



460KW-560KW-660KW Portable Load Banks

Description

The Simplex **ELECTRA** is a very large capacity, high performance Portable Load Bank designed to provide the manufacturers, distributors and users of large AC generators and UPS systems with sophisticated testing capability.

The **ELECTRA** provides 460KW, 560KW or 660 of resistive load at both 240V and 480V, 3-phase. It can be applied at any AC voltage to 480V AC, 50-60-400 Hertz, single or 3-phase. Load step resolution is 5KW.

The **ELECTRA** is a totally self-contained testing system. It includes all resistive load elements, load control devices, load element circuit protective devices, connection cable set, cooling system, malfunction detection system, control power supply and test instrumentation.

Principal Sub-Systems

Load Elements: Simplex "Powr-Web" chromium alloy, open wire, continuously supported, power resistor. See page 2 for details.

Load Control: 3-Pole magnetic contactors.

Load Element Circuit Protection: Branch circuit fuses. One set of fuses each 50KW branch. Fuses are current limiting type, 200,000 AIC, 600V, enabling safe use on large generating or UPS system. See page 2 for details.

Cooling System: 3-phase, direct-drive fan, 12,500 CFM.

Malfunction Detection System: Protection against fan failure, high exhaust air temperature, high intake air temperature, overvoltage and fan reversal.

Control Power Supply: Dual voltage control power transformer with supply power switchable to internal (generator) or external.

Test Instrumentation: 3½", ± 2% accuracy panel meters. Options available.

Remote Control: Load control switch panel removable for remote operation. Connection plugs will accept optional remote control cables.

Connection: 12' connection cable set including 3-phase power cables, ground cable and external control power cord, stored behind hinged door in rear compartment.

Features

- High capacity, dual voltage
- Fine load step resolution
- Toggle switch load control
- Comprehensive branch circuit fuse protection of load elements
- "Powr-Web" load elements
- Totally self-contained
- Fan/control power-source is operator selectable:

Internal power: Fan and control circuits powered internally, does not require external power.

External power: Fan and control circuits powered from external 3-phase outlet or other external source

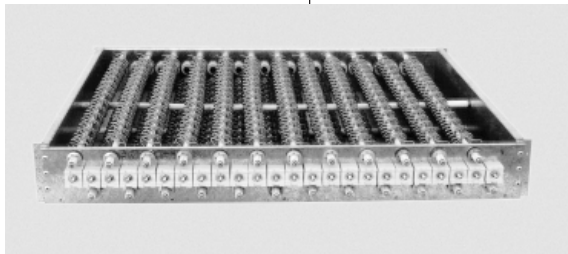
- Integral high capacity cooling fan
- 3-phase connection cable set stowed in cable compartment
- Compact, rugged, portable enclosure
- Double wall construction for cool exterior
- Control compartments thermally insulated from load elements
- Hinge-open control panel doors
- Comprehensive automatic malfunction detection system with alarm lights
- Test instrumentation
- Remote control capability



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

SIMPLX®

Powr-Web Resistive Load Element

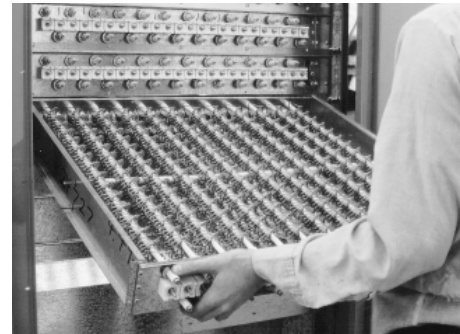


Description

Simplex Load Banks utilize "Powr-Web" load elements. The "Powr-Web" is an advanced design, air-cooled power resistor specifically designed for application to Load Bank systems. The "Powr-Web" is conservatively operated at half the maximum temperature rating of the alloy and features a short-circuit-safe design based on continuous mechanical support of the element by high temperature, ceramic clad stainless steel rods. The "Power Webs" are assembled into discrete trays which are assembled in a vertical "stack." Each tray in the "stack" is independently serviceable without disturbing adjacent trays.

Specifications

- Alloy: FeCrAl
- Maximum continuous temperature rating: 1920°F



- Maximum operating temperature as applied in Load Bank: 1080° F
- Cool down time from operating to ambient temperature is 10 seconds.

Construction

- Precision calibrated to specific ohmic value
- Welded lugs each end
- All load elements are continuously supported by vibration resistant, ceramic clad, stainless steel through-rods.

Branch Circuit Fuse Protection



The load of a resistive load bank consists of a dense array of open, uninsulated power resistors mounted within a cooling air stream. Since the elements are electrically live, it is possible for a foreign object to penetrate the element array and create a short circuit of adjacent elements or a short to ground. Since the elements are densely packed, it is possible for a short circuit, once started, to rapidly propagate through the entire element array. As a load bank represents a relatively large amount of power concentrated within a relatively small volume, a self-propagating, cascading short circuit would have catastrophic results.

Simplex virtually eliminates the dangers of short circuit through the use of branch circuit fuse protection of the load elements. Per NEC 110-10, protective devices shall clear a fault without "extensive damage" to the circuit components. A Simplex Load Bank is divided into branch circuits of not more than 50 KW each.

Each branch circuit is then individually fused. In a load bank, a developing short circuit can be current limited, initially, by the unaffected portion of the shorted load element. Closely scheduled branch circuit fuse protection as applied by Simplex can sense a low level developing fault, clear the fault and isolate the failed elements before propagation occurs. Since the load of a load bank is fixed in value and is either full-on or full-off, any excursion from rated current represents a fault. For this reason, Simplex Load Banks utilize closely scheduled, very fast acting, single-element fuses. In order to permit the application of a load bank to high capacity systems having a high available short circuit current, Simplex utilizes current limiting fuses which have the maximum U.L. interrupting rating of 200,000 amperes. This rating affords compliance with NEC sections 110-9 and 230-98 in today's large capacity systems and meets the requirements of future system expansion.

The **ELECTRA** includes an integral operators control panel which consists of the following:

1. AC instrumentation, 3½", ± 2% accuracy panel meters:
 - AC voltmeter with 3-phase transfer switch
 - AC ammeter with 3-phase transfer switch
 - Frequency meter
2. Load step control toggle switches
3. Master load control toggle switch
4. Control power switch

5. Control power voltage selector switch
 6. Fan reversal switch
 7. Operational indicator lights:
 - Normal operation
 - Overvoltage
 - Fan failure/overtemperature
- Optional instrumentation and controls available - see option list on page 4

Control Panel



Capacity Detail

KW(1.0pf)	Voltage (AC)					
	480V,3Ø	416V,3Ø	380V,3Ø	240V,3Ø	208V,3Ø	240V,1Ø
ELECTRA-460	460	345	288	460	345	307
ELECTRA-560	560	420	351	560	420	374
ELECTRA-660	660	495	414	660	495	440

General Specifications

Load Step Detail

Qty.	KW Each Step (1.0 p.f.)					
	480V,3Ø	416V,3Ø	380V,3Ø	240V,3Ø	208V,3Ø	240V,1Ø
1	5	3.75	3.1	5	3.75	3.3
1	10	7.5	6.3	10	7.5	6.7
1	20	15	12.6	20	15	13.3
1	25	18.75	16	25	18.75	16.7
2	50	37.5	31	50	37.5	33.3
3-4-5	100	75	63	100	75	66.7

Cooling System

	HP	CFM	ΔT, Nom.	ΔT, Max.
ELECTRA-460	3.0	9,000	153°F	290°F
ELECTRA-560	3.0	10,500	160°F	325°F
ELECTRA-660	5.0	12,500	158°F	350°F

Voltage:

- Dual Voltage: 240/480V AC, 3-phase
- Operational at any voltage to 480V AC maximum, single or 3-phase

Frequency:

- 50, 60, 400 Hertz

Connection:

- 3-wire plus ground

Time Rating: Continuous

Ambient Air Temp.: 120°F max

Control/Fan Power:

- 230/460V, 3-phase, 60 Hertz
- 190/380V, 3-phase, 50 Hertz
- Switchable internal (generator)- external
- 230/460-115V control power transformer internal to Load Bank.
- 15' external power cord

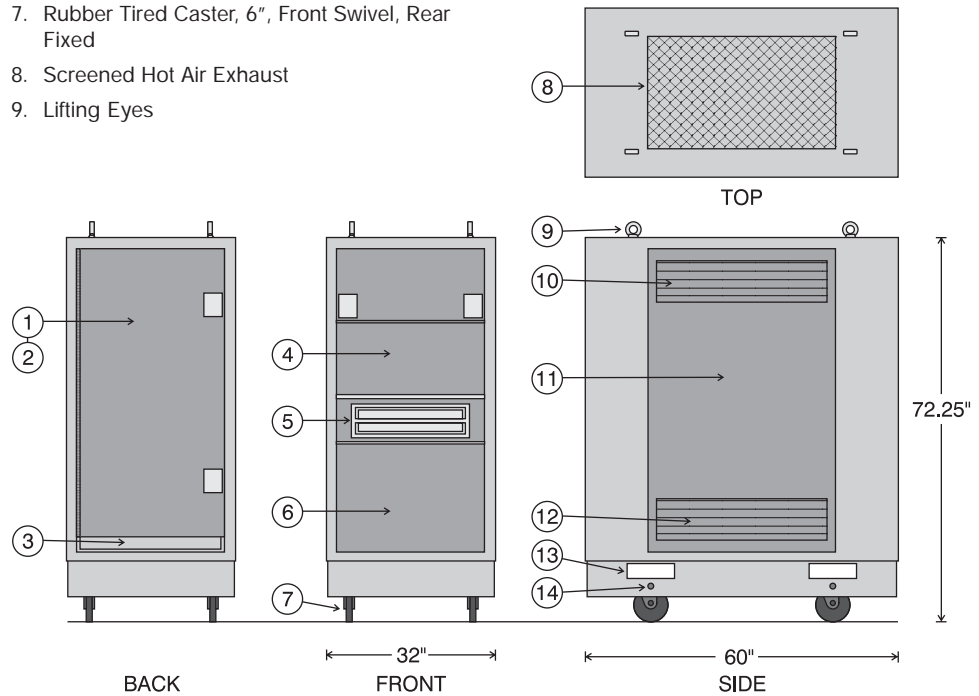
Fault Rating: 200,000 AIC

Insulation Rating: 600V, 302°F

Net Weight: 1675 lbs.

Dimensions and Key Features

1. Cable Compartment behind Hinged Door
2. Behind Cable Compartment Removable Access Panel to Rear Distribution Bus, Fuses, Contactors
3. Cable Exit-Allows Rear Door to Close
4. Instrumentation & Controls behind Doors
5. Recessed Handle Pocket
6. Removable Access Panel to Front Distribution Bus, Fuses, Contactors
7. Rubber Tired Caster, 6", Front Swivel, Rear Fixed
8. Screened Hot Air Exhaust
9. Lifting Eyes
10. Ventilation Louvers
11. Removable Access Panel, Both Sides, to "Powr-Web" Load Element Trays
12. Cooling Air Intake Louvers
13. Fork Lift Channels
14. Alternate Location of Lifting Eyes Used for Tie-Down Rings



Options

Remote Control Cables

Auxiliary Load Banks to increase capacity:

- 650 KW auxiliary resistive Load Bank with 50 KW load step resolution, dual voltage
- 550 KW, 450 KW, as above
- 345 KVAR (Electra-460), 420KVAR (Electra-560), or 495KVAR (Electra-660); 3.75 KVAR load step resolution, dual voltage
- Total load current transformer bank. Permits system of Electra plus auxiliary Load Banks to be metered from panel of Electra

- Centralized control of system of Electra plus auxiliary Load Banks

Weatherproof Cover

Weather-resistant configuration of Electra enclosure. Includes hinge-open protective door with safety interlock over air-exhaust outlet.

Highway Trailer