SURUB

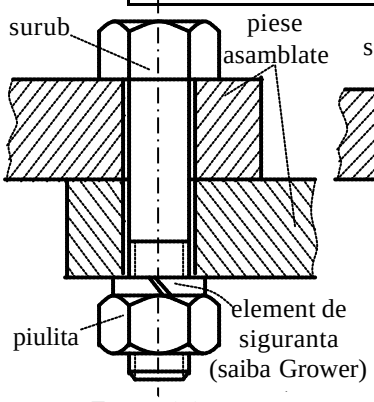


Figura 1.1

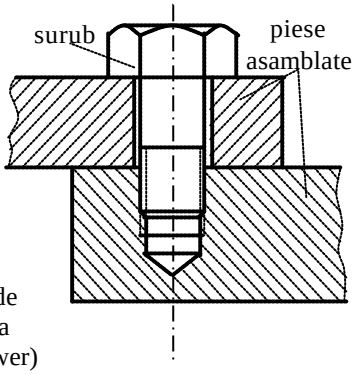
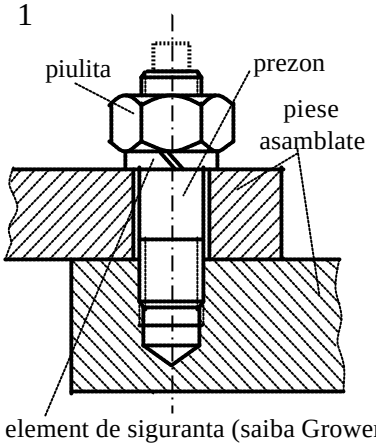


Figura 1.2



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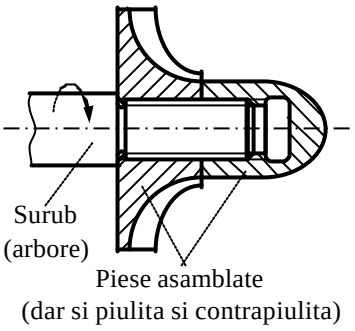

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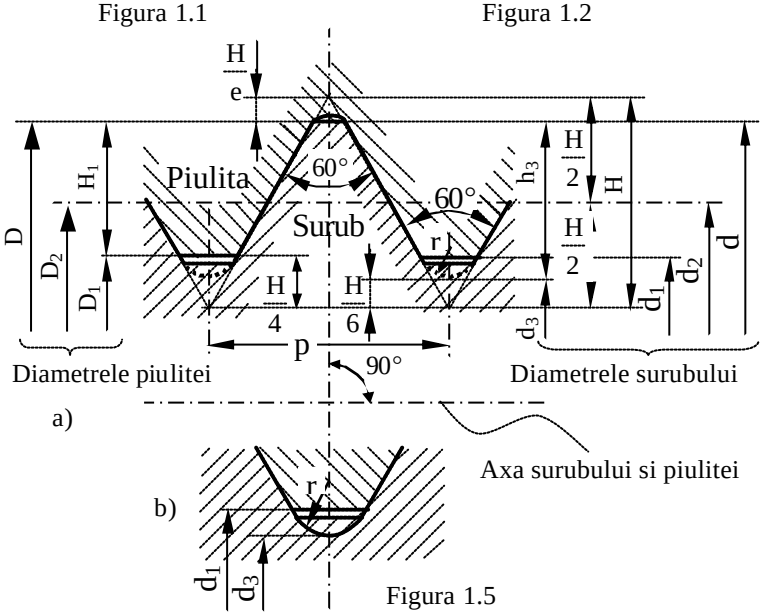

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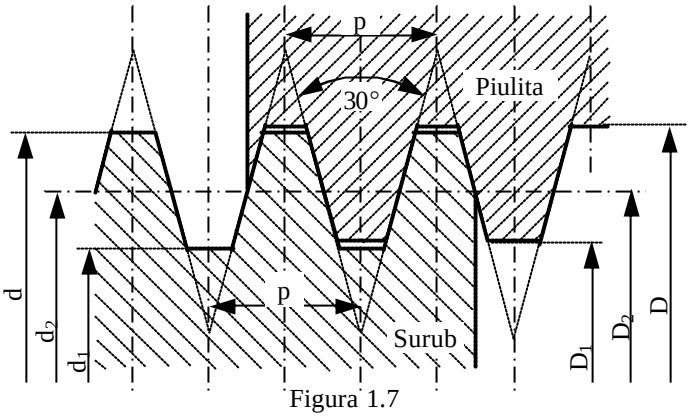

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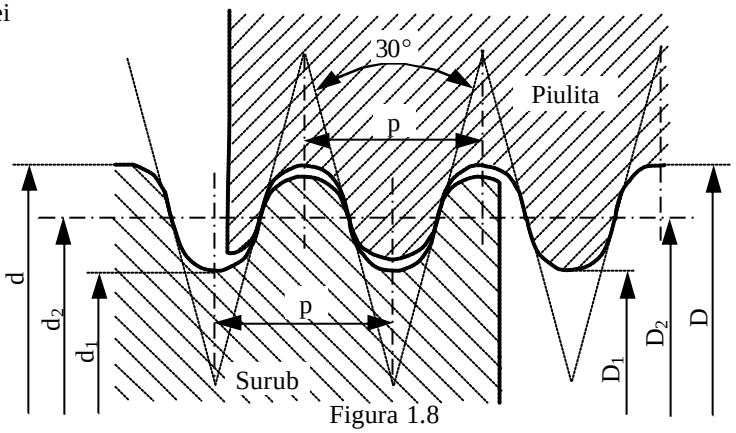

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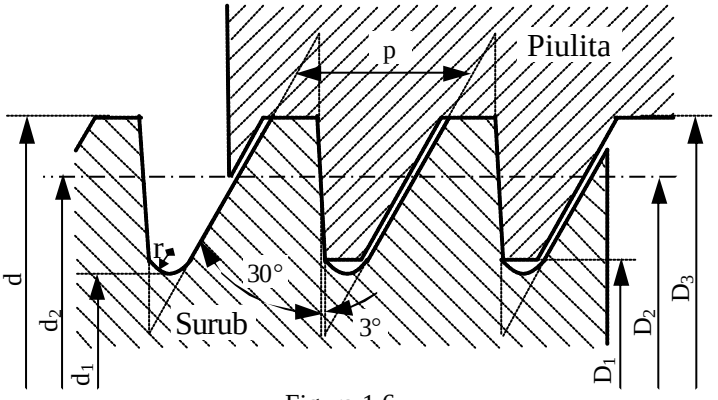

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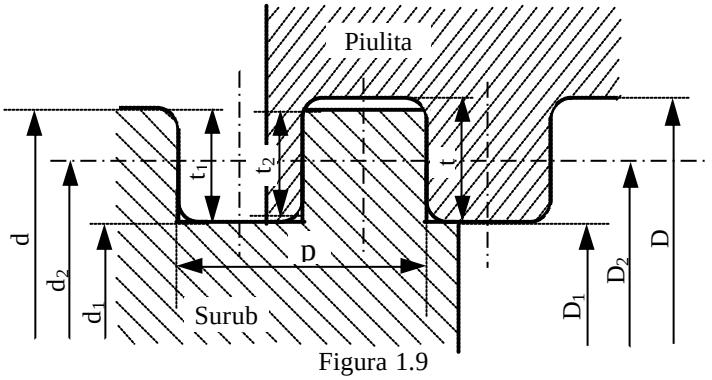


Figura 1.9

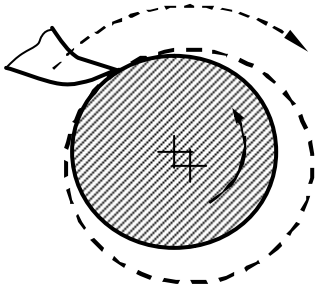
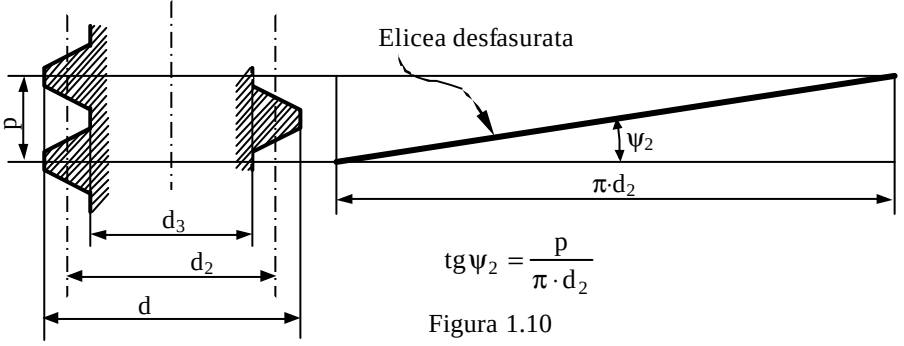


Figura 1.11

Figura 1.12



$$\operatorname{tg}\psi_2 = \frac{p}{\pi \cdot d_2}$$

Figura 1.10

$$\eta = \frac{\operatorname{tg}\Psi_2}{\operatorname{tg} 2\Psi_2} = \frac{\operatorname{tg}\Psi_2}{\frac{2\cdot \operatorname{tg}\Psi_2}{1-\operatorname{tg}^2\Psi_2}} = \frac{1-\operatorname{tg}^2\Psi_2}{2} \le 0{,}5 \qquad (1.1)$$

$$\sigma_t = \frac{F}{\frac{\pi}{4}\cdot d_3^2} \qquad (1.2)$$

$$\tau_t = \frac{M_{12}}{\frac{\pi}{16}\cdot d_3^3} \qquad (1.3)$$

$$\sigma_{ech} = \sqrt{\sigma_t^2 + 4\tau_t^2} \le \sigma_{at} \qquad (1.4)$$

$$d_{3\,necesar} = \sqrt{\frac{4\cdot\gamma\cdot F}{\pi\cdot\sigma_{at}}} \qquad (1.5)$$

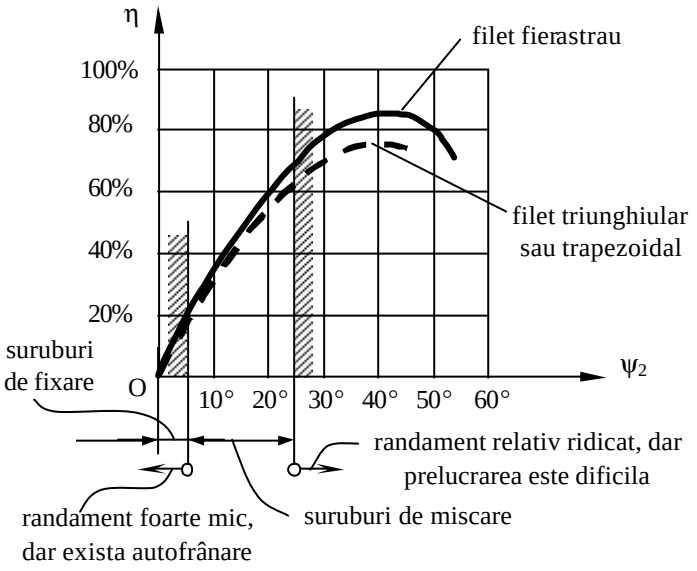


Figura 1.13

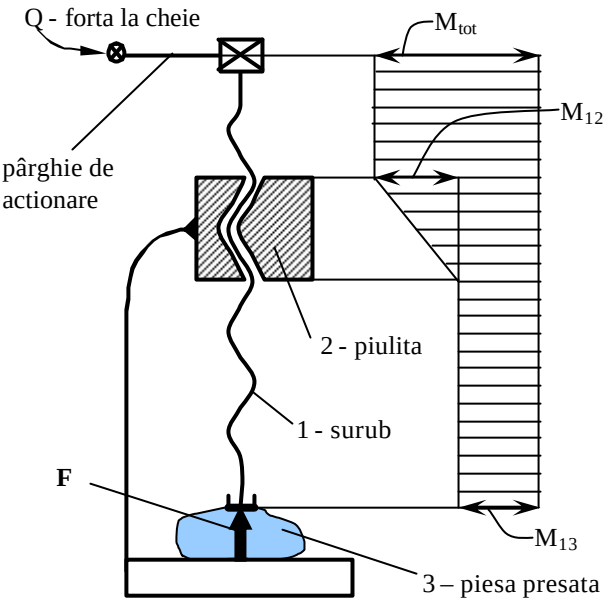


Figura 1.14

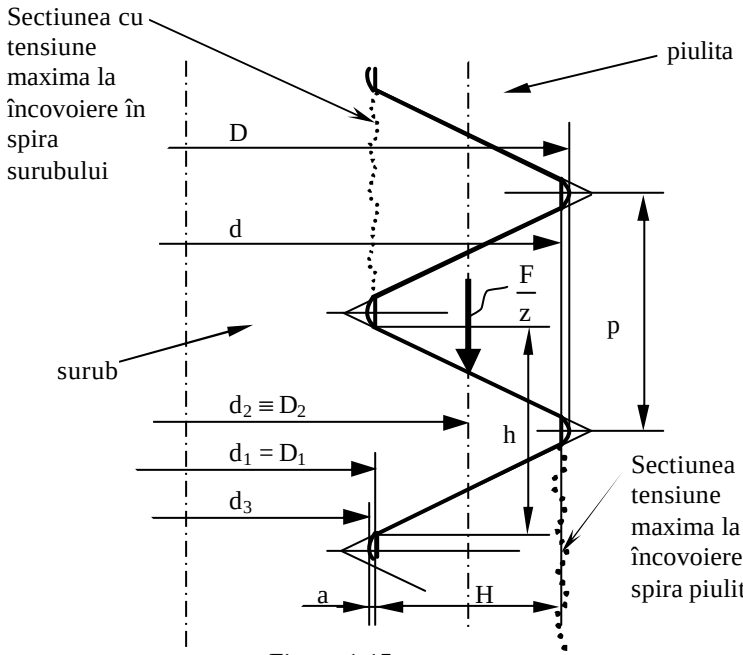


Figura 1.15

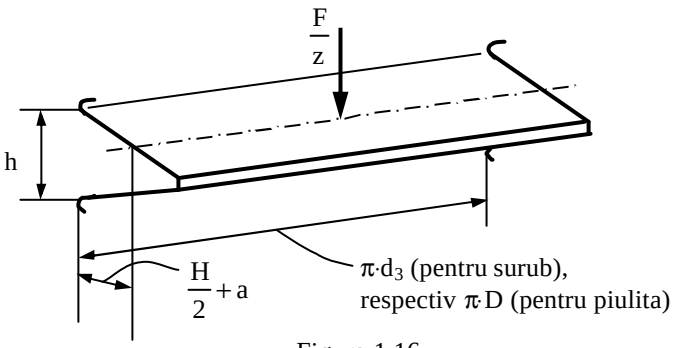


Figura 1.16

$$\sigma_c = \frac{F}{\frac{\pi}{4}\cdot d_3^2}; \qquad \tau_t = \frac{M_{12}+M_{13}}{\frac{\pi}{16}\cdot d_3^3} \qquad (1.6)$$

$$\sigma_{ech} = \sqrt{\sigma_c^2 + 4\tau_t^2} \le \sigma_{ac} \qquad (1.7)$$

$$F_c = \gamma \cdot F;\ \gamma = 1{,}05 \ldots 1{,}5. \tag{1.8}$$

$$p = \sigma_s = \frac{\frac{F}{z}}{\frac{\pi}{4}\cdot\left(d^2 - d_1^2\right)} \cong \frac{\frac{F}{z}}{\pi \cdot d_2 \cdot H} \le \sigma_{as} \tag{1.9}$$

$$M_i = \frac{F}{z}\cdot\left(\frac{H}{2} + a\right) \tag{1.10}$$

$$\sigma_i = \frac{M_i}{\frac{\pi \cdot d_3 \cdot h^2}{6}} \le \sigma_{ai_{surub}} \tag{1.11}$$

$$\sigma_i = \frac{M_i}{\frac{\pi \cdot D \cdot h^2}{6}} \le \sigma_{ai_{piulita}} \tag{1.12}$$

$$m = p \cdot z + 2 \cdot \frac{p}{2} = p\,(z+1) \tag{1.13}$$

$$\frac{\pi \cdot d_3^2}{4}\cdot\sigma_{at} = \pi \cdot d_2 \cdot H_1 \cdot z \cdot \sigma_{as}$$

$$\frac{\pi \cdot d_3^2}{4}\cdot\sigma_{at} = \frac{\pi \cdot z \cdot h^2 \cdot d_3}{6\cdot\left(\frac{H}{2} + a\right)}\cdot\sigma_{ai} \tag{1.14}$$

$$\left.\begin{aligned} m &= z' \cdot p = 0{,}75 \cdot d \\ m &= z'' \cdot p = 0{,}54 \cdot d \end{aligned}\right\} \Rightarrow m = 0{,}8 \cdot d \tag{1.15}$$

$$\mu \cdot F_s \ge F \tag{1.16}$$

$$\mu \cdot F_s = \beta \cdot F \tag{1.17}$$

$$d_{3_{necesar}} \ge \sqrt{\frac{4 \cdot \gamma \cdot F_s}{\pi \cdot \sigma_{at}}} \tag{1.18}$$

$$\tau_f = \frac{4 \cdot F}{\pi \cdot d^2} \le \tau_{af} \tag{1.19}$$

$$\sigma_s = \frac{F}{d \cdot l_{min}} \le \sigma_{as} \tag{1.20}$$

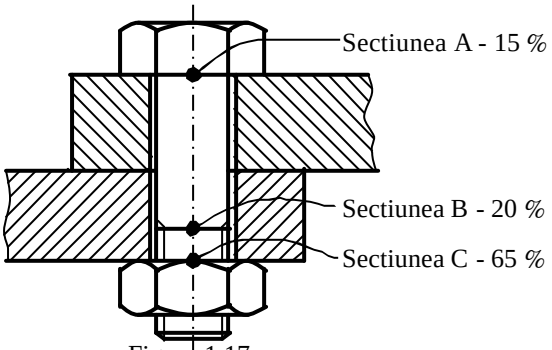


Figura 1.17

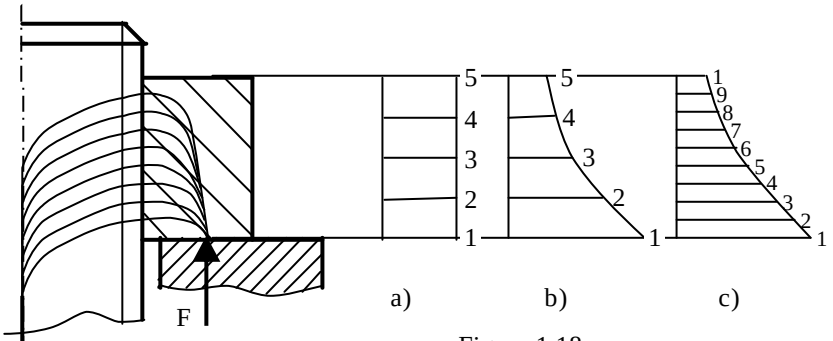


Figura 1.18

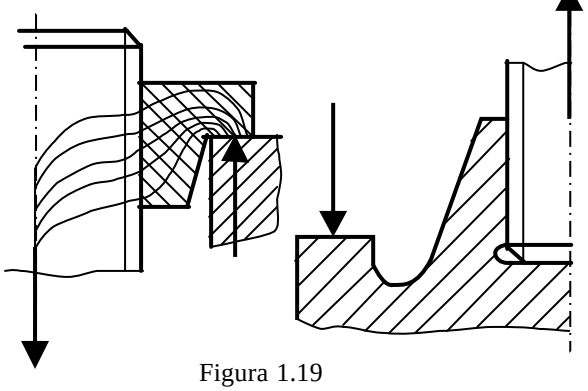


Figura 1.19

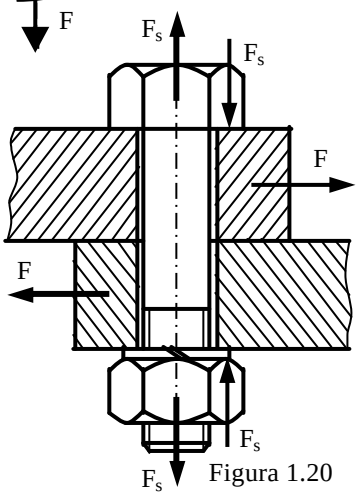


Figura 1.20

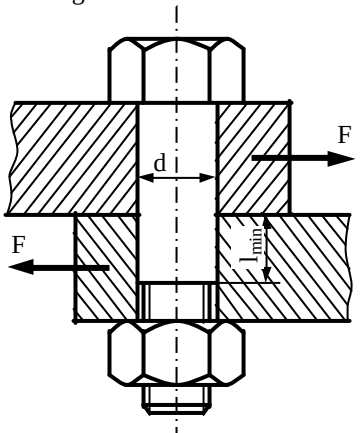


Figura 1.21

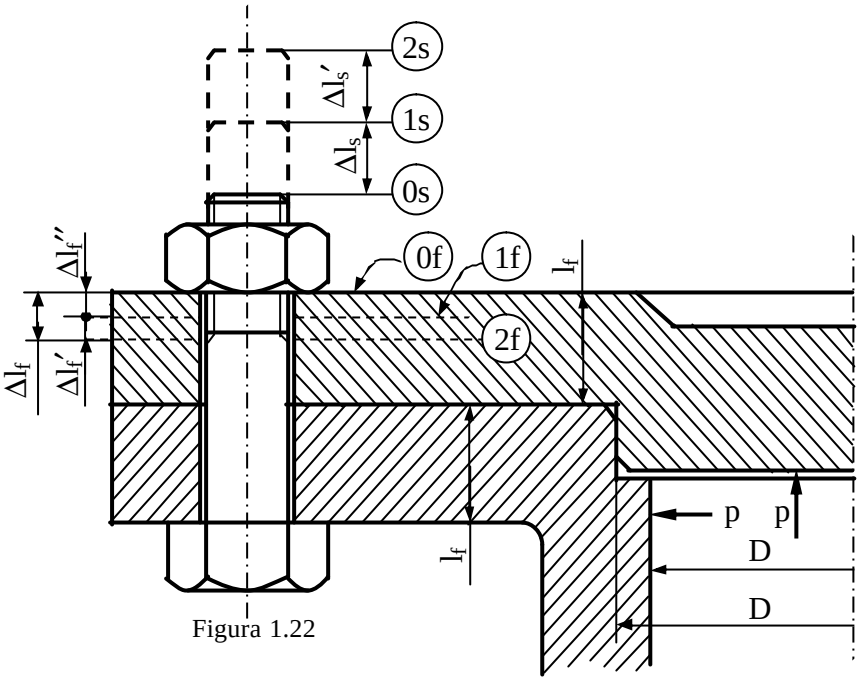


Figura 1.22

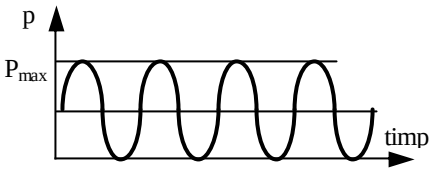


Figura 1.23

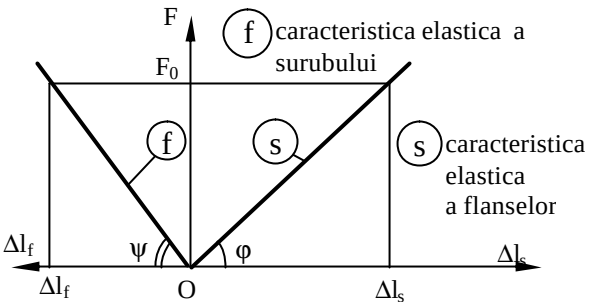


Figura 1.24

$$F_{max} = p_{max} \cdot \frac{\pi \cdot D^2}{4} \tag{1.21}$$

$$F = \frac{F_{max}}{i_s} \tag{1.22}$$

$$c_s = tg\varphi = \frac{F_0}{\Delta l_s};\ \ c_f = tg\psi = \frac{F_0}{\Delta l_f} \tag{1.23}$$

$$\begin{cases} F_0' = (0{,}5...0{,}6) \cdot F \\ F_0'' > 0 \end{cases} \tag{1.24}$$

$$tg\varphi = \frac{F_z}{\Delta l_s'};\ \ tg\psi = \frac{F_0'}{\Delta l_s'};\ \ F = F_z + F_0' \ \ \Rightarrow \ \ F = \Delta l_s' \cdot (tg\varphi + tg\psi). \tag{1.25}$$

$$F_z = \frac{c_s}{c_s + c_f} \tag{1.26}$$

$$F_{max_s} = F_0'' + F = F_0 + F_z$$

$$F_{max_s} = (1{,}5...1{,}6) \cdot F$$

$$F_{min_s} = F_0 = F_{max_s} - F_z = F \cdot \left[(1{,}5...1{,}6) - \frac{c_s}{c_s + c_f} \right] \tag{1.27}$$

$$\sigma_{max_{ts}} = \frac{F_{max_s}}{A_{min_s}};\ \ \sigma_{min_{ts}} = \frac{F_{min_s}}{A_{min_s}}$$

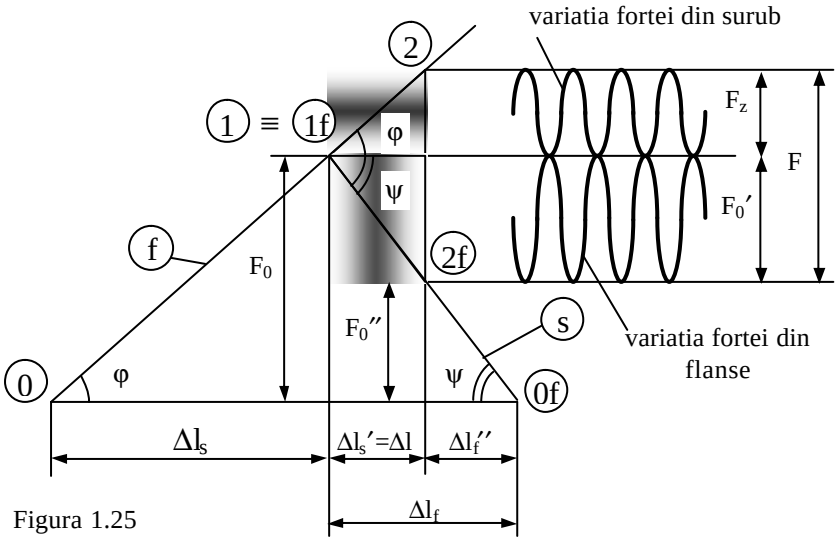


Figura 1.25

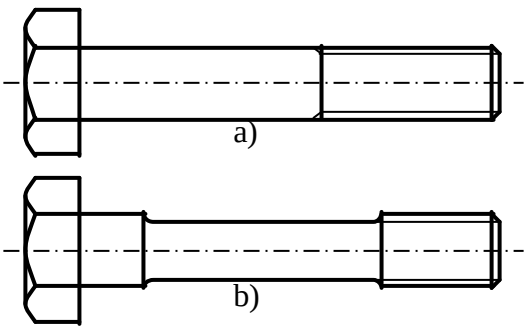


Figura 1.26

$$\left.\begin{aligned}\sigma_v &= \frac{\sigma_{max_{ts}} - \sigma_{min_{ts}}}{2}\\ \sigma_m &= \frac{\sigma_{max_s} + \sigma_{min_{ts}}}{2}\end{aligned}\right\} \quad (1.28)$$

$$c = \frac{1}{\frac{\beta_k}{\varepsilon\cdot\gamma}\cdot\frac{\sigma_v}{\sigma_{-1}} + \frac{\sigma_m}{\sigma_c}} \geq c_a \quad (1.29)$$

$$M_{ch} = F_0\cdot\frac{d_2}{2}\cdot tg(\psi+\varphi') + F_0\cdot\frac{1}{3}\cdot\mu\cdot\frac{S^3 - D_g^3}{S^2 - D_g^2} \quad (1.30)$$

$$c = \frac{E\cdot A}{l} \quad (1.31)$$

$$\Delta l_s = F_0\cdot\sum\frac{l_i}{E\cdot A_i} \quad (1.32)$$

$$\frac{1}{c_s} = \sum\frac{1}{c_{s_i}} \quad (1.33)$$

$$c_f = \frac{E_f\cdot A_f}{\sum l_f};$$

$$A_f = \frac{\pi}{4}\cdot\left[(S+l_f)^2 - D_g^f\right]; \quad (1.34)$$

$$\sum l_f = l_{f1} + l_{f2}$$

$$\rho = \frac{L_s}{\gamma};$$

$$M_i = \frac{E\cdot I_i}{\rho} = W_i\cdot\sigma_i \quad (1.35)$$

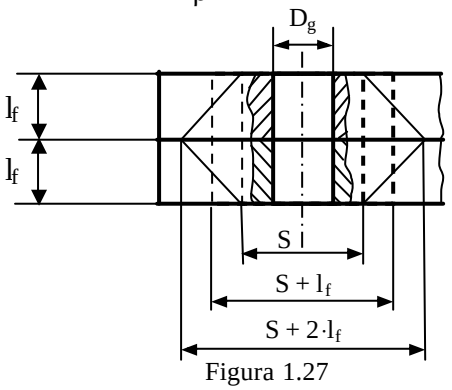


Figura 1.27

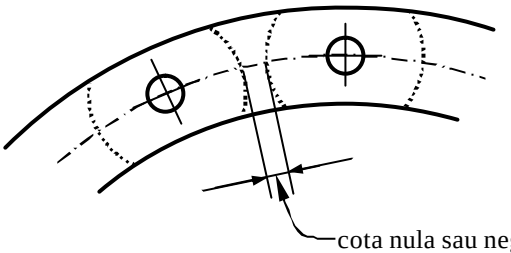


Figura 1.29

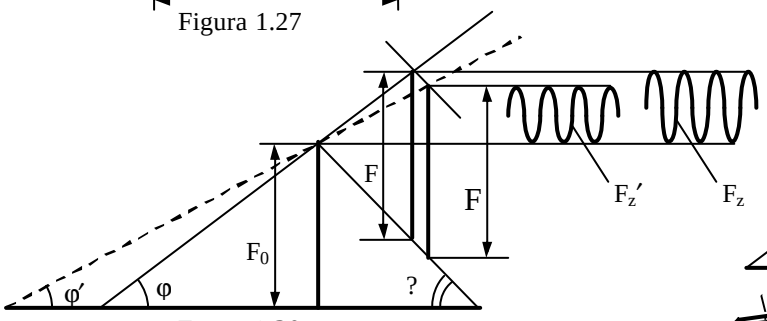


Figura 1.30

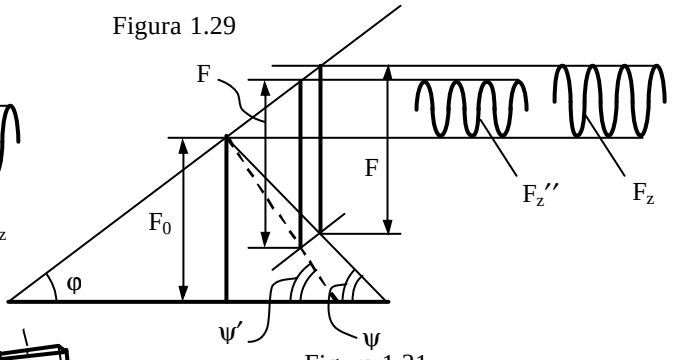


Figura 1.31

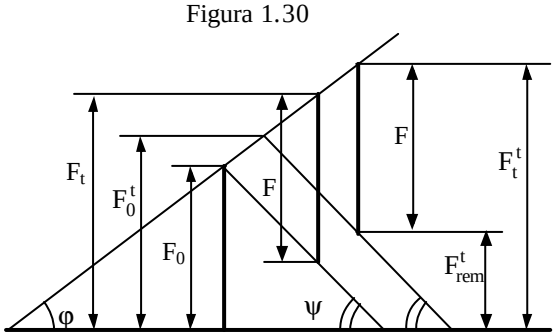


Figura 1.31

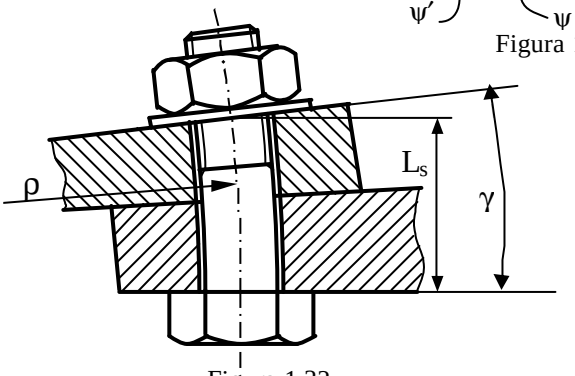


Figura 1.32

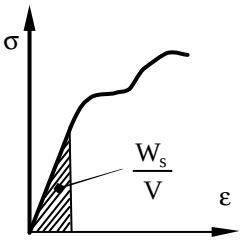


Figura 1.33

$$\sigma_i = \frac{\gamma \cdot E \cdot d_s}{2 \cdot L_s} \qquad (1.36)$$

$$\frac{W_s}{V} = \frac{1}{2} \cdot \sigma \cdot \varepsilon; \quad \varepsilon = \frac{\sigma}{E}$$

$$\frac{W_s}{V} = \frac{1}{2} \cdot \frac{\sigma^2}{E} \Rightarrow \sigma = \frac{2 \cdot W_s \cdot E}{V} \qquad (1.37)$$

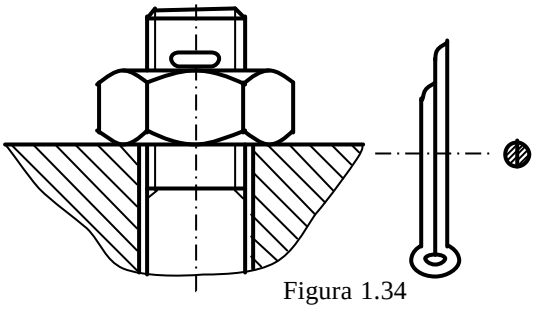


Figura 1.34

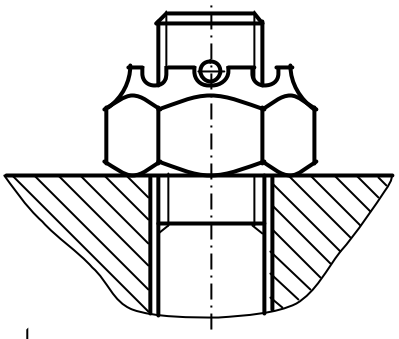


Figura 1.35

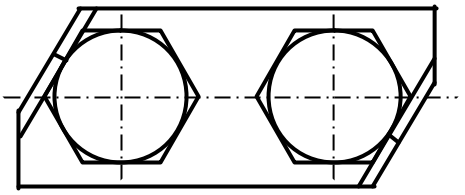


Figura 1.36

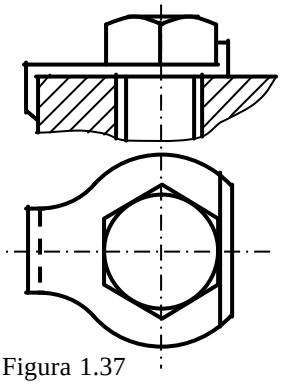


Figura 1.37

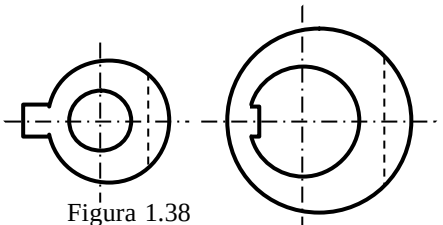


Figura 1.38

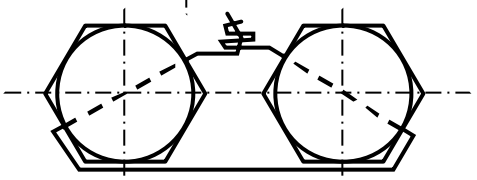


Figura 1.39

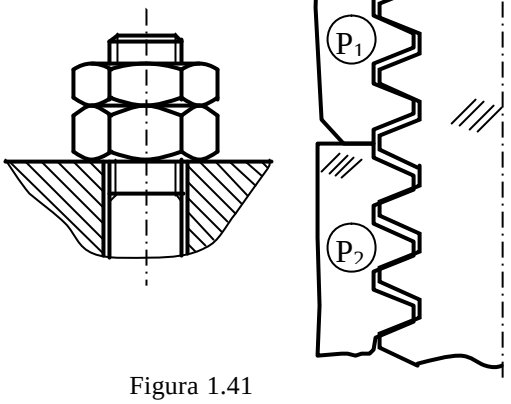


Figura 1.41

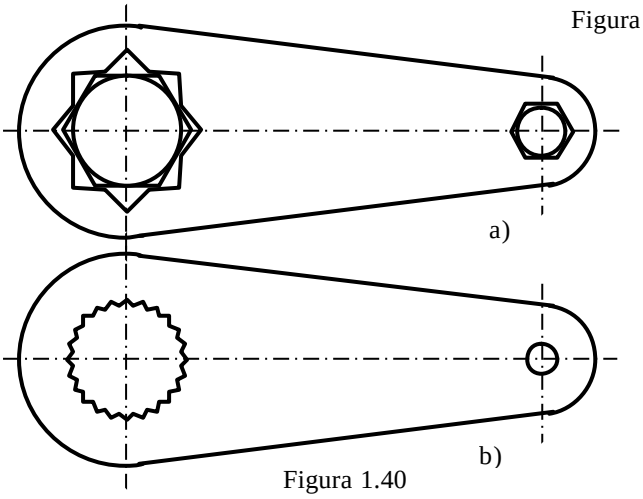
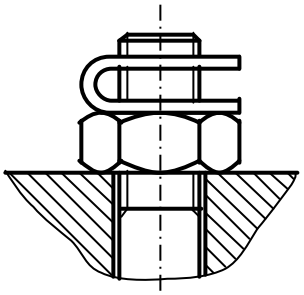


Figura 1.40



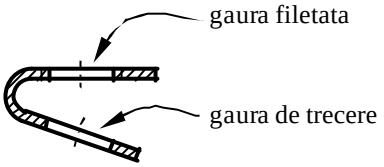


Figura 1.42

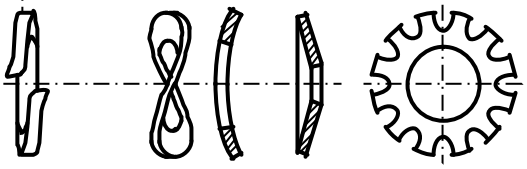


Figura 1.43

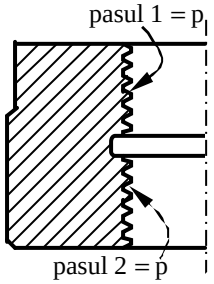


Figura 1.44

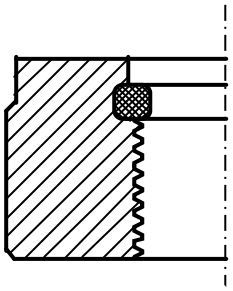


Figura 1.45

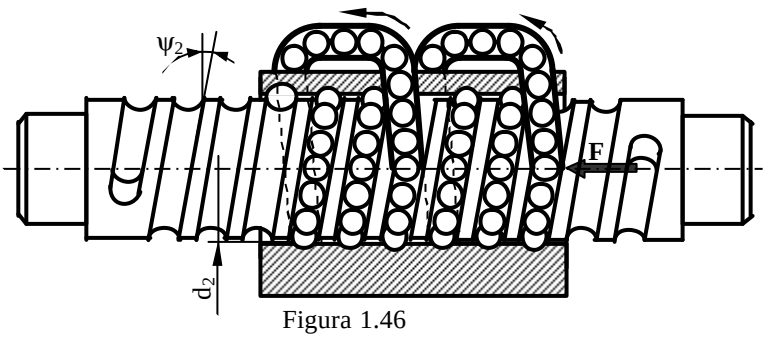


Figura 1.46

$$M_{t1} = F \cdot \frac{d_2}{2} \cdot tg(\psi_2 + \varphi') \qquad (1.38)$$

în care: $\psi' = \text{arctg}\left(\frac{2 \cdot k}{d_2 \cdot \sin\gamma}\right)$; k – coeficient de frecare de rostogolire.