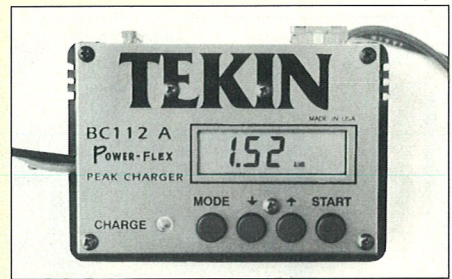


RRC REVIEW

The on-charge capacity of a pack of cells can be read off the LCD, although in real terms what comes out is more important!

now housed in a very smart and eye catching black plastic and gold metal case, complete with a large liquid crystal display. The buttons with which the different functions are brought into play are positioned below the LCD, and mounted flush with the case's top surface, so it is



The Tekin BC112A Power-Flex Charger

Tekin have always been at the forefront of R/C car racing electronics, and in particular have always tried to be 'different' when looking to gain an edge on the competition. We all know of Tekin's unique key pad micro computer speed control, but way back in 1989, Tekin introduced their original reflex charger, that used the then revolutionary Pro-Flex circuit. This charger was at the time fairly unique, in that its charging technique was very different to the majority of other chargers on the market, as linear charging was then 'in vogue'. The Pro-Flex enjoyed considerable success in the hands of racers from Champions to novices, as it adapted itself to any type or condition of nicad. Its major disadvantage or flaw (if you could call it that) was that it was fairly restricted in the functions available to the user, and wasn't all that adjustable. With this in mind, and the fact that the charger wasn't all that appealing to the eye in comparison with other, newer makes, Tekin decided to call a halt to the proceedings in favour of developing a refined version.

After a fairly lengthy period of development, Tekin released the BC112A to the market, the immediately obvious improvement (at least to the eye) being to the case and general packaging. The newly named BC112A Power-Flex Peak Charger, to give it its lengthy full title, is

impossible to knock them off in an overloaded pit-box, as would probably be the case if they were rotary knobs.

"What Is Power-Flex"?

Before proceeding any further, many of you are no doubt thinking "Exactly what is Power-Flex, Re-Flex or whatever"? Well, probably the best way to explain this is to quote an edited introduction to the BC112A's comprehensive instruction booklet.

"Normally a nicad cell will start to noticeably lose its edge and crispness to throttle response after just a few hard runs. This is caused by a gradual build up of crystals and the formation of impurities inside the cell, which is unavoidable. With each run the impurities increase, which results in increased internal resistance inside the cell, which then reduces the voltage and power output. Discharging the battery fully after each run will help reduce this effect, and also increase the battery life, but the only way to really minimise the deterioration and actually reverse previous deterioration, is to use the Tekin Power-Flex process.

The Power-Flex circuit is a refined version of the original Pro-Flex circuit. The Power-Flex circuit works by momentarily turning off the charge current, and applying a short,

high amperage, discharge pulse to the battery. This so called 'burping' of the batteries relieves the pressure build up which occurs inside a cell during the charging process, and restores the chemical balance.

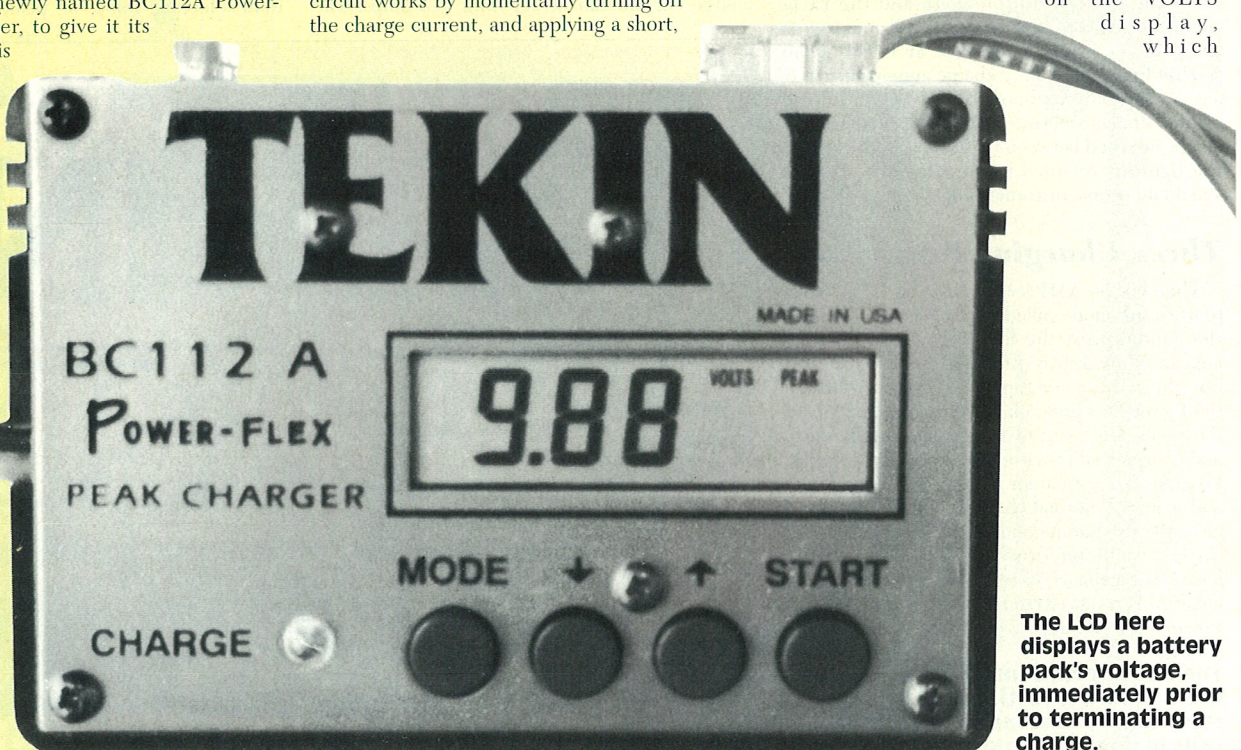
The net result is that the cells stay cooler during the charging process, and then deliver more voltage and capacity when placed under load. With the BC112A, the amount of Power-Flex conditioning that occurs is computer controlled, and varies at different times in the charge cycle".

Well, things should be a little clearer now!

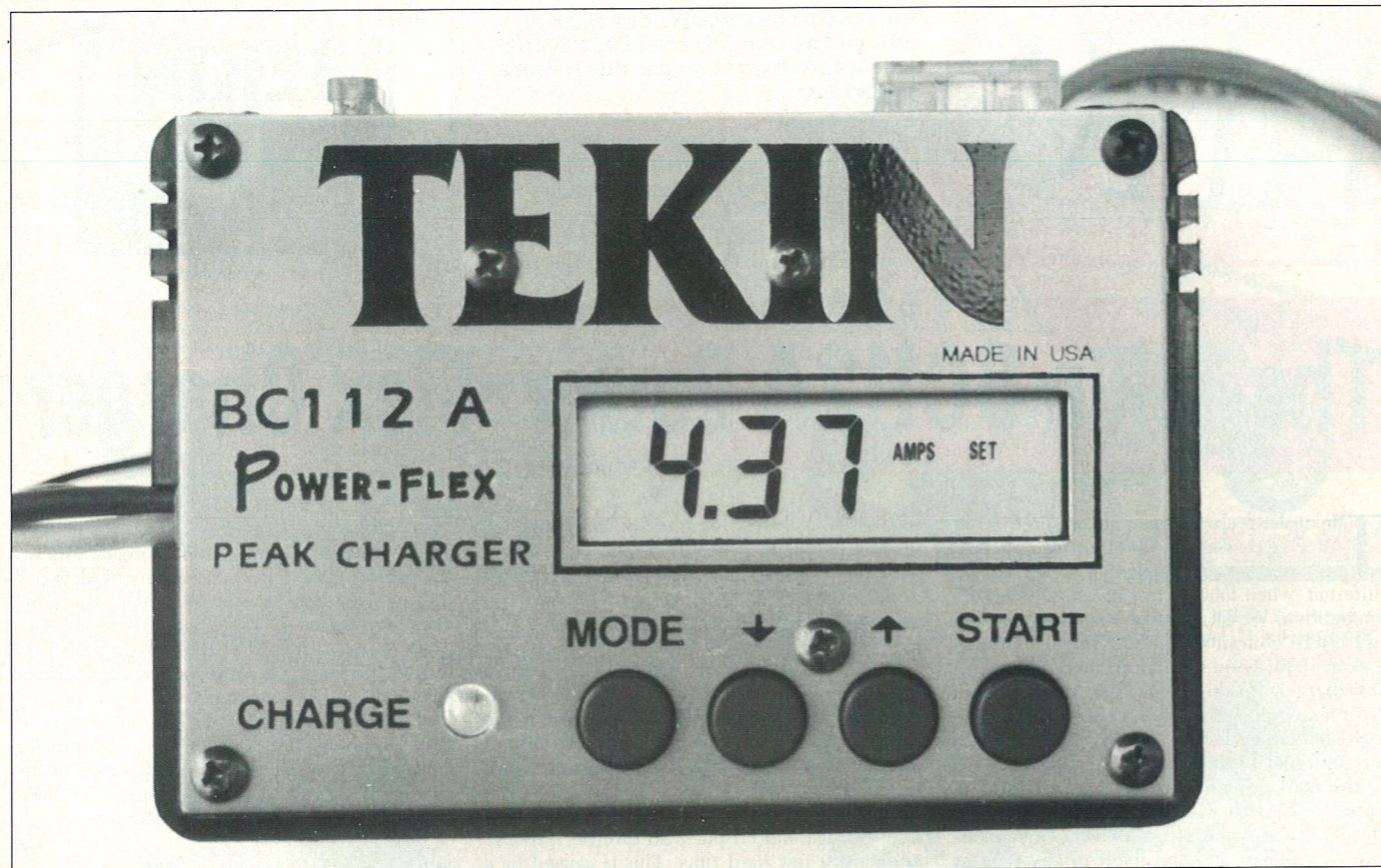
Using The Power-Flex

The BC112A is supplied with a very generously proportioned 12v power lead, whilst the battery pack charging leads are fitted with crocodile clips. Before commencing charging, it is recommended that the user become thoroughly familiar with all of the necessary functions, as the instructions can be a little confusing if you don't read them properly.

Upon connecting the BC112A to a suitable 12v supply, then the charging leads to the battery pack, the user is greeted with a brief display of all of the LCD's figures before it goes to and remains on the VOLTS display, which



The LCD here displays a battery pack's voltage, immediately prior to terminating a charge.



The Tekin BC112A is very compact, and should prove 'pit-box' proof because there aren't any projecting knobs, switches etc. The LCD is displaying the first step in its programming sequence.: Setting the charge rate, in this case 4.37 Amps

will indicate the condition of the 12v supply. Upon pressing the MODE button, the screen then switches to the next display, this being AMPS, then onto AMPS/TRICKLE, then TIME and AMPS/HOURS. After AMPS/HOURS, the display then returns to the VOLTS screen, but this time the word PEAK is displayed alongside the voltage figure displayed, which will be indicating the voltage of the pack to be charged. Press the MODE button again and the LCD returns to AMPS, but again a small message is alongside the figure, in this case SET. This is the prompt to set the desired charge amperage, and is set via the buttons marked with up and down arrows, similar to those in a lift! The charging rate can be adjusted between 0-10 amps, and once set, the figure is retained in the charger's memory should it become disconnected.

Three Charging Programs

While on the AMP/set mode, it is also possible to use a sub-mode called Power-Flex/set. To enter this mode, press the START button. P-F will appear on the display. At this point, you can press the (down arrow) or (up arrow) button to obtain the Power-Flex program desired. Program 1 gives the smallest amount of Power-Flex conditioning, and is suggested for either SCR cells or new cells. Program 2 is normal for SCRC or SCE type cells and generally normal charging, whilst Program 3 gives the maximum conditioning needed for cells in poor condition, or when charging a cell that hasn't had a chance to rest overnight since it was last run. Having selected a program, the status of Power-Flex is then saved in the memory, and

The Power-Flex conditioning circuitry has 3 different settings. 'PF2' represents the standard setting for cells in good condition.

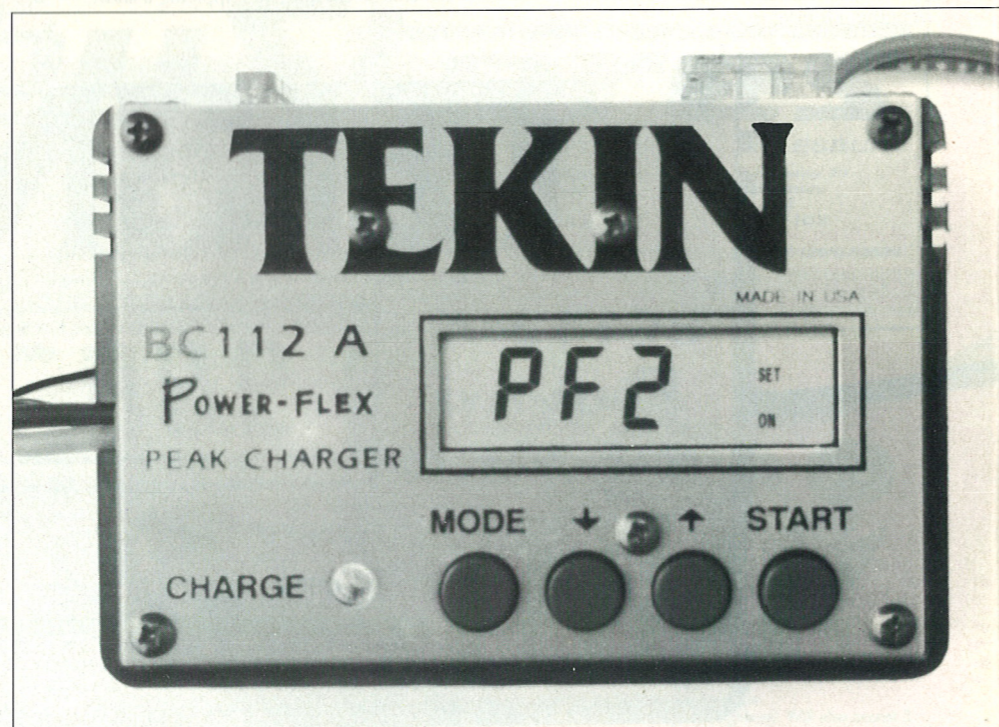
recalled next time the charger is used.

Pressing MODE again brings you to TIME/SET. This is a timed charge facility, where the user can set a desired amount of time of up to 1 hour 59 minutes (!), for the batteries to charge. There is however no peak detection, and it wasn't readily apparent exactly what function this facility is suitable for, so we moved on to; SET/TRK. This is fairly obvious in that a trickle (slow) charge current can be set from 0-5 amps. The

trickle charge current will flow into a nicad any time one is connected to the charger. Again the value is saved in the memory.

Select A Profile...

Once the functions are set, the only thing left to do is to select a charge profile. This might sound a little over the top, but is no more complicated than selecting 'temp' or 'peak' charging. Three



The trickle charge rate can be adjusted up to .5A, although in this instance it has been set to .25A.

charge profiles are available on the BC112A, and are displayed when pressing the start button. The first time the button is pressed, the display will show a P. This will provide a normal peak charge.

Press the start button again within 2 seconds, and P2 will be displayed. This is the re-peak mode. The Power-Flex charge mode is off now, and the charger reverts to a constant current whilst the peak detection circuitry is designed to optimise the pack's voltage just before going out to run.

This mode also offers the option to increase the charging current to 12 amps (!) for a super fast top up. This is available only on the P2 setting and lasts for a maximum of 3 minutes only.

If the start button is pressed again within 2 seconds, CS will be displayed. This is the 'cold start' mode. Tekin recommend the use of this mode on a nicad that has been fully discharged and not run for a while. The computer will adjust the charge current, Power-Flex conditioning and voltage curve throughout the charging process, for the optimum results.

During the first few minutes of the charge, the current will start off at a reduced level from that set by the user, this is normal and is kinder to the cells.

Tekin recommend that the CS mode isn't used on a battery that isn't at least 50% discharged, as it could result in an overcharge situation, especially as the CS mode locks in for 8 minutes to overcome any possible false peaks.

Once you have settled on your charge set up, just release the start button and it's off! Having charged a number of packs on the BC112A, the best way to monitor the charge was to watch the amp/hr display on the LCD.

Tekin say that 1700mah cells should charge to 1.70amp/hr on

the screen, however this was a little generous, the packs tested reaching 1.50-1.65, after charging fully.

Was There An Improvement?

Generally yes. The improvement became noticeable once the cells had been cycled using Power-Flex charging several times, and, having tested their capacity, now have a touch more duration, having regained virtually their original performance. Older packs improved their duration times and regained their 'match' to quite a degree after having only a few cycles.

Obviously Pro-Flex charging won't turn what were originally poor cells into good ones (it doesn't possess magic powers!), but it certainly seems to have the edge over the traditional 'linear' type of charger when it comes to

obtaining performance from cells that could be regarded as being beyond their 'sell by date'!

Well...?

Obviously, with so many possible functions to choose from, it would take quite some time to analyse every combination. Without a doubt though, the choice of charging modes will allow the racer to set the BC112A to suit every type of cell, and, once the user is familiar with its capabilities, it should give very good results.

Many racers will feel that the BC112A is a costly piece of equipment, which indeed it is, but then, don't forget that the BC112A isn't an ordinary charger... The Tekin BC112A Pro-Flex charger is distributed to the trade by CML Distribution (021) 457 7549, and is available from all good model shops

Selecting 'P2' alters the type of charge from the Power-Flex charging mode, to a constant current 'linear' charge to 're-peak' the cells prior to racing.

