

ELECTRIC/DIESEL FIRE PUMP CHECK LIST



BUILDING NAME: _____ LOCATION: _____

DESIGNER: _____ INSTALLER: _____

SCO REPRESENTATIVE: _____ DATE: _____

PUMP MANUF.: _____ OWNER NAME: _____

INSTALLATION

- Certificate for flushing and hydrostatic test furnished
- Piping been hydrostatically tested at 200 psi or 50 psi above maximum system pressure whichever is greater
- Electric wiring including control wiring, emergency supply been checked by electrical contractor
- Indoor fire pump units separated from all other areas of building by 2-hour rated construction, 1-hour if protected by sprinkler system
- If fire pump unit is located outdoors or if fire pump installation is in a building other than that building being protected by the fire pump, it is located at least 50 feet away from the protected building
- A suitable means for maintaining 40 degrees ambient temperature provided; 70 degrees if driver is diesel engine
- Was a copy of the manufacturer's certified pump test curve available for comparison to the results of the acceptance test?
- Pump room/house provided with normal lighting and emergency lighting
- Pump room/house adequately ventilated and floor is pitched toward drain
- Horizontal pump/driver on common base plate and connected by a listed flexible coupling
- Guard provided for flexible couplings and flexible connecting shafts
- Baseplate securely attached to concrete foundation
- Suction piping is the proper size. (5" for 500 gpm)(6" for 750 gpm)(8" for 1000-1500 gpm)(10" for 2000-2500 gpm)
- OS&Y valve provided in the suction piping
- No backflow prevention or other devices are in the suction piping. (*unless installed per distances as indicated on sketch*)
- No elbows perpendicular to impeller of horizontal pump are within 10 pipe diameters of the intake flange
- Reducer at pump intake is eccentric and installed with flat side up
- A bypass, at least the required size of the discharge pipe, is provided if the suction supply is of sufficient pressure to be of material value without the pump
- Listed indicating type valves are on each side of the check valve in the bypass and are normally open
- A 3-1/2" gauge having a rating of at least 100 psi and a range of at least twice the maximum suction pressure, on suction piping

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- A 3-1/2" gauge having a rating of at least 200 psi and a range of at least twice the working pressure of the pump near discharge casing
- Discharge piping properly sized. (5" for 500 gpm)(5" for 750 or 1000 gpm)(8" for 1250 or 1500 gpm)(10" for 2000 or 2500 gpm)
- Listed indicating valve is installed on the fire protection system side of the pump. See diagram.
- Check valve is provided between the discharge valve and the pump. See diagram.
- No valves are installed in the relief valve piping
- A properly sized relief valve has been provided if pump is diesel driven or if churn pressure can exceed rating of system components. (5" for 500 gpm)(6" for 750 gpm)(8" for 1000 and 1500 gpm)(10" for 2000 gpm)
- Test header piping is of the proper size (4" for 500 gpm)(6" for 750 and 1000 gpm)(8" for up to 2500 gpm)(10" for 2500 gpm)
- Proper number of listed 2-1/2" hose valves is provided on test header (2 for 500 gpm)(3 for 750 gpm)(4 for 1000 gpm)(6 for up to 2500 gpm)
- If test header piping is over 15' in length, the next larger pipe size is used
- A drain valve is located at a low point of the test header pipe between the normally closed test header valve and the test header
- If a flow meter is provided, meter system piping is of the proper size. (5" for 500 and 750 gpm)(6" for 1000 and 1250 gpm)(8" for up to 2500 gpm)
- The sensing lines both tap the discharge pipes between the check valve and the discharge control valve of the pumps they respectively serve. See diagram.
- Both sensing lines are 1/2" brass, copper, or series 300 stainless steel piping, tube, and fittings
- (2) check valves are installed in each pressure sensing line at least 5' apart. See diagram.
- No shut off valves in the sensing lines
- Verify that all valves are supervised open. (test header and flowmeter valves should be supervised shut)
- For electric pumps, verify that the following alarms are operative
 - Pump running
 - Loss of power
 - Phase reversal

Diesel

- For diesel engine drivers, there are two storage battery units provided and rack-supported above the floor, secured against displacement, and located where they are readily accessible for servicing and not subject to excessive temperature, vibration, mechanical injury, or flooding.
- For diesel engine driver, storage battery units are provided with battery chargers specifically listed for fire pump service, arranged to automatically charge at the maximum rate whenever required by the stat of charge of the battery, and arranged to indicate loss of current.
- For diesel engine driver cooled by a heat exchanger, the cooling water supply is from the discharge of the pump and taken prior to the discharge check valve.

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- The heat exchanger piping for a diesel engine driver is equipped with an indicating manual shutoff valve, an approved flushing-type strainer, a pressure regulator, an automatic valve listed for fire protection service, and a second indicating manual shutoff valve.
- Heat exchanger piping of a diesel engine driver is equipped with a pressure gauge installed in the cooling water supply system on the engine side of the last manual valve.
- Heat exchanger piping of a diesel engine driver is provided with a bypass line.
- The outlet provided for the wastewater line from the heat exchanger has a discharge line not less than one size larger than the inlet line, discharges into a visible open waste cone, and has no valves.
- Diesel fuel supply tank has a capacity of 1 gallon per engine horsepower plus 10%
- Diesel fuel supply tank is located aboveground.
- Exposed fuel lines are provided with guard or protecting pipe
- For diesel driven pumps, verify that the following alarms are provided on the controller and operative:
 - Low oil pressure
 - Battery failure/battery missing
 - Shutdown on overspeed
 - High engine temperature
 - Battery charger failure
 - Failure to start
 - Low (less than 2/3) fuel level
- For diesel driven pumps, verify that the following alarms are provided and transmit to a constantly attended locations
 - Controller main switch in a position other than "automatic"
 - Trouble on controller or engine
 - Pump running

TESTING PROCEDURE:

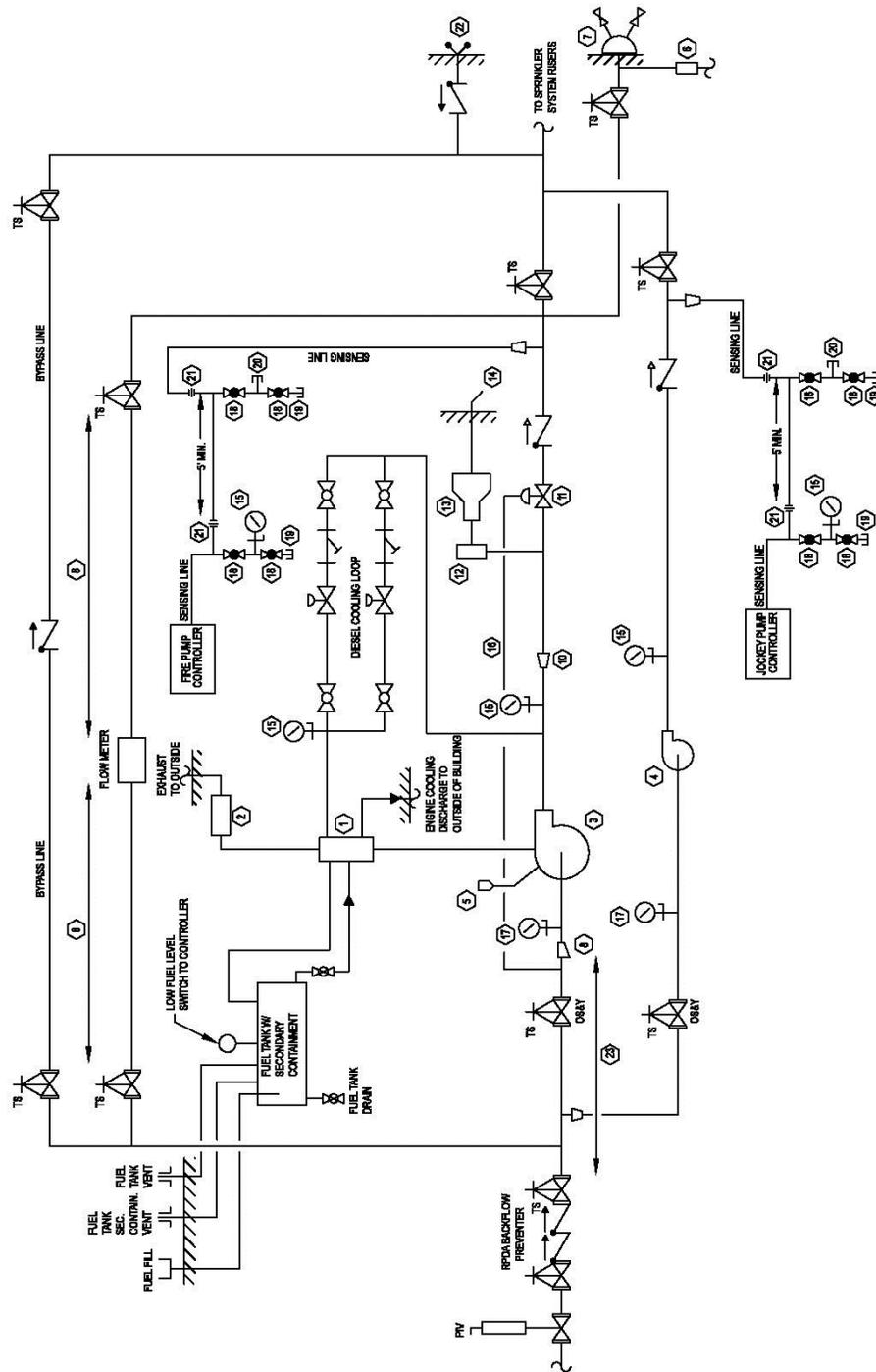
- Start motor 3 times from manual source and run for 5 minutes minimum from main source of power.
 - Start motor 3 times from automatic source and run for 5 minutes minimum from main source of power.
 - Start motor 3 times from manual source and run for 5 minutes minimum from alternate source of power.
 - Start motor 3 times from automatic source and run for 5 minutes minimum from alternate source of power.
- (Note: an engine driver is not required to run for 5 minutes at full speed between successive starts until the cumulative cranking time of successive starts reaches 45 seconds.)
- When normal power was restored, did retransfer from emergency to normal power occur without overcurrent protection devices opening on either line?
 - Upon simulation of power failure, while the pump is operating at peak load, did the transfer switch transfer from the normal power to the emergency source without overcurrent protection devices opening on either line? *(when the primary power source is interrupted while flowing 150% of rated pump capacity, the transfer switch and the alternate power source should be achieved within 60 seconds (low rise) 10 seconds (high rise).*
 - Electric motor phase reversal test on normal and alternate power.

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DIESEL FIRE PUMP

- KEY NOTES**
- 1 FIRE PUMP DIESEL ENGINE
 - 2 MAFFLER
 - 3 FIRE PUMP
 - 4 JOCKEY PUMP
 - 5 AIR RELEASE VALVE
 - 6 AUTOMATIC BALLRIP VALVE
 - 7 PUMP TEST HEADER, SIZE AS REQUIRED BY NFPA 20
 - 8 PROVIDE MINIMUM DISTANCES AS REQUIRED BY FLOW METER MANUFACTURER.
 - 9 ECCENTRIC REDUCER
 - 10 CONCENTRIC REDUCER
 - 11 SUCTION PRESSURE CONTROL VALVE
 - 12 PRESSURE RELIEF VALVE
 - 13 CLOGGED DISCHARGE COME WITH SITE GLASS
 - 14 PIPE FULL SIZE DISCHARGE TO OUTSIDE TO CONCRETE FLASH BLOCK
 - 15 PRESSURE GAUGE WITH GAUGE COOK
 - 16 PRESSURE SENSING PIPE
 - 17 COMPOUND PRESSURE VACUUM GAUGE WITH GAUGE COOK
 - 18 GLOBE VALVE
 - 19 DRAIN
 - 20 PLUG
 - 21 UNION WITH HOMOGENEOUS DIAGRAMS DRILLED FOR 1/2 ORIFICE
 - 22 FIRE DEPARTMENT CONNECTION
 - 23 MINIMUM 10 PIPE DIAMETERS

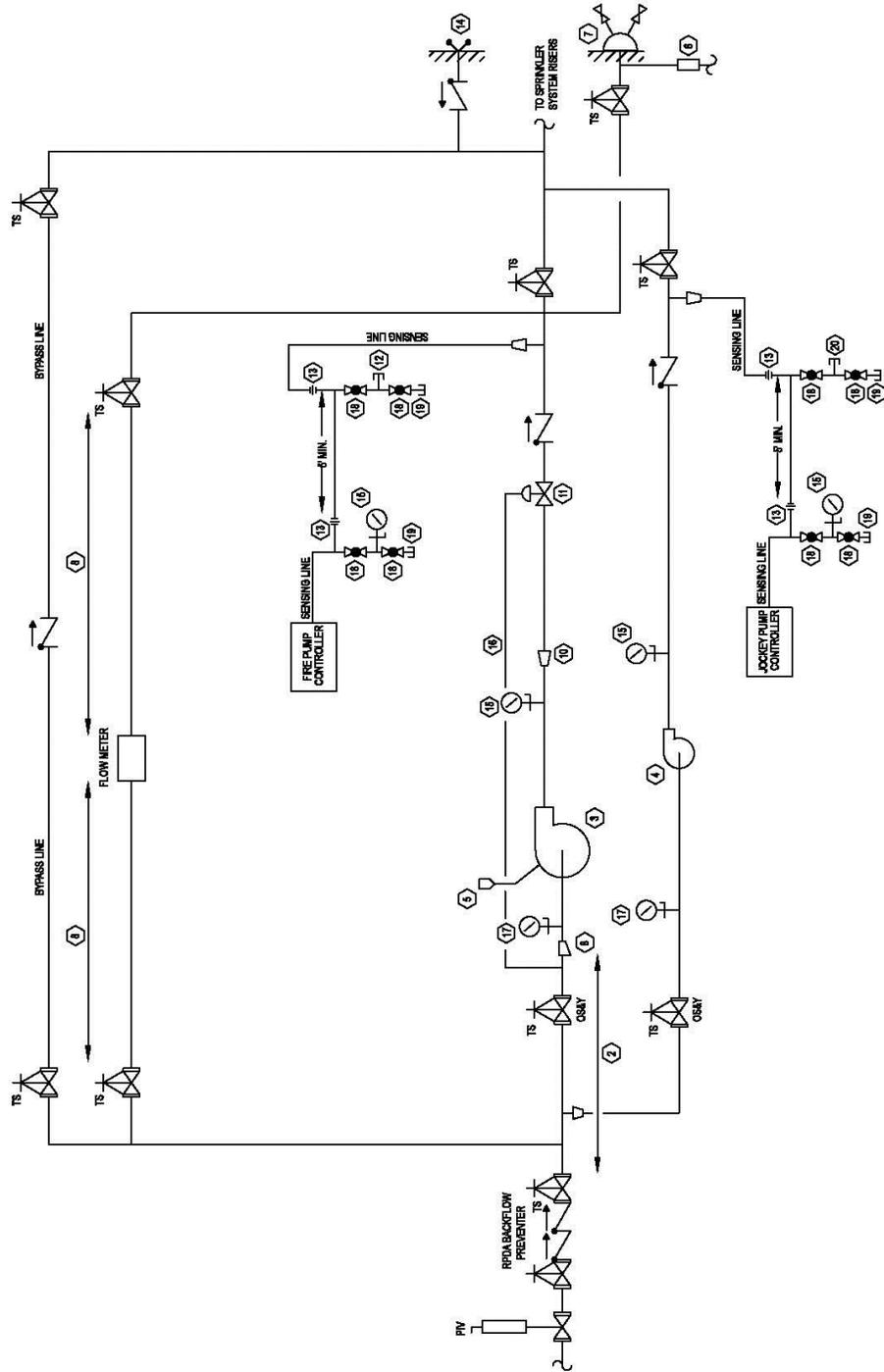


ELECTRIC/DIESEL FIRE PUMP CHECK LIST



ELECTRIC FIRE PUMP

- KEY NOTES**
- 1 ELECTRIC FIRE PUMP
 - 2 MINIMUM 10 PIPE DIAMETERS
 - 3 FIRE PUMP
 - 4 JOCKEY PUMP
 - 5 AIR RELEASE VALVE
 - 6 AUTOMATIC BALL DRIP VALVE
 - 7 PUMP TEST HEADER, SIZE AS REQUIRED BY NFPA 20
 - 8 PROVIDE MINIMUM DISTANCES AS REQUIRED BY FLOW METER MANUFACTURER.
 - 9 ECCENTRIC REDUCER
 - 10 CONCENTRIC REDUCER
 - 11 SUCTION PRESSURE CONTROL VALVE
 - 12 PLUG
 - 13 UNION WITH NONCORROSIVE DIAPHRAGMS DRILLED FOR $\frac{1}{8}$ ORIFICE
 - 14 FIRE DEPARTMENT CONNECTION
 - 15 PRESSURE GAUGE WITH GAUGE COCK
 - 16 PRESSURE SENSING PIPE
 - 17 COMPOUND PRESSURE VACUUM GAUGE WITH GAUGE COCK
 - 18 GLOBE VALVE
 - 19 DRAIN



ELECTRIC/DIESEL FIRE PUMP CHECK LIST



NC Building Code, Chapter 35 Referenced

Projects permitted under NC Building Code 2009 - NFPA20 2003

Projects permitted under NC Building Code 2012 - NFPA20 2007

REFERENCE INFORMATION TO ASSIST SYSTEM INSPECTION

*Note: These items are not intended to meet all of the criteria for NFPA 20 testing requirements.