

# Hawker Cyclon Valve Regulated Lead Acid Battery

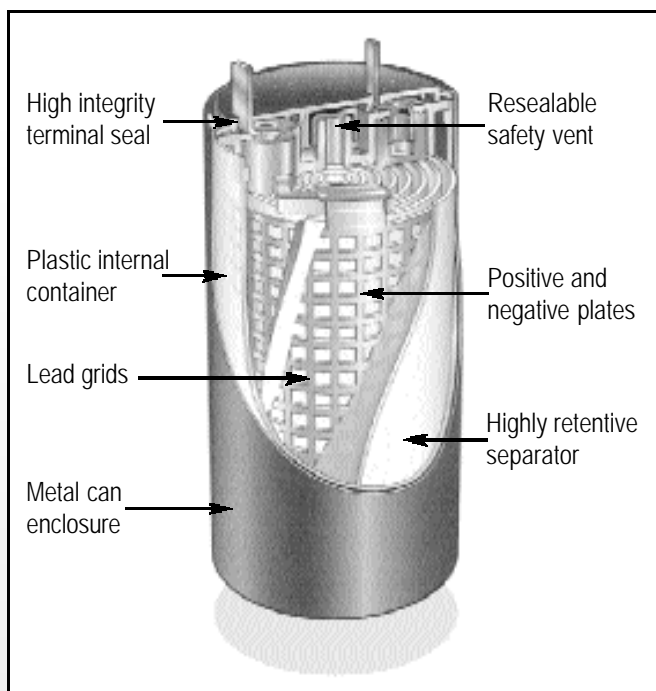
## Application Manual



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## Introduction to Cyclon Cells and Monoblocs

Cyclon Valve Regulated Lead Acid (VRLA) Cells and Monoblocs are a unique technology using wound electrodes made of pure lead (99.99%) alloyed with 0.65% of tin.



Gasses produced in normal overcharge are recombined within the cell. A re-sealable bunsen valve is incorporated to permit gas venting in the case of abusive overcharge.

Both Cyclon Cells and Cyclon Monoblocs can be charged and discharged in any attitude.

Both Cells and Monoblocs can be assembled into many different configurations providing maximum design flexibility.

Product can be transported by land, sea and air as non-hazardous cargo. Cyclon Cells are a recognised component meeting UL924 and UL1778. Cyclon Monoblocs meet UL924.

## Performance Characteristics

Cyclon Cells and Monoblocs have outstanding performance in the following areas.

- Long float life - Cyclon Cells: 15 years at 20°C.  
- Cyclon Monoblocs: 10 years at 20°C
- Long storage life (greater than 2 years at 25°C before recharge is necessary).
- Exceptional high rate discharge (Up to 26C).
- Wide operating temperature range  
- Cyclon Cells -65°C to +80°C  
- Cyclon Monoblocs -40°C to +40°C
- Very high shock and vibration resistance in all planes.

Cycle life up to 2500 cycles at 30% DOD.

## Discharge Characteristics

Maximum current capabilities		
Cyclon Type	Pulse Amps	Continuous Amps
D Single Cell (2.5 Ah)	200	65
D Monobloc (2.5 Ah)	200	50
TD Single Cell (4.5 Ah)	200	65
X Single Cell (5.0 Ah)	285	65
X Monobloc (5.0 Ah)	285	50
E Single Cell (8.0 Ah)	330	65
E Monobloc (8.0 Ah)	330	50
J Single Cell (12.5Ah)	400	65
BC Single Cell (25.0 Ah)	665	250

Table 1

The extremely low internal resistance of Cyclon cells gives excellent voltage regulation on discharge which is equal to or better than other VRLA systems.

As with all lead battery systems discharge energy available is reduced as temperature decreases.

Variation of discharge capacity with temperature.		
% of rated C/10 Capacity Available		
Temp °C	C/10	C
80	105	75
60	105	75
40	105	75
20	100	72
0	85	65
-20	70	50
-40	50	30

Table 2

*These values should be taken as a guide only.*

If the application fully discharges the battery it is recommended that a low voltage cut out is employed to protect the battery against overdischarge. The end of discharge voltage varies according to the rate of discharge (See Table 3). Overdischarging the battery can lead to recharging difficulties and also damage the battery. For design details of low voltages cut out circuits please contact our Customer Support Staff on +44 (0) 1794 830111.

Recommended minimum End of Discharge Voltage (EODV).	
Discharge Rate Amps	Min. EODV per cell
0.05C (C/20)	1.75V
0.10C (C/10)	1.70V
0.20C (C/5)	1.65V
0.40C (C/2.5)	1.65V
1.00C	1.60V
2.00C	1.55V
>5.00C	1.50V

*Discharging the Cyclon cell below these voltage levels or leaving the cell connected to a load in a discharged state may impair the cell's ability to accept a charge.*

Table 3