

THE DOC'S BATTERY & CHARGER REVIEWS

REZAP RBC883 REVIEW

DECEMBER 2003

REPORT

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WHAT IS IN THE BOX?

The Rezap RBC883 has a few names. The “Rezap Battery Doctor” and the “5 in 1 Multi-chemistry Battery Charger” and of course the “Rezap RBC883”. We will call it the Rezap Battery Doctor (a name dear to the Doc’s heart).

The charger makes an impression straight of the box. It is a single unit with the power supply incorporated as part of the charger. Some chargers have a separate power supply, such as the Vanson Speedy Box. The unit is well designed and of sturdy construction. It is a light grey in colour with a clear plastic lid (which can be replaced separately if broken for a modest cost).

Two models are available, first, the 220V-240V 50Hz model (for SAA, GS & BS Standards) and secondly the 110V-120V 60Hz model (for UL, CUL & JIS Standards). We are reviewing the 220-240 volt Australian model.



Top



Underside

Each of the 4 charging slots has three contact positions, bottom, middle and upper. There are corresponding notches on the negative terminal. Broadly speaking, the bottom contact is used by AAA batteries, the middle by AA and the upper by C and D. High capacity Ni-MH batteries (say over 1800 mAh) should be charged on the upper contact position. The Doc tells you how below.

On the reverse side of the unit there is a removable hatch. The hatch is hard to open (deliberately it would seem to keep inquisitive children away for the power cord). Inside the hatch are the power cord and the cables used to recharge 6-volt Lantern batteries. The power cord is easy to remove and the charger is recessed to allow the hatch to close over the extended power cord.

Key information is also printed on the reverse side if you lose the instructions. There are two notches allow the charger to be attached to the wall to save space. The only other item in the box is the User instructions.

USER INSTRUCTIONS

We will not beat around the bush; the Doc gives the documentation a ranking of **Outstanding**. Which means there is a genuine effort is made to provide detailed, clear instructions on how to operate the charger, address safety issues, provide advice on good charging technique, etc.

CHARGER TYPE (UNIVERSAL OR MINI)

The Rezap Battery Doctor is a Universal style charger. The probably does not do the charger justice, it is a Universal charger of exceptional versatility.

BATTERY SIZES CATERED FOR

The Rezap Battery Doctor can charge a large range of different battery sizes up to 4 at a time, including:

- ➔ AAAA;
- ➔ AAA;
- ➔ AA;
- ➔ C;
- ➔ D;
- ➔ N;
- ➔ 9V (only one battery can be charged at a time)
- ➔ 6V Lantern (only one battery can be charged at a time); and
- ➔ Prismatic (rectangular and flat in shape).

The Rezap Battery Doctor takes the largest range of batteries sizes of any consumer style charger we have used. Its versatility in this respect is unmatched.

BATTERY TYPES CHARGED

The Rezap can charge a large range of different battery types, including:

- ➔ Alkaline;
- ➔ Titanium;
- ➔ Rechargeable Alkaline Manganese (RAM);
- ➔ Ni-MH; and
- ➔ Ni-Cd.

You read the first two battery types correctly. The Rezap Battery Doctor is one of the rare consumer style chargers than can charge Primary cell batteries such as alkaline and titanium. This feature, in particular, has earned the charger endorsement from Plant Art. The

only charger to our knowledge that has such endorsement. So you maybe able to reuse some of those old batteries floating around the house instead of throwing them out.

The Rezap Battery Doctor's ability to take a large number of battery sizes and types makes this charger the most versatile in the retail market, bar none.

Warning: the Rezap Battery Doctor *does not* charge Carbon Zinc or Lithium Ion batteries. An earlier Rezap model could charge Carbon Zinc batteries, but that functionality has now be dropped from the product line up.

FEATURES SET

Some of the major features of the charger are:

- ➔ Microprocessor controlled. The Rezap Battery Doctor uses a high performance 8-bit microprocessor, employing advanced RISC architecture with integrated analog-to-digital converters and multi-channel high speed input/output ports controlling the whole charging process in real time. A rather long winded way of saying it has some smarts;
- ➔ The Microprocessor can be upgraded to cater for new battery types. The only retail charger we know of that has this feature;
- ➔ The Rezap Battery Doctor uses a Pulse charge, with AlkalineMax™ charging technology;
- ➔ Can charge up to 4 batteries at once;
- ➔ Built in battery tester, located in Slot 1. Slot 1 is on the far left of the charger as you look at the front. I would like to see the Slots numbered from 1 to 4 in future models;
- ➔ Automatic identification of defective batteries. The charger will not charge defective batteries. The LED on the relevant slot will go out signalling a defective battery;
- ➔ Automatic detection of battery size and type;
- ➔ The user is able to mix battery size and type;
- ➔ Extraordinary range of battery types and sizes taken (see above).
- ➔ 12 month warranty standard. An extra 12 months upon registration.

SAFETY FEATURES

The Rezap Battery Doctor uses a combination of hardware and software controls for safety, including:

- ➔ Alkaline battery charge–safe protection;
- ➔ Faulty battery detection and rejection;
- ➔ Overcharge protection;
- ➔ Short circuit protection;
- ➔ Wrong polarity protection. Which occurs when the user put the batteries in the wrong way;
- ➔ Negative delta protection;

- ➔ Zero delta voltage protection;
- ➔ Temperate protection; and
- ➔ Timer protection.

EASE OF USE

Chargers do not come easier, especially with some many safety features. Put the batteries in and the Rezap Battery Doctor does the rest. The safety features will protect the batteries from being over charged even if you forget to remove them. Even defective batteries will be identified and not charged.

The most idiot-proof charger the Doc has ever used. The only real danger will come if you insert the wrong battery type, for example Carbon Zinc (often called heavy duty batteries) or Lithium ion batteries.

PERFORMANCE

The Rezap Battery Doctor uses a three step charging process. First, the Analysing Stage. "In the Analysing Stage, each battery is subjected to a series of complex test functions to determine the size and category they belong to (eg. Alkaline, Carbon Zinc, NiCd, NiMH or RAM). The condition of each battery is also tested and "remembered", so that these parameters can be used in the next process stage." In the second stage the appropriate charging technique is used, depending on the information gained in stage 1. Once the batteries are charged the Rezap Battery Doctor goes into the third stage which applies a trickle charge to the batteries.

The Maximum Battery Capacity of the charger is:

- ➔ AA - up to 1800 mAh;
- ➔ C, D - up to 4000 mAh;
- ➔ NiCd, NiMH - up to 4000 mAh. **Hint:** you need to charge high capacity AA batteries on the upper contact, or you will limit the charge to 1800 mAh.

The maximum charge rate of the charger is 250mAh per slot. Actual charging voltages and currents are dynamically adjusted during the charge cycle.

So the performance lies somewhere between so called "fast" chargers (2-4 hours for 2100mAh AA batteries) and the older style manual chargers. The Rezap is a cool charger, which means the batteries do not become really warm or hot during charging, unlike say the Grandell Alkaline charger where the batteries can become very hot. Batteries will be hotter than ambient air temperature but not a great deal more. The only time the Doc noticed warm batteries is when the Doc charged AAA size batteries on the upper contact and right near the end of the charge cycle. This not uncommon when a battery reaches full charge, the additional energy is dissipated as heat, before the charger turns off the current.

If you are looking for very fast recharge rates, this is not the charger for you. The Doc has it on good authority that Digital Works (who make the Rezap) will, in early 2004, bring out two new "fast" chargers for AA and AA size batteries with some nifty features. One will have a patented cooling fan on the charger. So stay tuned.

The Doc is still working on tests to check the ability of chargers to fully charge batteries. His initial view is that the conservative charge cycle used by the Rezap Battery Doctor will not fully charge high capacity Ni-MH batteries. It is the price you pay for being able the

charge alkaline batteries. The conservative charge cycle is also the reason why the Doc uses the Rezap Battery Doctor to charge new batteries the first time. A conservative charge cycle should also mean batteries last longer and give more charge cycles.

THE REZAP IN USE

The Doc has been using the Rezap Battery Doctor for some time now. It has become one of his favourite chargers. The Doc would like to see some improvements. So it is time to get very picky:

- ➔ As the instructions refer to slots 1 to 4, the slots should be numbered to reflect the instructions;
- ➔ The red LED “on light” is hard to see in high light environments such as offices;
- ➔ The negative terminals are made of soft metal, which can be bent if sufficient care is not taken;
- ➔ There is no ability to discharge batteries. This becoming less important as Ni-MH begin to replace Ni-Cds, but it is till a useful feature to have;
- ➔ The Rezap can only charge one 9 volt battery at a time. Most can charge two. The Doc does not consider this key feature – as he does not charge many 9-volt batteries!
- ➔ A better system is needed for charging high capacity AA Ni-MH batteries. The instructions suggest you use the upper contact. That is easy to say than do. It is difficult for proper contact for the 4 AA batteries to happenat once. The batteries tend to fall off contacts. So the Doc made up a simple, but effective, battery cradle. The cradle is made of 3cm wide D shaped dowel. The dowel it is cut shorter than a AAA battery, say 4cm. The cradle is placed in the slot and the battery placed on top. Both AA and AAA batteries can use the cradle. Here is a picture:



- ➔ Make sure the batteries are properly seated within the charger. Otherwise the charger may indicate the battery is defective. Also look to ensure you have not bent the terminals. It is also a good idea to reset the charger each time you charge a set of batteries;
- ➔ If the charger indicates that a battery is defective, the Doc takes it out and places the battery into another slot and tests it again. If the second test shows the battery to be defective, throw it out. Primary alkaline cells go off quickly, so be prepared to throw them out even after only 3 recharges.
- ➔ When charging high capacity batteries (say around 1800 mAh) for extended periods, the Doc has noticed that the battery in slot 4 will stop charging; the Doc believes the radiant heat from the transformer (located next to slot 4) is triggering the temperature cut out on slot 4. This can be partially addressed by turning the charger off and allowing it to cool down.

DOC'S RATING (RANKED OUT OF 10)

Feature set	8.5
Safety Features	10
Ease of use	10
Versatility	10
Value for money	8.5
Overall ranking	9.5
Documentation	Outstanding

CONCLUSION

The Rezap Battery Doctor is a best of class product. It gets the Doc's tick of approval, a truly outstanding charger for the price. Perfect? No. Outstanding? Yes. The ideal family charger.

Postscript 13 January 2004: It has been suggested by one website that the charger used in the The Doc's test was 12 months old. As the new chargers will charge up to 2,800 mAh for the AA battery size. The charger used was actually about 3 months old. The Doc has checked brand new chargers and the company's website. No where could he confirm that the Rezap can charge AA batteries up to 2,800 mAh.

Warning 5 February 2004: The Doc had charged Duracell alkaline batteries in the Rezap a few times without any issues. However, the batteries were then left to sit in a container for several weeks. About half of the Duracells alkalines leaked. The Doc suggests you don't use the Rezap to charge Duracell alkaline batteries. These were the copper top Alkaline, rather than the Duracell Ultra alkalines.

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