

SPECIFICATIONS OF
VALVE REGULATED LEAD-ACID BATTERIES

APPROVAL SHEET

MODEL : RT1295 (12V9.5AH)

SPEC NO. _____

TOTAL PAGES : 7pages incl. this cover page

DATE : 18TH MAY, 2003

APPROVED BY : _____

1 RANGE

This specification applies to the Sealed Lead-Acid batteries manufactured by RITAR

Model: **RT1295** (12V9.5AH).

2 PHYSICAL SPECIFICATIONS

- 2.1 Normal Voltage : 12V
- 2.2 Normal Capacity : 9.5AH(20 hour rate)
- 2.3 Approx. Weight : 2.95kg(6.50lbs)
- 2.4 Terminals: F1 (standard); F2(optional)
- 2.5 Dimensions
 - Length 5.94inches(151mm)
 - Width 2.56inches(65mm)
 - Height 3.68inches(93.5mm)
 - Total Height 3.90inches(99mm)

3 ELECTRICAL SPECIFICATIONS

3.1 Test Conditions

The test is carried out with new batteries. (Using 14.5-14.9V voltage to charge the test batteries for 24h before testing and the initial charging current less than 2.85A.)

- Temperature :25±5°C
- Humidity :25-85%
- Air pressure :86-106Kpa

3.2 Final Discharge Voltage

The battery should never be discharged to less than the predetermined final discharge voltage. Otherwise over discharge may result. Repeated over discharge may cause failure to recover capacity by charging

Discharge Current (A)	Final Discharge Voltage
(A) < 0.1C	10.8V
0.1C ≤ (A) < 0.5C	10.5V
0.5C ≤ (A) < 1.0 C	10.2V
(A) ≥ 1.0 C	9.6V

3.3 Capacity affected by Temperature

Temperature	Discharge efficiency
40°C(104°F)	102%
25°C(77°F)	100%
0°C(32°F)	85%
- 15°C(5°F)	65%

3.4 Test Methods & Performance

ITEM	Unit	Performance	Condition	Remark
Open Circuit Voltage(OCV)	V	≥ 13.04	New batteries	(Full charged)
Capacity	AH	≥ 9.5 (20 hour rate)	Discharging battery's Voltage to 10.5V with 0.475A current	1 New batteries 2 Up to 3 cycles are allowed
		≥ 8.8 (10hour rate)	Discharging battery's Voltage to 10.5V with 0.88A current	
		≥ 7.6 (5 hour rate)	Discharging battery's Voltage to 10.5V with 1.1.52A current	
		≥ 6.4 (1 hour rate)	Discharging battery's Voltage to 10.2V with 6.4A current	
		≥ 4.4 (15minute rate)	Discharging battery's Voltage to 9.6V with 17.7A current	
Internal Resistance	mΩ	< 20	Full charged batteries	

ITEM	Unit	Performance	Condition	Remark
High Rate Discharge (90A)		No appearance charge, terminals of battery are ok	Discharge for 3 Seconds	
Over charge		No leakage Nor explosion	Charging battery for 160 hours with 0.03C current	Full charged batteries
Sealing reaction efficiency	%	≥ 95	Charging battery for 96 hours with 0.01C ₁₀ current, then Charging battery for 1 hours with 0.005C ₁₀ current, then begin to collect gas 1 hours	Full charged batteries
Safety valve action	Kpa	15-30(opening) ≥ 5 (closing)	Test battery inner pressure of opening valve and closing valve	
Blast prevented capability		Nor explosion	The battery encountered with fire	Full charged batteries
Moisture prevented capability		No acid on the surface of the battery	Battery in the Moisture surroundings	Full charged batteries
Maintenance of charge	AH	$\geq 80\%C_{20}$	After stored 120 days, then discharging battery with 0.45A current	Full charged batteries
Cycle Life	Cycle	≥ 250	JISC 8702-1995,8.3.12	
Vibration		The battery's mechanically and electrically are normal	To vibrate the battery which is in upside-stand direction after vibration which has an amplitude of 4mm a frequency of 16.7 Hz and it should be continued for 60 minutes	
Shock		The battery's mechanically and electrically are normal	Dropping the battery which is in upside-stand direction from a height 200mm to a wood board which thicker than 10mm for 3 times.	

4 CHARGING INSTRUCTIONS

- 4.1 Always recharge the battery immediately after use.
- 4.2 Constant Voltage charging is recommended. The maximum initial charging current should be less than 2.85A. The charging voltage is 14.5-14.9V(Cycle use) and 13.6-13.8V (Standby use).
- 4.3 If batteries are used in series or parallel, the correct size cabling should be used.
- 4.4 Do not charge the battery in upside-down position.
- 4.5 The battery requires approx. 110% of the total discharging energy to fully recharge.

5 DISCHARGING INSTRUCTION

- 5.1 Never Leave a battery in a discharging condition
- 5.2 Never allow a battery to fall below 12V in storage. The full capacity may not be able to be reached and actual service life decreased
- 5.3 Maximum continuous discharge current is 95A. For greater continuous discharge currents, please consult our technical staff.
- 5.4 Avoiding over discharging the battery, the discharge cut off voltage should be more than 9.6V.

6 STORAGE

- 6.1 When storing the batteries, be sure to remove them from the equipment, or disconnect them from the charger and the other load. Keep them in a place where the air is dry and the temperature is sufficiently low.
- 6.2 The batteries gradually deteriorate even during storage.
- 6.3 Stored batteries should receive a supplementary charge at intervals suggested as follows:

Storage Temperature	Charging Interval
0°C(32°F) to 20°C(68°F)	Every 12 months
21°C(70°F) to 30°C(86°F)	Every 9 months
31°C(88°F) to 40°C(104°F)	Every 5 months
41°C(108°F) to 50°C(122°F)	Every 2.5 months

- 6.4 Stored batteries should self-discharge if the battery didn't be charged for a long time , so the capacity of the stored batteries will decline as follows (At 20°C):

Storage Time	Remaining Capacity
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After 3 months 90%

After 6 months 80%

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After 9 months 60%

7 PRECAUTIONS

- a) When cleaning the batteries, use soft cloth only.
- b) Batteries may generate inflammable gas in some cases. Do not expose them to flame or excess heat. Do not short batteries.
- c) Do not attempt to disassemble the batteries.
- d) Batteries may explode if put into the fire. Never dispose of batteries in fire.
- e) Do not mix use the different manufacturer or history of use (charge/discharge operation).

8 SPECIFICATION

- a) Charging characteristics.
 - i. Float service 2.27-2.30V/C at 25°C(Fig 1)
 - ii. Cycle service 2.40-2.45V/C at 25°C(Fig 2)

NOTE: As temperature rises, charging voltage should be reduced to prevent overcharge, and increased as temperature falls to avoid undercharge. The recommend compensation factor for *RITAR* batteries is $-20\text{mv}/^{\circ}\text{C}$.Cell (standby use) and $-30\text{mv}/^{\circ}\text{C}$ cell (cyclic use). The standard center point for temperature composition is 25°C.

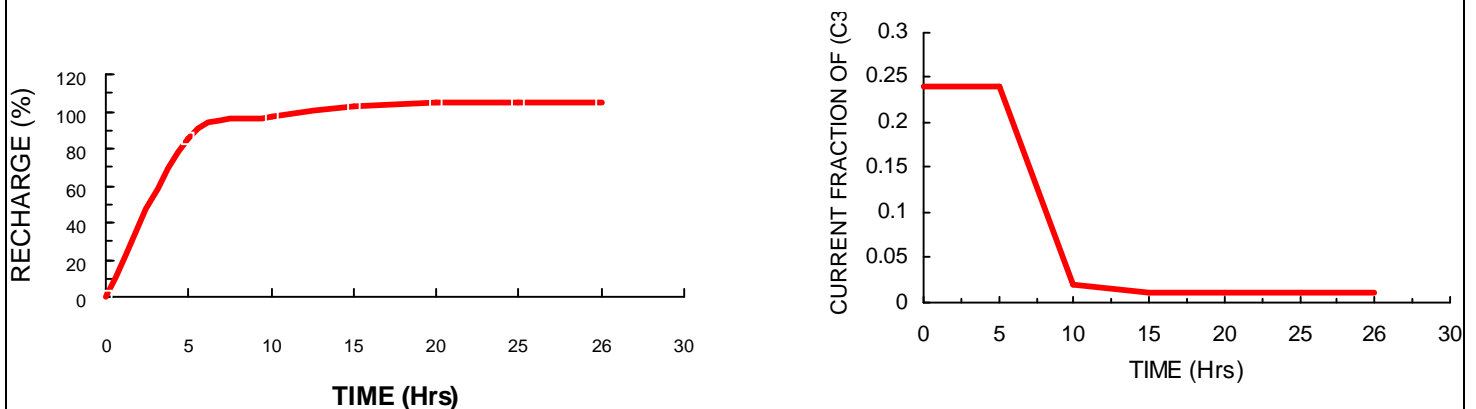


Fig 1. RECHAEGE 0.3C AMP LIMIT

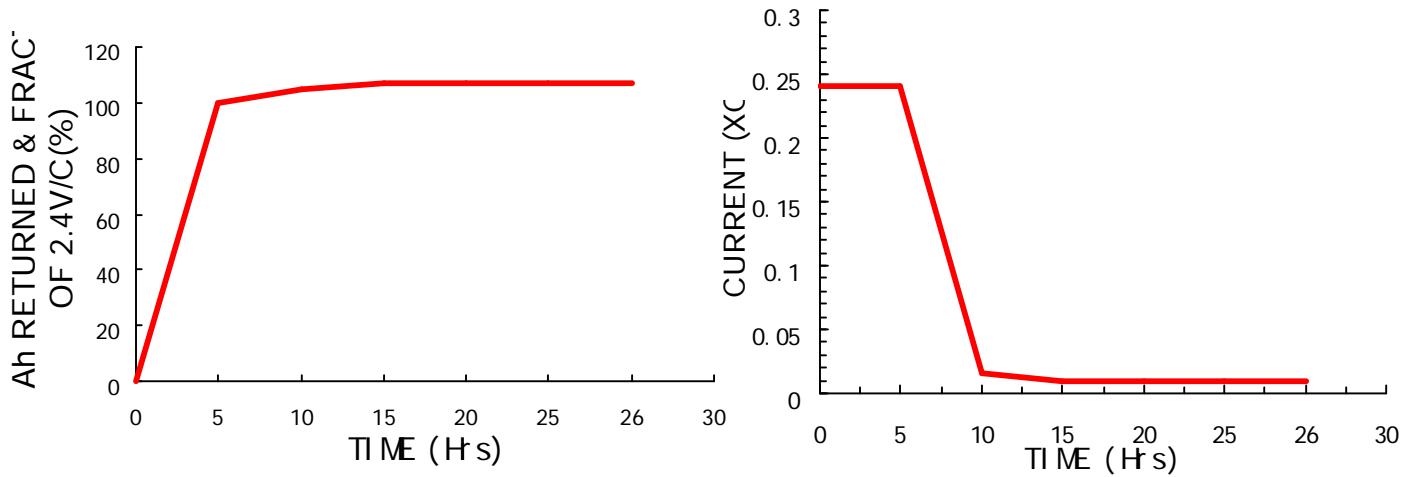


Fig 2. CYCLING SERVICE RECHARGE

b) Discharging characteristics (Fig 3)

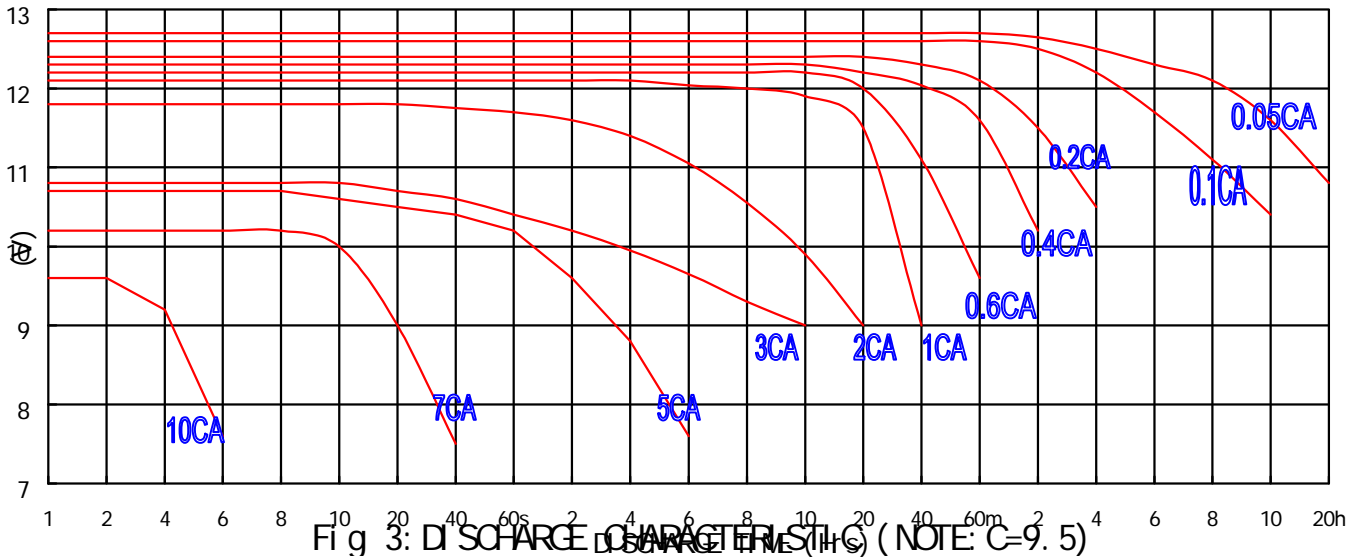


Fig 3: DISCHARGE CHARACTERISTICS (NOTE: C=9.5)

c) Cycle service

The greater the depth of discharge of each cycle, the lesser the number of cycles available from the battery(Fig4).

Figure 4: Cycle service life

