

ELECTRIC FIRE PUMP AND MAINTENANCE

ALLIANZ RISK CONSULTING

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OVERVIEW

Electric fire pumps, also known as “booster pumps,” increase water pressure in fire sprinkler systems. Consider using booster pumps when water supplies do not provide adequate pressure for the operation of a sprinkler system. Fire pumps are connected to a city water main, water tank, reservoir, or ponds that are designed for firefighting purposes.

The reliability of a fire protection system depends on the operation of the pump. In some instances, a secondary water source is required. And in most cases, an electric motor driven fire pump drives the system.

OPERATION

A fire pump consists of a suction port that draws water from the source and a discharge port that expels water at a higher pressure rate. A check valve prevents water from leaking back into the source once the pump stops operating. Since an electric motor drives the pump, it is important to calibrate both at the same “RPM.”

The motor and pump assembly is started by a controller box equipped with a pressure sensing device that will engage when the pressures drop below a preset point. It is possible to change the set point while in the field.

A smaller pump, called a “jockey pump,” is sometimes installed to supplement small pressure changes and low water volume resulting from leaks or expansion within the system. The jockey pump is set to cut in before the main pump, and has a field adjustable pressure-sensing device as well.

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ENGINEERING: INSTALLATION INDICATED

- Pump Churn Test** : Check if pump starts with a drop in pressure. Record the gauges on the suction and discharge sides. Test weekly.
- Pump Alarm Test** : Test pump alarms for pump running, power failure, and valve tamper every quarter. Check alarm functions with the central station.
- Pump Flow Test** : Operate pump with water flowing through the unit. Test the pump at churn, at 100% of its rated GPM capacity, and at 150% of its rated capacity. The resulting pressure should equal the pump rated pressure. The resulting pressure at 150% of the rated flow should be no less than 65% of the rated pressure at 100% flow. It is advisable to have a contractor equipped to perform this function. Some pumps have a flow gauge built into the system, which allows for testing without a water discharge on the property. Test annually.

Transfer Switch Operation: Test manual or automatic transfer of power supplies annually.

The National Fire Protection Association has additional details on inspection, testing, and maintenance procedures listed in NFPA 25 Standard for the Inspection Testing and Maintenance of Water Based Fire Protection Systems (2020 Edition, Chapter 8 Fire Pumps, Sections 8.2 Inspection and 8.3 Testing) that can serve as an additional resource for help.

Design: [Graphic Design Centre](#)

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