

Froment MS220

Resistive Load Bank

As well as the MS220 described here, an extensive range of resistive, inductive, capacitive or combined load banks are also available.

Construction

The frame of the load bank is constructed from 2mm 'Zintec' steel, folded and welded to form a monocoque construction.

Double skinned recessed doors allow easy access to the separate enclosures for control, switch gear and power connections.

The double skinned, vertical discharge duct with aluminised steel heat shield contains the resistive load elements and the two cooling fans below.

Stainless steel mesh screens on the main air galvanised grille or fans outlet provide protection against access to hazardous parts to IP1X.

All electrical enclosures are to IP54.

The whole assembly is mounted within a crash frame constructed from 3mm thick box section and formed sheet steel to provide an exceptionally solid and robust assembly.

The frame contains four lifting points and corner tie bars to connect the frame to the fork base. The overall effect provides a mini crash frame. The base has fixing points for permanent installation.

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.

Mounting

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

Airflow and Noise Level

Forced-air cooling is by two axial metal-bladed aerofoil fans, giving vertical discharge.

Typical noise level is 76dBA 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 ± 3 dBA.

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.

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

Power Terminals and Cable Entry

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

Static load banks have three removable, blank non-ferrous gland plates, with the following clear opening dimensions.



Please note: Standard colour is now Grey RAL7042.

Front 780 x 350mm, Bottom 750 x 250mm and End 1100 x 260mm.

Moveable load banks have a cable sock fitted to the front gland plate

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.

Element Specification and Voltage Rating

Froment 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.

Elements are continuously rated at the specific voltage. 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.

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Protection

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.

Optional Accessories

Anti-condensation heater • Dual 50/60Hz fan & control circuit • Special paint finish • Power isolation - 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.

Please see system layout diagram for further details.

Load Control

The load contactors are actuated by the specified load control system. Options range from simple switches to the comprehensive Sigma system, please see separate data sheet and system layout diagram for further details.

Testing Standards and Warranty

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

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

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

Documentation - Operator Handbook

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

Dimensions and Weights

Model		MS220
Nominal Capacity	kW	2000
Length	mm	2958
Width across airflow	mm	1868
Height on forklift base	mm	2250
Approximate weight	kg	2390
Terminals per phase		6 x M12
Fan motor size, 50Hz (DOL)	kW/Ph	2 x 4.5/3
Airflow	m ³ /s	15
Average air temperature rise	°C	113