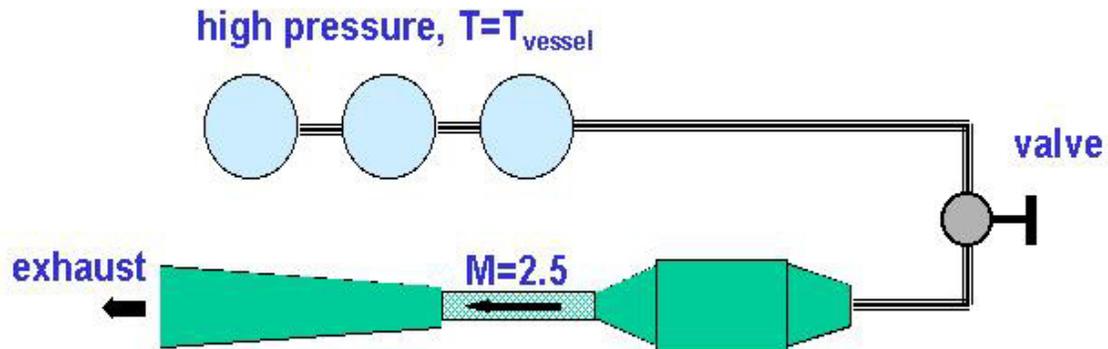


Chapter 6 Question #14

The Lockheed Martin Student Supersonic Wind-Tunnel is supplied with air from a series of pressure vessels.



For a model mounted in the wind-tunnel which of the following is true?

- 1) $T_{\text{model}} > T_{\text{vessel}}$
- 2) $T_{\text{model}} = T_{\text{vessel}}$
- 3) $T_{\text{model}} < T_{\text{vessel}}$
- 4) I don't know

Chapter 6 Question 14 Answer:

(2) $T_{\text{model}} = T_{\text{vessel}}$

The flow between the vessel and the model undergoes an adiabatic, steady flow process with no external work. The two reference frames are at zero speed relative to each other (the model and the vessel). So the stagnation temperature is the same in both locations. The model reaches the temperature of the flow that stagnates on it.

Class Response:

