

## Valve Regulated Lead Acid Battery Box BB160A



The Battery Box BB160A is one in the range of Gresham Power Electronics' battery boxes. It affords a secure means of housing batteries which are used for backing up the ship's main and other supplies.

A control and monitoring enclosure is bolted to the top of the battery box and the connections between the control enclosure and the main battery enclosure are gas tight.

The maintenance free batteries selected are built in accordance with BS 6290 Part 4 (1997) and have a 7 to 10 year design service life at 20°C. They are high integrity Valve Regulated Lead Acid cells with case material that is flame retardant (rated V0 (UL94) oxygen index 30).

Nominally 24 volt, continuous float and recharge should be in the range 27.0V to 27.6V. A low ripple charger (such as in the Gresham 3RP range) should be employed in order to maintain battery life. The nominal battery rating is 160Ah at 20°C.

The battery box is a custom built steel enclosure 765 x 515 x 557mm, that is designed for bulk head mounting. Ingress Protection level is to IP23.

Access for maintenance and repair is from the front via a hinged door. The top mounted control and monitoring enclosure contains front mounting digital meters, indicating lamps and a double pole ON/OFF circuit breaker.

Louvres pressed outwards on the bottom of the panel and the vent behind the control enclosure allow cooling by natural convection and ventilation for the battery.

Electrical connections to and from the Battery Box are made on M8 (x1.25) studs for the main connections and to a terminal block, for remote sense and indications. The studs and terminal block are situated in the main battery enclosure. Access to the studs and terminal block is gained via a gland plate which is situated on the side of the main enclosure.

An M10 external earth stud is provided on the top of the enclosure.

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## ELECTRICAL CHARACTERISTICS

### Batteries

Valve Regulated Lead Acid  
Nominal voltage: 24V  
Nominal capacity 160Ah  
8 batteries (4 parallel strings of 2)  
To avoid over-discharging the battery the battery boxes have an end of discharge cut off set at 20V.

Specified lifetime 7-10yrs at 20°C.  
The recommended normal operating temperature range is 20 to 25°C.  
High temperature will reduce the battery service life, typically to 80% at 30°C, dropping dramatically to 20% at 45°C

### Local Controls and Indications

Battery Circuit breaker  
Digital voltmeter  
Digital ammeter  
Batt Available LED  
Discharge LED  
Low Battery LED  
Overvolt LED  
Overtemperature LED  
H2 Level LED  
Imbalance LED

### Charger Interface

Discharge  
Temperature Sensor  
Battery Protection Operation  
Battery Fault

### Battery monitoring

The battery monitoring includes overvoltage, low voltage, excess hydrogen and cell voltage imbalance.

## MECHANICAL FEATURES

### Enclosure

Fabricated mild steel folded and welded for strength. Deck mounted, top steadies. Lifting eyes.

### Dimensions

(O/A) (h x w x d) 765 x 515 x 557mm

A clearance of at least 100 mm should be allowed around the unit to allow proper ventilation.

Fixings 4 holes 13.0mm dia. Centres (w x d) 460 x 573 mm

### Weight

195kg

### Cable Entry

Side via gland plate.

### Ingress Protection Rating

IP23

### Ventilation

Naturally ventilated. Air inlet: bottom. Air outlet: top.

### Maintenance

Front maintenance – Lift off front panel for access.

### Internal wiring

Low fire hazard cross linked polyolefin RADOX 125.

### Earthing

M10 external earth stud

## ENVIRONMENTAL CHARACTERISTICS

### Shock

Designed to meet a shock acceleration of 15g (25ms half-sine) in each of the three orthogonal directions when solidly mounted. For installed shock levels in excess of this shock mounts should be fitted.

### Vibration.

Designed to meet the shipboard vibration requirements. 5 to 33Hz +/- 0.125mm

### Noise

< 50dbA.

### Electromagnetic Compatibility.

Designed to meet the requirements of Def Stan 59-411

### Ambient Temperature.

0°C to + 45°C.

Batteries are temperature dependent. The batteries have been selected for operation at a nominal ambient temperature of 20C. Higher temperatures will adversely affect battery life and lower temperatures will adversely affect battery performance.

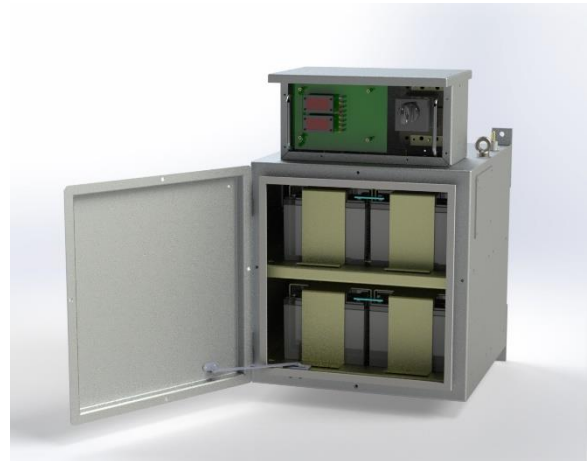
### Relative Humidity

10% to 95% non-condensing.

### Ships Motion

The equipment is designed to withstand, without damage or degradation of performance or spillage of fluids, ship motion due to the action of the sea and weather as well as accelerations and velocities deriving from deliberate ship manoeuvres.

Roll angles	± 30°
Pitch angles	± 10°
Steady list angles	± 15°
Steady trim angles	± 5°



Internal view

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