

Fire Pump Failure

By Alexandra Witkowski

While performing an annual fire pump test, you may notice that there is inadequate water pressure for the fire pump to operate as designed. From this test, you can conclude that the fire pump does not meet 150% flow. In order to diagnose and resolve the problem, you will need to spend some time investigating the fire pump. Some problems are easy to identify and inexpensive to repair, so it is best to start performing basic tests first so that you do not end up spending too much time and money on a simple solution.

Where should you start?

If the fire pump is vibrating during its weekly or monthly pump churn test, then there may be air in the pipes that causes cavitation. Since the system failed to automatically release

the air, the air relief valve needs to be cleaned and/or replaced. Once all the air is released from the system, the churn test should be performed again to make sure the problem is resolved.

Another easy problem to diagnose is inadequate water supply.

Check the suction pressure gauge during the annual flow test to verify and record the pressure. If the pressure gauge has a reading of 5 or 10 PSI and only 110% of the required flow, it indicates that there is a water supply problem. In this case, notify the water authority because they may be able to help solve this problem.

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They will check all the underground valves in the area to make sure that they are all open. If there is still a water pressure problem, it may be due to an old infrastructure that provides poor water supply and pressure. Some Authorities Having Jurisdiction may accept pump reports with less than 150% flow if it is because of the infrastructure.

If water pressure is not the problem, rebuilding the pump may be a viable option. Oftentimes, replacing the bearings, sleeves, and cleaning the internal casings and impeller allows the pump system to operate efficiently. Replacing these parts reduces friction and drag on the impeller; additionally, it creates a smoother pathway for the impeller to move ample amounts of water throughout the system.

The last part of the pump that may require maintenance is the motor. Voltage and amp readings contain the information necessary to decide whether an electric, motor-driven pump is operating as designed. The motor must be separated from the pump and the readings should be taken a second time. This test indicates whether the pump is dragging the motor down or if the motor is not running properly.

Lastly, it is important to consider that all of these procedures take time and can be quite costly. The facilities manager must decide the most cost-effective remedy for the problem. Replacing a fire pump is expensive, but, in some cases, it may be the only solution to keep your system operating in accordance to code requirements.

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