



# OPERATING MANUAL

for

## AC LOAD BANK

type

## HAC415-110

issue 1

Serial No. M36400

Hillstone Hire Fleet

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## INTRODUCTION

The load bank HAC415-110 is designed for testing 415 volt, three phase, 50 Hz UPS or generators up to 153A per phase.

The unit comprises of pre-set, force cooled, high powered resistor channels which allows manual adjustment of the load current.

Load bank is supplied complete with 20 metres of double insulated, rubber covered flexible cable.

Safety features include internal fuse protection, fan motor overload protection, auxiliary circuit protection and auto shutoff in the event of a mains interruption.

The load bank is force cooled by a three phase mains powered fan which is internally connected to the 3 phase load circuit.

The case is designed for outdoor use.

The unit is supplied with swivel castors for easy movement and can be lifted from underneath using a fork lift truck.

## SAFETY CONSIDERATIONS

1. The load bank is designed for indoor or outdoor but is not intended to be operated subject to driving rain, sea spray or snow.
2. The unit should only be operated by competent electrical engineers who are completely familiar with the operation and specification of the load bank.
3. The equipment is designed for AC operation only and therefore SHOULD NOT be used on DC loads such as batteries.
4. Operators must ensure that interconnecting cables are correctly rated to carry the required load current and adequately insulated to prevent the possibility of electric shock when operating at high voltages.
5. When in use the load bank should be cordoned off using safety barriers.
6. The load bank should only be operated in an area with adequate ventilation.
7. Care should be taken as the exhaust air outlet will be hot.
8. During operation the load bank should not be covered or positioned to restrict air flow
9. Caution – some metal surfaces will be hot during operation
10. At the end of any test the fans should be kept running for 5 minutes on no load to remove the residual heat from the load bank case.

## CONNECTION PROCEDURE

- A. Ensure the power source to be tested is compatible with the load bank operating voltage.
- B. Ensure the power source is de-energised.
- C. Do not attempt to operate the load bank above the maximum operating voltage.
- D. Check all panel mounted control switches are in the OFF position.
- E. Connect the power cables to the generator or UPS as follows ;
 

Brown		L1
Black	L2	
Grey	L3	
Blue	Neutral	
Green/yellow	Earth	

## OPERATING INSTRUCTIONS

Operators should read the

### **SAFETY CONSIDERATIONS** and **CONNECTION PROCEDURE**

before carrying out the following operating instructions

1. Ensure all panels are in place on the load bank.
2. Ensure all panel mounted switches are in the OFF position.
3. Energise the power source from the UPS or generator.
4. Switch on the green panel mounted rocker switch.
5. Check the cooling fan rotates with exhaust air at the opposite end to the fan.
6. If the cooling fan rotates the wrong way carry out the following procedure ;
  - a) switch off and isolate the generator or UPS supply
  - b) change over any two phase connection cables ( Brown, Black or Blue )
  - c) check the cables are secure and proceed from 1 above.
7. Select the appropriate load using the panel mounted control switches.
8. Do not exceed the maximum rating of the load bank.
9. At the end of the test switch off all the load control switches.
10. Do not switch off the green control switch.
11. Leave the fans running ( off load ) for five minutes to cool the resistor elements.
12. switch off the green control switch
13. Isolate the UPS or generator power source
14. DO NOT remove the power circuit with the load circuit energised.

The red EMERGENCY STOP button can be used as an Emergency Disconnect at any time during a test to disconnect all load circuits and the fan supply.

## SPECIFICATION

Type ref	HAC415-110
Max operating voltage	415V three phase 50 Hz
Max current rating	153A per phase
Max power rating	113 KW three phase
Resistor tolerance	+/-5%
Case size	length
	width
	height
	1110mm
	610mm
	920mm

Weight 140 kgs ( excluding cables )

### TYPICAL PERFORMANCE TABLE

HLB415-110		Approximate available power
Channel	Watts @ 415V 3ph	
1	1.5KW	
2	2KW	
3	4KW	
4	4KW	
5	10KW	
6	20KW	
7	36KW	
8	36KW	
<b>Total</b>	<b>113KW</b>	

### MAINTENANCE PROCEDURES

The load bank should not require any special maintenance, however as with any electrical equipment periodic checks should be carried out to ensure the equipment is in a safe and satisfactory condition.

The following periodic checks are recommended;

- 1) Check the inlet and outlet grills are free from obstruction.
- 2) Check the controls and terminal are undamaged.
- 3) Check the fan rotates freely without obstruction.
- 4) Check internal wiring for loose connections or damage.

### FAULT FINDING PROCEDURES

The following fault finding procedure is intended to identify simple operational errors and has been categorised into two possible problem areas as follows;

#### **FAN COOLING NOT OPERATIONAL**

- Check the power source is available.
- Check the interconnecting cable connections.
- Check the fan motor operates.
- Check for air blockage.
- Check fan blades are secure to motor shaft.

#### **LOAD BANK DOES NOT PROVIDE SUFFICIENT LOAD CURRENT**

- Check the power source is at the required voltage.
- Check the required current channels have been selected.
- Compare the current values with the specification table.
- Identify individual current channels for reduced output.

Any faults not corrected by carrying out the above procedures may require the internal wiring or components of the load bank to be inspected for damage.

**Note: Isolate the load bank from any power source before removing any covers.**

- Testing the load bank with the covers removed is not recommended as high voltages can be present on power resistors or terminals.**
- Repair or replacement should be carried out by the manufacturer.**