

U.S. Fire Administration / National Fire Academy

Coffee Break Training

Topic: Fire Pump Air Release Valves

Learning objective: The student shall be able to explain the purpose of the air release valve assembly for a centrifugal fire pump.

Centrifugal fire pump assemblies are susceptible to cavitation: a condition where, due to high speed and low pressure, water vapor forms inside the pump impeller. When pressure increases, the vapor pockets collapse inside the pump causing vibration and noise. The cavitation may result in permanent damage to the pump.

To minimize the likelihood of cavitation, centrifugal fire pump assemblies are required to be outfitted with an air release valve

installed on the top of the pump casing. The air release valve must operate automatically if the pump casing normally is full of water and the pump is designed to start automatically.

If the pump is arranged for manual start only, the air release valve may be operated by remote control.

For additional information, refer to NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection.

