

$$a := 40 \text{ mm}$$

$$b := 50 \text{ mm}$$

$$c := 25 \text{ mm}$$

$$d := 80 \text{ mm}$$

$$e := 78 \text{ mm}$$

$$f := 20 \text{ mm}$$

$$g := 70 \text{ mm}$$

$$\theta_a := 89.76 \text{ deg}$$

$$\theta_d := 43.9 \text{ deg}$$

$$\theta_h := \text{atan}\left(\frac{6.5}{12}\right) + 90 \text{ deg} = 118.443 \text{ deg}$$

$$z := 46 \text{ mm}$$

$$h := \sqrt{(6.5 \text{ mm})^2 + (12 \text{ mm})^2} = 13.647 \text{ mm}$$

$$q := \sqrt{a^2 + z^2 - 2 a \cdot z \cdot \cos(\theta_a)} = 60.832 \text{ mm}$$

$$\theta_Q := \text{acos}\left(\frac{a^2 + q^2 - z^2}{2 \cdot a \cdot q}\right) = 49.128 \text{ deg}$$

$$\theta_{Q'} := \text{acos}\left(\frac{q^2 + b^2 - c^2}{2 \cdot q \cdot b}\right) = 23.573 \text{ deg}$$

$$\theta_b := \theta_Q + \theta_{Q'} = 72.701 \text{ deg}$$

$$\theta_{q'} := \text{acos}\left(\frac{q^2 + c^2 - b^2}{2 \cdot q \cdot c}\right) = 53.116 \text{ deg}$$

$$\theta_q := \text{acos}\left(\frac{z^2 + q^2 - a^2}{2 \cdot q \cdot z}\right) = 41.112 \text{ deg}$$

$$\theta_c := \pi - \theta_q - \theta_{q'} = 85.772 \text{ deg}$$

$$\theta_k := \frac{\pi}{2} - \theta_d = 46.1 \text{ deg}$$

$$j := \sqrt{c^2 + h^2 - 2 \cdot c \cdot h \cdot \cos(\theta_h)} = 33.708 \text{ mm}$$

constant

$$\theta_{c'} := \text{acos}\left(\frac{c^2 + j^2 - h^2}{2 \cdot c \cdot j}\right) = 20.854 \text{ deg}$$

$$\theta_{c''} := \theta_c - \theta_{c'} = 64.917 \text{ deg}$$

$$m := \sqrt{j^2 + d^2 - 2 \cdot j \cdot d \cdot \cos(\theta_{c''} + \theta_k)} = 97.317 \text{ mm}$$

$$\theta_f := \text{acos}\left(\frac{e^2 + f^2 - m^2}{2 \cdot e \cdot f}\right) = 163.184 \text{ deg}$$

$$\theta_{E'} := \arccos\left(\frac{h^2 + j^2 - c^2}{2 \cdot h \cdot j}\right) = 40.703 \text{ deg}$$

$$\theta_{E''} := \arccos\left(\frac{j^2 + m^2 - d^2}{2 \cdot j \cdot m}\right) = 50.118 \text{ deg}$$

$$\theta_{E'''} := \arccos\left(\frac{e^2 + m^2 - f^2}{2 \cdot e \cdot m}\right) = 3.409 \text{ deg}$$

$$\theta_e := \theta_{E'} + \theta_{E''} + \theta_{E'''} = 94.229 \text{ deg}$$

$$\theta_{b'} := \pi - \theta_a - \theta_b = 17.539 \text{ deg}$$

$$\theta_{h'} := \theta_c + \theta_h - \pi = 24.215 \text{ deg}$$

$$\theta_{e'} := 2 \cdot \pi - \theta_c - \theta_h - \theta_e = 61.556 \text{ deg}$$

$$\theta_{f'} := \theta_f - \theta_{e'} = 101.628 \text{ deg}$$

$$x_a := \cos(\theta_{f'}) \cdot (f + g) = -18.14 \text{ mm}$$

$$x := a \cdot \cos(\theta_a) + b \cdot \cos(\theta_{b'}) + h \cdot \cos(\theta_{h'}) + e \cdot \cos(\theta_{e'}) - \cos(\theta_{f'}) \cdot (f + g) = 115.581 \text{ mm}$$

$$y := d \cdot \cos(\theta_d) + g \cdot \sin(\theta_{f'}) = 126.208 \text{ mm}$$

$$x = 115.581 \text{ mm}$$

$$y = 126.208 \text{ mm}$$