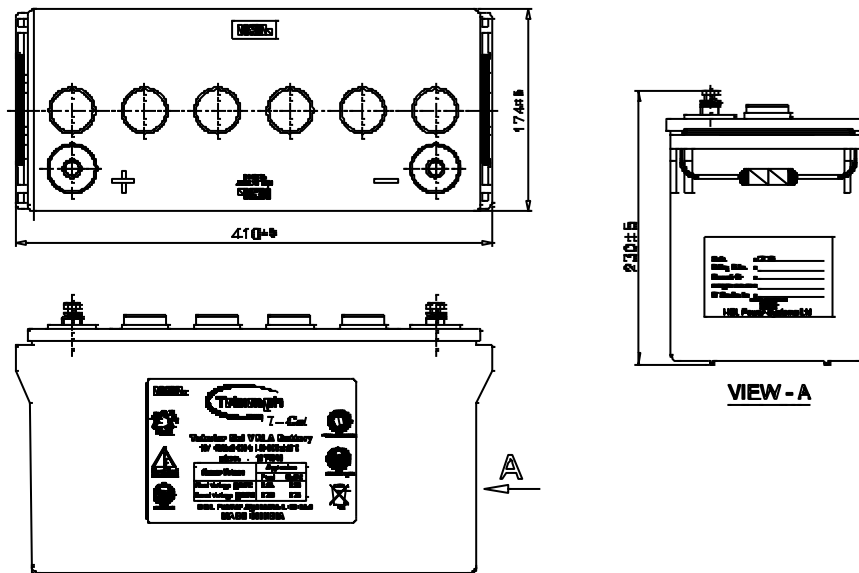


**HBL POWER SYSTEMS LIMITED**  
**General Technical Particulars – Tubular Gel VRLA Battery**

S.No.	Parameters	12V – 60 Ah Battery Details
1	Battery type	Maintenance Free Tubular Gel VRLA Battery
2	Model offered	12 TGI 60
3	Capacity rated at	10 hour rate up to 1.80 ECV at 25°C
4	12V Bloc Dimensions & Weight	410 ± 5 x 174 ± 5 x 230 ± 5 mm; 28.0 ± 5% Kg
5	Applicable standards	IEC 60896 – 21 & 22-2004, IEC 61427, DIN 43539 P5
6	Ah Efficiency	Min 95%
7	Wh Efficiency	Min 85%
8	Self discharge	Less than 2% per month at 25°C
9	Design float life	16 years at 25°C on float under recommended charging
10	Design cycle life at 25°C	1200 cycles at 80% DOD 3500 cycles at 20% DOD
11	Recommended charging for standby Float duty	Constant potential with current limited to 0.4 C <sub>10</sub> Amps (max.) Float charging: 13.50 ± 0.005V/Bloc at 25°C Boost charging: 13.80 ± 0.005V/Bloc at 25°C Equalizing charging: 14.10±0.005V/Bloc at 25°C
	Cyclic duty	Float charging: 13.62 ± 0.005V/Bloc at 25°C Boost charging: 14.10 ± 0.005V/Bloc at 25°C Equalizing charging: 14.22±0.005V/Bloc at 25°C
13	Charge controller settings for SPV application	<p><b>On/Off Type</b></p> <ul style="list-style-type: none"> <li>▪ Over Voltage disconnect: 14.70±0.03 V/Bloc at 25°C</li> <li>▪ Array Reconnection Voltage: 13.80±0.03 V/Bloc at 25°C</li> <li>▪ Low Voltage disconnect: 11.10±0.03 V/Bloc at 25°C</li> <li>▪ Load Reconnect Voltage: 12.48±0.03 V/Bloc at 25°C</li> </ul> <p><b>Pulse width modulation (CV Controller) Type</b></p> <ul style="list-style-type: none"> <li>▪ Regulation Voltage: 14.40±0.03 V/Bloc at 25°C</li> <li>▪ Load Reconnection Voltage: 12.48±0.03 V/Bloc at 25°C</li> <li>▪ Low Voltage disconnect: 11.10±0.03 V/Bloc at 25°C</li> </ul>
14	Positive Plate	Tubular Plate with polyester gauntlet and Lead Calcium Tin alloy with special additives
15	Negative Plate	Flat plate with Lead-Calcium alloy grid and long -life expander material
16	Separator	Micro porous synthetic separator
17	Electrolyte	Sulfuric acid, immobilized as Gel
18	Container & Lid Material	ABS (Flame retardant is optional)
19	Container to lid sealing method	Heat Sealing (Fusion welding)
20	Safety vent	Self resealing, Pressure Regulating Valve with Flame arrestor
21	Terminals	Lead plated brass threaded insert
22	Termination	Bolted type
23	Ventilation	Natural ventilation is sufficient
24	Battery shipment condition	Filled and charged. Ready to use
25	Application	HBL TGEL Batteries are offered for voltage system with back-up duration greater than 1hr for continuous and non-continuous loads but with each individual load in a discharge profile that shall not be less than 1 hr.

**Figure-1**



**For HBL Power Systems Limited**