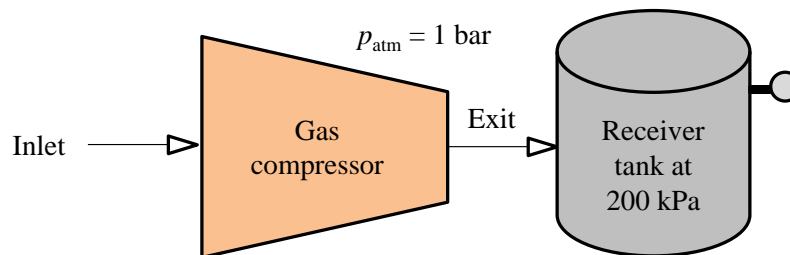


1.28 As shown in Figure P1.28, the exit of a gas compressor empties into a receiver tank, maintaining the tank contents at a pressure of 200 kPa. If the local atmospheric pressure is 1 bar, what is the reading of the Bourdon gage mounted on the tank wall in kPa? Is this a *vacuum* pressure or a *gage* pressure? Explain.

KNOWN: The exit of a gas compressor empties into a receiver tank.

FIND: The Bourdon gage reading. Identify whether the reading is a *vacuum* pressure or a *gage* pressure and explain.

SCHEMATIC AND GIVEN DATA:



ANALYSIS:

Converting the local atmospheric pressure to kPa, we get $p_{\text{atm}} = 100 \text{ kPa}$. Since the pressure in the tank, 200 kPa, is greater than the atmospheric pressure, **the Bourdon reading is a gage pressure**. Using the relationship

$$p_{\text{gage}} = p_{\text{abs}} - p_{\text{atm}} = 200 \text{ kPa} - 100 \text{ kPa} = 100 \text{ kPa}$$

The Bourdon reading is 100 kPa.