PROFLEX CHARGER

THE LATEST WAVE IN CHARGING

by STEVE POND

HOW DO YOU charge your batteries? This sounds like a question that should have a simple answer, but if you asked the 10 most prominent authorities on the subject, you'd hear 10 different answers.

The ability to charge Ni-Cd batteries properly is now one of the most necessary skills in R/C racing, and disagreements about how to do it have increased the sales of many types of charger. In this search for "the ultimate," racers have gone from one charger to another in an attempt to get that extra 10 seconds out of their pack and a win in the A-Main. Charging methods are still very confusing, but we now have a tremendous choice of ways to do it.

While we at *Car Action* haven't given every charger the once-over, occasionally, a new one comes along with new technology that seems to warrant a second look. I'm not referring to one of the "me-too" chargers that does the same thing with a different label, but one that has a new—beneficial—approach to charging. One such charger is the new Tekin* BC210, which is based on the BC100S soft-pulse charger, but has a few additions that make it worth a second look.

The BC210 could be mistaken for the BC100S because it's mounted in the same casing. It has many of the same features:

- 1- to 9-amp adjustable charge rate
- a cell-selector switch for charging both SCRs and SCEs
- output jacks that allow the use of a voltmeter for monitoring charge rate and pack voltage
- an indicator light that shows when the battery is peaked and how it's charging
- fuse-protected circuitry
- a large heat sink for cooling.

What's new?—a new proflex charge mode and a 4-minute timer mode that prevents false peaking.

PROFLEX CHARGING

Proflex charging was originally developed for the movie industry: in remote locations, rechargeable batterires are uesd for the cameras. After continuous use, it was found that the battery packs ran down to about 75 percent of their capacity when new. Proflex charging was developed to prevent this deterioration, and this method was able to restore the usable charge to almost 100 percent.

Even without the benefit of the proflex mode, the BC210's soft pulse has proven to be very effective in charging both SCR and SCE-type cells. Preferred by some experts over the linear charge method, the soft pulse seems to give a pack a slightly higher voltage, and this results in faster overall speeds; but it's the effects of the *proflex mode* that make this charger so desirable.

When charging batteries at a low rate and discharging at such a high rate, a crystalline substance forms on the cell plates. This limits the amount of room the cell gases have to expand and results in constantly reduced run time. If you've ever run the same SCE pack a few times in one day, you'll already know of this negative effect on run time. Proflex charging has a series of positive pulses with a single, momentary, negative pulse that breaks down the crystalline substance on the plates and improves run times.

TESTING TIME

I tested the BC210 with fresh batteries and also with older cells that had lost their "zip" but were still taking a charge. With

Hooked up to a regulated power supply, a 12V battery, or an automotive battery charger, the Tekin BC210 provides a superior charge for SCEs and SCRs.

the fresh cells, the temporary crystallization is most likely to occur when the battery hasn't had enough time to rest between races (a week is usually recommended with SCE cells). Using only two packs a day, I deliberately put at least four charges through each to see if the proflex mode would help to keep them competitive, even after several runs.

Following the instructions, on each of the packs, the first charge was done in the soft-pulse mode. With a brief rest after peaking, I hit the packs with 7 amps for a final peak. Both packs were in the 700 range and turned in consistently fast runs on a flat, carpet oval, with about 40 seconds of run time left at 10 amps (according to a LavCo* Cell Mate).

That was the easy part. When they had cooled to room temperature, I charged the packs again (usually a big-time taboo in racing circles), but this time, I brought them back up in the proflex mode. Again following instructions, when they were peaked, I switched the charger back to the soft-pulse mode and gave the packs a final shot before heading for the track.

In both cases, the packs were able to equal their previous performance with anywhere from a 5- to 10-second loss (according to the Cell Mate) after the run. Repeated runs in the races that followed yielded similar results. Don't get me wrong; this isn't recommended charging practice, but I wanted to see if the packs would hold up to repeated charges. There's still no real substitute for having enough packs to run each only once a week, but if you're in a jam and you find yourself short one pack for the day, this charger could be the ticket.

A final, less formal, test using older SCE batterires that had been poorly cared for also showed the effects of proflex charging. These batteries had deteriorated to a point where they were only good for practicing. The LavCo numbers on the pack had shrunk from almost 700 to between 630 and 640. This is typical of the SCE cells when they've been used for some time, and there's usually no hope at this point. Using the Proflex Charger, however, I was able to restore the cell's capacity to within 98 percent of its capacity when new. Some packs did better than others, obtaining readings as high as 700 on a pack that read 709 when it was new. In some caess, the improvement was less marked, but there was a substantial increase in run time.

No—the BC210 doesn't have all the bells and whistles; in fact, it's quite the opposite. It's housed in a small, rugged casing that's easy to transport. What else does it do?—nothing. It just charges batteries—and very well, too. The charge is monitored with a digital voltmeter, but apart from that, there's nothing to it.

I highly recommend the Tekin BC210; it combines two proven, effective charge modes that give optimum run time with both SCE and SCR cells. What's more, with a simple, no-frills package, Tekin has kept the cost down and produced a charger that's easy to operate—a definite winner!

**Here are the addresses of the companies mentioned in this article:*
Tekin Electronics, *970 Calle Negocio, San Clemente, CA 92672.*
LavCo USA, *3150 East La Palma, Unit B, Anaheim, CA 92806.* ■