RENTAL LOADBANK OPERATING MANUAL

Automatic Varicon DC Load Bank

HAV260-15

Serial number M36358

BattScan Data Logging Fuse Box

300V 200A DC

MADE IN BRITAIN®

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Units 1&2, Freetown Business Park,
Hudcar Lane, Bury,
Lancashire,
BL9 6HD,
U.K.

Tel: +44(0)161 763 3100
sales@hillstone.co.uk

www.hillstone.co.uk
www.batt.life
www.bm40.org

INTRODUCTION

The load bank **HAV260-15** is designed for automatic constant current battery discharge testing.

The **BattScan data logging fuse box** uses the latest software and enhanced measurement accuracy for data logging the test results during the discharge.

The **BattScan data logging fuse box** also protects battery cables with internal fuses in both the +ve & -ve.

The recorded discharge data can then be imported in CSV format to the battery asset maintenance program - **BattLife**.

BattLife is free to download and use software from Hillstone, please visit www.batt.life

The **HAV260-15** load bank rating can be used on lead acid or ni-cad batteries from 12V to 260V DC and it will automatically select the required current range setting for the connected battery voltage.

The load bank incorporates a panel mounted LCD display to indicate:

- battery voltage
- current
- watts
- ampere hours discharged
- ambient temperature
- elapsed time plus test status and any fault conditions

The user can program the load bank to stop the discharge test for either a pre-set end of test voltage or at a time duration.

The load bank requires 240V 50Hz / 60Hz auxiliary mains supply for the controls and cooling fan, and is supplied with a carrying handle and swivel castors for easy movement.

The unit comprises high powered resistor channels, which are electronically controlled to allow load current control from zero to the maximum rating.

Safety features include:

- protection for reverse battery polarity,
- high battery volts,
- cooling fan failure
- load circuit isolation via DC rated contactors.

SAFETY CONSIDERATIONS

1. The equipment is designed for use in a clean, dry, indoor environment and should only be operated by competent electrical engineers who are completely familiar with testing batteries and the operation and specification of the load bank.
2. As with any electrical equipment the load bank should not be used in close proximity to recently charged batteries where a build up of explosive gases may have occurred.
3. 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.
4. When in use the load bank and Battscan fuse box should be cordoned off using safety barriers.
5. The load bank and Battscan fuse box should only be operated in an area with adequate ventilation.
6. Care should be taken as the exhaust air outlet from the load bank may be hot.
7. The cable connection sockets **must not** be inserted or removed with the load circuit on load.
8. Do not smoke in the proximity of batteries.
9. Operators working with batteries should not wear rings, jewellery or metal watch straps.
10. Only insulated tools should be used when working on battery or power supply connections.
11. Refer to the battery manufacturers operating instructions for methodology and additional safety precautions.
12. Ensure all personnel are familiar with the location of the nearest safety kit and eye wash facility.
13. During operation the load bank should not be covered or positioned to restrict air flow
14. Caution metal surfaces will be hot during operation

CONNECTION PROCEDURE

A. Ensure the battery to be tested is compatible with the load bank operating voltage.

B. Do not attempt to operate the load bank above the maximum operating voltage.

C. Check the battery is isolated before connecting to the BattScan fuse box and load bank.

D. Connect the 240VAC auxiliary mains lead into the panel mounted socket.

E. Insert the DC power cable plug from the BattScan box into the load bank socket.

F. Connect positive cables (**Red** marking) to the battery positive terminal on the BattScan fuse box.

G. Connect negative cables (**Black** marking) to the battery negative terminal on the BattScan fuse box .

H. Ensure that both sets of cables are connected and the cable connections are secure.

I. Plug in the hand-held controller plug into the can socket on the load bank.

Note

- the BattScan fuse box LCD will display the battery voltage once connected to the battery
- the hand held controller must be connected to the load bank before switching on the aux mains
- the load bank must be connected to the BattScan fuse box before switching on the aux mains

OPERATING INSTRUCTIONS

Operators should read the
SAFETY CONSIDERATIONS and CONNECTION PROCEDURE
before carrying out the following operating instructions

1. Turn on the illuminated Green mains on/off switch to operate the fan.
2. Press the GREEN Start button on the front panel to power-up the control circuit.
3. The LCD display on the hand-held controller will illuminate and the load bank will run a self diagnostics test.
4. After a successful self test the following information will be displayed on the LCD

Battery voltage Battery current Elapse time
Temperature H M S
PRESS 0 TO BEGIN

Note :
The Battery voltage will read the battery terminal voltage.
The Temperature will read the ambient temperature in Deg C
The Battery current, elapse time, should all read zero.

Press 0 on the keypad to carry out the test.

The screen will change to :

Battery voltage Battery current Elapse time
Temperature H M S
Enter load amps
Clear = UP (↑) Enter = DN (↓)

Enter the required load current.
Press enter (arrow down button on keypad) if the correct value has been entered or clear (arrow up button on keypad) to start again.

Note:
Load current settings are to the nearest amp.
Up to three digits can be entered. Example 129 for 129 amps or 9 for 9 amps

The screen will change to :

Battery voltage Battery current Elapse time Temperature H M S Enter duration 0: <H Clear = UP (↑) Enter = DN (↓)

Note:
If you do not wish the test to stop on time then enter 00:00

Enter the required time period for the test (Hours).

The screen will change to :

Battery voltage Battery current Elapse time Temperature H M S Enter duration M> : 0 Clear = UP (↑) Enter = DN (↓)

Enter the required time period for the test (Minutes).

Press enter (arrow down button on keypad) if the correct value has been entered or clear (arrow up button on keypad) to start again.

The screen will change to :

Battery voltage Battery current Elapse time Temperature H M S Enter Stop Volts Clear = UP (↑) Enter = DN (↓)

Enter the required stop voltage.
Press enter (arrow down button on keypad) if the correct value has been entered or clear (arrow up button on keypad) to start again.

If the settings are accepted the screen will change to :

Battery voltage Battery current Elapse time Temperature H M S Press Start to begin LOAD BANK READY

Press the START push button on the keypad when you are ready to commence the test.

The screen will change to:

xxx V	**xxx A**	**HH:MM:SS**
xx C		
	TEST RUNNING	

5. The load bank will now run the test, automatically maintaining a constant current until the battery voltage falls to the pre-set value or the elapsed time reaches the test duration setting.

6. If the battery voltage falls to the pre-set stop voltage or the test continues to the pre-set time duration, the test will be automatically terminated and the screen display will be frozen.

7. The test can be stopped at any time by pressing the red STOP push button on the keypad. The STOP button will de-energise all internal contactors, switch off all control circuitry and isolate the battery from the load bank. Starting a test after pressing the red STOP push button will require all the settings to be re-entered.

8. If the PAUSE push button on the keypad is used to interrupt the test, the settings are retained and the test can be continued by pressing the START push button again.

9. When the test is complete, press the **RED** Stop button on the front panel to power down and reset the control circuit.

10. At the end of a test the **cooling fans should remain running for 5 minutes** to cool the resistor elements.

11. The battery cables can be disconnected only when the test has finished and all contactors de-energised. Do not disconnect the battery or remove the DC power cable sockets with the load circuit energised.

12. In an emergency the test can be stopped at any time by pressing the emergency stop button. The emergency stop will de-energise all internal contactors, switch off all control circuitry, LCD display, isolate the battery from the load bank and stop the cooling fan.

13. Switching off the auxiliary mains supply will also stop the cooling fan and all control circuitry including de-energising the isolation contactors.

HINTS ON USAGE AND FAULT CONDITIONS

a. An invalid entry warning will be displayed if the settings are outside the range of the load bank.

   Examples: The requested load current is too high,

   The requested stop voltage is higher than the battery voltage.

b. The load bank will not operate and the RED fault lamp will illuminate if a battery (or rectifier) is over voltage, not connected or connected in reverse polarity.

c. The Handheld controller will not accept any input if the RED fault light is on.

d. The internal contactors will not operate if the RED fault light is illuminated.

e. The cooling fans incorporate a thermal cut-out in the motor winding which will stop the fan if the motor overheats. The load bank will shut down if a motor winding cut-out protection operates and can only be re-started manually after allowing it to cool down.

SPECIFICATION

Equipment type ref	HAV260-15
Nominal voltage ranges	12V, 24V, 48V, 110V & 240V
Max voltage	16V, 32V, 65V, 130V & 260V
Constant current ratings **For lead acid battery discharges to 1.8 volt end of test voltage**	0 - 40A for 12V batteries 0 - 78A for 24V batteries 0 - 80A for 48V batteries 0 - 90A for 120V batteries 0 - 44A for 240V batteries
Resistor tolerance	+/- 5%
Current adjustment	<0.2A to max current + 200A/200mV 0.5 brass ended shunt
Control Accuracy	< 1% minimum step resolution on voltage ranges
Digital display	large screen LCD display
DC cable set	5 metres twin cable
Auxiliary supply	240VAC single phase 50/60 Hz
Auxiliary fuse rating	5 amps (panel mounted)
Overall Case Size	Length - 1000mm Width - 560mm Height - 770mm
Weight	53 Kgs

Equipment type ref	BattScan 300V 200A
Display type	4 line x 20 character oLED
Measurement	Voltage: 0 to 300V, 0.2% accuracy Current: 0 to 200A, class 0.5 shunt
Connections	Powerlock twist lock safety connectors
Overall Case Size	Length - 580mm Width - 440mm Height - 210mm
Weight	6 Kgs

RATING TABLE

Range	Voltage	Current	Maximum Watts
240V	260V	60A	15600W
	192V	44A	8448W
		<0.6% control res	
Range	Voltage	Current	Maximum Watts
110V	130V	120A	15600W
	96V	90A	8640W
		<0.2% control res	
Range	Voltage	Current	Maximum Watts
50V	65V	120A	7800W
	43V	80A	3440W
		<0.1% control res	
Range	Voltage	Current	Maximum Watts
24V	32V	120A	3840W
	21V	78A	1638W
		<0.1% control res	
Range	Voltage	Current	Maximum Watts
12V	16V	60A	960W
	11V	40A	440W
		<0.1% control res	

Notes

1. Information in technical literature, quotations or data sheets are intended to be correct at the time of publication, however, Hillstone Products Ltd bears no responsibility for the accuracy of any information given.
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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 the terminals are undamaged.
3) Check the fan rotates freely without obstruction.
4) Check cables 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 mains switch is in the correct ON position.
Check the Emergency Stop switch is reset.
Check the fan motor operates.
Check the mains fuse.
Check for air blockage.
Check fan blades are secure to the 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.

Important Note:

Isolate the load bank from all sources of power before removing any covers. Testing the load bank with the covers removed must not be carried out as it presents a risk of injury or death by electric shock. Repair or replacement should only be carried out by the manufacturer.