

Steam enters chamber from left, leaving from right

Steam Engine

both valves closed, piston moves to the right

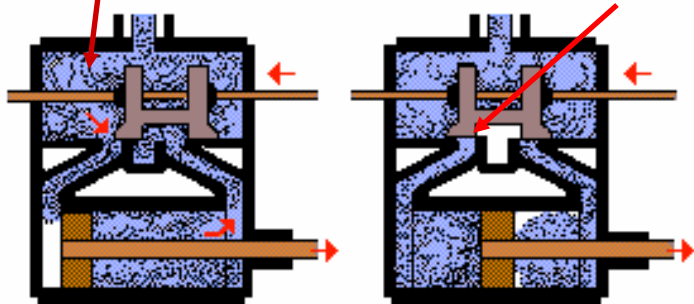
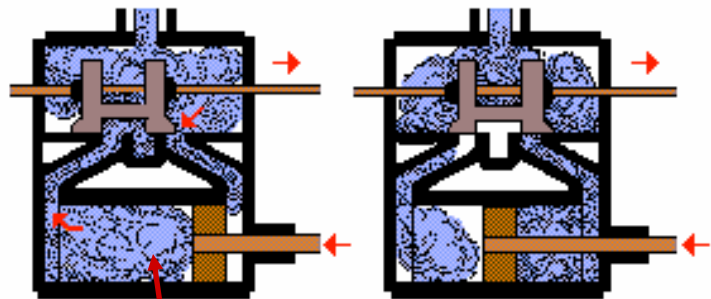


Figure 1a

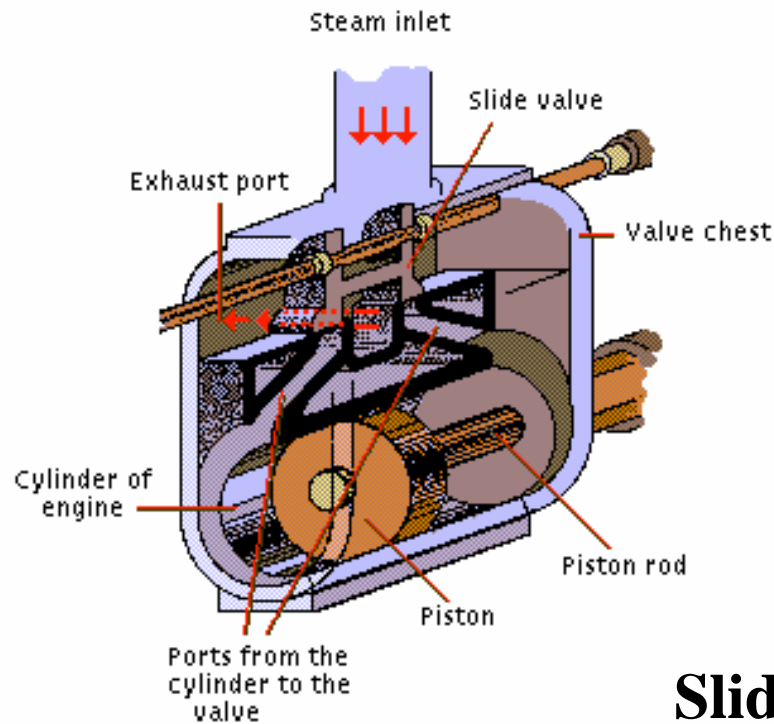
Figure 1b



Microsoft Illustration

Figure 1d

Steam enters from right, leaving from left
piston moves back to the left



Sliding valve

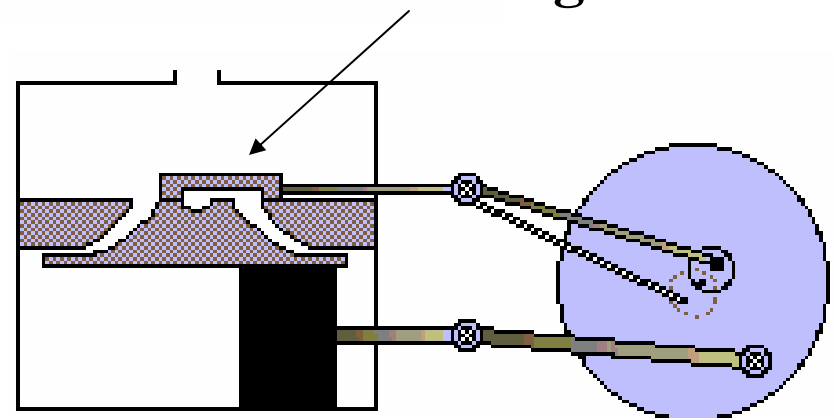
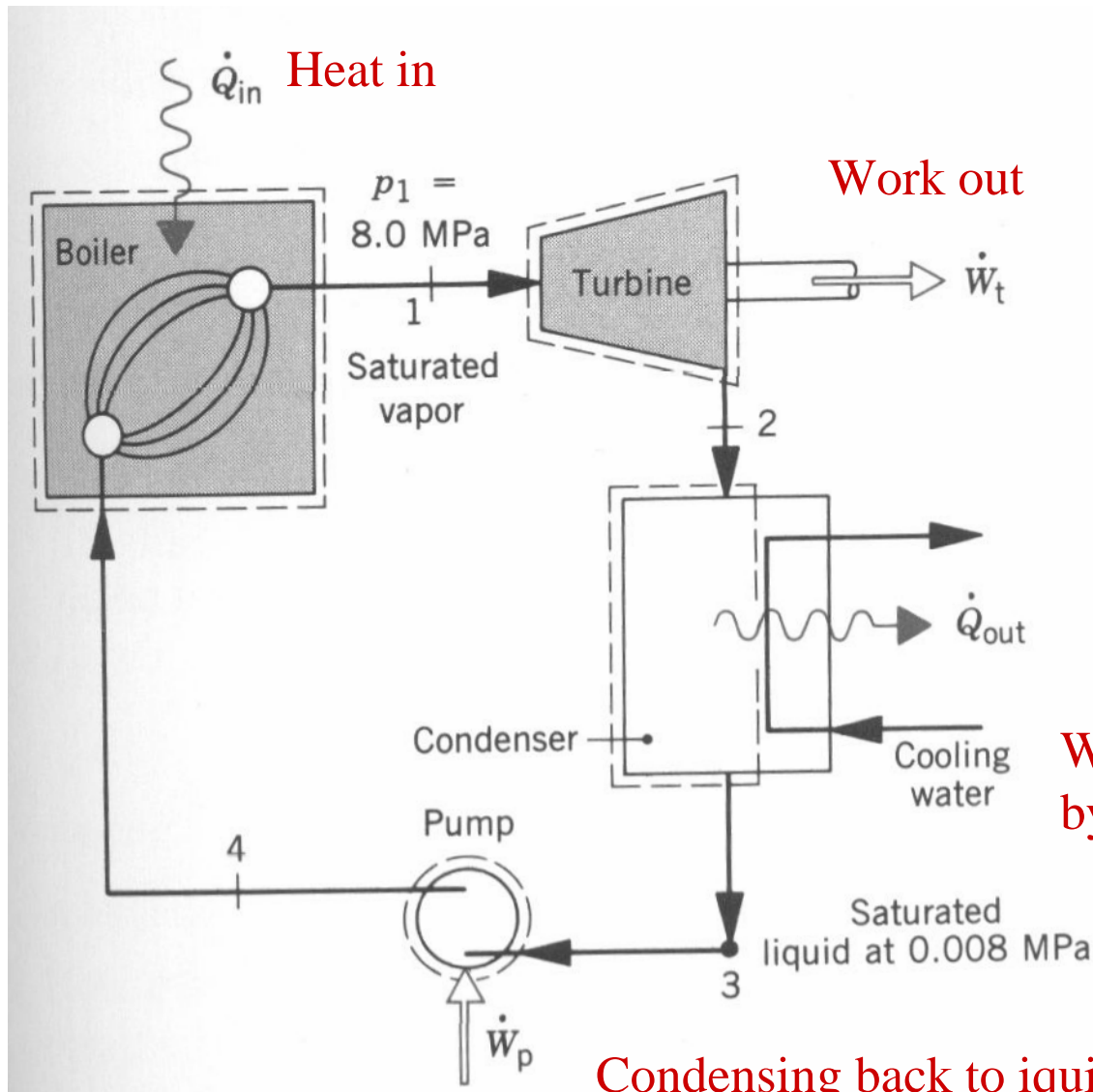
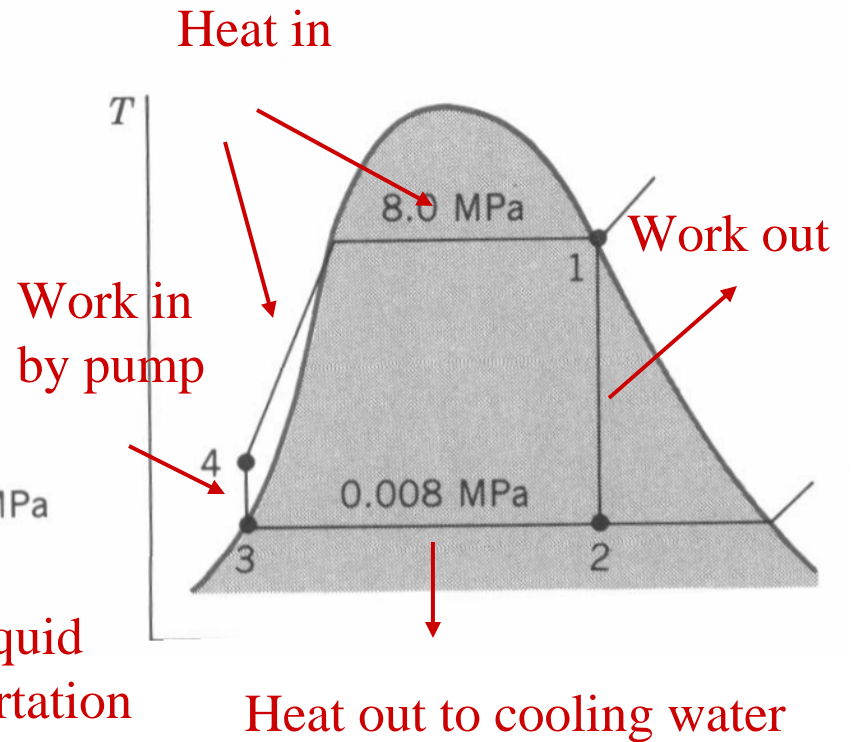


Figure 2

Simple steam power plant cycle



Condensing back to liquid form for easy transportation



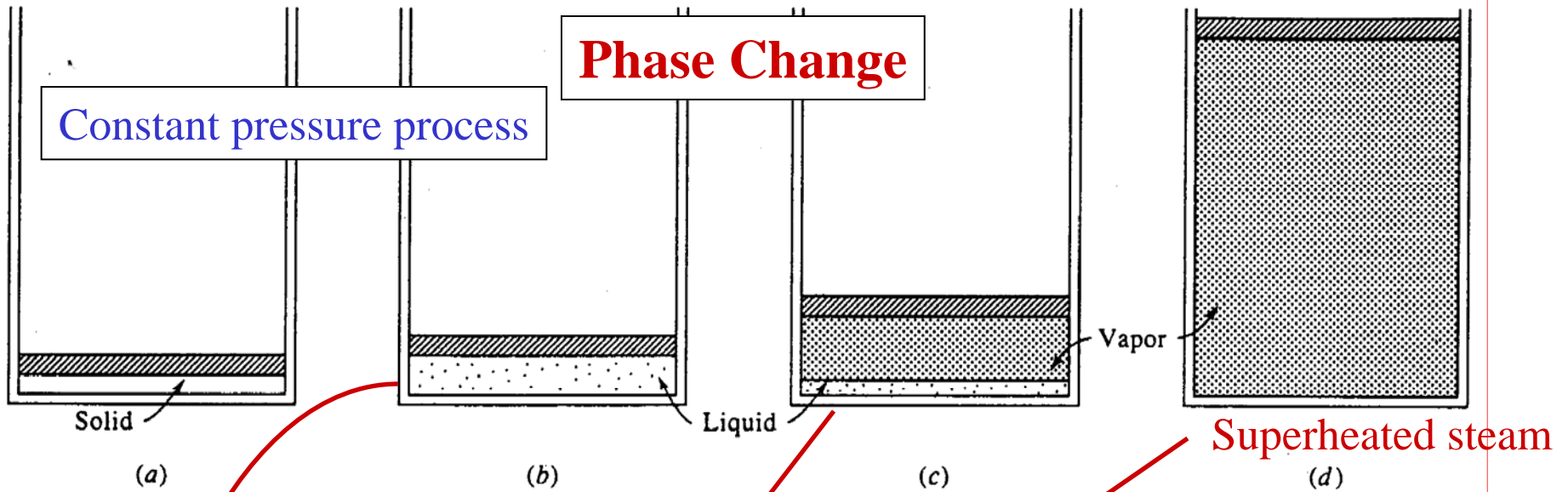


Fig. 2-1 The solid, liquid, and vapor phases of a substance.

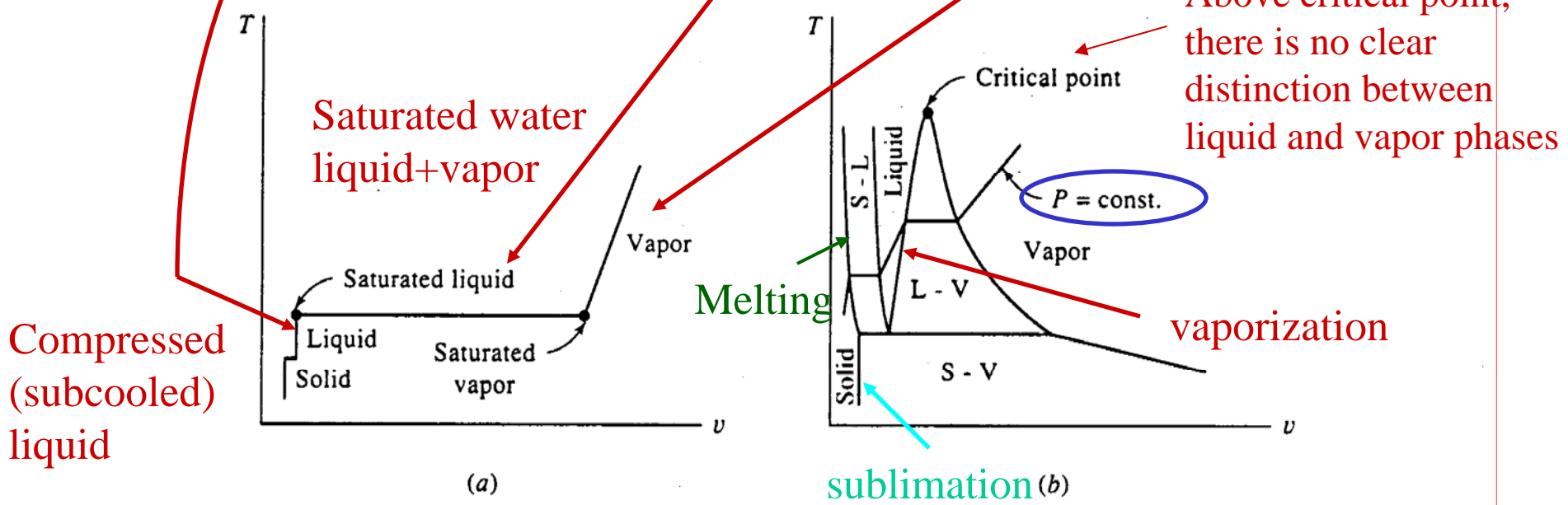


Fig. 2-2 The $T-v$ diagram.

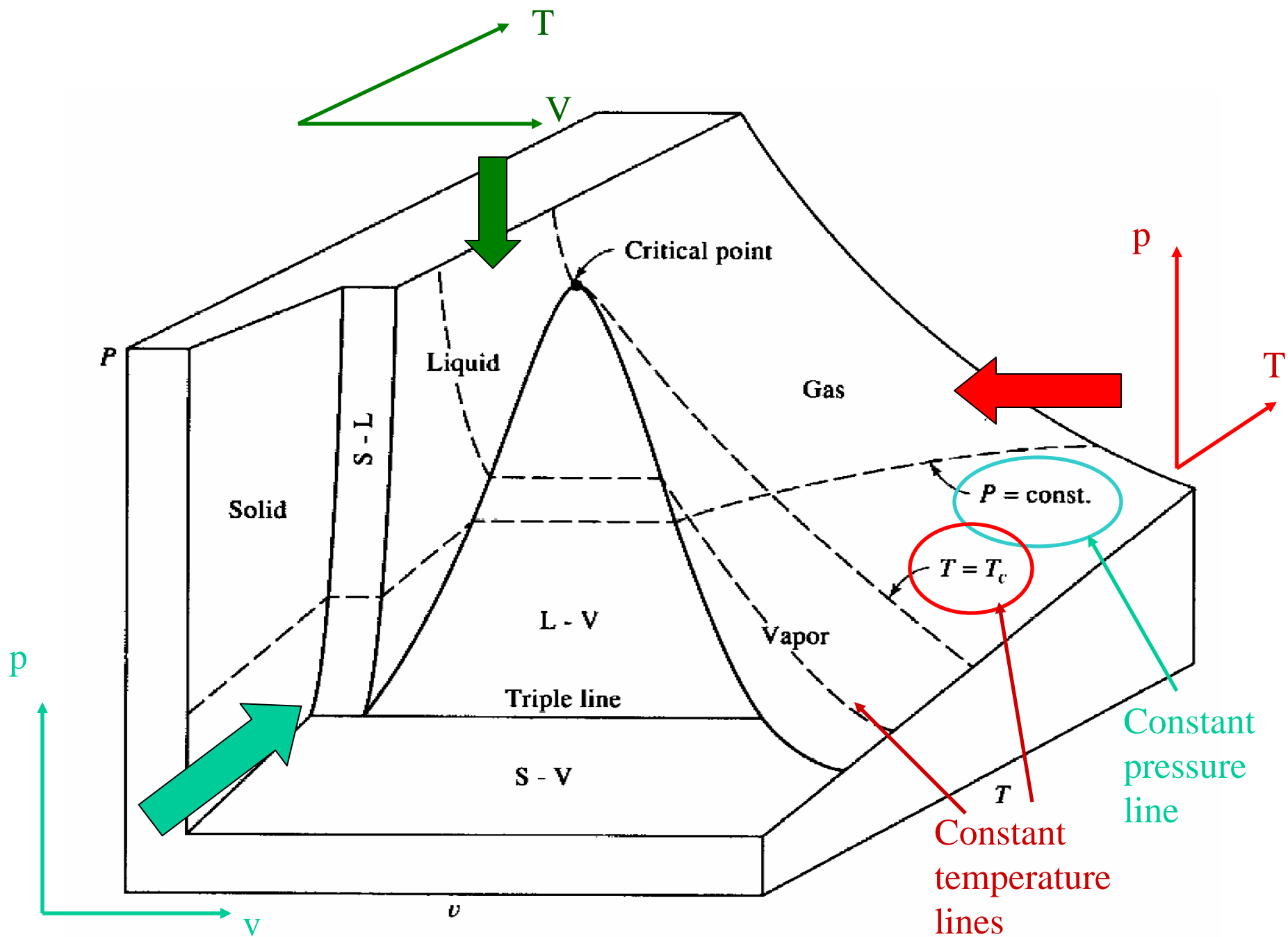


Fig. 2-3 The P - v - T rendering of a substance that contracts on freezing.

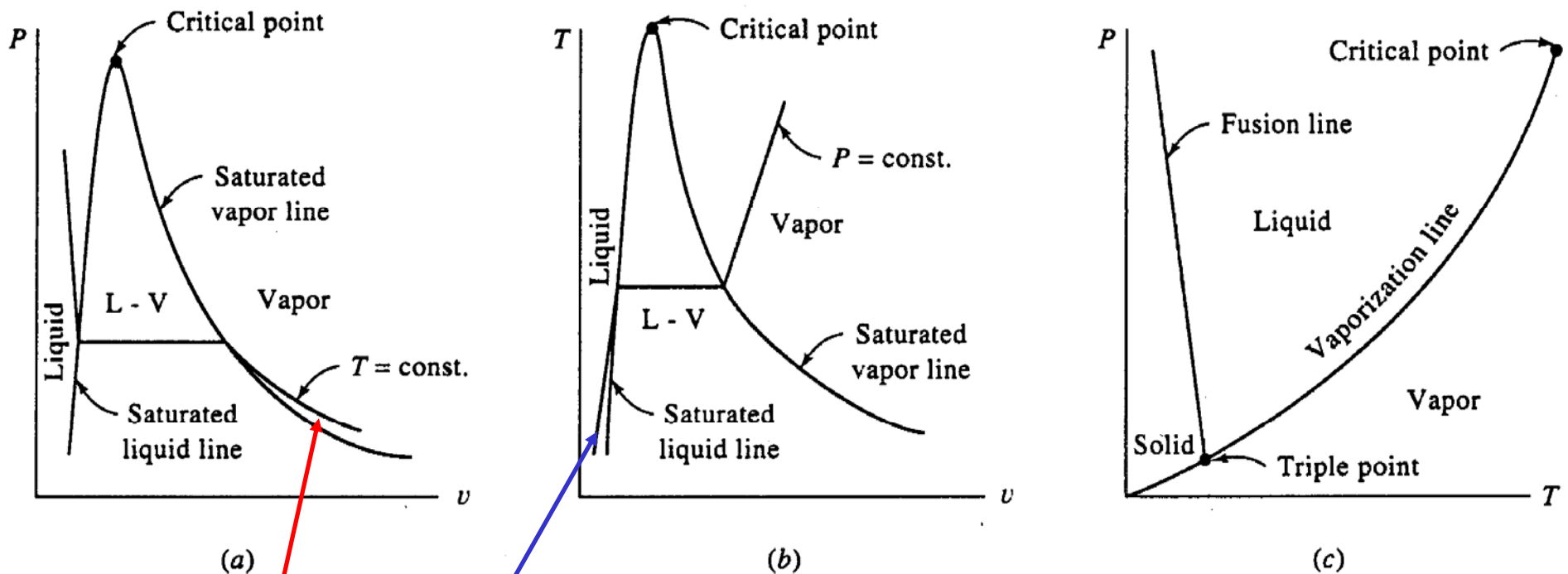
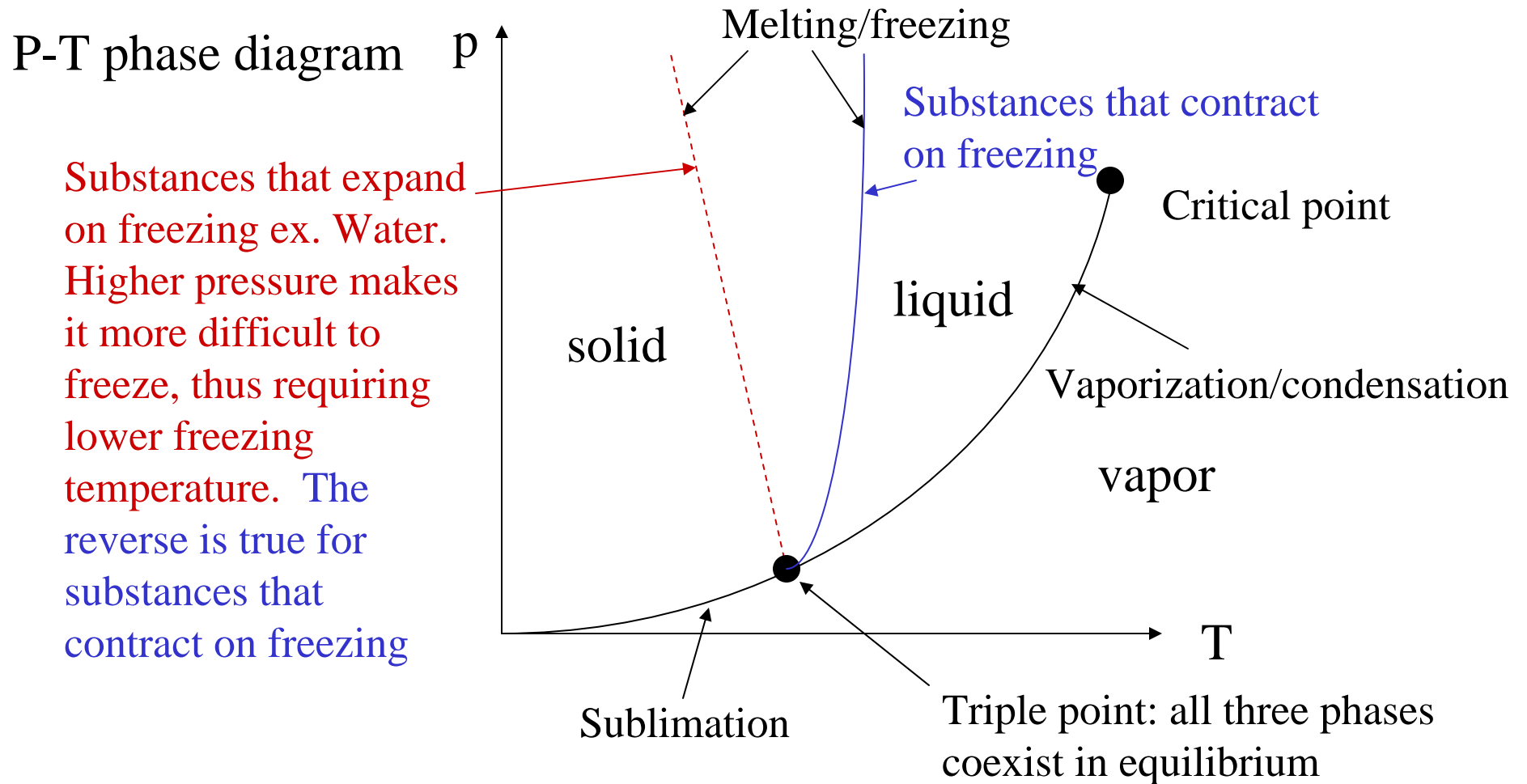


Fig. 2-4 The P - v , T - v , and P - T diagrams.

- (a) P - v diagram: Along the constant temperature line, increasing vapor pressure will lead to higher density (lower specific volume) due to compression. After it reaches the saturation pressure at that temperature, the vapor will condense into liquid while the pressure remains constant until all vapor condense into liquid.
- (b) T - v diagram: Along the constant pressure line, increasing liquid temperature will lead to lower density (higher specific volume) due to thermal expansion. At the saturation temperature, the liquid will vaporize into gaseous form at a constant pressure until all liquid vaporize.



Critical point: A limiting state above which there is no clear distinction between liquid and vapor phases.