Solutions

2.1

- Maximum clearance $= 40.025 - 39.975 =$ **50** µm.
- Minimum clearance $= 40.000 - 39.991 =$ **9** µm: always positive, a **clearance fit**.

2.2

- Maximum interference = largest shaft − smallest hole $= 40.042 - 40.000 =$ **42** µm.
- Minimum interference $= 40.026 - 40.025 =$ **1** µm: always an interference fit, pressed or shrunk on, but the grip at the loose end of the zones is very light.

2.3

- Worst case: $\pm(0.04 + 0.03 + 0.02) = \pm$**0.090** mm.
- RSS: $\pm\sqrt{0.04^2 + 0.03^2 + 0.02^2} = \pm$**0.054** mm.

3.1

- Nominal gap $= 62.20 - (30 + 20 + 12) =$ **0.200** mm.
- Worst case: $\pm(0.090 + 0.05) = \pm 0.140$, so **0.060** to **0.340** mm.
- RSS: $\pm\sqrt{0.0029 + 0.05^2} = \pm 0.073$, so 0.127 to 0.273 mm.
- The worst case stays above 0.05 mm, so every pump assembles. For 20 pumps use worst case: RSS assumes many parts from capable processes.

exercises.lol exercises.com.cn