

Known Typographical Errors in the First Edition, First Printing of Elements of Fluid Mechanics by D. C. Wilcox

These are all of the known typographical errors as of August 6, 2008.

1. Page 9, last paragraph, first line: Replace “cancelation” with “cancellation”.
2. Page 38, Problem 1.48: Replace “1100 psi” with “1100 atm”.
3. Page 126, Problem 3.82, first line: Replace “ $h = \frac{1}{5}h$ ” with “ $h = \frac{1}{5}H$ ”.
4. Page 128, Problem 3.91, first line: Replace “copper” with “bismuth”.
5. Page 131, Problem 3.107, first line: Replace “of width $2L$ ” with “of width L ”.
6. Page 163, Problem 4.37, first line: Replace “zero” with “nonzero”.
7. Page 220, Problem 5.67, next to last line: Replace “rection” with “reaction”.
8. Page 239, Equation (6.16), between first and second equal signs: Replace “ $d(1/\rho)$ ” with “ $pd(1/\rho)$ ”. The correct equation is

$$Tds = c_v dT + pd \left(\frac{1}{\rho} \right) = c_v dT - \frac{p}{\rho^2} d\rho$$

9. Page 250, Figure 6.6, caption: Replace “Fiction” with “Friction”.
10. Page 264, just above Equation (6.80): Replace “substitute Equations (6.77) and (6.78) into Equation (6.73)” with “combine Equations (6.73), (6.75) and (6.77), and let $d_2/d_1 = \sqrt{2}$ ”. Also, the correct Equation (6.80) for h_L is

$$h_L = \left[\hat{R}_1 + \hat{R}_2 \left(\frac{d_1}{d_2} \right)^4 \right] \bar{u}_1^2 = \left[\hat{R}_1 + \frac{1}{4} \hat{R}_2 \right] U^2$$

11. Page 277, Example 6.14: The dimensions of y are m, not m/sec. The correct equation for \bar{u} is

$$\bar{u} = \frac{Q}{y^2} = \frac{5 \text{ m}^3/\text{sec}}{(2.61 \text{ m})^2} = 0.734 \frac{\text{m}}{\text{sec}}$$

12. Page 290, Problem 6.44, third line: Replace “in terms of $\rho, \dot{m},$ ” with “in terms of $\rho, \dot{V},$ ”.
13. Page 293, Problem 6.59, third line and figure: Replace “ $\mathcal{R} = 0.06D$ ” with “ $\mathcal{R} = 4D$ ”. Also, add $L/D = 100$.
14. Page 295, Problem 6.67, figure: Replace “ $p_0 + \Delta p$ ” with “ $p_a + \Delta p$ ”.
15. Page 323, Equation (7.71): The velocity “ $\mathbf{u}-$ ” should be replaced by “ \mathbf{u} ”. The correct equation is

$$\text{Deflected Jet: } \mathbf{r} = r\mathbf{e}_r, \quad \mathbf{u} = \tilde{V}_j \mathbf{n}, \quad \mathbf{w} = \tilde{V}_j \mathbf{n} - \Omega r \mathbf{e}_\theta, \quad \mathbf{n} = \mathbf{e}_\theta \cos \phi + \mathbf{e}_r \sin \phi$$

16. Page 324, Equation (7.79): The quantity “ r ” should not appear in the equation to the right. The correct equation is

$$\frac{d\Omega\tau}{dU} = 2\rho Q (V_j - 2U)$$

17. Page 331, Problem 7.44, third line: Replace “ $\Omega\tau$ ” with “ τ ”.
18. Page 372, Problem 8.26(c): The gas is air.
19. Page 374, Problem 8.41, next to last line: Replace “ T_{t1} ” with “ T_t ”.
20. Page 386, just above Equation (9.10): Replace “Reynolds Transport” with “Reynolds Transport Theorem”.
21. Page 388, Footnote: Replace “Equation (9.1)” with “Equation (9.9)”.

22. Page 389, just above Equation (9.33): Replace “Equation (9.33)” with “Equation (9.32)”.

23. Page 402, Equation (9.90): Replace “ a ” with “ a^2 ”. The correct equation is

$$\frac{dh}{dp} = \frac{1}{\rho}, \quad \frac{d^2h}{dp^2} = -\frac{1}{\rho a^2} \frac{dh}{dp}$$

24. Page 464, Problem 10.66: Replace “point source” with “potential vortex”.

25. Page 509, Problem 11.22, next to last line: Replace “that sailboat” with “that the sailboat”.

26. Page 549, Problem 3.25, Part (b): Replace “Glycerin” with “SAE 10W Oil”.

27. Page 549, Problem 3.45(b): Replace “0.225 atm” with “0.223 atm”.

28. Page 549, Problem 4.5(a): Replace “ U ” with “ U_o ”. The correct solution is $\mathbf{a} = (2U_o^2/x_o)(1 - x/x_o)^{-5}\mathbf{i}$.

29. Page 549, Problem 4.33: The exponential term’s argument should be squared. The correct solution is

$$\boldsymbol{\omega} = (U/\sqrt{\pi\nu t}) \exp[-y^2/(4\nu t)]\mathbf{k}$$

30. Page 550, Problem 5.27: Replace “ $u = U/6$ ” with “ $A_{cs} = A/8$ ”.

31. Page 550, Problem 5.39: Replace “ $B = \frac{1}{2}A$ ” with “ $B = \frac{1}{4}A$ ”.

32. Page 550, Problem 5.67: The correct answer for R_y/R_x is $R_y/R_x = 5/(2 + 5 \cos \phi)$.

33. Page 550, Problem 5.85: The correct answer for \mathbf{F} is $\mathbf{F} = \frac{1}{32}\pi\rho V^2 D^2(-3\mathbf{i} + 2\mathbf{j})$.

34. Page 550, Problem 5.93(b): Replace “0.464 kN” with “0.467 kN”.

35. Page 550, Problem 5.101: The correct answer for F_y is $F_y = -\frac{1}{72}(16 - 3 \sin \alpha) \rho U^2 h$.

36. Page 550, Problem 5.105: The correct answer for C_D is $C_D = -\frac{5}{9}$.

37. Page 551, Problem 6.81: Replace “ $\bar{u}_{up} = 0.96$ ” with “ $\bar{u} = 1.02$ ”.

38. Page 552, Problem 8.31: Replace “ $T_2 = 279 \text{ K}$ ” with “ $T_2 = 292 \text{ K}$ ”.

39. Page 552, Problem 8.41: Delete “ $M_A = 0.3$ ” and “ $M_A = 0.6$ ”. The first two of the three parts of the answer are $p_A/p_B = 1.198$ and $T_A/T_B = 1.053$.

40. Page 552, Problem 8.69(a): Replace “ $p_1 = 13.51 \text{ psi}$ ” with “ $p_1 = 13.52 \text{ psi}$ ”.

41. Page 553, Problem 10.49(b): Replace “ $UQ/(2\pi)$ ” with “ $UQ/(\pi x)$ ”. The correct solution is

$$p = p_\infty + \frac{1}{2}\rho [UQ/(\pi x) - Q^2/(2\pi x)^2]$$

42. Page 553, Problem 10.71: Replace “ D ” with “ \mathcal{D} ”.

43. Page 557, Lighthill and Whitham reference: Replace “317{345” with “317-345”.