

**SOLAR TUBULAR  
BATTERIES**





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ROBUSTE uses premium technology and high grade materials in these lead tubular batteries to deliver maximum power for extended durations and have an appreciably longer life span. These batteries are specifically suitable for powering up UPS and inverters. ROBUSTE flooded lead acid batteries are environment-friendly, highly reliable in performance and are low in cost. Hear again our extensive research and development wing has helped us create batteries customized to suit Indian operating conditions. These flooded batteries are perfect for use in battery powered vehicles and to power inverters as well as for telecom use.

# SOLAR TUBULAR BATTERIES



## TECHNICAL SPECIFICATIONS OF SOLAR TUBULAR BATTERIES

Model	Capacity at 27 deg C When discharged at (C20 upto 1.75 Vpc 1.280)	Dimension (±3mm)			Weight (Kg±5%)		Initial Charge Minimum AH Input (AH)	Initial Charge at Constant Current (A)		Constant Potential Limiting Current (Amps)	Triple Charge Current in (mA)	
		Length	Width	Height	Dry	Filled		Start (Upto 2.3Vpc)	Finish (Upto 2.75Vpc)		Min.	Max.
RTB 8000	75 AH	504	218	254	18.3	32.5	7.5	3.7	265	12.5	65	260
RTB 12000	100 AH	504	218	254	19.3	34	10	5	350	16.7	85	350
RTB 14000	135 AH	505	190	410	24	42	12	6	420	20	105	420
RTB 16500	150 AH	505	190	410	29	56	15	7.5	525	25	130	520
RTB 22000	200 AH	505	190	410	29	61	20	9	630	30	155	625
RTB 24000	220 AH	505	190	410	32	64	22	10	700	33.5	175	695
RTB 26000	240 AH	505	190	410	34	68	24	11	770	36.6	190	765

\* The height mentioned is upto terminal top

### INITIAL CHARGING INSTRUCTION FOR DRY CHARGE BATTERY



- 1) Filling in specific  $1.220 \pm 0.005$  at 27 deg C
- 2) Rest Period 12 hrs
- 3) In order to reduce the charging time, the following route may be adopted

For RTB 7500 The initial 2.36Vpc charging current may be 7.5A upto followed by 3.7A upto 2.75Vpc  
 For RTB 10000 The initial 2.36Vpc charging current may be 10A upto followed by 5A upto 2.75Vpc  
 For RTB 12000 The initial 2.36Vpc charging current may be 12A upto followed by 6A upto 2.75Vpc  
 For RTB 15000 The initial 2.36Vpc charging current may be 15A upto followed by 7.5A upto 2.75Vpc  
 For RTB 22000 The initial 2.36Vpc charging current may be 20A upto followed by 9A upto 2.75Vpc  
 For RTB 26000 The initial 2.36Vpc charging current may be 24A upto followed by 11A upto 2.75Vpc







### CONDITION OF FULLY CHARGED

- A) 3 Consecutive hourly reading of specific gravity and voltage become constant
- B) Top of charge voltage will be around 16.2V - 16.5V
- C) All Cells should be gas freely
- D) Minimum Ah has been given
- 5) Specific Gravity at fully Charged condition  $1.240 \pm 0.005$  at 27 Deg C

### PRODUCT FEATURES

-  Long shelf life when left unattended for extended periods
-  Pasted Negative Plates
-  Tubular Positive Plates
-  Acid Resistant Polyester Gauntlets
-  High Porosity Envelope Separators
-  Micro porous Ceramic Vent Plug

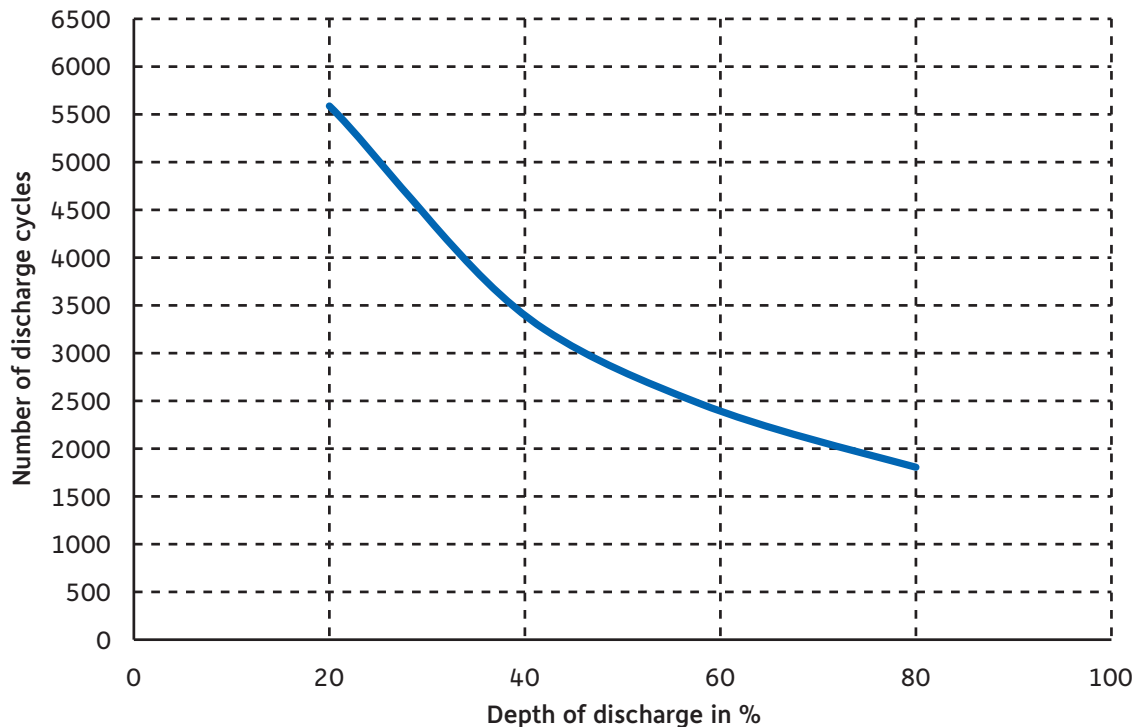
### PRODUCT BENEFITS

-  Long design life
-  Very low maintenance
-  Can handle extreme weather conditions
-  Rugged Performance
-  Longer life without charging
-  More efficient and saves money

## BATTERY CYCLIC PERFORMANCE CALCULATION AND ESTIMATION

IDEAL CYCLIC PERFORMANCE

ROBUSTE Cyclic Test Result



Graph 1, Cycle life vs. DOD of ROBUSTE Series with Ideal Charge Table 1, data of cycle number

### Discharge & Charge Scenario (80%DOD)

#### CYCLE METHOD

Discharge with  $2I_{10}$  for 4 hours (80% DOD), charge with  $2I_{10}$  for 3.5 hour +  $I_{10}$  for 0.5 hour +  $0.25I_{10}$  for 3.5 hour. This is one cycle.

#### RESIDUE CAPACITY DETERMINATION

The batteries are discharged at 10 hour rate after every 50 cycles to test battery capacity. When residue capacity of 10 hour rate capacity is lower than 80%, test is ended. After discharge at 10 hour rate after every 50 cycles, the charge method is: charge 80% of discharged capacity with current of  $2I_{10}$  + charge 20% with current of  $I_{10}$  + charge 20% with current of  $0.4I_{10}$  (i.e. charge 120% of discharged capacity)

#### TEMPERATURE - 27°C

Advantage of Upper Constant Current Charge Model Battery; can be completely recharged within 8 hours.

The end charge voltage will be higher than 2.6Vpc, which is good for active material exchange.

Disadvantage of Upper Constant Current Charge Model

It has risk of battery malfunction without voltage limited. It isn't easy to manage charging in practice.

\* Technical Parameters are Subject to Change due to Continuous improvements and R&D

### ROBUSTE ENERGY

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