



Coffee Break Training - Fire Protection Series

Inspection Techniques: Fuel Dispenser Emergency Shut-Off Valves

No. FP-2014-21 May 27, 2014

Learning Objective: The student will be able to describe the installation and inspection requirements for fuel dispenser emergency shut-off valves.

We drive past service stations every day where motorists are dispensing fuel into their cars or trucks from underground storage tanks. Modern motor vehicle fuel dispensing facilities use a turbine system where pumps immersed in the tanks push the fuel to the dispensers for consumer use.

In a simple description, when the dispenser nozzle is open, the turbine pump is pushing the fuel into the vehicle that is being filled. As long as the nozzle, or any part of the supply pipe, remains open, the pump will continue to operate. Likewise, if the dispensing assembly (dispenser unit, hose and nozzle) is dislodged from its mount by impact or other means, the turbine continues to pump.

In order to stop the flow when a dispenser is damaged, a listed, rigidly anchored emergency shut-off valve incorporating a fusible link or other thermally actuated device must be installed at the dispenser base. The shut-off valve is designed to close automatically in the event of severe impact or fire.

The installation shown today has several obvious deficiencies that should be corrected when discovered on inspection. This means the inspector must be prepared to internally examine all of the dispenser units where the valves exist.

Emergency shut-off valves must be installed in accordance with the manufacturer's instructions and arranged so that they are rigidly mounted. The one in this illustration rises from the ground and is connected to the dispenser assembly but is not otherwise anchored.

The automatic closing feature has been compromised by it being wired in the open position. The service station manager acknowledged that the device was closing on its own due to a weakened spring, and this was his workaround to satisfy his customers' ability to obtain fuel.

The automatic closing feature of this valve should be tested at the time of installation and at least once a year by manually tripping the hold-open linkage. Records of the tests should be kept on the premises or available for the code official within 24 hours of a request.

If an inspector finds an older style suction-type dispensing system that includes a booster pump, or a suction-type dispensing system is supplied by a tank that produces a gravity head on the dispensing device, then a listed, vacuum-actuated shut-off valve with a shear section or equivalent-type valve should be installed directly under the dispensing device.

For additional information, consider attending the National Fire Academy's "Hazardous Materials Code Enforcement" (R0615) course. Information can be found at <http://apps.usfa.fema.gov/nfacourses/catalog/details/10504>.



This emergency shut-off valve has been wired in the open position, so it cannot operate as intended.



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