



The Avtron Model 6180 are resistive/ reactive load banks designed for outdoor installation when up to 2000 kVA of electrical load is required.

LOAD BANK RATINGS

Standard capacity rating up to:

- 2000 kVA

Standard load step resolution:

- 1 kW
- 1 kVAR

Standard voltage ratings:

Voltage*	Hz	Max. Capacity
400	50	1650 kVA
480	60	2000 kVA

*NOTE: Other voltages are available. Please contact sales for further information.

Airflow and Noise Level

Forced-air cooling is by a single axial metal-bladed aerofoil fan, giving vertical discharge. Fan motor is rated at 50Hz (DOL), 6.3kW at 3 phase and airflow is 10 m³/s (21,188 CFM).

Typical noise level is 79dBA at 50Hz. Measurements are taken 3 metres from the load bank and at 90° to the airflow direction. Noise readings are subject to a tolerance of ±3dBA.

Load Control

The resistive elements and inductors are connected to the supply on test by electro-mechanical contactors fitted internally within the load bank. These are controlled by the SIGMA load control system.

SIGMA allows quick and easy operation without having to resort to lengthy calculations to determine the proportion of resistors and inductors to be connected for a given kVA at any power factor – for the various voltages and frequencies applied.

For comprehensive information on SIGMA control please see separate data sheet and system layout diagram for further details.

Construction

The frame of the load bank is constructed from 2mm 'Zintec' steel, folded and welded to form a monocoque construction. The top half of the load bank houses the resistive load and enclosed in either end is the inductive load.

Double skinned recessed doors allow easy access to the separate enclosures for control, switchgear and power connections. The double skinned, vertical discharge duct with aluminised steel heat shield contains the resistive load elements and cooling fan below.

A stainless steel mesh screen on the main air outlet and fan grille on the inlet provide protection against hazardous parts to IP1X on the resistive section.

On the inductive section louvers with stainless steel mesh grills provide ventilation and protection to IP1X. All electrical enclosures are to IP54. The load bank frame contains four integral lifting points and the base has fixing points for permanent installation.

An optional crash frame ties to the fork base providing increased rigidity and making an exceptionally solid and robust assembly.

Finish

High quality two-pack industrial acrylic paint system applied to an electro-plated zinc base and low-bake finish. Standard colour is grey (RAL7042). Other colours are available on request. Stainless steel construction is also available as an option.

Safety Features

An emergency stop/disconnect switch gives full isolation of the fan and control supply. A 110 Volt AC control circuit transformer provides isolation and operator safety. Stop/start buttons ensure the load bank will not automatically restart. On static load banks provision is also made for the connection of remote stop/start buttons.

The fan motor is fully protected with fuses and a thermal overload. Movable load banks are also fitted with phase rotation detection to automatically ensure correct airflow direction. Single phasing protection is provided by the overload. Thermal detectors are fitted to protect against overheating in the resistive duct and switchgear enclosure. Over voltage protection for the control and load circuit is provided by Sigma load control if specified.

Each element group and its associated contactor are protected by an HRC fuse. This is very important when testing large capacity power supplies, due to the possible high fault currents.

The load contactors are interlocked with the fan controls to ensure load can be applied only when the fan is running.

Internal access is restricted by key operated door catches. Polycarbonate screens behind the doors prevent accidental contact with live parts.

Warranty

The equipment is covered by a 12-month warranty as detailed in our Conditions of Trade.

Model 6180 Specifications

Resistor Elements

The 6180 load banks use replaceable, non-finned sheathed elements. The outer sheath is made from stainless steel to give good corrosion resistance. The heating element is an 80/20 nickel-chrome wire embedded in compacted magnesium oxide powder, giving good thermal and insulation properties.

The elements are very conservatively rated and there is no need for cooling fins to dissipate the heat into the airflow. This ensures that foreign matter or a loosely fitting fin cannot possibly cause hot spots and therefore ensures high reliability.

The elements are designed to operate continuously at up to 800°C (red/orange). The actual temperature is below 500°C (dull red). This gives a wide margin of safety and very long life.

Load tolerance is within 2½ % of total capacity.

Inductors

Three phase inductors are used that will also allow single-phase operation. Fuse failure of one phase only leaving the inductor energized by two phases will not cause any damage to the load inductor.

All inductors are iron cored and vacuum impregnated with insulating varnish. Each inductor is fitted with a thermal trip device to protect against overheating.

The 6180 inductive load banks will operate continuously without ill effects, when absorbing power with the voltage harmonics generated by typical AC generators complying with current standards. Load tolerance is within 3% of total capacity.

Voltage Rating

Resistive elements and inductors are continuously rated at the specific voltage and frequency. Short-term tests with fluctuations up to 10% above rated voltage are permissible. Tests at lower voltages, with a corresponding reduction in overall rating, may be carried out. Power is proportional to voltage squared.

Inductors rated at 50Hz can also be used on 60Hz, but not vice versa. Resistive elements are suitable for both 50 and 60Hz operation.

Ambient Temperature and Humidity

Standard load banks are rated at 35°C, when protected from solar radiation. Load banks rated at 50°C are also available. Average air temperature rise is 136°C.

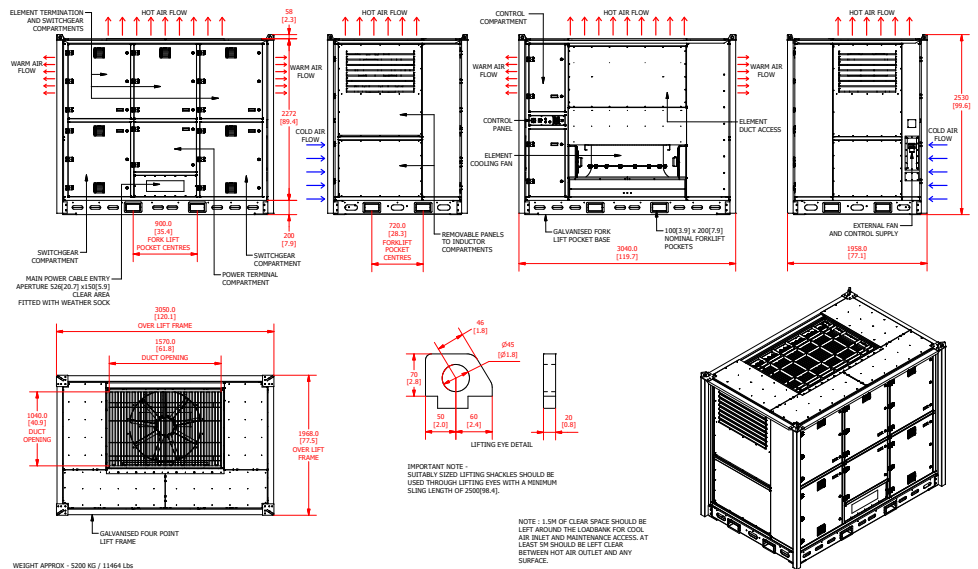
Ambient humidity may be up to 90% RH, non-condensing.

Mounting

The load bank is mounted on a hot-dip galvanised forklift pocket base.

For static installation 300mm hot-dipped galvanised legs are available to allow easier power cable entry.

These are supplied separately for shipping purposes.



All dimensions are in millimeters. Specifications subject to change without notice.

Power Terminals & Cable Entry

Power terminals are located behind a dedicated door. A neutral terminal is fitted for instrumentation purposes only.

Static load banks are fitted with a blank non-ferrous gland plate.

Moveable load banks are fitted with a pre-punched, non-metallic gland plate with a flexible rubber shutter, to enable safe temporary power connections to be easily made in a controlled test environment. A blank non-ferrous gland plate is also supplied to enable a fully compliant installation to IP54 if necessary.

The gland plate opening size is 526 x 150mm.

Auxiliary Supply

The fan and control circuit may be powered from an external auxiliary supply or from the supply on test, provided it is of the correct voltage and frequency. Lower voltages and other frequencies must be tested using the external supply.

On static load banks, connection is by internal terminals.

On movable load banks, an IEC 60309-2 plug and socket with a three-position switch enables quick and easy connection.

Optional Accessories

- Anti-Condensation Heater
- Dual 50/60Hz Fan & Control Circuit
- Crash Frame
- Special Paint Finish
- Power Isolation*

Please see system layout diagram for further details.

Documentation – Operator Handbook

A comprehensive illustrated operator's manual is supplied. Sections cover safety, installation, commissioning, operation, calibration, maintenance and fault finding.

Testing and Standards

Functional operation and load tests are completed on all load banks, before despatch, in line with our ISO 9001:2008 procedures.

Avtron load banks comply with international standards and are CE marked to confirm compliance with both the EMC and Low Voltage Directives.

Weight and Dimensions

Measurements: mm/in. and kg/lbs.

Model	6180
Length (over buffers)	3050/120.07
Width across airflow	1825/71.85
Height on forklift base	2460/96.85
Approximate weight	5000/11,023

Additional Information

An extensive range of resistive, inductive, capacitive or combined load banks of varying capacities are also available. For further information on this model or any other 6000 SERIES load bank, please contact a member of our sales team.

* Power air circuit breakers complying to IEC standard allow the load bank to be fully isolated from the supply on test. The circuit breakers provide short circuit, overload and earth fault protection. A shunt trip facility is also fitted to allow tripping from a remote location. Dual UL/IEC standard circuit breakers are also available.