



Coffee Break Training - Fire Protection Series

Access and Water Supplies: Suction Tank Component Details

No. FP-2014-16 April 22, 2014

Learning Objective: The student will be able to identify components associated with a water storage tank connected to a fire protection system.

Last week's Coffee Break Training discussed fire protection water tank heating and insulation properties in accordance with National Fire Protection Association (NFPA) 22, *Standard for Water Tanks for Private Fire Protection*. We'll look at some of the components associated with the tank and their functions.

The installation in the photograph is a detail from a 15,000-gallon (56,780-L) aboveground water storage tank that supplies an automatic sprinkler system. The tank discharges into a 250-gallon per minute (950-liter per minute) electric drive fire pump that supplies a wet pipe fire sprinkler system protecting an Ordinary Hazard, Group 2 storage and retail occupancy.

Starting from the upper center of the photograph, you can identify an electrical junction box that encloses wiring for electrical power.¹ The junction box is connected to a round device that is the water tank temperature supervisory switch, which is preset to give a low-temperature signal at 40 F (4.5 C) and a high-temperature signal at 140 F (60 C). NFPA 22 requires that the water in the tank be at or above 42 F (5.6 C), so the low-temperature alarm provides a warning if the water temperature drops below the threshold.

The two round devices below and to the left and right of the temperature supervisory switch are electric immersion heaters. When the project is completed, they will be connected to the supervisory switch to start heating the water when the temperature drops too much. There is a mercury thermometer mounted on the tank wall between the heating units to check the water temperature at any time.

The lower portion of the flexible electrical conduit is connected to an indicating type butterfly valve assembly near the bottom of the tank. The tank is connected to the butterfly valve by a flanged connection on the rear right-hand side and a rolled groove connection between the discharge pipe and valve. This valve assembly isolates the tank from the 6-inch (152-millimeter) galvanized water supply line at the lower left-hand side of the photograph.

For additional information on fire protection water supplies, take the NFA Online course "Testing and Evaluation of Water Supplies for Fire Protection" (Q0218) at <http://www.usfa.fema.gov/nfa/nfaonline/browse/index.shtm>.

¹ This picture was taken before the project was completed.



The outlet pipe from this 15,000-gallon (56,780-liter (L)) aboveground water storage tank supplies an automatic sprinkler system.

