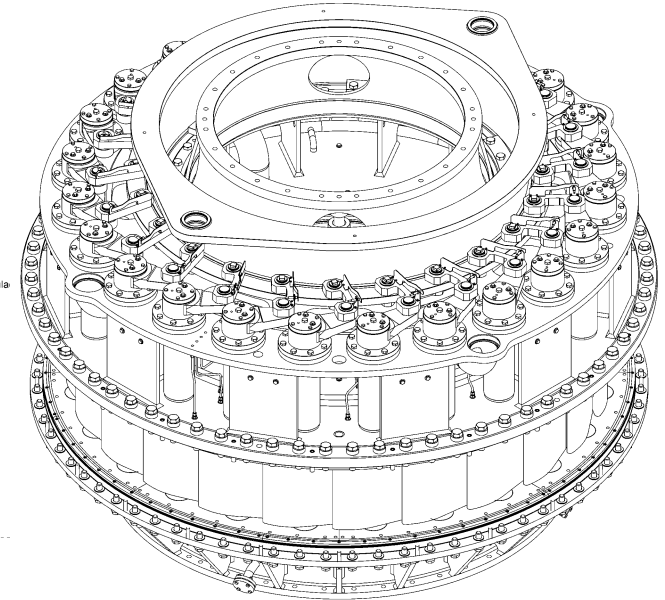
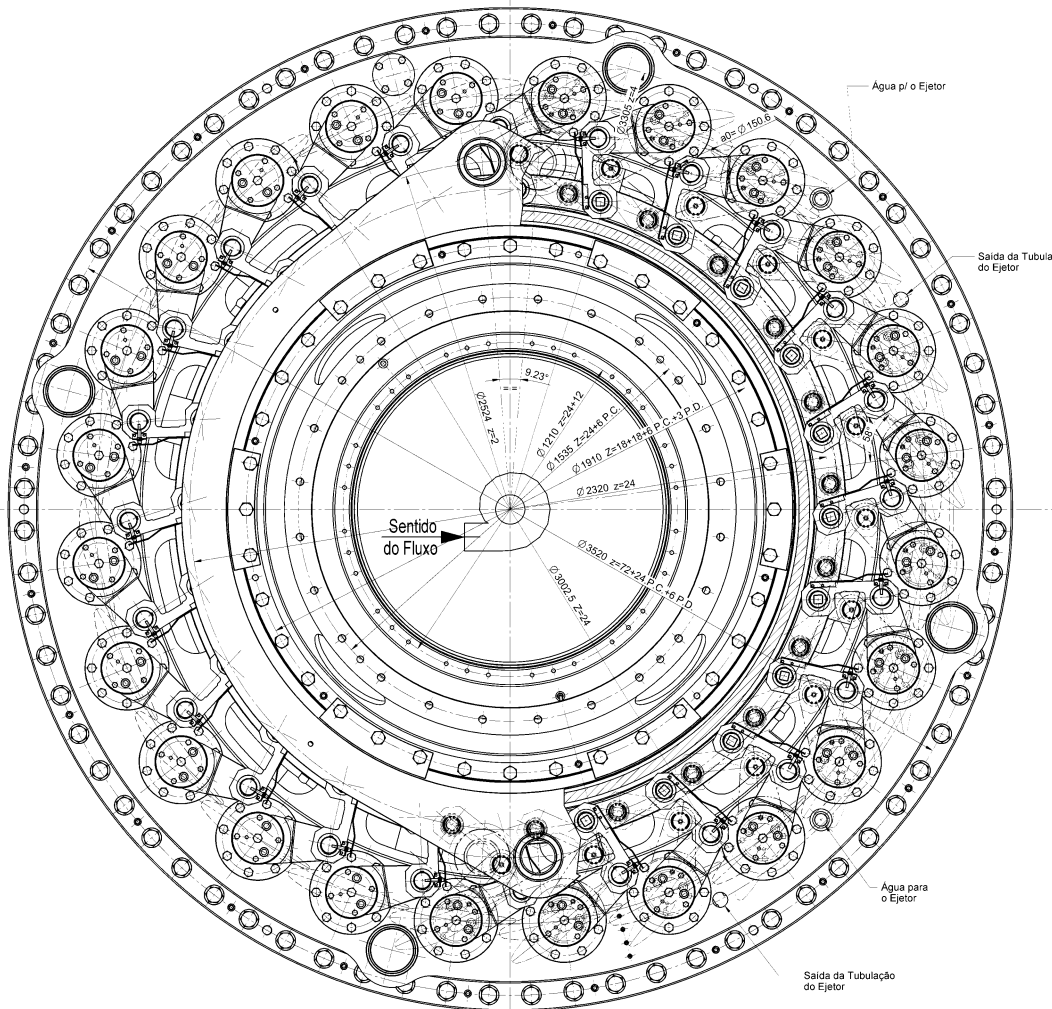
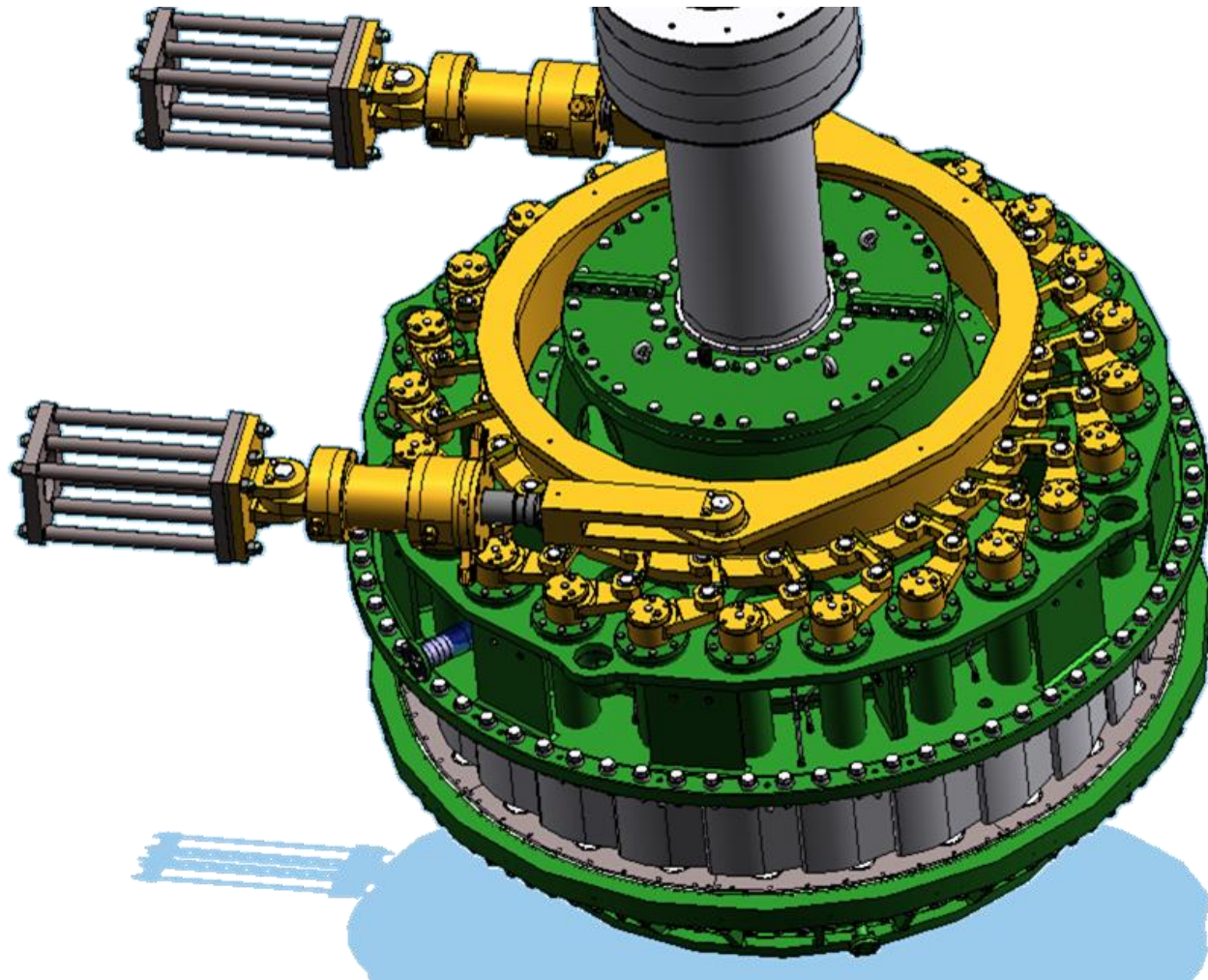


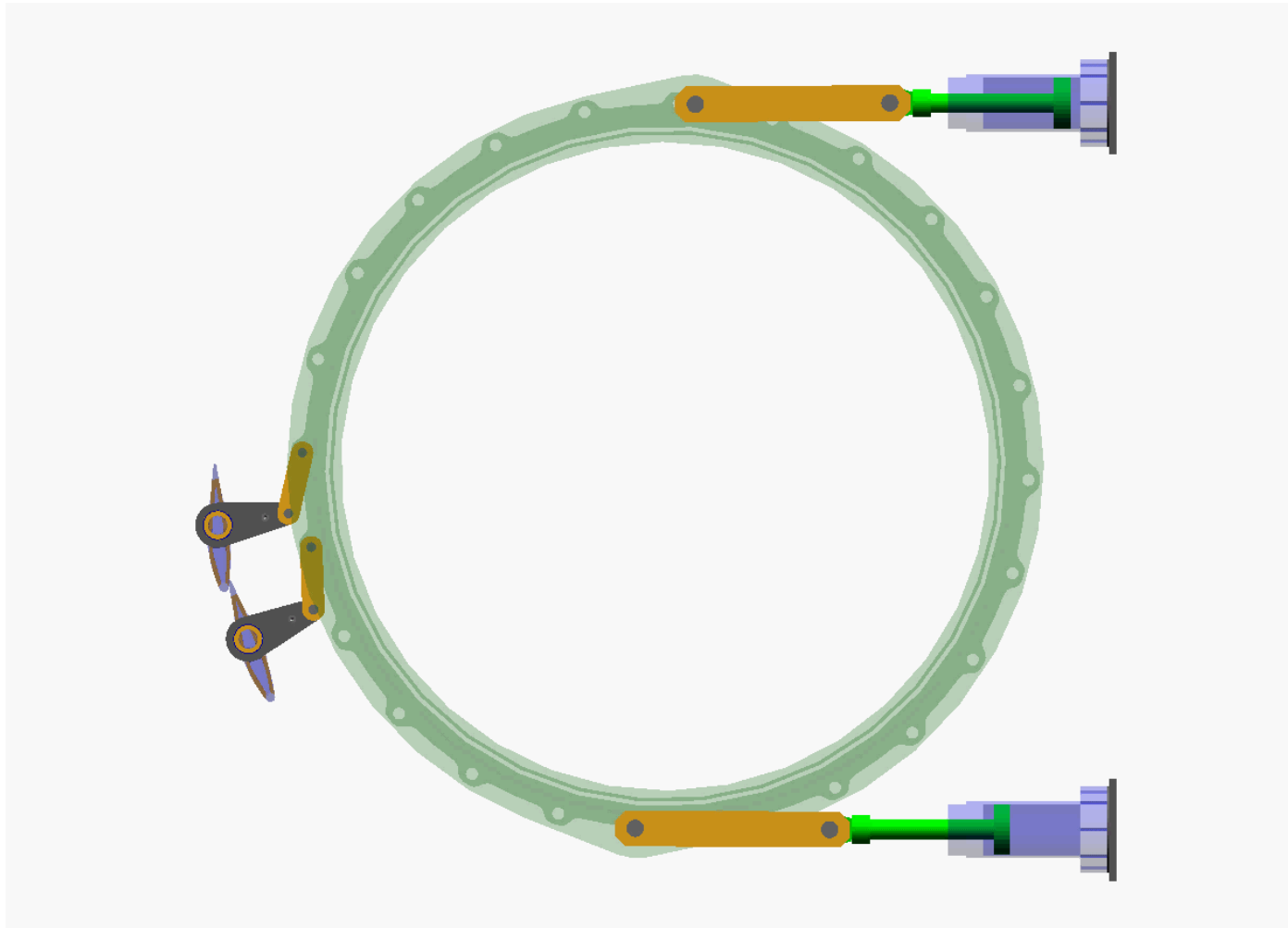
Mecanismo do Distribuidor



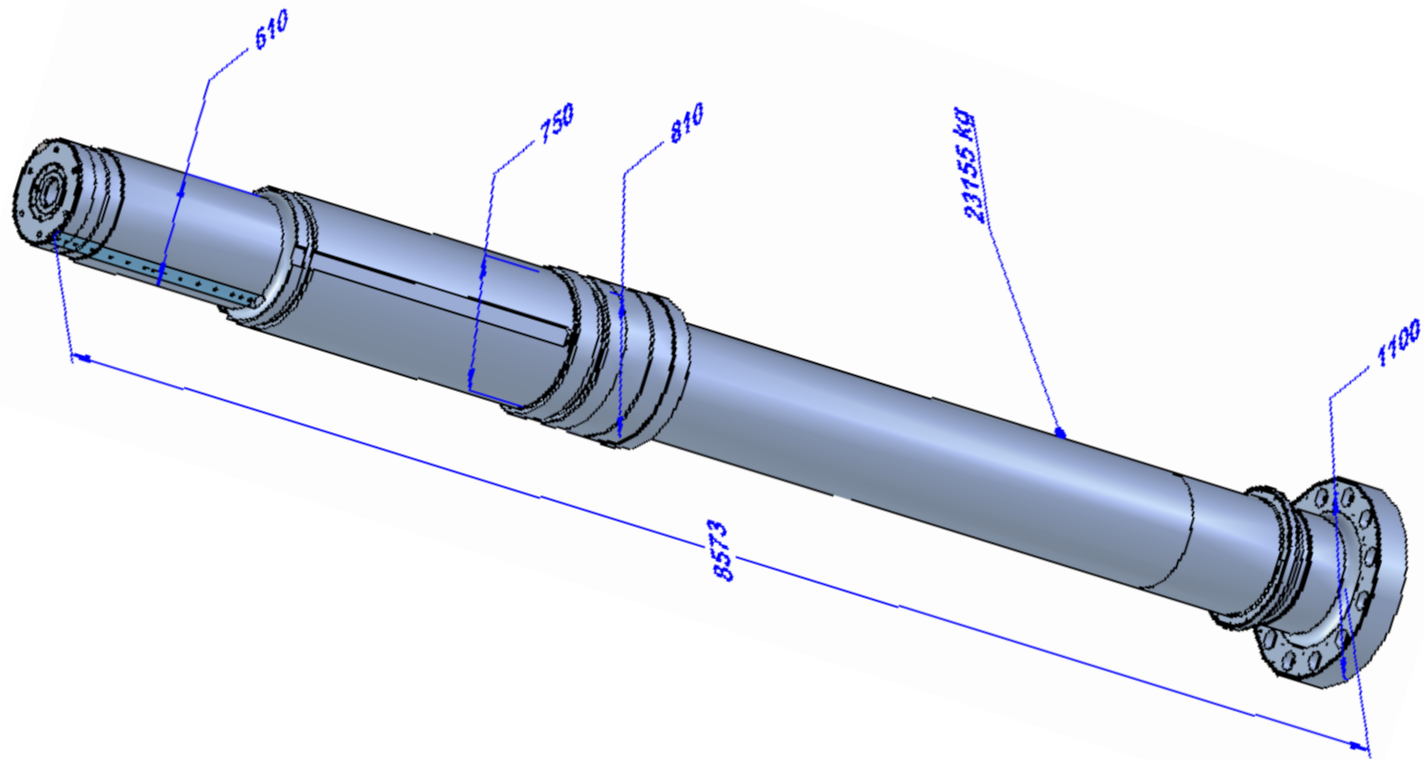
Mecanismo do Distribuidor



Mecanismo do Distribuidor



Eixo



Eixo

$$\tau = \frac{T \times r}{I_p} \quad I_p = \frac{\pi \times d^4}{32}$$

$$\tau = \frac{2467 \text{ kN.m} \times 0,315 \text{ m}}{\frac{\pi(0,63 \text{ m}^4 - 0,15 \text{ m}^4)}{32}} = 50,4 \text{ MPa}$$

$$\sigma = \frac{F_{ax}}{A}$$

$$\sigma = \frac{1452 \text{ kN}}{\frac{\pi}{4}(0,63 \text{ m}^2 - 0,15 \text{ m}^2)} = 4,9 \text{ N/mm}^2 = 4,9 \text{ MPa}$$

Eixo

$$\sigma_{vm} = \sqrt{\sigma^2 + 3\tau^2}$$

$$\sigma_{vm} = \sqrt{4,9^2 + 3 \times 50,4^2} = 87,4 \text{ MPa}$$

Material do eixo = ASTM A668 Cl. D (mod.)

Tensão de escoamento = 280 MPa

$$\text{Fator de Segurança} = FS = \frac{280}{87,4} = 3,2$$