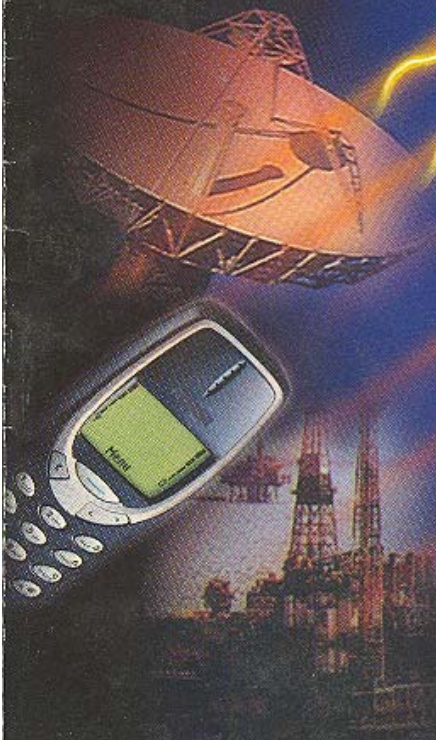




# EXIDE



**EXIDE**  
*Powersafe*

SEALED  
MAINTENANCE FREE  
VRLA BATTERIES

MST RANGE  
(400Ah to 5000 Ah)

## INTRODUCTION

For over 75 years, Exide Industries Ltd. has pioneered battery technology in India. Formerly known as Chloride Industries Limited, the Company was a part of the Chloride Group PLC UK. The leader in packaged power technology, Exide is today India's largest storage battery company with global affiliations and internationally reputed brands having 9 factories strategically located all over India.



A tie-up with Shin-Kobe of Japan, leading global manufacturers of the renowned Hitachi brand of batteries and state-of-the-art highly automated factories at Hosur and Haldia, give us the technology edge. Recognition of our pursuit of quality was achieved when RWTUV of Germany awarded us the ISO 9001 followed by ISO 14001. Technology and quality combine together in **Exide Powersafe** series of Maintenance Free batteries, bringing you the best power back-up for usage in standby and solar power applications.

## Vision

To win our customer, stakeholders and employees by transferring Quality into a performance oriented business which will secure market leadership and profitable growth through effective fulfilment of customer needs.

## Performance Characteristics Conforming

JIS : C8707

TEC Specification No. : G/BAT-01/02 MARCH 2000 With Latest Amendment

RDSO Specification No. : IRS:S93-96 With Latest Amendment

## APPLICATION



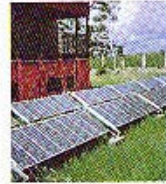
Telecommunication System



Off-shore Platform



Cellular Phones & Pagers (Base Stations & Transmitters)



Solar Photo-voltaic Systems



Power Station



Railway Signalling & Telecom Equipment

- Electronic PABX Systems
- UPS Systems
- Office Automation Equipment
- Cable Television Equipment
- Geophysical Equipment

## Technical Details :

- **Maintenance Free**  
No topping up is required.
- **Enhanced Performance**
  - Computer aided grid design for high power density
  - Excellent deep discharge recovery
  - Better thermal management in the module
  - Resistance to thermal runaway
- **Ready-to-use**  
Supplied in factory charged condition.
- **State-of-the-art technology**
  - Argon arc welding employed
  - Heat sealing checked by Helium Ion Tester
  - Flame arrestor fitted safety valve
- **Eco-friendly**
  - No emission of corrosive fumes or gases under normal operating conditions.
  - Cadmium free
- **Easy handling & no installation constraints**  
Compact, easily transportable and can be used in any orientation without leakage or spillage of electrolyte.

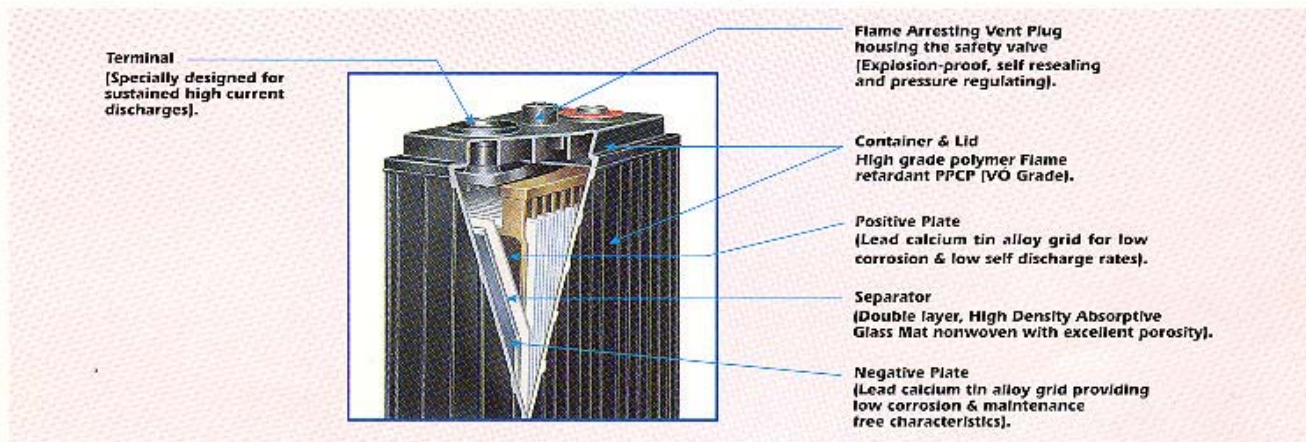
- **Saving in floor space**  
Horizontally stackable modules, low foot-print.
- **User friendly**
  - Front access design
  - Easy cell replacement
  - Can be used in any orientation
- **Life Expectancy in float condition**  
20 years at 27°C and following proper charging conditions.
- **Life Expectancy in Cycling conditions at 27°C**
  - 4000 cycles at 20% DOD
  - 1800 cycles at 50% DOD
  - 1200 cycles at 80% DOD

### Recommended Float Voltages

AMBIENT TEMP (°C)	RECOMMENDED FLOAT VOLTAGE PER CELL (VOLT)	MAXIMUM CHARGING CURRENT (AMPERE)
-5 to 14	2.27+/-0.01	0.15C
15 to 24	2.25+/-0.01	0.15C
25 to 34	2.23+/-0.01	0.15C
35 to 40	2.20+/-0.01	0.15C

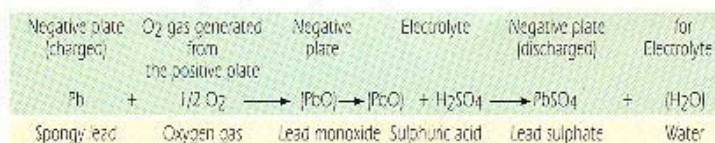
C : Nominal 10 hr. capacity of the battery at 27°C

## Mechanism Construction

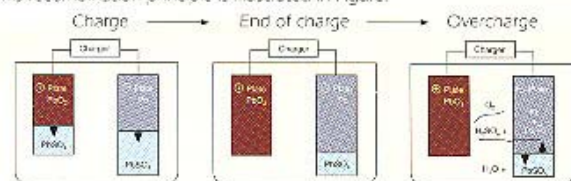


## Recombination Principle

This recombination principle may be expressed as a :



This recombination principle is illustrated in Figure.



### MST RANGE

Battery Model	Nominal Voltage (V)	Rated Capacity (Ah)				Dimensions (mm)			Weight (Kg) $\pm 5\%$
		10 Hr. 1.75V/cell	5 Hr. 1.75V/cell	3 Hr. 1.70V/cell	1 Hr. 1.67V/cell	L $\pm 5$	D $\pm 5$	H $\pm 5$	
1MST1400	8	400	333.2	286.8	200	789	466	252	160
1MST500	8	500	416.5	358.5	250	789	466	252	188
1MST600	8	600	499.8	430.2	300	789	466	252	208
2MST800	4	800	666.4	573.6	400	436	466	362	149
2MST1000	4	1000	833.0	717.0	500	436	466	362	163
2MST1250	4	1250	1041.25	896.25	625	436	466	511	203
2MST1500	4	1500	1249.5	1075.5	750	436	466	511	227
2MST1600	4	1600	1332.8	1147.2	800	436	466	511	241
MST2000	2	2000	1666.0	1434.0	1000	436	466	362	163
MST2500	2	2500	2082.5	1792.5	1250	436	466	511	203
MST3000	2	3000	2499.0	2151.0	1500	436	466	511	227
MST4000	2	4000	3332.0	2868.0	2000	872	466	362	326
MST5000	2	5000	4165.0	3585.0	2500	872	466	511	406

### DETAILS OF 48V SYSTEMS IN MODULAR CONSTRUCTION :

System	Model	Stacking	Overall Dimensions (mm)			Foot print Area (Sq.m.)	System Drg. Ref. No.	Weight (Kg) $\pm 5\%$
			L $\pm 10$	D $\pm 10$	H $\pm 10$			
48V400	6x4MST400	1 Stack 6 Mod./Stack	789	510	1637	0.4024	BA 6826	972
48V500	6x4MST500	1 Stack 6 Mod./Stack	789	510	1637	0.4024	BA 6826	1140
48V600	6x4MST600	1 Stack 6 Mod./Stack	789	510	1637	0.4024	BA 6826	1260
48V800	12x2MST800	3 Stack 4 Mod./Stack	1308	510	1573	0.6671	BA 6821	1823
48V1000	12x2MST1000	3 Stack 4 Mod./Stack	1308	510	1573	0.6671	BA 6821	1991
48V1250	12x2MST1250	4 Stack 3 Mod./Stack	1744	510	1658	0.8894	BA 6822	2482
48V1500	12x2MST1500	4 Stack 3 Mod./Stack	1744	510	1658	0.8894	BA 6822	2770
48V1600	12x2MST1600	4 Stack 3 Mod./Stack	1744	510	1658	0.8894	BA 6822	2938
48V2000	24xMST2000	6 Stack 4 Mod./Stack	2616	510	1573	1.334	BA 6823	3982
48V2500	24xMST2500	6 Stack 4 Mod./Stack	2616	510	2169	1.334	BA 6824	4941
48V3000 2x1500	24xMST3000	8 Stack 3 Mod./Stack	3488	510	1658	1.779	BA 6825	5540
48V4000 (B)1x1000	24xMST4000	12 Stack 4 Mod./Stack	2616	1170	1573	3.061	BA 6843 Sh. #1 & #2	7964
48V4000 (L)1x1000	24xMST4000	12 Stack 4 Mod./Stack	5232	510	1573	2.668	BA 6827	7964
48V5000 (B)1x1250	24xMST5000	12 Stack 4 Mod./Stack	2616	1170	2169	3.061	BA 6844 Sh. #1 & #2	9882
48V5000 (L)1x1250	24xMST5000	12 Stack 4 Mod./Stack	5232	510	2169	2.668	BA 6830	9882

#### NOTE :

- Batteries with other intermediate capacities for specific application shall be provided on request.
- Dimensions given are as per horizontal stacking arrangement.

### MST Range : Discharge Performance at 27°C

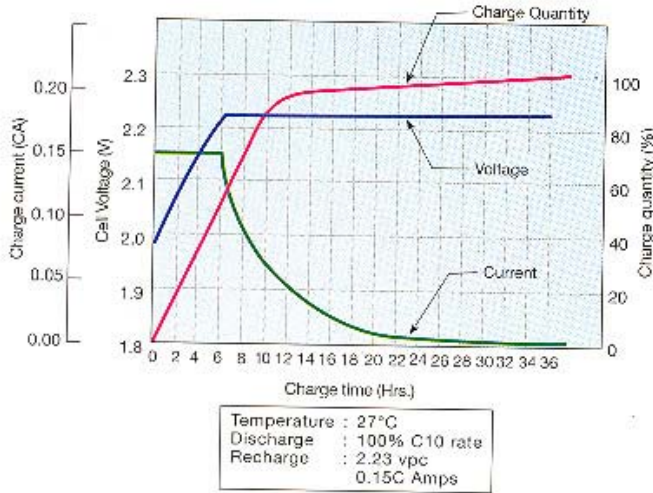
Battery Type	Final Volt per cell	Discharge current in Amperes (temp. 27°C)							
		10 hr.	8 hr.	5 hr.	4 hr.	3 hr.	2 hr.	1 hr.	30 min
4MST400	1.75	40.00	48.00	72.00	84.00	108.00	152.00	264.00	440.00
	1.70	–	–	76.00	86.00	112.00	160.00	276.00	452.00
	1.60	–	–	–	–	–	–	280.00	472.00
4MST500	1.75	50.00	59.00	84.00	100.00	121.50	164.00	260.00	385.00
	1.70	–	–	91.00	108.50	134.00	181.50	293.50	462.50
	1.60	–	–	–	–	–	–	316.00	520.00
4MST600	1.75	60.00	70.80	100.80	120.00	145.80	196.80	312.00	462.00
	1.70	–	–	109.20	130.20	160.80	217.80	352.20	555.00
	1.60	–	–	–	–	–	–	379.20	624.00
2MST800	1.75	80.00	94.40	134.40	160.00	194.40	262.40	416.00	616.00
	1.70	–	–	145.60	173.60	214.40	290.40	469.60	740.00
	1.60	–	–	–	–	–	–	505.60	832.00
2MST1000	1.75	100.00	118.00	168.00	200.00	243.00	328.00	520.00	770.00
	1.70	–	–	182.00	217.00	268.00	363.00	587.00	925.00
	1.60	–	–	–	–	–	–	632.00	1040.00
2MST1250	1.75	125.00	147.50	210.00	250.00	303.75	410.00	650.00	962.50
	1.70	–	–	227.50	271.25	335.00	453.75	733.75	1156.25
	1.60	–	–	–	–	–	–	790.00	1300.00
2MST1500	1.75	150.00	177.00	252.00	300.00	364.50	492.00	780.00	1155.00
	1.70	–	–	273.00	325.50	402.00	544.50	880.50	1387.50
	1.60	–	–	–	–	–	–	948.00	1560.00
2MST1600	1.75	160.00	188.80	268.80	320.00	388.80	524.80	832.00	1232.00
	1.70	–	–	291.20	347.20	428.80	580.80	939.20	1480.00
	1.60	–	–	–	–	–	–	1011.20	1664.00
MST2000	1.75	200.00	236.00	336.00	400.00	486.00	656.00	1040.00	1540.00
	1.70	–	–	364.00	434.00	536.00	726.00	1174.00	1850.00
	1.60	–	–	–	–	–	–	1264.00	2080.00
MST2500	1.75	250.00	295.00	420.00	500.00	607.50	820.00	1300.00	1925.00
	1.70	–	–	455.00	542.50	670.00	907.50	1467.50	2312.50
	1.60	–	–	–	–	–	–	1580.00	2600.00
MST3000	1.75	300.00	354.00	504.00	600.00	729.00	984.00	1560.00	2310.00
	1.70	–	–	546.00	651.00	804.00	1089.00	1761.00	2775.00
	1.60	–	–	–	–	–	–	1896.00	3120.00
MST4000	1.75	400.00	472.00	672.00	800.00	972.00	1312.00	2080.00	3080.00
	1.70	–	–	728.00	868.00	1072.00	1452.00	2348.00	3700.00
	1.60	–	–	–	–	–	–	2528.00	4160.00
MST5000	1.75	500.00	590.00	840.00	1000.00	1215.00	1640.00	2600.00	3850.00
	1.70	–	–	910.00	1085.00	1340.00	1815.00	2935.00	4625.00
	1.60	–	–	–	–	–	–	3160.00	5200.00

**NOTE :**

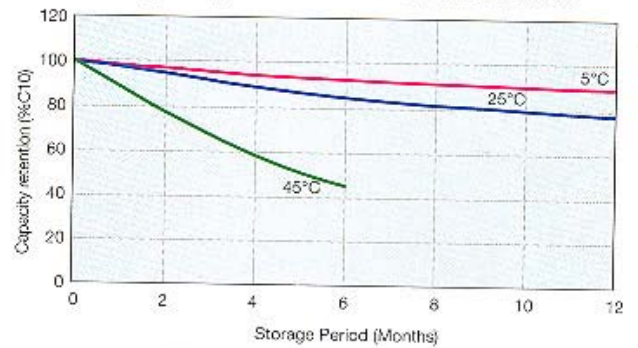
- 2) The available current output for each duration is dependent upon the end of discharge voltage level required by the system. Increase in specified end volts will increase battery size. The quoted end of discharge voltage relates to battery terminal voltage. Hence, voltage drop due to cable resistance between battery terminals and load circuit needs to be allowed for in the system calculation, particularly where a high current load for short duration is involved.
- 3) Batteries are shipped at 90% of their rated capacity. 100% capacity will be achieved by cycling the battery or after 3 months of float service.

## CHARACTERISTICS OF MST BATTERIES

### Charge Characteristics

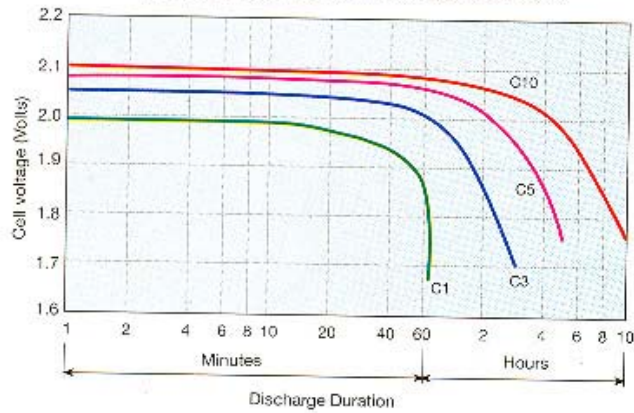


### Capacity Retention Characteristics

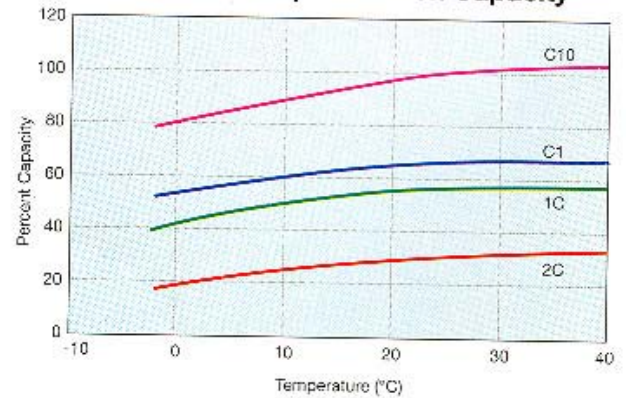


- Supplementary charge is recommended before capacity retention ratio drops less than 80%.

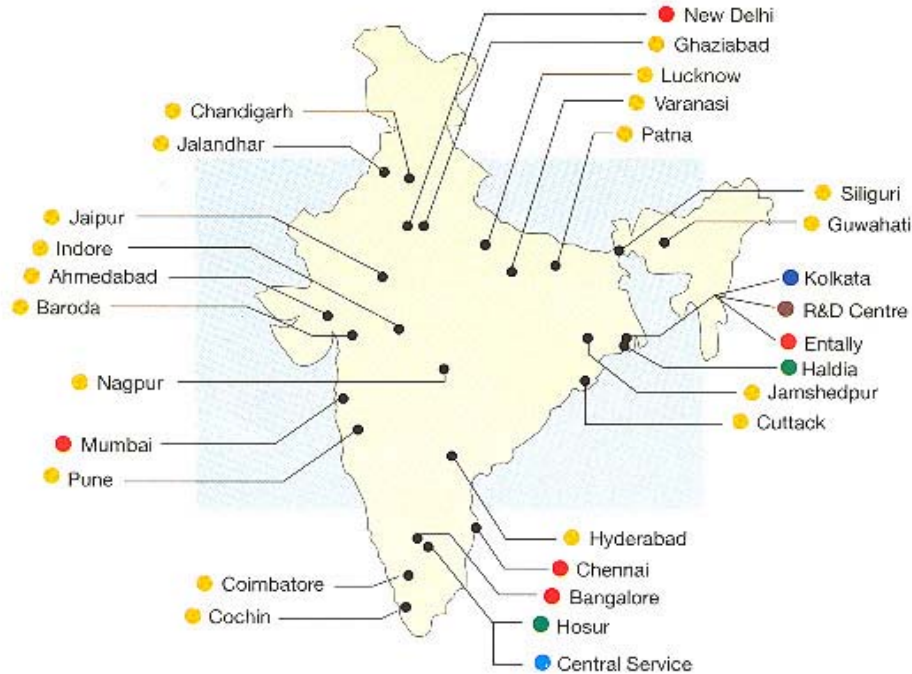
### Discharge Performance Curves



### Effect of Temperature on Capacity



## NETWORK



- HEAD OFFICE
- REGIONAL OFFICE
- BRANCH OFFICE
- FACTORY
- R&D CENTRE
- CENTRAL SERVICE

For more information please contact us :

**Head Office :** Exide Industries Ltd., Exide House, 59E, Chowringhee Road, Kolkata 700 020, Ph. : (033) 247 8320/8326-29, Fax : (033) 247 9819, 240 7831:

**Factory Address :** **Hosur** Survey No. 246, Chinchurakanapalli Village, Sevaganapally Panchayat, Hosur Taluk, Dharmapuri Dist., Tamil Nadu - 635 103 Ph. : (04344) 51252-58 Fax : (04344) 51251 **Haldia** Exide Industries Limited, Durgachak, Haldia - 721 602, Dist. Midnapur, West Bengal Ph. : (03224) 52140/145/296/253 Fax : (03224) 52145

**R&D Address :** 217, Nazrul Islam Avenue, Kolkata - 700 059 Ph. : (033) 5591458/4225/1660 Fax : (033) 5515545 **Central Service** Survey No. 246, Chinchurakanapalli Village, Sevaganapally Panchayat, Hosur Taluk, Dharmapuri Dist., Tamil Nadu - 635 103 Ph. : (04344) 51252-58 Fax : (04344) 51251 Contact No. : 98450 44422 (24 hrs.)

**Regional Offices :** **Kolkata**, 8A, Hatibagan Road, Kolkata 700 014, Ph. : 246 4560/4566, 284 3137, Fax : (033) 244 6555; **New Delhi**, Exide House, 3E/1 Jhandelwala Extension, Link Road, New Delhi 110 055, Ph. : (011) 355 5702, 362 7097, Fax : (011) 355 5703; **Mumbai**, 'Rahejas', 5th Floor, 8C Main Avenue, V. P. Road, Santa Cruz (West), Mumbai 400 054, Ph. : (022) 646 5283/84, Fax : (022) 646 5042; **Chennai (South I)**, 21/22, Alandur Road, Guindy, Chennai 600 032, Ph. : (044) 234 1136/37/38/8031, Fax : (044) 234 6894; **Bangalore (South II)**, 85 Ulsoor Road, Bangalore 560 042, Ph. : (080) 559 8153/3683, Fax : (080) 559 9624;

**Branch Offices :** **Baroda**, Ph. : (0265) 791 947, Fax : (265) 33 6063; **Chandigarh**, Ph. : (0172) 65 7409/4387/4553, Fax : (0172) 65 4395; **Coimbatore**, Ph. : (0422) 211737/1846/1997; **Cuttack**, Telefax : (0671) 62 0272; **Ghaziabad**, Ph. : (0120) 473 4574, 471 2338; **Guwahati**, Ph. : (0361) 544317; **Hyderabad**, Ph. : (040) 3314820 Fax : (040) 339 9050; **Indore**, Ph. : (0731) 49 1357/3395, Fax : (0731) 49 3395; **Jaipur**, Ph. : (0141) 293 799, 704, Fax : (0141) 37 2409; **Jalandhar**, Ph. : (0181) 237 870/874, Fax : (0181) 59 571; **Jamshedpur**, Ph. : (0657) 42 6847, Fax : (0657) 42 8349; **Kochi**, Ph. : (0484) 53 4868/69, Fax : (0484) 53 4869; **Lucknow**, Ph. : (0522) 215 280, 281, Fax : (0522) 21 8089; **Mumbai**, Ph. : (022) 207 2188/89/7918/7533, Fax : (022) 207 8831; **Nagpur**, Ph. : (0712) 811 139/815, 882 Fax : (0712) 54 1479; **Patna**, Ph. : (0612) 23 1569; **Pune**, Ph. : (020) 612 6426, Fax : (020) 634 9315.

## Do's

1. Read the manual carefully before use.
2. When the battery is not in use, store it in a cool place. Charge the battery atleast once in six months.
3. Keep sparks, flames, lighted cigarettes away from battery.
4. While charging the VRLA battery, use a dedicated charger and follow our charging conditions.
5. Make sure that you connect VRLA batteries by their proper polarity.
6. Make sure that VRLA batteries are operated in the following temperature range  
Discharge -20 to 50°C  
Charge 0 to 40°C  
Storage -20 to 40°C
7. After discharge, recharge the battery as soon as possible.
8. Erection to be completed at one go.

## Don'ts

1. Never place the battery near or in fire
2. Never short-circuit the terminals.
3. Never disassemble or reassemble the battery.
4. Do not connect or disconnect any cell without switching off circuit.
5. Never use scouring powder or any solvent to clean battery surface.
6. Do not ever discharge a battery below 1.6 vpc.
7. Do not unpack, erect or assemble part by part.
8. Do not use the VRLA battery together with other types of batteries.
9. Never connect the VRLA battery directly to a power supply socket without using charger as a medium.
10. Do not solder directly on to the terminals of the VRLA battery.
11. Do not apply strong shock by dropping it or hitting it against objects.
12. Do not operate without proper safety measures.
13. Used batteries are recycled, so do not dispose them.



Exide Industrial, Exide Industries Limited – An ISO 9001 Company  
Exide House, 59E, Chowringhee Road, Calcutta – 700 020  
Tel : (033) 247 8320/8326/27/28/29. Fax : (033) 247 9819, 240 7831  
Visit us at [www.exideindustries.com](http://www.exideindustries.com)

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