



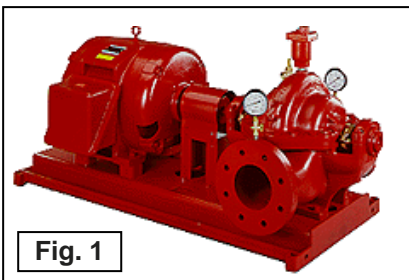
QUICK RESPONSE

Saving life and property through effective licensing, plan review, and inspection of fire protection systems.

March 2008

FIRE PUMPS - TYPES

Various types of fire pumps are used in fire protection systems. Types of fire pumps include: horizontal split case, vertical split case, vertical in-line, vertical turbine, and end suction. These fire pumps may be powered by an electric motor or diesel engine and on rare occasion powered by a steam turbine.



Horizontal split case (Fig. 1) pumps are the most commonly used type of pump. This is due to their ease of access to all working parts, availability of various sizes, ability to efficiently move large amounts of water, and their long term dependability. This type of pump requires a water source that provides a positive suction pressure.



Fig. 2

The functionality of a **Vertical split case (Fig. 2)** pump is similar to that of a *Horizontal split case* pump with the exception of the vertical orientation of the pump and motor. The vertical motor placement offers the advantages of less required floor space and the protection of the motor against potential flooding conditions. This type of pump also requires a water source that provides a positive suction pressure.



Fig. 3

Vertical in-line (Fig. 3) pumps also have a vertical motor orientation. Generally these are smaller, compact pumps requiring less space than other pumps. They are suited for applications with limited space for a pump room. Another benefit includes in-line mounting that generally does away with the need for special pads or foundations. A drawback to the in-line pump is that the entire driver unit must be removed to perform maintenance or repairs. A positive suction pressure is required for this type of pump.

Unlike the previously discussed fire pumps the **Vertical turbine (Fig. 4)** pump does not require a water source that provides a positive suction pressure. As such, this type of pump is able to operate without priming. The typical supplies for these pumps are underground tanks or wells. When operating, these pumps force water up through the column pipe to the pump discharge.



Fig. 4



Fig. 5

An **End suction (Fig. 5)** pump is considered a horizontal pump. *NFPA 20 - Standard for the Installation of Stationary Pumps for Fire Protection* defines *End suction* pumps as follows: "A single suction pump having its suction nozzle on the opposite side of the casing from the stuffing box and having the face of the suction nozzle perpendicular to the longitudinal axis of the shaft". Similar to the *Vertical turbine* pump, the water flowing through an *End suction* pump makes a 90° radial turn from suction to discharge.

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