

DC7000 Load bank



For performance testing of diesel electric locomotives up to 4000hp rating, with easy-to-use resistance adjustments.

Key features

DC capacity

3100kW, 0 - 7000A continuously at up to 2000V DC. The load consists of twin 14-section fan-cooled resistor ducts with fans, starters and controls. The optional two main load isolating contactors and an integrated off-load switch panel permitting the pre-selection of any one of more than 200 values of resistance between 0.026Ω and 3.3Ω.

Connection scheme

The off-load knife switches allow for the reconnection of the twelve resistors in each stack into more than 200 different configurations with a range from 0.026Ω/7000A through to 3.3Ω/600A. There are intermediate points to suit the majority of loco alternators up to 300hp rating.

Construction

The fans, resistors and switchgear are all built in to a single sheet steel frame with hinged lockable access doors, air intake screens and (optionally) hand-operated outlet louvres. Paint finish is RAL9002 grey powder coat the enclosure is designed for floor mounting with bottom cable entry. Fan motor and control voltages are set to suit customer's own available supply voltage and frequency.

Resistor elements

Flat strip elements, type EN Each bank is contained in a fully insulated duct section with two independent levels of 3kV electrical insulation. The resistor elements are manufactured from a 60:23 nickel-chrome stainless steel. This is a high-grade stainless steel with excellent corrosion resistance properties and a low (0.12%/°C) temperature coefficient of resistance, giving very stable resistance values over the whole range of operation.

Optional extras

- **Main Contactors** – The two main contactors carry the maximum continuous thermal current of 7000A and have a peak breaking capacity of 1000A, allowing for on-load isolation from the locomotive generator after the excitation has been reduced. For safety, the contacts are mechanically latched and have a separate trip coil so that there is no possibility of accidental opening during testing.
- **Weather proof louvres** – For periods of long term storage it is recommended to protect the load bank from water and particulate ingress. Optional extra is to have hand-operated weather proof louvres integrated into the outlet ducts can provide this protection.



Ratings

Maximum voltage, V DC	2000
Maximum current, A	7000
Maximum capacity, kW	3126

Power settings

Step no.	Voltage, V	Current, A	Power, kW
1	2000	580	1160
2	1770	600	1062
3	1475	600	885
4	1180	600	708
5	2000	1160	2320
6	1770	1200	2124
7	1475	1200	1770
8	1180	1200	1242
9	1035	1200	1242
10	890	1200	1068
11	730	1200	876
12	1135	2320	2633
13	1030	2400	2472
14	890	2400	2136
15	1015	3080	3126
16	940	3300	3102
17	860	3480	2993
18	735	3600	2646
19	755	4120	3111
20	690	4520	3119
21	570	4640	2645
22	545	5620	3063
23	508	6120	3109
24	295	4800	1416
25	297	6000	1782
26	286	7000	2002
27	248	7000	1736
28	189	7000	1323

Connection interfaces

Load controls	Main load connections to suit order, 2 x M12 PE bonding
External control supply	To suit order.

Control and ventilation

Manual controls	14 x Off-load knife switches, on/off push button control for fans, 1 x local emergency stop
Instrumentation	1 x 4000A/1 mV shunt 1 x Digital power meter with 4-20mA output
Cooling	Forced convection, vertical orientation, horizontal outlet.
Fan(s)	2 x 27kW AC fan, axial type
Control supply	3-phase AC, voltage and frequency to suit order
Source	External supply

Operating environment

Suitable for	Outdoor use
Ambient temperature	-10°C to 50°C
Humidity	95% RH
Ingress protection	IP23 load enclosure IP54 Control cabinet

Construction

Resistor elements	Steel strip
Element material	60-23 NiCr high grade stainless steel
Main enclosure	Sheet steel, painted RAL9002 grey
Exhaust air duct	Stainless steel grade 304L, un-painted 2B finish

Weight and dimensions

See general arrangement drawing reference 161537

Length, mm	2750
Width, mm	1900
Height, mm	2650
Weight, kg	2700

Safety

Thermal protection	Airflow status alarm via. pressure switch
Access protection	Lockable cabinet doors, interlocked with trapped key isolator safety logic