

LBW-Series

50KW-2500KW Water-Cooled Load Bank

Overview

- Water-cooled Load Bank System
- 50-2500KW, to 600VAC, to 250VDC
- Compact, space-efficient design
- Totally quiet operation
- Suitable for use with chilled-water systems
- Digital control

Description

The Simplex LBW-Series comprises a line of water-cooled Load Banks, 50-2500KW, to 600VAC, 250VDC.

The LBW-Series is an attractive alternative to air-cooled Load Banks: it is perfectly quiet and cool running; it is extremely compact and may be installed in otherwise unutilized space; it is virtually maintenance free.

The LBW-Series is more reliable and maintenance free than a comparable air-cooled Load Bank due to two principle factors:

1. The water-cooled unit can be installed indoors in a controlled environment versus an outdoor installation which is exposed to the elements.
2. The water-cooled Load Bank operates at much lower temperatures than an air-cooled unit.

Although high in unit cost than a comparable air-cooled Load Bank, the water-cooled unit can be significantly less costly to install. The water-cooled unit may require far less connection cable/conduit since it can be installed indoors, possibly nearer to the power source.

The LBW-Series is ideal for installation in buildings in central-city areas, industrial parks or office complexes where an outdoor air-cooled Load Bank would be architecturally obtrusive or impossible to install due to space restrictions.

The LBW-Series consists of an assembly of high-pressure load cells in a structural steel tubing frame, clad with steel panels. Coolant flow is via intake and exhaust manifolds with feeder lines to each load cell. Coolant flow is controlled by a main electrically operated valve.



LBW-400

The load cells are rated for operating pressures up to 180PSI. High pressure systems are available. Each load cell includes sensors for overtemperature, overpressure, loss-of-flow, and low coolant level.

Load elements are water immersion power resistors. Discrete, branch circuit elements with screw plugs are utilized to permit replacement of individual elements.

Load control is via magnetic contactors. Available load step ratings are 25KW, 50KW, or 100KW.

Comprehensive branch circuit fusing of load elements is provided. Each 50KW branch circuit is individually protected by current-limiting type fuses.

Control power for the Load Bank is provided by 120V, transformer isolated, internal power supplies. Control power

can be derived internally, from the connected power source or from an external source.

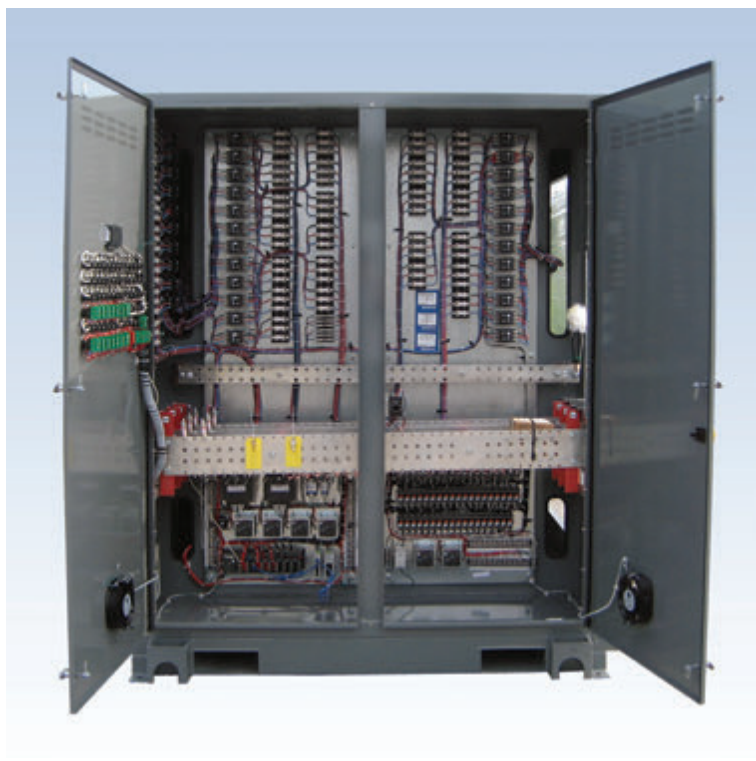
Power distribution within the Load Bank is via a 3-phase main copper load bus. Field power connections are made to the bus.

The LBW-Series is suitable for use with a variety of cooling media, including city water (nominal 50PSI), closed loop chilled water systems, heat exchanger systems, pumped water from natural sources (lake, river, etc.) or brine or sea water (requires optional nickel alloy construction and elements).

Limited temperature rise-high flow rate systems are available for use with chilled water systems. These Load Banks limit temperature rise to a nominal 12.5°F and consequently accept very high flow rates (50 GPM per 100KW).



LBW-400 Control Section



LBW-2500 Control Section

Load Elements

Water-immersion type, screw-plug mounting

Water Connections

2", 4", or 6" as required by flow

Coolant Flow Control

Main electrically operated valve

Load Element Circuit Protection

Branch circuit fuses, each 50KW branch 600V, 200KAIC branch circuit fuses

Power Wiring

150°C insulated

Power Connection

Bus bar

System Protection

Sensed at each load cell: overpressure, overtemperature, low coolant level, loss-of-flow. Lockout and alarm at control panel.

Controller

Simplex D-Series Digital Load Bank Controller: PLC based control system with color - TFT LCD touchpanel operator interface with bright colors, excellent contrast and wide viewing angle, perfect for bright sunlight or low light conditions. Network capable (MODBUS RTU over RS-485 or Ethernet) to integrate digital power meters, data outputs from generator controllers, thermocouple inputs, and to integrate single or multiple control stations. The D-Series will also integrate to a PC or can be assigned an IP address for remote access.

Simplex Load Banks can be used to satisfy the requirements of the National Fire Protection Association (NFPA) for emergency stand-by power systems.



LBW-2500 (half module shown)

| SPECIFICATIONS | |
|---------------------------------|--|
| CAPACITY: | 50KW-2500KW, Resistive, 1.0 p.f. Greater than 2500KW available as multiple modules. |
| VOLTAGE: | to 600VAC, to 250VDC |
| FREQUENCY: | 50Hz, 60Hz and 400Hz |
| LOAD STEPS: | 50KW resolution standard. 1-5-10-25KW resolution available. |
| COOLANT: | City water, closed -loop heat exchanger, natural water (river, lake, etc.) brine*, sea-water* |
| COOLING CHARACTERISTICS: | Normal Duty 10 GPM per 100KW, 62.5°F rise Minimum Cooling Requirements 6.25 GPM per 100KW, 100°F rise, outlet not to exceed 170°F Special Duty, Chilled Water Systems 50 GPM per 100KW, 12.5°F rise Coolant Requirements KW = GPM x Temp. Rise (F) x .16 GPM = KW / (Temp. Rise x .16) Temp. Rise (F) = KW / (GPM x .16) Particles must be less than 150 microns or a filter is required |
| PRESSURE DROP: | 5 PSI or less |
| CONTROL POWER: | Internal or external source, transformer isolated, 120V |
| PRESSURE: | 180PSI, optional to 1500 PSI |
| DUTY CYCLE: | Continuous |

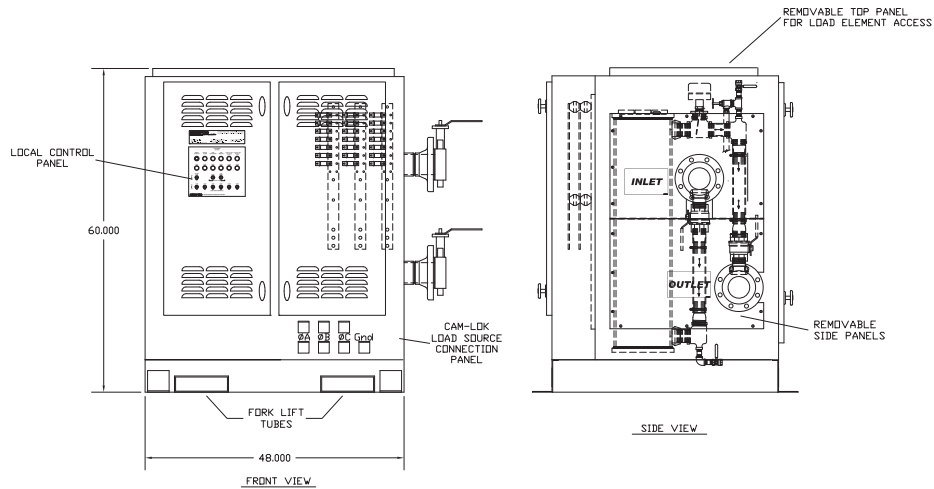
*Requires optional nickel alloy construction elements.

LBW-Series

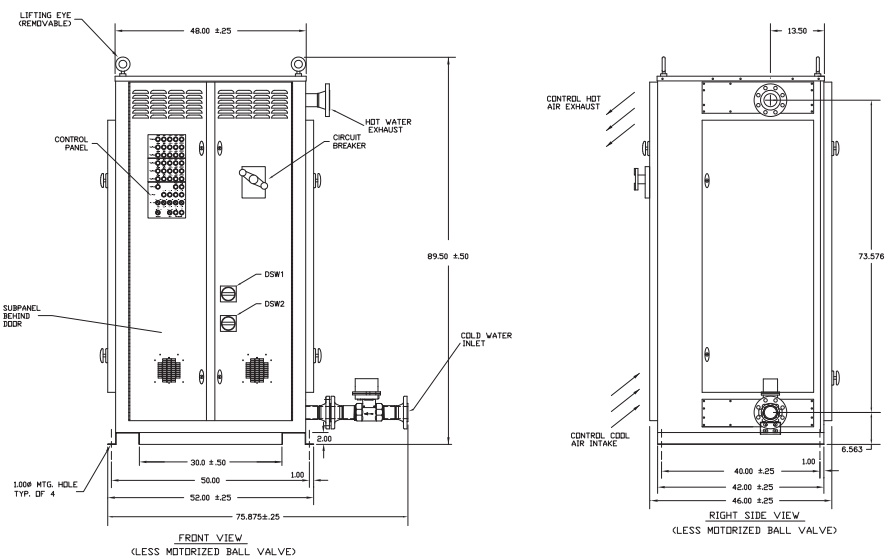
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SIMPLEX®

LBW-400



LBW-600



LBW-2500

