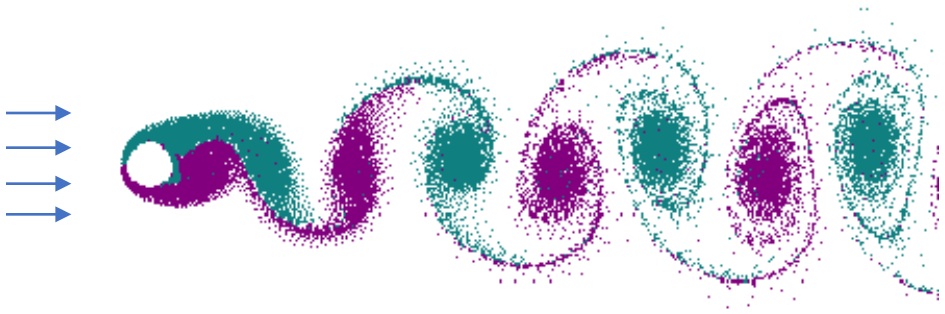
Exercise 13.

- Force coef. relation between measured and characteristic force
  $C = \frac{F}{{}^1/_2 \rho U^2 A} = \frac{\text{Measured force}}{\text{Characteristic force}}$
- Drag coefficient is the most common:
  $C_\text{D} = \frac{F_\text{D}}{{}^1/_2 \rho U^2 \cdot A} = \frac{\text{True drag force}}{\text{Potential retarding force}}$
  - F_D, is the measured force in the flow direction (parallel to flow)
  - ${}^1/_2 \rho U^2 \cdot A$, *kinematic pressure* times the *projected area in the flow direction*
  - C_D is in some cases function of only Re → $C_\text{D}(\text{Re})$

- Lift force → Change the drag force to the lift force (normal to the flow)

Exercise 13.

- $C_{\mathrm{D}}(\mathrm{Re})$
  - Cylinder like shapes



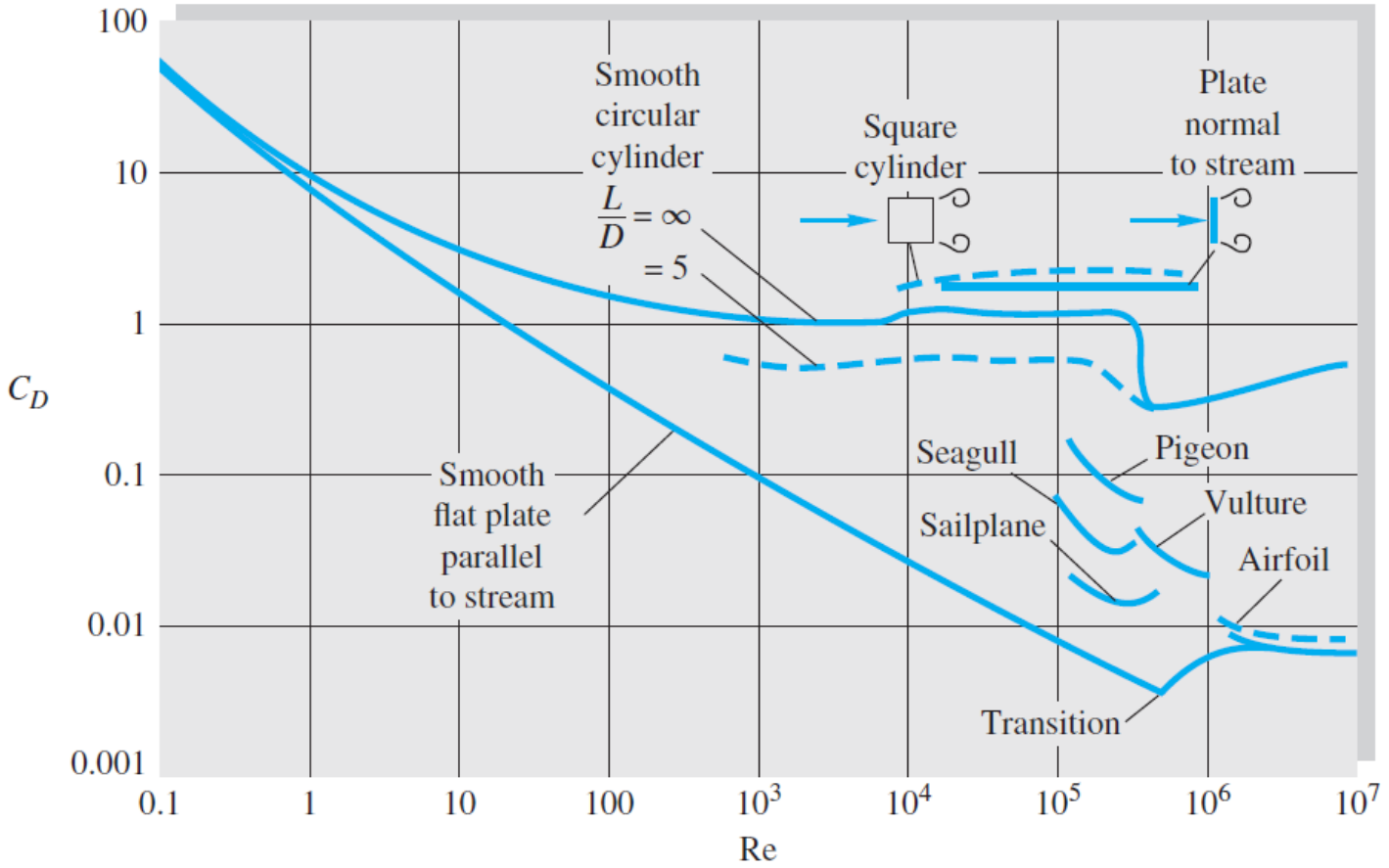
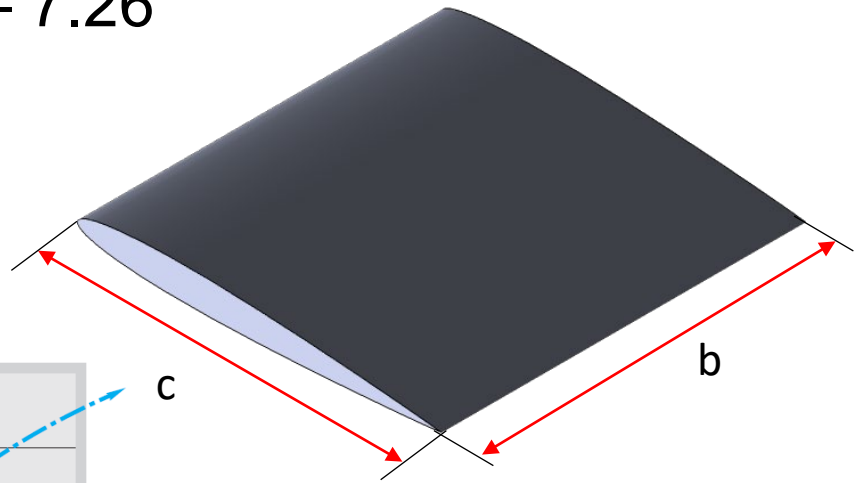


Fig. 7.16

Exercise 13.

- Airfoil with $C_{\mathrm{D}\infty}(\alpha), C_{\mathrm{L}\infty}(\alpha)$, infinite span, Fig. 7.25 – 7.26

$$\mathrm{AR} = \frac{b^2}{A_\mathrm{p}} = \left[A_\mathrm{p} = c \cdot b\right] = \frac{b}{c}$$



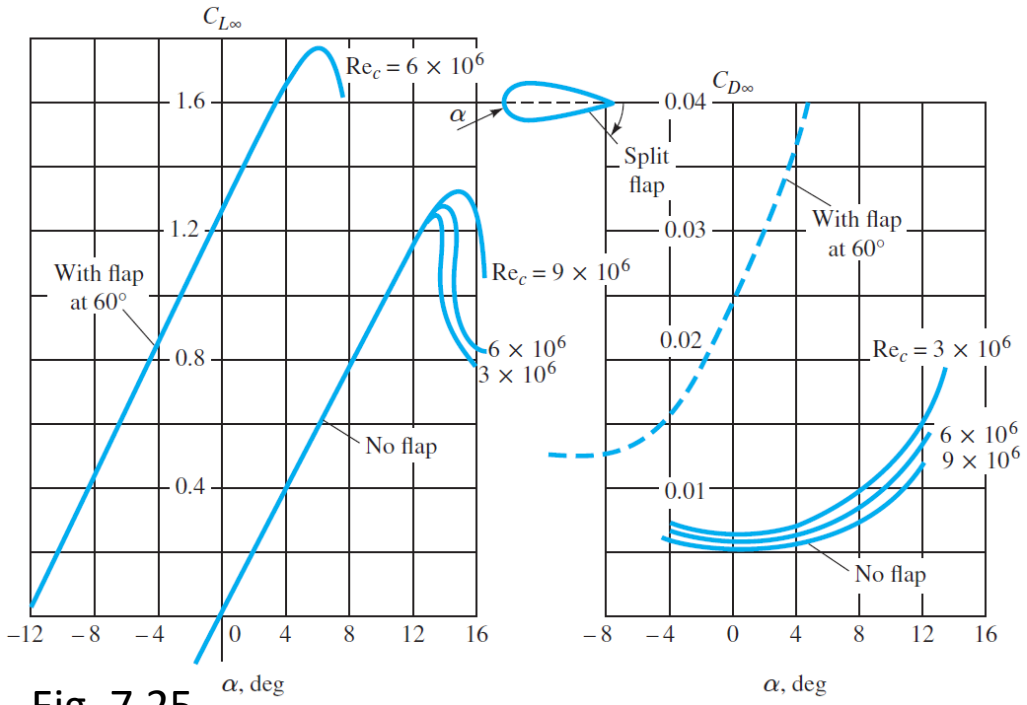


Fig. 7.25

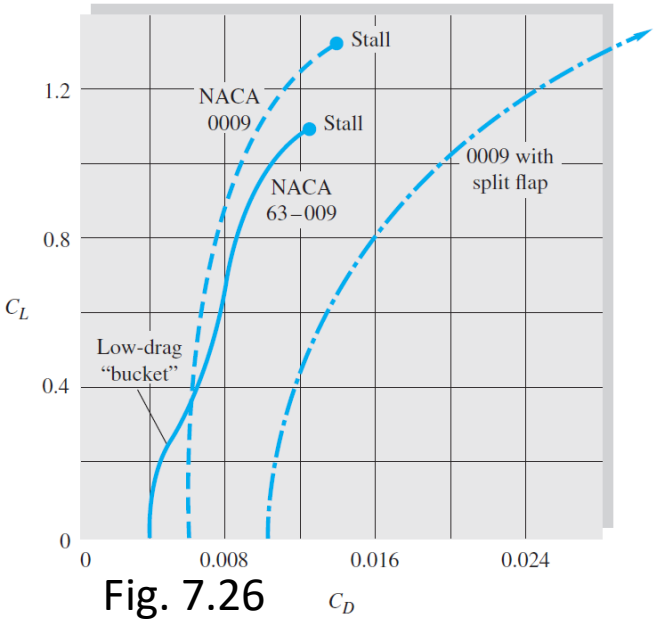


Fig. 7.26