

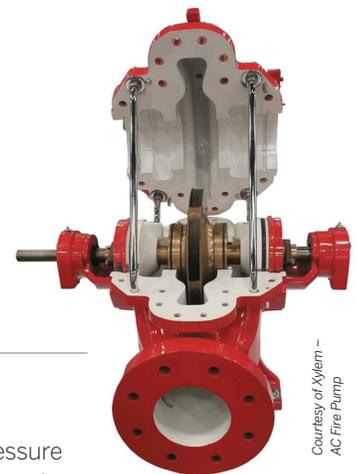
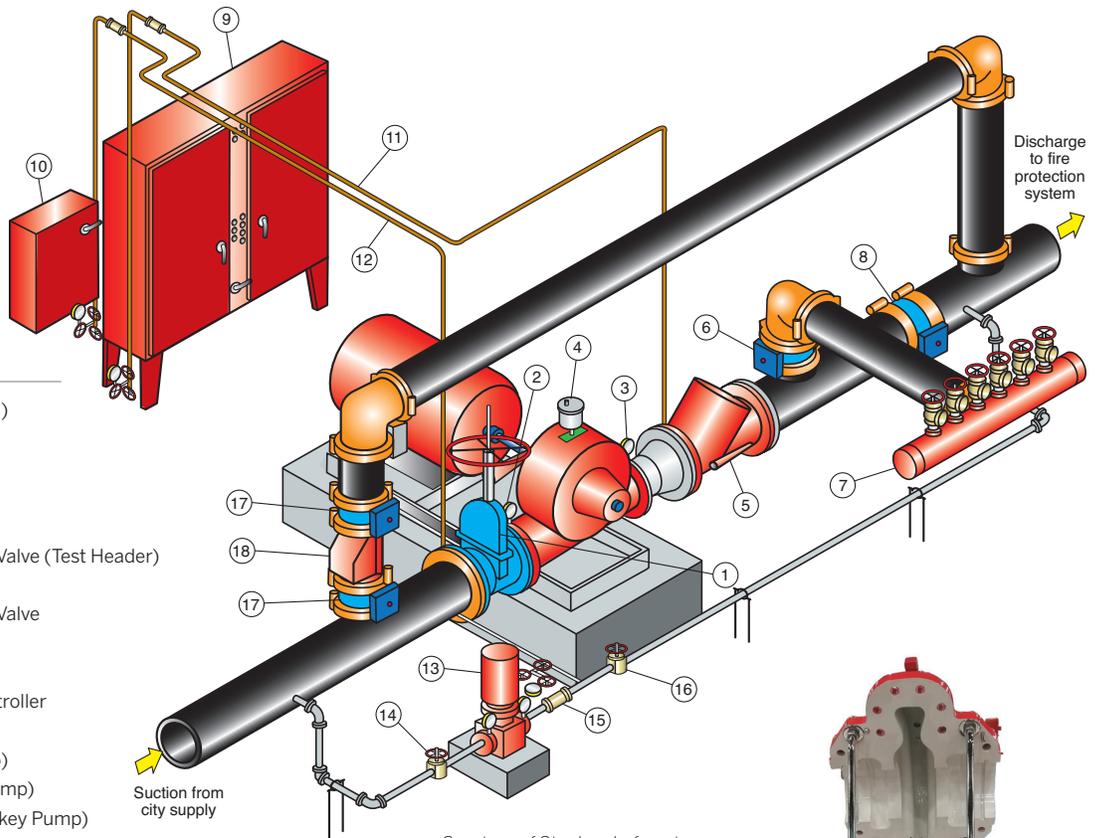


FIRE PUMP BASICS

What is a Fire Pump?

Fire pumps are used to increase the water supply pressure available from public mains, gravity tanks, reservoirs, or other sources. An entire fire assembly consists of a fire pump, driver, controller, and accessories.

1. OS&Y Gate Valve (Suction Control)
2. Suction Pressure Gauge
3. Discharge Pressure Gauge
4. Automatic Air Release
5. Check Valve (Pump Discharge)
6. Indicating Gate Valve or Butterfly Valve (Test Header)
7. Test Header
8. Indicating Gate Valve or Butterfly Valve (Discharge Control Valve)
9. Fire Pump Controller
10. Pressure Maintenance Pump Controller (Jockey Pump)
11. Pressure-Sensing Line (Fire Pump)
12. Pressure-Sensing Line (Jockey Pump)
13. Pressure Maintenance Pump (Jockey Pump)
14. Isolation Valve (Jockey Pump Suction)
15. Check Valve (Jockey Pump Discharge)
16. Isolation Valve (Jockey Pump Discharge)
17. Indicating Gate Valve or Butterfly Valve (Bypass)
18. Check Valve (Bypass)



Types of Fire Pumps

The fire pump itself is just the provider of water flow and pressure; the driver (diesel engine or electric motor) provides the energy needed for the pump to spin and move the water. There are many different types of fire pumps that can be used.

Centrifugal Pump

A centrifugal pump creates pressure by using centrifugal force (outward force created from rotating an object) to increase the velocity of the water through the rotation of the impeller.



FIRE PUMP BASICS *continued*

Vertical Shaft Turbine-Type Pump

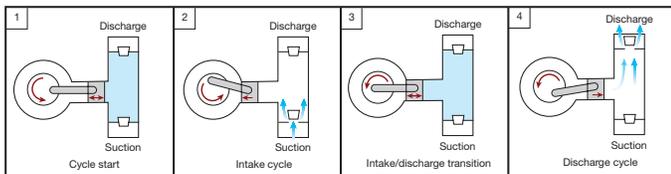
A vertical turbine pump is designed to pump water out of a static source of water (such as a well or an under-ground tank). This is the only pump that doesn't require the source of water have some pressure coming into the pump, known as suction pressure.



Courtesy of Grundfos

Positive Displacement Pump

A positive displacement pump creates pressure by filling a cavity with water and then pushing it out; these types of pumps can create higher pressures than a centrifugal pump. Positive displacement pumps are generally found as part of water mist and foam-based fire protection systems because of these attributes.



Types of Fire Pump Drivers

Power for driving fire pumps is selected on the basis of reliability, adequacy, safety, and economy.

Diesel Engine

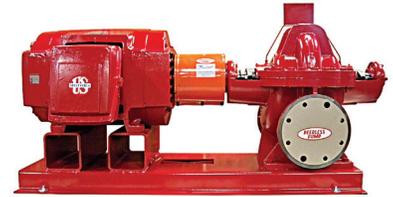
Diesel engines have proven to be very reliable and effective, and they are currently the only type of internal combustion engine permitted by NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*, for driving fire pumps. Diesel engines require batteries to power the electric start of the engine and are required to have a fuel storage tank.



Courtesy of Clarke Fire Protection Products, Inc.

Electric Motor

Electric motors are a reliable, effective means of supplying power to fire pumps. Electric motors need to be supplied by a reliable source of power.



Courtesy of Peerless Pump Company

Steam Turbine

The application of steam as a driver for fire pumps is not as common as that of electric drive or diesel drive, because steam is not as readily available.

Fire Pump Controllers

A fire pump controller is a group of devices that serve to control the starting and stopping of the fire pump driver and monitor the signal and status and condition of the fire pump unit.



ITM

Fire pumps are required to provide water supply pressure or enhance the existing water supply pressure for a fire protection system, such as an automatic sprinkler system. Without a functional pump, the systems will be unable to provide the design pressure and very likely not be able to adequately suppress the fire and because of that, proper Inspection, testing, and maintenance (ITM) is required.

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