and tapping threads: $\tau_f^N = 2N/(\pi \cdot d_f \cdot L'_e)$ with $L'_e \leq L_e$.

A6.5213 **Shear stress on the screw head: τ_t^N**

- $\tau_t^N = N/(\pi \cdot d_1 \cdot H)$

A6.5214 **Contact pressure: p^N**

- between engaged threads: $p_f^N = 4N \cdot p / [\pi \cdot (d^2 - D^2) \cdot L_e]$
- under the head or nut if there is no washer: $p_t^N = 4N / [\pi \cdot (a^2 - D_p^2)]$
- on assembled parts if there is a washer: $p_t^N = 4N / [\pi \cdot (a'^2 - D'_p{}^2)]$

with :

a' $a' = a + 2 C$
 D'_p the greater of the two values (D_p ; B)

A6.5220 **STRESSES INDUCED BY A BENDING MOMENT: M****A6.5221** **Bending stress: σ^M**

- on the thread root section: $\sigma_n^M = \pm 32M / (\pi \cdot d_n^3)$
- on the smooth shank section: $\sigma_l^M = \pm 32M / (\pi \cdot d_1^3)$

A6.5222 **Shear stresses on the threads: τ_f^M**

- For bolt and tapping threads: $\tau_f^M = 8M/(\pi \cdot d_f^2 \cdot L'_e)$ avec $L'_e \leq L_e$.

A6.5223 **Shear stress on the screw head: τ_t^M**

- $\tau_t^M = M/(\pi \cdot d_1^2 \cdot H)$

A6.5224 **Contact pressure: p^M**

- Between the engaged threads:
- under the head if there is no washer:
- on the assembled part if there is a washer:

$$p_f^M = \frac{16 M \cdot p}{\pi \cdot L_e \cdot (d - D) [(d + D)^2 + 2 d^2]}$$

$$p_t^M = \frac{16 M}{\pi (a - D_p) [(a + D_p)^2 + 2 a^2]}$$

$$p_t^M = \frac{16 M}{\pi (a' - D'_p) [(a' + D'_p)^2 + 2 a'^2]}$$

with

a' equals the smaller of two values ($a + 2C$; A)
 D'_p equals the greater of two values (D_p ; B)

A6.5230 **STRESSES INDUCED BY RESIDUAL TWISTING TORQUES C_r AND C_t** **A6.5231** **Thread root shear stress**

- $\tau_n^{Cr} = 16 C_r / (\pi \cdot d_n^3)$

A6.5232 **Smooth shank shear stress**

- $\tau_l^{Cr} = 16 C_r / (\pi \cdot d_1^3)$

A6.5233 **Head shear stress**

- $\tau_t^{Cr} = 16 C_t / (\pi \cdot d_1^3)$