

Fire Pump Controller

Diesel Engine Controller For Engine Driven Fire Pumps

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LX-2000

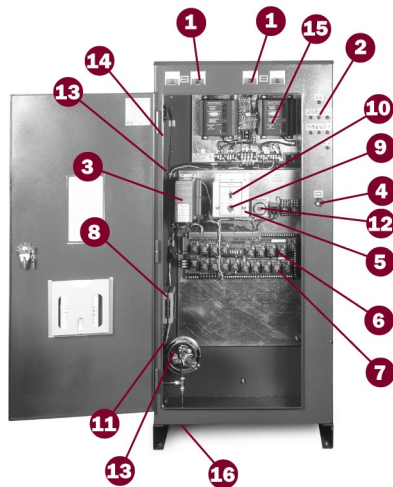
The LX-2000 Fire Pump Controller is a combined automatic and manual diesel engine driven fire pump controller. These controllers are specifically designed and tested to be used with 12V or 24V fire pump diesel engines. They are available for either positive or negative ground systems.

Included as standard in the LX-2000 controller is the Hubbell LX-750, a dual, current limiting, switch mode battery charger which assures both sets of batteries are properly and adequately charged at all times.

These controllers include all the required features to provide start and stop signals to the engine, monitor engine conditions and to provide audible and visual alarms for engine and controller conditions.

Approvals

Hubbell's fire pump controllers are listed by Underwriters' Laboratories, Inc., ULC, CSA and approved by Factory Mutual and New York City. They are built to meet or exceed the requirements of NFPA 20 (Installation of Centrifugal Fire Pumps), NFPA 70 (National Electrical Code). NEMA member.



- 1 Battery Voltmeters & Ammeters
- 2 Control Status & Failure Lamps
- 3 Cranking Sequence/Logic Boards
- 4 Manual Stop Pushbutton
- 5 Battery Circuit Breaker
- 6 Control Relay Mother Board
- 7 Field Wiring Terminal Blocks
- 8 Pressure Recorder
- 9 Manual Start Selector
- 10 Selector Switch (Auto, Test, Off, Manual)
- 11 Solenoid Valve (behind door, mounted on outside of cabinet)
- 12 Weekly Test Timer
- 13 Pressure Switch
- 14 Horn (behind door)
- 15 Dual Battery Charger
- 16 Plumbing Connection

Standard Features

- ▶ Rugged NEMA Type 2, drip-proof enclosure with removable mounting feet.
- ▶ Maximum utilization of solid state components.
- ▶ All Logic as called for by Selector Switch.
- ▶ Battery low voltage detection and lockout.
- ▶ Tamper proof cranking sequence with dead battery lockout and sequence changeover to alternate battery.
- ▶ Oil pressure bypass delay.
- ▶ Audible and Visual Alarms — Failure To Start, Low Oil Pressure, High Water Temperature, Battery Failure Of Either Battery, Engine Overspeed (Alarm and Shutdown) Battery Charger Failure, and Control Switch Position.
- ▶ NO & NC contacts for remote indication of control switch mis-set, engine start, and trouble.
- ▶ 5 position selector switch provides "Auto", "Test", "Off", "Manual 1", "Manual 2" operational modes.
- ▶ Dual Battery Charger - built in 12V or 24V with solid state automatic proportioning of output and dual ammeters and voltmeters.
- ▶ Weekly test timer.
- ▶ Manual stop pushbutton.
- ▶ Pressure recorder, 7 day, electric drive.
- ▶ Lockout circuit.



Options

- Remote operation.
- Automatic Stop, 15 or 30 minute time delay.
- Special Plumbing - 600 PSI or Stainless Steel plumbing for salt water applications.
- Sequence starting.
- Control transformer (when AC voltage >115V).
- Heater with switch, thermostat or humidistat.
- AC power failure start relay (delay up to 15 seconds for auto start and/or alarm).
- Pump house alarm and signals—low fuel level, low room temperature, relief valve open, low reservoir, empty reservoir, flow meter on, low suction pressure.
- Contacts for individual remote engine trouble signals.
- Optional enclosure designs include NEMA Types 3R (Outdoor), 4 (Watertight), 4X (Watertight, Corrosion Resistant, Stainless Steel) and 12 (Dust and Oil Tight).
- For additional options, see price list 6200 or consult the factory.

Dimensions

Weight	350#
Width	29"
Height	64"
Depth	14"

Standard enclosure – NEMA Type 2. Special enclosures fabricated on request.

Other Fire Pump Controllers

In addition to the LX-2000, Hubbell offers the following full service electric fire pump controllers: LX-1100 S²MC Soft Start/Stop, LX-1200 Across-the-Line, LX-1300 Autotransformer, LX-1400 Primary Resistor, LX-1600 Manual Wound Rotor Motor, LX-1700 Part Winding, LX-1800 Wye-Delta Closed Transition, LX-1900 Wye-Delta Open Transition Controller and LX-1500 Limited Service Controller. All Hubbell electrical fire pump controllers are available with an automatic transfer switch designed specifically for fire pump applications. Consult the factory or your local sales office for information.

Operation

Automatic Operation

LX-2000 controllers automatically start the fire pump diesel engine to provide the required pressure for proper operation of the fire sprinkler system. The start signal is usually received from a water pressure switch in the controller. The switch activates the controller when a reduction of pressure occurs in the fire sprinkler system. Other provisions may be included to start the engine. These may include remote manual start or special controls such as deluge valve switches.

When the LX-2000 detects a drop in system water pressure it initiates automatic start-up of the diesel engine by alternately cranking the engine from two independent sets of batteries.

The cranking operation consists of six crank periods of 15 second durations, separated by five rest periods of 15 second durations. If the engine does not start within the cranking cycle a "Fail to Start" light illuminates in conjunction with the activation of an audible alarm.

If battery voltage drops below 50% of nominal at any time during the cranking cycle, the LX-2000 Controller automatically alters the cranking sequence by excluding the faulty battery and selecting the alternate battery for the remainder of the crank cycle. An audible alarm is also actuated to indicate battery failure.

Engine start automatically terminates the crank cycle, and with the engine running, the controller continues to monitor system operation for any failures.

Solid State circuitry proportions the output of the dual battery charger to quickly recharge the battery which is lowest and then maintains both batteries at full charge.

Manual Operation

The engine may be started manually, if desired, by selecting one of the dual batteries and depressing the "Start" button. *Note — The automatic control circuits are by-passed in this mode. All engine alarms, however, are operational in the manual start mode.*

A manual check of controller operation can be accomplished by simply energizing the drain valve solenoid to simulate a drop in system water pressure. Weekly test starts en-

sure reliability. Engine operation for a 30 minute period is recommended weekly. Weekly test start of the engine is easily accomplished by using a programmed timer to energize the drain valve solenoid. The controller automatically stops the engine upon completion of the 30 minute test start period. Allowing the controller, engine and pump to operate periodically increases system reliability inasmuch as any minor system problem that develops can be caught prior to an emergency start-up. *Note — All alarm circuits remain operational during the 30 minute duration of the test start period.*

Manual Stop

The LX-2000 Controller is also wired for easy manual shutdown. This is accomplished by simply placing the control switch in the "Off" position, or by depressing the "Stop" pushbutton while the controller is in the automatic mode. The "Stop" pushbutton, located on the front of the controller cabinet, will only stop the engine if all engine start signals have been satisfied or removed.

Since the controller does not have to be opened for manual shutdown of the engine, the possibility of the selector switch being left in the "Off" position is minimized.

For additional information on the LX-2000 please request publication drawing PC-90342-001/-002 (schematic), PC-90112-000 (outline) and PC-90341-003 (field connections).



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