ERRATA SHEET

Thermodynamics: An Engineering Approach
8th Edition
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This errata includes all corrections since the first printing of the book.

Front Pages

Page 21: Align four equations at equal sign.

Chapter 1

Page 41, Prob. 1-15E, 2nd line: Change "(a spring scale" to "(a spring scale)"

Page 44, Prob. 1-64: Insert a CD-EES icon " " to this problem.

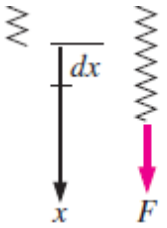
Page 50, Prob. 1-118, 4th line: Change "$C_{\text{Drag}}\, A_{\text{front}}$" to "$C_{\text{Drag}}$, A_{front}"

Chapter 2

Page 61, Fig. 2-15, 3rd can: Make the third can the same as other two cans. Make sure the label "5C" shows clearly.

Page 65, Fig. 2-27: For the very right label, change "*V* " to "**V**"

Page 67, Fig. 2-32: Move the label "*dx*" and the below short horizontal line up, as shown below. Do not change other parts of the figure.



Page 84, 4th equation line: In the numerator change the subscript "elect,out" to "shaft,out". Also, in the same line, change "800kW" to "800 kW" and change "1031kW" to "1031 kW"

Page 85, 14th line: Change "0.93.2" to "0.932"

Page 89, 2nd paragraph, 6th line: Change "0.36 percent" to "0.036 percent"

Page 90, 4th line: Change "12,000 miles" to "13,500 miles"

Page 96, 2nd column, 4th text line from bottom: Change "general mass and energy balances" to "general energy balance"

Page 101, Prob. 2-52, 2nd line: Change "70 km/s" to "70 km/h"

Page 101, Prob. 2-62, 5th line: Change "12 pieces" to "13 pieces"

Page 101, Prob. 2-64, last line: Change "by he" to "by the"

Page 107, Prob. 2-128, 1st line: Change "60 km/s" to "60 km/h"

Page 108, Prob. 2-140, 1st line: Change "reviews that concepts" to "reviews the concepts"

Chapter 3

Page 114, 5th line from bottom: Change "One the phase-change" to "Once the phase-change"

Page 125, Fig. 3-27: Change "Specific temperature" to "Temperature"

Page 133, 6th text line from bottom: Change “value is 1600” to “value is 1600 kJ/kg”

Page 137, 3rd text line: Change “6.9%” to “3.3%”

Page 138, 8th line: Change “ideal-gas relations” to “ideal-gas relation”

Page 145, Example 3-13, 3rd text line from bottom: Change “28.013 kg/mol” to “28.013 kg/kmol”

Page 151, Prob. 3-5C, 2nd line: Change "Explain" to "Explain."

Page 153, Prob. 3-35E, 4th line: Change “modifty” to “modify”

Page 153, Fig. P3-36E: Change "R134a" to "R-134a"

Page 153, Prob. 3-40, 1st line: Change “elevaion” to “elevation”

Page 155, Prob. 3-56E, 4th line: Change “100 psi to 300 psi” to “100 psia to 300 psia”

Chapter 4

Page 167, Example 4-2, First two Analysis lines: Delete the first subtitle “*Analysis*” and move the sentence “A sketch of the system and the *P-V* diagram of the process are shown in Fig. 4-7” right after the second subtitle *Analysis*.

Page 167, Example 4-3, First two Analysis lines: Delete the first subtitle “*Analysis*” and move the sentence “A sketch of the system and the *P-V* diagram of the process are shown in Fig. 4-8” right after the second subtitle *Analysis*.

Page 182, 4th text line: Change "Table A-2a" to "Table A-2*a*"

Page 185, Example 4-11, Last calculation: Change “0.001 m^3 kg” to “0.001 m^3/kg”

Page 186, Example 4-13, 3rd line: Change "long oven." to "long oven (Fig. 4-36)."

Page 193, Table 4-3, footnote: Change “19 and 25” to “25 and 19”

Page 195, Column 1: Change "(4) Isothernal" to "(4) Isothermal"

Page 201, Prob. 4-61E, 1st line: Change “Nitrogen gas to 20 psia and 100°F initially occupies” to “Nitrogen gas initially at 20 psia and 100°F occupies”

Page 202, Prob. 4-76, 2nd line: Change “piston-cylinder” to “piston”

Page 203, Prob. 4-83E, 1st line: Change “1n the” to “In the”

Page 204, Prob. 4-100E: Change problem number to “4-100” (Delete E)

Page 204, Prob. 4-104E, 7th line: Change “19 ≤ BMI ≥ 25” to “19 ≤ BMI ≤ 25”

Page 208, Prob. 4-137, 2nd line: Change “conditons” to “conditions”

Page 208, Prob. 4-138, 2nd line: Change “conditons” to “conditions”

Page 209, Prob. 4-139, 8th line: Change "stops, (*d*) and the total" to "stops, and (*d*) the total"

Page 210, Prob. 4-154, 1st line: Change “at 95°C” to “to 95°C”

Chapter 5

Page 224, Fig. 5-49: Move the indicator line down to point the dashed line, not the piston.

Page 227, Eq. 5-37: Delete the extra minus sign “–”

Page 247, 5th text line: Change "The the electrical" to "The electrical"

Page 248, 1st equation line after the heading: Delete both “δ”

Page 253, Prob. 5-16, 5th line: Change "15 L/min" to "5 L/min" and Last line: Change "189 kg" to "212 kg". Also in Fig. 5-16: Change "15 L/min" to "5 L/min"

Page 257, Fig. P5-72: Add a fluid-look to dark orange area on the right.

Page 259, Prob. 5-88, part c, 1st line: Change “adiabetic” to “adiabatic”

Page 271, Prob. 5-184, 5th and 8th lines: Change "tank" to "cylinder"

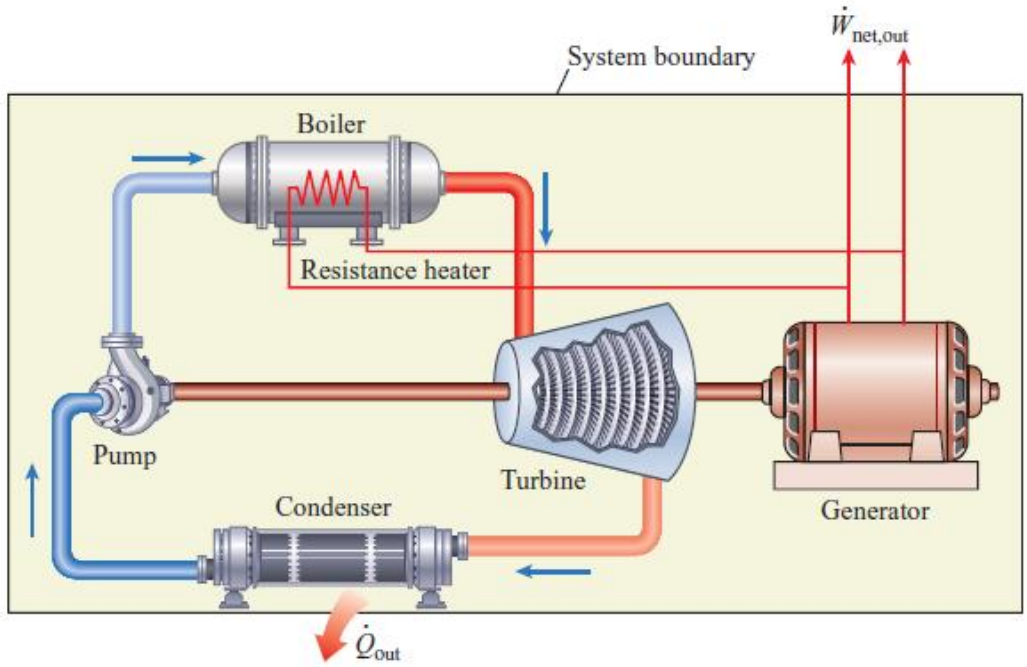
Chapter 6

Page 285, 5th line after the heading: Change "low emperature" to "low temperature"

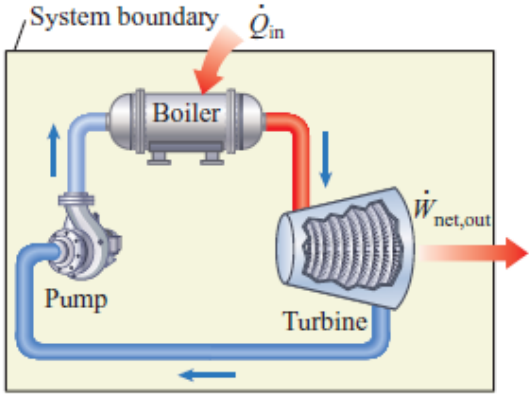
Page 286, 4th line below subtitle: Change “the ratio the total” to “the ratio of the total”

Page 287, Fig. 6-23: Change “HP” to “R”

Page 290, Fig. 6-27: Modify the figure, as shown below.



Page 291, Fig. 6-28: make the red, thick arrow on the right longer, to cross over the vertical black line, as indicated below.



Page 302, 8th line from bottom: Change "Fig. 6-49" to "Fig. 6-48"

Page 306, Example 6-6, Discussion, 1st line: Change “Carnot cycle” to “Reversed Carnot cycle”

Page 313, Prob. 6-25E, 2nd line: Change "solar pounds" to "solar pond"

Page 317, Fig. P6-75E: Change “60° F” to “60°F” (Delete the space before F)

Page 323, Prob. 6-139, 11th line: Delete the space before and after dot.

Page 326, Prob. 6-154, 1st equation line: Change “$(h_A)_H$” to “$(hA)_H$”

Chapter 7

Page 342, 1st line after Eq. 7-14: Change "$\delta Q_{\text{rev int}}$" to "$\delta Q_{\text{int rev}}$"

Page 344, 2nd line after Eq. 7-20a: Change "is later generalized" to "was later generalized"

Page 348, the line after Eq. 7-23: Change “Gibbs, equation” to “Gibbs equation”

Page 359, Example 7-11, Solution, 1st line: Change “specified pressure” to “specified temperature”

Page 361, Example 7-12, Analysis, 1st line: Change “first the turbine and then the pump” to “first the pump and then the compressor”

Page 366, (d), 2nd line: Change “the same, and its value is” to “the same, and the value of the intermediate pressure is”

Page 368, 7th text line: Change "ε_T" to "η_T"

Page 368, Example 7-14, Analysis, (a): Change "3 MPA" to "3 MPa"

Page 376, 1st line after Eq. 7-75: Change volume vee "V_n" to velocity vee "V_n" as in Eq. 7-75.

Page 377, Eq. 7-81: Change "*System 1 Surroundings*" to "*System + Surroundings*"

Page 387, Fig. 7-71: Change "621,417 kWh" to "621,417 kWh/yr"

Page 394, 8th line: Change "noncondensable" to "condensable"

Page 400, Prob. 7-51, 1st line: Change "isentropically" to "isentropically in a piston-cylinder device"

Page 406, Fig. P7-119: Add a circular blue arrow around the shaft, as in Fig. P7-120.

Page 412, Prob. 7-177: Change problem number to "7-177E"

Page 418, Prob. 7-220: Delete period "." at the end of the second equation.

Page 418, Prob. 7-221, 1st line: Add a half space after "v"

Page 418, Prob. 7-225, lines 2-4: Change to "… the ratio of the isentropic differential work done on the fluid to the actual differential work done on the fluid flowing through the compressor …"

Page 418, Prob. 7-227, 1st line: Change "an average mass of" to "a mass of"

Chapter 8

Page 432, Example 8-6, 2nd line from the bottom: Change "(extracted from the cold outside air)" to "(25.7 of which extracted from the cold outside air)"

Page 447, Example 8-11, 2nd equation line from bottom: Change "}(kJ/kPa·m^3)" to "(kJ/kPa·m^3)}"

Page 454, Example 8-14: Last calculation: Change "3463 kJ" to "3462 kJ". Also, in Discussion, 1st and 3rd lines: Change "3463" to "3462"

Page 457, Eq. 8-55: Make "or" non-italic.

Page 460, State 3 line: Change "20psia" to "20 psia" (Add a space before psia)

Page 470, State 3 line: Change "130°C" to "130°F"

Page 460, 8th line from bottom: Change "310" to "300"

Page 467, right column, 1st equation line: Change "ψ" to "ϕ"

Page 470, Prob. 8-28, last line: Change "5.0 kJ" to "47.5 kJ"

Page 470, Prob. 8-33, 1st line: Change "0.8 L" to "8 L"

Chapter 9

Page 494, equations in the middle of page: Change "$W_{\text{out},0\text{-}1}$" to "$w_{\text{out},0\text{-}1}$" and change "$W_{\text{in},1\text{-}0}$" to "$w_{\text{in},1\text{-}0}$"

Page 494, Fig. 9-16: Move this figure up, just under the level of 3rd paragraph.

Page 503, Fig. 9-25: Move the word "Energy" on the right closer to the red arrow.

Page 504, 10th line from bottom: Change "isothermal expansion and compression" to "isothermal compression and expansion"

Page 506, 9th line before title: Change "utilized as the working fluid." to "utilized."

Page 526, 9th line before the heading: Change "gases are expended" to "gases are expanded"

Page 528, Example 9-10: Add a title to this example "EXAMPLE 9-10 Second-Law Analysis of an Otto Cycle"

Page 528, Analysis, 1st line: Change "We take the engine" to "(*a*) We take the engine"

Page 539, Prob. 9-21, 4th line: Change "isothermal heat rejection" to "isothermal heat addition"

Page 543, Prob. 9-90, last line: Delete answers.

Page 543, Prob. 9-91E, 6th line: Change "compresssor" to "compressor"

Page 544, Prob. 9-99: According to the problem, the temperature of the hot fluid at the inlet to the regenerator (state 5) is less than the temperature of the cold fluid entering the regenerator (state 2) which makes regeneration impossible/opposite. This is due to assuming isentropic processes. Using a pressure ratio of 8 would generate reasonable temperature values.

Page 547, Prob. 9-140E, 4th line: Change “energy” to “exergy”

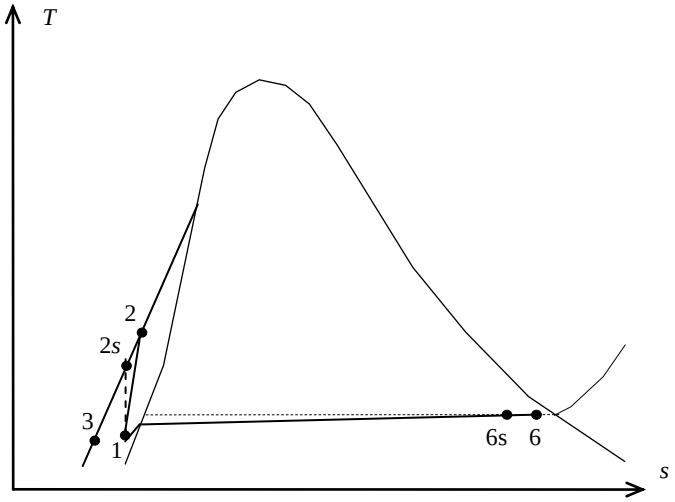
Page 548, Prob. 9-154E, 3rd line: Change “I800°F” to “1800°F” (Change I to 1)

Page 548, Prob. 9-158, 8th line: Change “cyclinder” to “cylinder”

Page 551, Prob. 9-199, last line: Change “heat inputs.” to “heat inputs?”

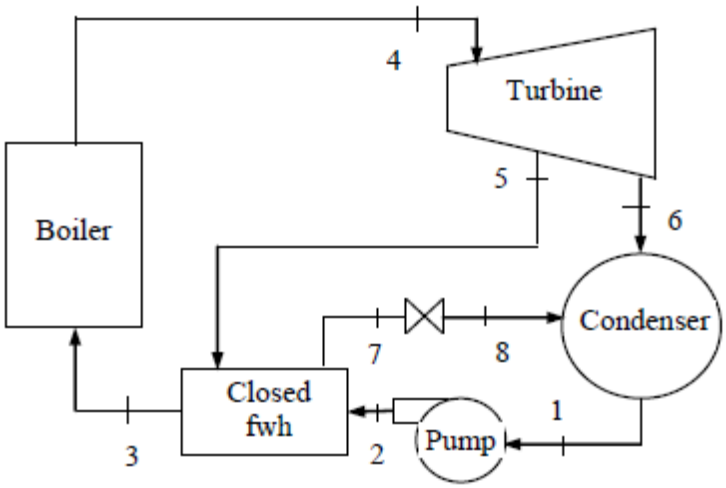
Chapter 10

Page 560, Fig. 10-5, right figure: See below figure for correct positions of states 1, 2, 2s, and 3. Ignore other details in below figure.



Page 582, 3rd line: Change “beginning of this century” to “beginning of last century”

Page 595, Prob. 10-48, Fig. P10-48: Wrong figure. Replace the figure by the below one.



Page 599, Prob. 10-82, 9th line: Change “efficiences” to “efficiencies”

Chapter 11

Page 616, Eq. 11-18, 1st line, 3rd term, numerator: Change “ $\dot{X}_{Q_L}$ ” to “ $\dot{X}_{\dot{Q}_L}$ ”

Page 632, Example 11-6, (b), 1st equation, denominator: Change “$W_{\text{turb,out}}$” to “$w_{\text{turb,out}}$”

Page 642, Prob. 11-30E, 3rd line: Change “temperature” to “temperatures”

Page 647, Prob. 11-86, 7th line: Change “If the COP of an actual” to “If an actual”

Page 653, Prob. 11-142, 6th line: Delete "discussed in the preceding problem"

Chapter 12

Page 660, Eq. 12-9, 3rd term: Change "$-\left(\frac{\partial x}{\partial y}\right)_x$" to "$-\left(\frac{\partial z}{\partial y}\right)_x$"

Page 676, last equation in the page, in the numerator: Change "∂Zr" to "∂Z"

Page 681, Prob. 12-34, 4th line: Change "1 m^3/kg" to "0.01 m^3/kg"

Page 681, Prob. 12-34, 1st line: Change "100 kPa" to "100 kPa and"

Chapter 13

Page 697, Example 13-3, 6th line: Change "her unit mass" to "per unit mass"

Page 702, Example 13-5, (b), 3rd equation block: Change "$T_{\text{cr},m}$" to "$T'_{\text{cr},m}$" (2 times) and change "$P_{\text{cr},m}$" to "$P'_{\text{cr},m}$"

Page 703, 1st equation block: Change "[(6394 – 4650) kJ/kmol]" to "(6394 – 4650) kJ/kmol". In the same equation, change "T_{cr}" to "T'_{cr}"

Page 705, 3rd line from bottom: Change "mixing is positive" to "mixing is negative"

Page 705, 2nd line from bottom: Change "negative for" to "positive for"

Page 708, Eq. 13-47, 1st term: Change "$\overline{v}_{\text{mixing, ideal}}$" to "$\overline{v}_{\text{mixture,ideal}}$"

Page 708, Eq. 13-48, 1st term: Change "$\partial\mu_{i,\text{mixing}}$" to "$\partial\mu_{i,\text{mixture}}$"

Page 708, Eq. 13-49, last term: Change "y_1" to "y_i"

Page 708, Fig. 13-20, 5th equation line: Change "$\overline{h}_{i,\text{mixing}}$" to "$\overline{h}_{i,\text{mixture}}$"

Page 709, Eq. 13-51*b*: Change "Δs_{mixing}" to "$\Delta\overline{s}_{\text{mixing}}$"

Page 718, Prob. 13-42, 7th line: Change "Amagad's" to "Amagat's"

Chapter 14

Page 728, Example 14-1, Properties, 2nd line: Change "T_{sat} = 3.1698 kPa" to "P_{sat} = 3.1698 kPa"

Page 743, Example 14-7, the line before Discussion: Maket he subscript "2" and "wb" non-italic.

Page 743: Align equations 14-21, 14-22, and 14-23 at equal sign.

Page 756, Fig. P14-130: Change "36°F" to "36°C". Also, delete "60°F"

Chapter 15

Page 763, last line: Make the subscript "2" non-italic.

Page 775, the line after Eq. 15-8: Change "molal" to "molar"

Page 778, 3rd line below table: Make "kmol" non-italic.

Page 778, Example 15-7, Assumptions, 2nd line: Change "2 The fuel, the air, and" to "2 The fuel, the oxygen, and"

Page 781, Example 15-8, the line before the table: Change "h values" to "$\overline{h}$ values"

Page 783, 2nd paragraph under Eq. 15-20, 8th line: Change "this century" to "last century"

Page 784, 3rd line after Eq. 15-24: Change "$\overline{g}_0$" to "$\overline{g}_{T_0}$"

Page 785, Eq. 15-27: Change "n_p" to "N_p"

Page 786: Fig. 15-32 is wrong figure. Use the correct one from 7th edition, as shown below:

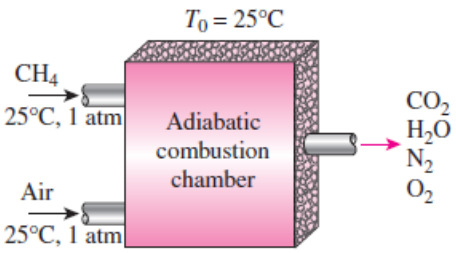


FIGURE 15–33
Schematic for Example 15–10.

Page 786, last line in the page: Change "*h* values" to "$\bar{h}$ values"

Page 787, 2nd table, last column heading: Change "$N_i\bar{s}_i^o$" to "$N_i\bar{s}_i$"

Page 789, 2nd equation line from bottom: Change "(2845.35 – 3023.69) kJ/kmol" to "(2845.35 – 3023.69) kJ/kmol·K"

Page 798, In heading: Change "cof" to "of"

Page 799, Prob. 15-94E, 4th line: Change "water vapor" to "water"

Chapter 16

Page 806, Fig. 16-2: Reverse the direction of the right blue arrow

Page 806, Fig. 16-2, caption: Change "Equilibrium criteria" to "Equilibrium criterion"

Page 807, Fig. 16-4, caption: Change "Criteria for" to "Criterion for"

Page 811, middle of the page, superscript: Change "$\nu_{H_2} - \nu_{O_2} - \nu_{H_2O}$" to "$\nu_{H_2} + \nu_{O_2} - \nu_{H_2O}$"

Page 815, the line before Discussion: Change "$2.074O_2$" to "$2.047O_2$"

Page 823, 9th text line from bottom: Change "$[Ca(HO_3)_2]$" to "$[Ca(HCO_3)_2]$"

Chapter 17

Page 876, 1st line: Change to "… energy equations, entropy change, and equation of state for the control volume …"

Page 880, Example 17-14, the line after Eq. (2): Delete the space before "(k - 1)"

Page 884, 3rd calculation from bottom: Change "1570 K" to "1566 K"

Page 889, Prob. 17-18, 6th line: Change "crusing" to "cruising"

Page 894, Prob. 17-128, 2nd line: Change "$RT(v - b)$" to "$RT/(v - b)$"

Page 896, Prob. 17-155, 4th line: Change "(b) 93 kPa" to "(b) 96 kPa"

Page 896, Prob. 17-157, Answer choices: Delete all five "m/s" in answer choices.

Page 896, Prob. 17-162, (b), second line: Change "diversion section" to "diverging section"

Chapter 18

Page 59, Equation 18-89: Change "h_{2a}" to "h_{2b}"

Page 74, Prob. 18-9C, 1st line: Change "distibution" to "disribution"

Page 74, Prob. 18-28C, 1st line: Change "iner" to "inner"

Page 74, Prob. 18-29, 2nd line: Change "transmissivty" to "transmissivity"

Page 74, Prob. 18-31E, 2nd line: Change "transmissivty" to "transmissivity"

Page 75, Prob. 18-32, 2nd line: Change "transmissivty" to "transmissivity"

Page 77, Prob. 18-62, 5th line: Change "anuual" to "annual"

Page 78, Prob. 18-85C, 4th line: Change "haet" to "heat"

Page 78, Prob. 18-89, 4th line: Change "at arate" to "at a rate"

Appendix

Page 901, Table A-2, 2nd column, 12th line: Change "S_2" to "S"

Page 951, Table A-2E, 2nd column, 12th line: Change "S_2" to "S"

Page 987, Table A-31E: On the saturation temperature line, change "30" to "40"