



ICC CODE CORNER

2012 IFC Code & Commentary

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SECTION 913 - FIRE PUMPS

913.1 General. Where provided, fire pumps shall be installed in accordance with this section and NFPA 20.

❖ This section contains specific installation requirements for fire pumps supplying water to fire protection systems. Inspection, testing and maintenance requirements comply with NFPA 20 unless noted otherwise.

Applicable maintenance standards are also identified. Fire pumps are installed in sprinkler and standpipe systems to pressurize the water supply for the minimum required sprinkler and standpipe operation.

They are considered a design feature or component of the system. Fire pumps can improve only the pressure of the incoming water supply, not the volume of water available. When the volume from a water supply is not adequate to supply sprinkler or standpipe demand, water tanks for private fire protection, improvements in the size and capacity of fire mains or water distribution systems or all of these for the installation of a fire pump are needed. When fire pumps are required to meet the pressure requirements of sprinkler and

standpipe systems, they must be installed and tested in accordance with NFPA 20.

913.2 Protection against interruption of service. The fire pump, driver, and controller shall be protected in accordance with NFPA 20 against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

❖ This section lists hazards that must be taken into account when determining the extent of protection required for the fire pump and its auxiliary equipment.

A pump room in a building that is protected against the listed hazards in compliance with the IBC would be considered in compliance. Because fire pumps are also typically located in separate detached structures, geographical and security issues must also be considered.

913.2.1 Protection of fire pump rooms. Rooms where fire pumps are located shall be separated from all other areas of the building in accordance with Section 913.2.1 of the International Building Code.

❖ The purpose of this section is to require indoor fire pump room separation by fire



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barriers and horizontal assemblies in accordance with the requirements in the IBC. See the commentary to Section 913.2.1 of the IBC for a complete discussion of the requirements.

913.3 Temperature of pump room. Suitable means shall be provided for maintaining the temperature of a pump room or pump house, where required, above 40°F (5°C).

❖As previously noted for sprinkler systems, standpipe systems and other water-based fire protection systems, pump rooms or pump houses must be maintained at a temperature of 40°F (4°C) or above to prevent the system from freezing.

913.3.1 Engine manufacturer's recommendation. Temperature of the pump room, pump house or area where engines are installed shall never be less than the minimum recommended by the engine manufacturer. The engine manufacturer's recommendations for oil heaters shall be followed.

❖If the engine manufacturer's recommended minimum temperature is higher than the minimum established in Section 913.3, that recommendation must be complied with. Maintaining the

desired engine temperature enhances the startability of the engine.

Maintaining water heaters and oil heaters as required for diesel engines, for example, will improve the starting capabilities of the fire pump and reduce engine wear and the drain on batteries.

913.4 Valve supervision. Where provided, the fire pump suction, discharge and bypass valves, and the isolation valves on the backflow prevention device or assembly shall be supervised open by one of the following methods.

1. Central-station, proprietary or remote-station signaling service.
2. Local signaling service that will cause the sounding of an audible signal at a constantly attended location.
3. Locking valves open.
4. Sealing of valves and approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner.

❖As was the case with sprinkler systems, water control valves that are a part of the fire pump installation must be supervised in the open position so that the system is operational when needed and also to reduce the chance of a system failure (see commentary, Section 903.4). In most cases the required water-based extinguishing system, which the fire pump is an integral



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component of, will be electrically supervised. Locking or sealing valves open as the only means of supervision may not be permitted, depending on the type of valve. Section 903.4, for example, specifically exempts jockey pump control valves from being electrically supervised if they are sealed or locked in the open position.

913.4.1 Test outlet valve supervision. Fire pump test outlet valves shall be supervised in the closed position.

❖ Fire pump test outlet valves are for performance testing of the fire pump and do not control the available water supply to either a sprinkler system or a standpipe system. These valves are normally in a closed position and are supervised accordingly.

913.5 Testing and maintenance. Fire pumps shall be inspected, tested and maintained in accordance with the requirements of this section and NFPA 25.

❖ Fire pumps require periodic maintenance so that they will perform as required. Monthly maintenance includes running the pump at churn to exercise the pump and driver. Pump packings and relief valve settings must be adjusted as needed. Annually, the pump must be retested to

verify its proper performance. Pressure, flow, revolutions per minute, voltage and, for electric motor-driven pumps, voltage and amperage readings must be recorded, plotted and compared with original design criteria.

Upon completion of testing and maintenance, the pump must be left in the automatic-start condition, ready for service. Because a fire pump is a component of a water-based extinguishing system, NFPA 25 is applicable. If the fire pump is powered by a liquid fuel, such as diesel, it is important that the fuel supply be replenished as soon as possible after the test.

913.5.1 Acceptance test. Acceptance testing shall be done in accordance with the requirements of NFPA 20.

❖ Chapter 14 of NFPA 20 details the procedure for conducting a fire pump acceptance test. This test is run to determine that the installation matches the sprinkler or standpipe system design criteria, the approved shop drawings and the pump manufacturer's performance specifications. The test is to be conducted in the presence of the building official in accordance with Section 901.5 by the installing contractor and representatives of the pump manufacturer and the controller



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manufacturer. Where the pump engine and/or transfer switch are separately supplied components, their manufacturer representative must also be present

913.5.2 Generator sets. Engine generator sets supplying emergency or standby power to fire pump assemblies shall be periodically tested in accordance with NFPA 110.

❖ This section does not require emergency or standby power for all fire pump installations, but rather requires the testing of on-site generator sets that are used for emergency or standby power to fire pump assemblies. The need for emergency or standby power is typically based on occupancy conditions as indicated in the IBC. Section 403.10 of the IBC, for example, requires standby power for all electrically powered fire pumps in high-rise buildings. A generator set is recognized as a permissible standby power source. NFPA 110 prescribes the operational testing requirements, including load tests, as well as the periodic inspection and maintenance for generator sets.

913.5.3 Transfer switches. Automatic transfer switches shall be periodically tested in accordance with NFPA 110.

❖ Automatic transfer switches are self-

acting equipment that is used to transfer power from a normal source of electrical supply to an alternative supply, such as an engine generator set. NFPA 110 requires a test on each automatic transfer switch that simulates failure of the normal power source. Upon failure, the automatic transfer switch must then automatically transfer the load to the emergency power supply.

Manual transfer switches are not permitted as the only means to transfer power between the normal supply and the alternative supply to the fire pump controller.

913.5.4 Pump room environmental conditions. Tests of pump room environmental conditions, including heating, ventilation and illumination shall be made to ensure proper manual or automatic operation of the associated equipment.

❖ Maintaining suitable environmental conditions is essential to the proper starting capability, performance and safe operation of fire pumps and associated emergency power supplies, where required. Adequate ventilation, for example, is needed to maintain the ambient temperature in the pump room within the range recommended by the



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manufacturer for the emergency power supply equipment.

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The International Code Council, a membership association dedicated to building safety and fire prevention, develops the codes used to construct residential and commercial buildings, including homes and schools. Most U.S. cities, counties and states that adopt codes choose the International Codes developed by the International Code Council.



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