Froment MS66 & MS110
Resistive Load Bank

As well as the MS66 and MS110 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, horizontal discharge duct with aluminised steel heat shield contains the resistive load elements and the cooling fan.

Stainless steel mesh screens on the main air inlet and outlet provide protection against access to hazardous parts to IP1X.

All electrical enclosures are to IP54.

An optional single and four point lifting frame has corner tie bars to connect the frame to the fork base. The overall effect provides a mini crash frame.

Finish
High quality two-pack industrial acrylic paint system applied to an electro-plated zinc base.

Standard colour is a combination of white (RAL9001) and red (RAL3020). 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 a single axial metal-bladed aerofoil fan, giving horizontal discharge.

Typical noise level is 73dBA 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.

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 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 430 x 140mm.

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.

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Froment MS66 & MS110
Resistive Load Bank

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.

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
Airflow turning elbow • Anti-condensation heater • Castor sets • Dual 50/60Hz fan & control circuit • Highway trailer • Protective cover • Raised base/legs • Single and four-point lifting frame • Special paint finish

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		MS66	MS110
Nominal capacity	kW	600	1000
Length along airflow	mm	2040	2340
Width across airflow	mm	1540	1540
Height on forklift base	mm	1470	1910
Add height for lift frame	mm	150	165
Approximate weight	kg	840	1290
Add weight for lift frame	kg	110	130
Terminals per phase		2x M12	3x M12
Fan motor, 50 Hz, (DOL)	Kw/Ph	2.5/3	4.5/3
Airflow	M^3/S	6.5	8.3
Average air temp. rise	°C	92	120

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