

## Engineer's Specification: Sephco Permanent Test & Exercise Load Banks BL Series

### 1. Generator Load Banks BL SERIES

Sephco BL series load banks are generally used for permanent on-site installation for intermittent testing of standby or primary power generators and UPS systems. The load bank is used for periodic exercise and testing of generators, eliminating wet-stacking and cylinder glazing. For base loads or 24 hour/7 day a week operation, please consult with the factory. The load bank is manufactured under ISO9001:2015 quality assurance, completely weather-proofed for outdoor installation.

### 2. Size & Model No.

As specified

### 3. Load Bank Design

The load bank is completely self contained, free standing unit, incorporating all resistive elements, load contactors for each load group, individual load group circuit breakers, load bank protection devices, main load busbars, auxiliary terminals, fan cooling systems, malfunction detection system, unit load controller, remote control facility and IP54 type segregated control enclosure.

### General Construction

#### Resistors

Load resistors are fully sealed stainless steel finned, stainless steel sheath type, immersion proof and vibration proof, impervious to heavy rain, constructed to IP65 (NEMA 6). Resistors are calibrated to within 5% of their rated value, tested to 2kV and individually grounded. Resistor connections are light gauge nickel-plated copper bus links, connected in groups of 50kw maximum and arranged to minimize strain on resistor terminals. All connections of the resistor groups to the corresponding switchgear is made using 125°C rated IEC 60228/AS/NZS1125 multi-stranded flexible cable.

#### Construction

Load bank's body panels and control compartment is constructed from 2mm (Zincanneal) zinc-impregnated steel (Patented), incorporating removable panels for access to resistors. The Load Bank shell is mounted onto a fully hot dipped galvanized chassis frame with forklift pockets. Air inlet and outlet are fully protected by grills having 12mm X 25mm maximum opening. Air cooling is vertical flow discharge, so adjacent equipment and personnel are not affected. The control and electrical cabinet is incorporated as an integral part of the load bank but segregated from the resistor section.

Load bank switchgear enclosure is constructed with full gutter surround, fitted with lift off type hinges, security type locks and wire reinforced neoprene door gaskets

#### Weatherproofing

Load bank is designed for outdoor use, totally weather proofed to IP54, (resistors are hose proof) incorporating stainless steel type immersion proof resistors. The design of the load bank ensures complete resistance to water and moisture buildup.

#### Anti Corrosion

All panels and final assembly are cleaned, pre-treated, first stage primed then finished in Dulux Polyester Powder Coat White Gloss with a minimum final thickness of 78 Microns. Load bank base frame assembly is fully hot-dip galvanized and finished in Dulux Polyester Powder Coat Black Gloss. All structural parts, frames, resistor supports are hot dipped galvanized. External screws and bolts are #316 stainless steel material.

**Cooling Fans**

The load bank's cooling design ensures that the control enclosure does not rise above 30°C above ambient at full load. Standard Fan motors are rated at 940 RPM IP55, each protected by thermal overloads and circuit breakers.

**Safety Interlocks**

Load bank incorporates a triple interlock protection system for each fan motor fitted, protection against fan failure, airflow restriction, high temperature and fan reversal.

**Fan Run On- Cool Down**

An automatic fan run-on for a period of five minutes automatically activates on load dump, fan shut down signal or on tripping of the fan interlock protection system.

**Switchgear and Auxiliaries**

All load groups are evenly balanced and switched by suitably rated mechanical contactors. Each load group is protected by a dedicated re-settable 25kA circuit breakers.

The cooling fan/s circuit is connected to the load bank auxiliary terminals for connections to a dedicated 3 phase circuit from the mains power source to facilitate a five-minute fan run-on cool-down period after the load bank shutdown.

**4. Load Bank Remote Controller**

The load bank includes a remote digital controller with touch type keypad and LED load display, which provides the following functions.

- Digital kilowatt display of load value
  - Touch key button operation
  - Fan "Start"- "Stop" buttons
  - Kilowatt "UP" – "Down" buttons
  - Enter (Master) button
  - "Emergency Stop" button
  - LED Display:-
  - LED - Load Bank "COOLING FAULT" indication
  - LED - Load Bank "LOAD COOL-DOWN" indication
  - LED - Load Bank "FAN ON" indication
  - Remote-Automatic Load Dump contact facility
- (a) Monitoring of the load bank's fan interlock systems, such as thermostats, airflow switches and fan motor thermal overload devices
  - (b) Communication and 12-18 volt power supply to the remote panel.
  - (c) Cooling fan start-up
  - (d) Cooling fan automatic shutdown
  - (e) Remote load dump signaled from the transfer switch, initiating a fan run-on cool down period.
  - (f) Manual load dump
  - (g) Variable load adjustment from 0%-100% of generator rating in kW increments specified
  - (h) Auxiliary contacts for field use to indicate load bank "Operating Normally" and "Load Bank Failure".

**5. Load Bank Control Operation**

Full control of the load bank is done from the remote panel/s. Controlling the load bank can be set up to control the load bank from several locations typically UPS rooms or generator rooms, where additional panels can be installed.

For generator standby applications, operation of the load bank is only possible when the automatic transfer switch is in the normal/mains position. When the manual operation is in progress and emergency standby is called for, the remote control panel will automatically disable the manual mode operation; dump loads and initiate a fan cool-down for a period of five minutes.