Chapter: 15

Conceptual Problems: 10, 12

Problems and Exercises: 14, 15

10.

Would the previous question make any sense for an isochoric process? Explain your answer.

12.

The temperature of a rapidly expanding gas decreases. Explain why in terms of the first law of thermodynamics. (Hint: Consider whether the gas does work and whether heat transfer occurs rapidly into the gas through conduction.)

14.

Calculate the net work output of a heat engine following path ABCDA in the figure below.

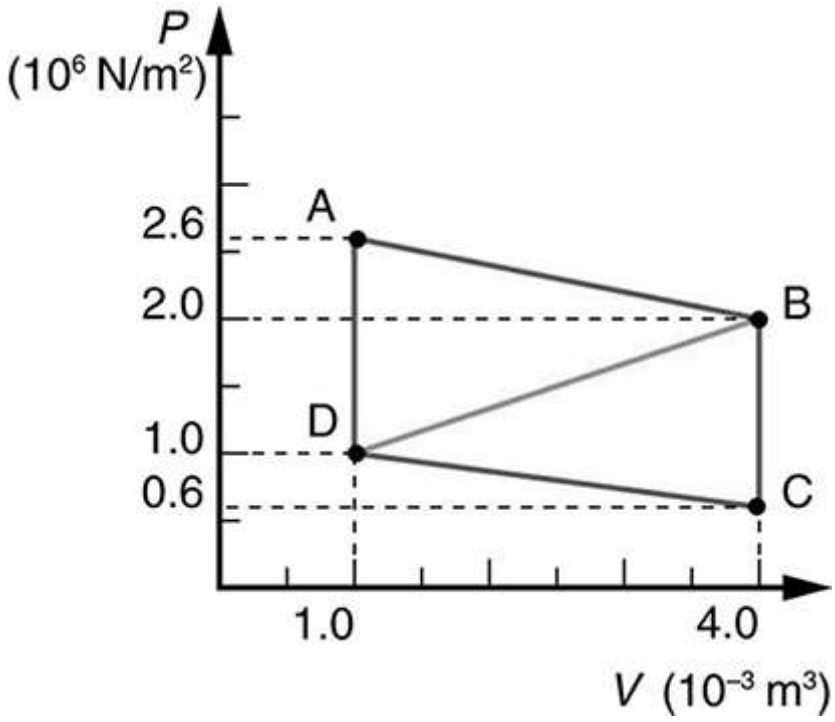

Figure 15.41

15.

What is the net work output of a heat engine that follows path ABDA in the figure above, with a straight line from B to D? Why is the work output less than for path ABCDA? Explicitly show how you follow the steps in the Problem-Solving Strategies for Thermodynamics.