

Remarks: See §2.2.1, pages 19 till 21
See §2.3, pages 24 till 26
See §2.6, pages 34 onwards

Answers :

- a. $A = 50 \text{ mm}^2$ (Maximum stress limitation)
- b. $A = 60 \text{ mm}^2$ (Maximum strain limitation)

Explanation:

$$\text{a. } \frac{(12 \times 10^3 \text{ N})(1500 \text{ mm})}{(210 \times 10^3 \text{ N/mm}^2)A} \leq 2 \text{ mm} \rightarrow A \geq 42,9 \text{ mm}$$

$$\frac{12 \times 10^3 \text{ N}}{A} \leq 240 \text{ N/mm}^2 \rightarrow A \geq 50 \text{ mm}$$

$$\text{b. } \frac{(12 \times 10^3 \text{ N})(2100 \text{ mm})}{(210 \times 10^3 \text{ N/mm}^2)A} \leq 2 \text{ mm} \rightarrow A \geq 60 \text{ mm}$$

$$\frac{12 \times 10^3 \text{ N}}{A} \leq 240 \text{ N/mm}^2 \rightarrow A \geq 50 \text{ mm}$$