<div align="center">

**Errata to**
*Fundamentals of Thermodynamics* **(SDL),**
**I-P Edition (2004)**

**February 27, 2017**

*Shaded items have been added since the previously published errata sheet dated May 6, 2014.*

</div>

| | |
|---|---|
| **Page 3:4** | The equation above the example supplies a $\Delta z$ of water as "33.9 ft water" but should state "**32.98** ft water." |

**Page 3:4**   Example 3-1 states in the problem that "$\rho = 62.4$ lb/ft$^3$" but should state that "$\rho = $ **64.2** lb/ft$^3$." The changes in this problem as well as in the equation noted above necessitate changes to the solution to Example 3-1 as follows:

$$\Delta p = (\mathbf{64.2}\ \text{lb}_\text{m}/\text{ft}^3)(32.2\ \text{ft/s}^2)(1500\ \text{ft})/(32.2\ \text{lb}_\text{m} \cdot \text{ft}/(\text{lb}_\text{f} \cdot \text{s}^2))(144\ \text{in}^2/\text{ft}^2)$$

$$\Delta p = \mathbf{669}\ \text{psi}$$

This value can also be found with the knowledge that 14.7 psia $\approx$ **32.98** ft of water:

$$\Delta p = (1500\ \text{ft})(14.7\ \text{psia})/(\mathbf{32.98}\ \text{ft})$$

$$\Delta p = \mathbf{669}\ \text{psi}$$

The actual pressure experienced by the vessel is

$$P_{actual} = P_{atmosphere} + \Delta p$$

$$P_{actual} = 14.7 + \mathbf{669} = \mathbf{683.7}$$

**Page 3:12**   The solution to Example 3-3 reads "$v_{mixture}$" in three places when it should read "$V_{mixture}$."

**Page 3:18**   The graphic in Problem 3-05 shows a "V" on the axis instead of "**v**".

**Page 3:19**   The graphic in Problem 3-06 shows a "V" on the axis instead of "**v**".

**Page 4:4**   The first sentence of Section 4.2 reads "...the pressure and temperature are not dependent on one another" but should read "...the pressure and temperature **are** dependent on one another."

---

**For online access to these errata as well as updates to other publications, visit www.ashrae.org/publicationupdates.**

*Please notify ASHRAE of any other errors you might find by using the Comment on Publications form at www.ashrae.org/resources--publications.*

ASHRAE®

*Page 1 of 5*

**Page 5:5**    The string of equations in the middle of the page reads "...$T_2 = (36 + 460) = 496$ R" but should read "...$T_2 = (\mathbf{32} + 460) = \mathbf{492}$ R". The $p_2$ calculation below that reads:

$$p_2 = (v_1/v_2)(T_2/T_1)(p_1)$$
$$= (496/532)(14.7)$$
$$= 13.71 \text{ psia}$$

but should read:

$$p_2 = (v_1/v_2)(T_2/T_1)(p_1)$$
$$= (\mathbf{492}/532)(14.7)$$
$$= \mathbf{13.59} \text{ psia}$$

**Page 6:11**    In the Solution to Example 6-1, the equation reads

$$_1W_2 = p_1 m(v_1 - v_2)$$
$$= (14.7096 \text{ psia})(10 \text{ lb}_\text{m})\left[(27.890 - 0.01671)\frac{\text{ft}^3}{\text{lb}_\text{m}}\right][(1 \text{ Btu})/5.404 \text{ psia·ft}^3]$$
$$= 728.3 \text{ Btu}$$

but should read

$$_1W_2 = p_1 m(v_1 - v_2)$$
$$= (14.7096 \text{ psia})(10 \text{ lb}_\text{m})\left[(\mathbf{26.780} - 0.01671)\frac{\text{ft}^3}{\text{lb}_\text{m}}\right][(1 \text{ Btu})/5.404 \text{ psia·ft}^3]$$
$$= \mathbf{728.5} \text{ Btu}$$

**Page 6:13**    The first sentence on the page references Example 6-3 but should reference Example **6-4**.

**Page 6:13**    In the calculations to the left of Figure 6-7, the $p_2 = p_1(V_1/V_2)$ calculation is repeated instead of supplying the equation for calculating the mass of the air. Replace the second $p_2 = p_1(V_1/V_2)$ calculation with the following:

$$m = (p_1 V_1)/(RT_1)$$
$$= (20 \text{ psia} \cdot 1.0 \text{ ft}^3)/[(0.3704 \text{ psia·ft}^3/\text{lb·°R})(76°R + 460°R)]$$
$$= 0.10 \text{ lb}_m$$

**Page 6:15**    The last sentence on the page reads "(note: $v$ is volume)" but should read "(note: $v$ is **specific** volume)."

**Page 6:16**    In the paragraph in the middle of the page, the third line reads "conversion factor 1 Btu = 5.404 psia·ft$^3$/lb$_\text{m}$ to the $pv$ term" but should read "conversion factor **0.185 Btu/psia·ft$^3$** to the $pv$ term."

| | |
|---|---|
| **Page 6:20** | In the Skill Development Exercises for Chapter 6, Problem 6-11 lists 1205 $\Omega$ but should list **150 $\Omega$**. |

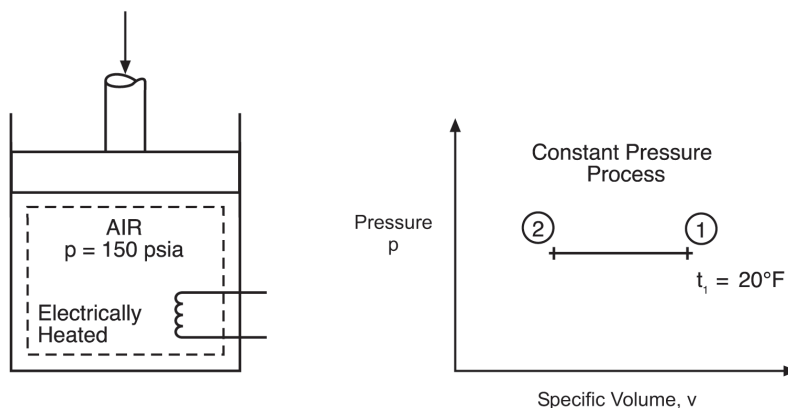**Page 7:11**   Figure 7-4 does not show the piston. The corrected graphic follows.



**Figure 7-4. Piston-Cylinder Arrangement and *p-v***

**Page 7:14**   The second nomenclature item in the Summary reads "$_1W_2$ = net heat transfer..." but should read "$_1W_2$ = net **work** transfer...."

**Page 8:9**   The first sentence of the paragraph beneath the equations reads "where S is the summation symbol..." but should read "where $\Sigma$ is the summation symbol...."

**Page 8:18**   Problem 8-08 reads "...a solar water heater 60 ft$^2$ above ground" but should read "...a solar water heater **60 ft** above ground."

**Page 9:8**   The text beneath Table 9-2 reads:
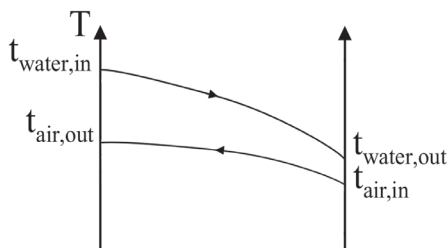
Throttling is a constant enthalpy device, therefore:

$$t_4 = t_3 + \dot{m}_{R-22}(h_2 - h_1)/\dot{m}_{air} \cdot c_p$$
$$= 72 + 0.02(120 - 39.502)/[(0.2)(0.24)]$$
$$= 105.54°F$$

But should read "Throttling is a constant enthalpy device, therefore: $h_2 = h_1$."

**Page 9:15**   In the answer choices for Problem 9-05, replace the current answer (c) with the following:



**Page 10:6**   The last equation on the page reads "$COP_{HV} = COP_R + 1$" but should read "$COP_{HP} = COP_R + 1$."

**Page 11:7**   The equation in the second line on the page reads "$w_{compressor} = q_H = q_L$" but should read "$w_{compressor} = q_H - q_L$."

**Page 12:14**   The first equation in the solution to Example 12-5 is cut off at the end. The final expression after the equal sign should read "$(h_2 - h_3)/(h_5 - \mathbf{h_8})$."

**Page 12:14**   The second line of the COP calculation includes 1.63 as a value instead of the **1.59** that was calculated.

**Page 12:14**   The third line of the COP calculation is cut off at the end. The final expression after the plus sign should read "$1.59(121.5 - \mathbf{114.610})$."

**Page 12:17**   The second line of the second equation in the Solution to Example 12-6 is cut off at the end. The final expression after the equal sign should read "**36.217**."

**Page 12:17**   The last equation on the page is cut off at the end. The final expression after the plus sign should read "$(1 - 0.267)(\mathbf{117.0}) = \mathbf{115.5}$."

**Page 12:20**   The last sentence of the second paragraph from the bottom includes incorrect units for enthalpy and should be reworded. The sentence should read "**...$h_5 = h_6 = 54.239$ Btu/ $lb_m$, is the saturated liquid enthalpy at the heat rejection pressure**."

**Page 12:28**   Problem 12-05 refers the reader to "Example 12.3" but should refer to "Example **12.4**."

**Page 13:7**   The first sentence of the paragraph above the gray example box begins "On the right side..." but should read "On the **left** side...."

**Key Terms and Symbols**   The value of $g$ (gravitational acceleration) reads "32.2 ft/sec" but should read "32.2 ft/$\mathbf{s^2}$."

| **Skill Development Exercises for Chapter 6** | Problem 6-11 lists 1205 $\Omega$, but should list **150** $\Omega$. |
|---|---|
| **Skill Development Exercises for Chapter 13** | Problem 13-09 is the same as Problem 13-02; please delete Problem 13-09. |