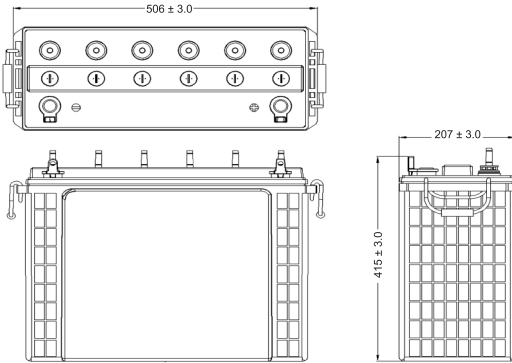


TECHNICAL SPECIFICATION - Tall Tubular Conventional Battery



Product Features :-

1. Robust Tubular with High Pressure diecasted spine- resulting low rate of spine corrosion.
2. Spill Proof Vent plug – resulting in no spillage on top and low controlled acid fumes.
3. Optimized Negative paste receipt for fast charge acceptance
4. Consistent backup throughout life
5. Excellent behavior in PSOC condition as compare
6. Low Self Discharge
7. Excellent performance on deep cyclic application as compare to AGM VRLA
8. Very High Design & Service Life
9. Low water loss

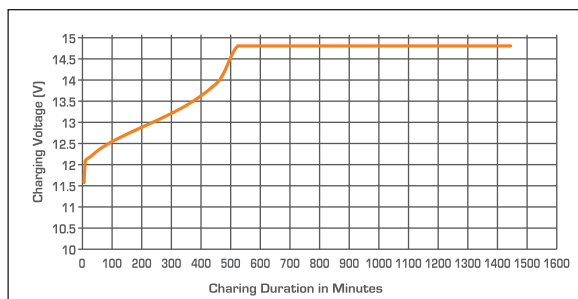
Technical Specifications

Model	Nominal Voltage	Rated Capacity 20 Hr @ 27°C (Ah)	Dimensions in mm			Gross Battery Weight [Kg] [±3%]	Terminal Type
			Length [± 3 mm]	Width [± 3 mm]	Height [± 3 mm]		
EM200 [12 V 200 AH @ C20]	12	200	506	207	415	66.60	L
EM230 [12 V 230 AH @ C20]	12	230	506	207	415	67.50	L
EM240D [12 V 240 AH @ C20]	12	240	506	207	415	74.20	L
EM300D [12 V 300 AH @ C20]	12	300	506	207	415	82.20	L

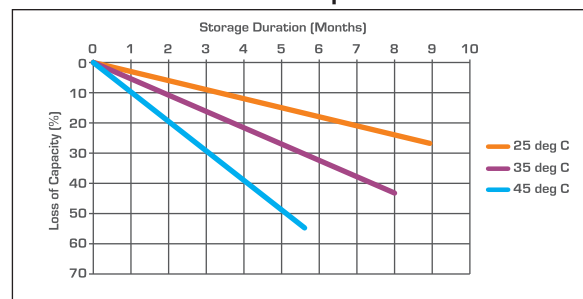
Electrical Parameters & Charging Profile

Battery Specified Capacity Test @ 27 °C						
Model	C20 @10.5V	C10 @10.5V	C7 @10.5V	C5 @10.5V	C3 @10.5V	C1 @10.5V
EM200 [12 V 200 AH @ C20]	200	180	165	150	129	90
EM230 [12 V 230 AH @ C20]	230	198	182	165	142	99
EM240D [12 V 240 AH @ C20]	240	216	198	180	155	108
EM300D [12 V 300 AH @ C20]	300	270	248	225	194	135
Ah & Wh Efficiency						
Ah Efficiency	>90%		Wh Efficiency		>75%	

Charging Profile



Self Discharge Characteristics @ Different Temperature

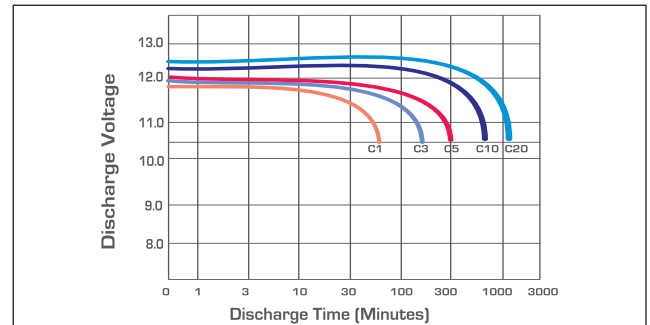


TECHNICAL SPECIFICATION - Tall Tubular Conventional Battery

State of Charge Measure of Open-circuit Voltage @ 27°C

State of Charge	Specific Gravity	Voltage
100%	1.245-1.275	12.55V-12.70V
75%	≤ 1.225	≤ 12.4V
50%	≤ 1.190	≤ 12.1V
25%	≤ 1.155	≤ 12.0V
0%	1.120	11.8V

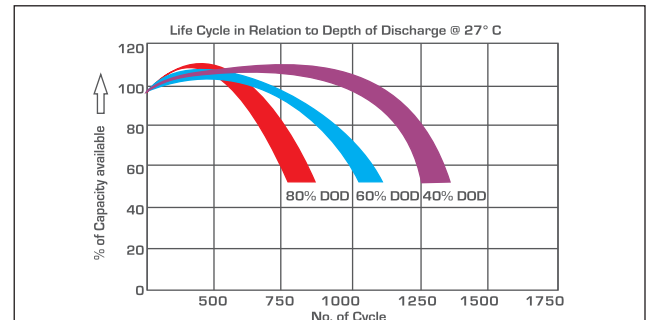
Discharging Characteristics at various rates @ 27°C



Specific Gravity & Self Discharge w.r.t. Temperature

CHARGING TEMPERATURE COMPENSATION	Add	Subtract
	0.005 volt per cell for every 1°C below 25°C 0.0028 volt per cell for every 1°F below 77°F	0.005 volt per cell for every 1°C above 25°C or 0.0028 volt per cell for every 1°F above 77°F
OPERATIONAL DATA	Operating Temperature	Self Discharge
	-4°F to 131°F (-20°C to +55°C) At temperatures below 32°F (0°C) maintain a state of charge greater than 60%.	As per discharge Graph

Expected Life



Charging Instructions

Charger Voltage Settings (at 77° F/ 25°C)			
System Voltage	12V	24V	48V
Maximum Charge Current	0.2C ₁₀		
Minimum Charge Current	20Amp.		
Maximum Absorption Phase Time (hours)	4		
Absorption Voltage	14.6	29.2	58.4
Float Voltage	13.8	27.6	55.2
Equalization Voltage	16	32	64
NOTE: 1) Do not install or charge batteries in sealer or non-ventilated compartment. Constant under or overcharge will damage the battery and shorten its life as any battery. 2) Maximum two strings are allowed in parallel connections.			
Periodic Charge	Provide a periodic fresh charge to maintain a SOC grater than the threshold of 80%		

Comparison in between Eastman TTC & AGM VRLA

S.No	Parameter	Eastman Tall Tubular Conventional	AGM VRLA
1	Plate Technology	Tall Tubular Plate	Flat Pasted Plate
2	Life w.r.t Application	Excellent performance on cyclic application	Not good for deep cycle application.
3	Application	"Power Backup Solution - Solar/Inverter/UPS Suitable for Float Application above 1 Hour discharge rate"	"Power Back up - Inverter/UPS Good for float & stand by application"
4	Electrolyte	Free Flow Electrolyte	Electrolyte in- between AGM
5	Water Loss	Low	Negligible
6	Water Top up	Low water top up	No water top up throughout Warranty Life
7	Life Extension	Long life with regular water top up	
8	Self Discharge	Low <3.0%	Very Low < 2.0%
9	Life Cycle w.r.t DOD @27° C @ 80% DoD	900 Cycle for Regular & 1100 for Diamond Series	450 Cycle
10	Spillage	Low Spill-proof	Spill-proof
11	Fumes	Low Fumes	No
12	Recovery in PSOC	Excellent	Low
13	Charger Settings	Generic set point for chargers	Required special set point for chargers
14	Operating Temperature Range	-20 Degrees to +55 Degrees	-15 Degrees to +40 Degrees
15	Terminal Type	L-Type Terminal	Stud Type Terminal