

Simplex PowerStar Quick Start Guide

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DESCRIPTION

Simplex Load Banks are precision test instruments specifically designed to apply a discrete, selectable resistive electrical load to a power source while measuring the response of the generator to the applied load. They also provide a means for routine maintenance exercise to assure long term reliability and readiness of the standby generator. Exercise Load Banks eliminate the detrimental effects of unloaded operation of diesel engine generators.

This fully self-contained Load Bank includes test instrumentation, cooling system, rugged load elements, load-application control devices and automatic system protection devices.

The resistive load elements in this Load Bank are cooled by a horizontal forced air system. The load system is connected to the test source via the load cables. This Load Bank is equipped with automatic safety systems which de-energize all load steps when conditions are present which could damage the Load Bank or present a safety hazard to the operator. A Cooling Failure de-energizes any load applied when cooling of the load elements becomes inadequate due to fan failure or high exhaust temperature.

PRIMARY INSPECTION

Preventative visual inspections of the shipping crate and Load Bank is advised. Physical or electrical problems due to handling and vibration may occur. Never apply power to a Load Bank before performing this procedure. The following five point inspection is recommended before installation, and as part of the 50 hr. / 6 month maintenance schedule or as a Load Bank is relocated:

1. If crate shows any signs of damage examine the Load Bank in the corresponding areas for signs of initial problems.
2. Check the entire outside of the cabinet for any visual damage which could cause internal electrical or mechanical problems due to reduced clearance.
3. Inspect all relays and control modules. Make sure all components are secure in their bases and safety bails are in place. Spot check electrical connections for tightness. If any loose connections are found inspect and tighten all remaining connections.
4. Examine all accessible internal electrical components such as fuses, contactors and relays. Check lugged wires at these components.
5. Visually inspect element chamber for foreign objects, broken ceramic insulators, mechanical damage.

If any problems are observed during Primary Inspection call the Simplex Service Manager at 217-483-1600 (24hrs.)

LOAD BANK LOCATION

The load elements in this Load Bank are cooled by a horizontal forced air system which discharges through the front of the cabinet. Location of the Load Bank is of prime importance and is one of the most critical factors involved in safe operation. The Load Bank must be positioned and installed according to large airflow requirements. Never point the exhaust at a nearby surface or object which may be adversely affected by high temperature. Never operate the Load Bank in a confined space without regard for adequate intake of air and provision for exit of high temperature exhaust. Consider that the Load Bank and a nearby generator set may have to compete for cooling air. Never bounce hot exhaust air off nearby objects and allow it to re-circulate through the cooling system. Never operate the Load Bank in proximity to a sprinkler system.

MAINTENANCE

The Load Bank has been designed to require minimum maintenance. All components have been chosen for a long, reliable life. Two basic intervals of maintenance are required: each operation and every 50 hours or 6 months (which-ever comes first).



Always remove all power from the load bus and all fan/control power before servicing the Load Bank. Never operate or service a Load Bank that is not properly connected to an earthground.

EACH OPERATION

The air intake screens and louvers, fan and cooling chamber, and exhaust openings must be checked for any obstructions or foreign objects. Due to the high volume of air circulated, paper and other items can be drawn into the air intakes. During Load Bank operation insure that air is exiting from the exhaust vent. The load branches should be checked for blown fuses or opened

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load resistors. To check the fuses or load resistors, operate the Load Bank from a balanced 3-phase source and check the three line currents. The three current readings should be essentially the same. If a sizeable difference is noted one or more load fuses or load resistors may have malfunctioned.

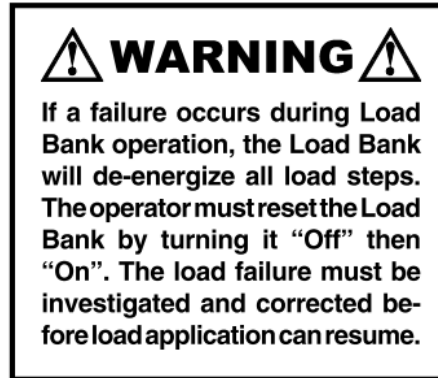
EVERY 50 HOURS OR 6 MONTHS

Check the tightness of the electrical connections. The expansion and contraction caused by Load Bank operation may result in loose connections. The vibrations caused by the cooling fan may also loosen electrical connections. If the Load Bank is transported “over the road”, the electrical connections should be checked for tightness at a shorter-than-normal time interval. See “Primary Inspection”.

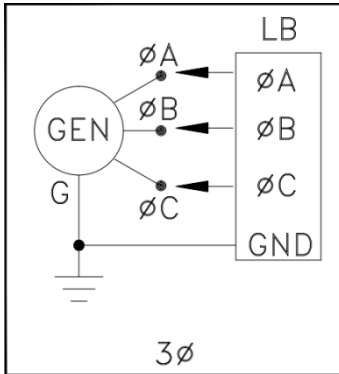
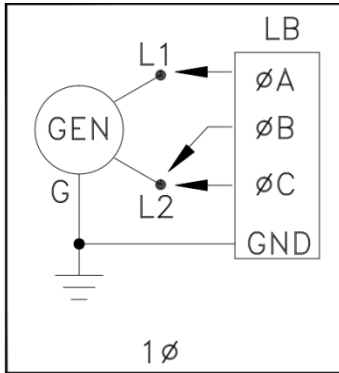


FAILURE SUBSYSTEM

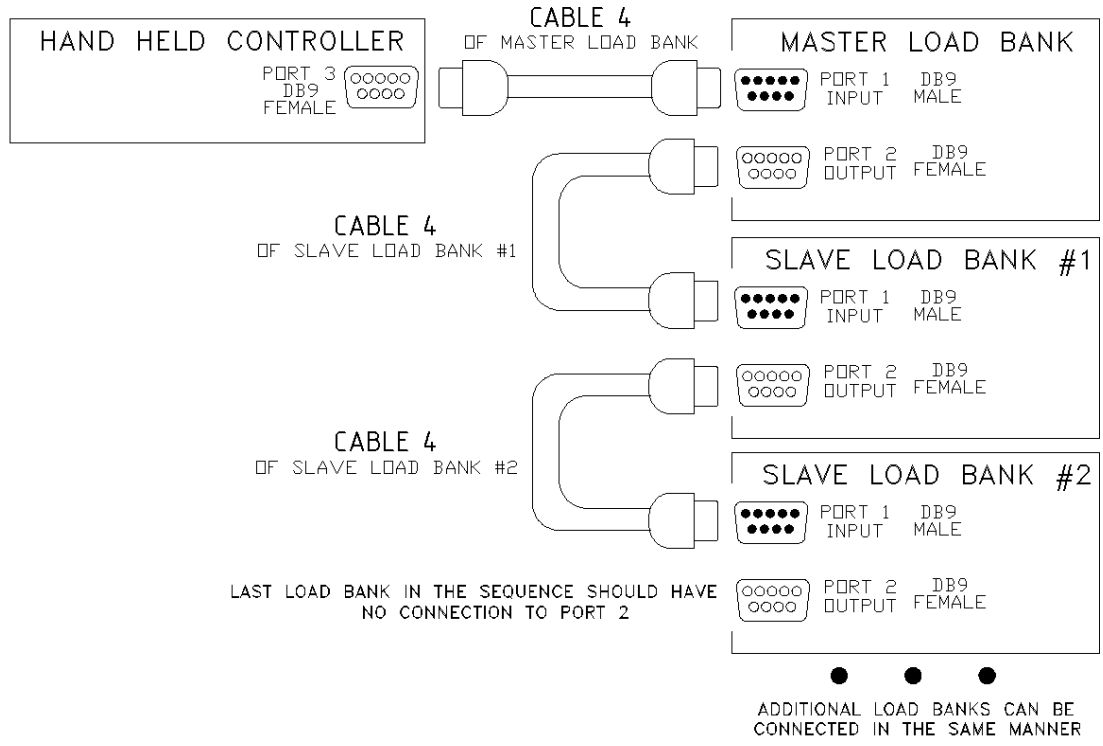
Excessive intake/exhaust temperatures, any reduction in cooling air flow, or a Loss of Communication from either the hand held controller or the controlling load bank is indicated by the illumination of the “Failure” indicator on the hand held remote control. Any of the above conditions will result in the Load Bank entering a failure state. The “Failure” indicator on the hand held controller will illuminate and the load de-energizes. All load steps are locked out until the problem is corrected. Until the failure is investigated/corrected and the control system is reset the load cannot be reapplied.



Generator Connection Diagram



Control Connection Diagram



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OPERATION

1. Confirm the test source is properly grounded and ground the Load Bank to its own independent ground.
2. Confirm the Control Power, Master Load and all load step switches are in the “Off” position.
3. See Control Section Drawing:
 - a. Using appropriate cables, connect the load source to the Cam-Type Connectors on the Load Bank.
 - b. Place the Fan/Control Power Plug into a 120V, 15A maximum external receptacle.
4. Place the “Control Power Switch” located on the remote control in the “On” position.
5. Visually observe correct fan operation and investigate any unusual fan related noises.
6. Check air intake for obstructions and confirm positive air flow.
7. Verify the “Normal” indicator is shown before proceeding.
8. Start-up generator or bring other test source on line.
9. Adjust power source voltage and frequency.

Individual Unit Control



10. Select the desired load steps by placing them in the “On” position.
11. Place the “Master Load” switch in the “On” position. *This simultaneously applies all of the selected load steps. Trim is achieved by flipping the load steps “On” and “Off” while the “Master Load” is in the “On” position.*
12. Adjust source voltage and load. Monitor as needed.

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Multiple Unit Control



10. Select the desired load steps by pressing the Load Entry button and enter the desired load.

11. Place the "Master Load" switch in the "On" position.

This simultaneously applies the entered load. Trim is achieved by pressing the Load Entry button and entering a new value as the "Master Load" is in the "On" position.

12. Adjust source voltage and load. Monitor as needed.

Metering Screen



The Metering Screen is accessed by pressing the F5 function key. Return to Main Control Screen by again, pressing the F5 button.

SHUTDOWN

1. De-energize the load.
2. Run the cooling fan for 5 minutes to assure a thorough cool down of all load elements (optional).
3. Place the "Control Power" switch in the "Off" position.