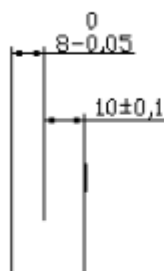


第六章作业答案补充

6-15

6-15: 方案一: 钻孔的定位基准与设计基准重合, 因此 A_1 的工序尺寸就等于设计尺寸, 即 $A_1=10\pm0.1$

方案二: 尺寸链为



$10_{-0.1}^{+0.1}$ 为封闭环, A_2 为增环, $8_{-0.05}^0$ 为减环

$$\therefore A_2 = 8 + 10 = 18 \text{ mm}$$

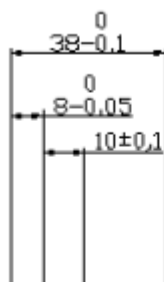
$$ES(A_2) = 0.1 - 0.05 = 0.05 \text{ mm}$$

$$EI(A_2) = -0.1 \text{ mm}$$

$$\text{公差 } T(A_2) = 0.2 - 0.05 = 0.15$$

$$\therefore A_2 \text{ 的工序尺寸为 } 18_{-0.1}^{+0.05}$$

方案三: 尺寸链为



$10_{-0.1}^{+0.1}$ 为封闭环, $8_{-0.05}^0$, A_3 为减环, $38_{-0.1}^0$ 为增环

$$\therefore A_3 = 38 - 8 - 10 = 20 \text{ mm}$$

$$EI(A_3) = 0.05 - 0.1 = -0.05 \text{ mm}$$

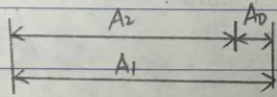
$$ES(A_3) = 0$$

$$\text{公差 } T(A_3) = 0.2 - 0.1 - 0.05 = 0.05$$

$$\therefore A_3 \text{ 的工序尺寸为 } 20_{-0.05}^0$$

6-21

尺寸链图:



A_1 为孔的直径 $A_1 = 80^{+0.2}_0$, A_2 为轴的直径 $A_2 = 80^{+0.1}_0$, A_0 为封闭环

极大极小法:

$$ES_0 = ES_1 - EI_2 = 0.2 - (-0.1) = 0.3$$

$$EI_0 = EI_1 - ES_2 = 0 - 0 = 0$$

$$\therefore A_0 = 0^{+0.3}_0 \text{ mm}, T_0 = 0.3 \text{ mm}$$

根率计算法:

由于 $T(A_0) = \sqrt{\sum_{i=1}^m \varepsilon_i^2 k_i^2 T(A_i)^2}$, 由于组成环符合正态分布 $\varepsilon_i = 1$, $k_i = k_0 = 1$

$$T(A_0) = \sqrt{T(A_1)^2 + T(A_2)^2} = \sqrt{0.2^2 + 0.1^2} = 0.2236$$

由于 $\Delta_0 = \sum_{i=1}^m \varepsilon_i (\Delta_i + e_i T(A_i)/2)$; $e_i = 0$

$$\Delta_1 = (ES_1 + EI_1)/2 = \frac{0.2 + 0}{2} = 0.1$$

$$\Delta_2 = (ES_2 + EI_2)/2 = \frac{0 + (-0.1)}{2} = -0.05 \quad \therefore \Delta_0 = \Delta_1 - \Delta_2 = 0.15$$

$$ES_0 = \Delta_0 + T(A_0)/2 = 0.15 + 0.2236/2 = 0.2618 \text{ mm}$$

$$EI_0 = \Delta_0 - T(A_0)/2 = 0.15 - 0.2236/2 = 0.0382 \text{ mm} \quad \therefore A_0 = 0.0382^{+0.2618}_0 \text{ mm}$$