

Power Devil Drill Charger

By G8MNY

(Updated Oct 07)

(8 Bit ASCII Graphics use code page 437 or 850)

I was given one of these cheap hammer drills, hardly used, but the charger had packed up. The 13A mains plug fuse as OK!!

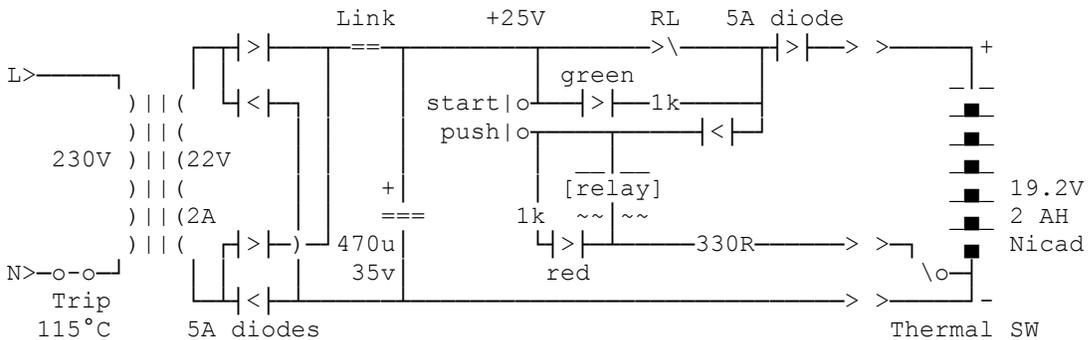
THE PROBLEM

First I had to make a special screwdriver (ground a slot in the blade bit) for the 4 case security screws.

The mains 50W transformer was open circuit. It has a 115°C thermal fuse burred under a few layers of tape, that had tripped. So to make sure all was still well with the transformer, I tried a full battery charge with the fuse bypassed. All was well but the transformer was quite warm, but no where near 115°C, so it was worth replacing the special heat fuse.

The cause seem to be the stupid case manufacturing fault, where air vent holes had been moulded into the top, they were not pushed right through in the moulding to lake holes, & the underside holes were totally blocked by the transformer core!

THE CIRCUIT



HOW IT WORKS

The mains transformer is on 100% of the time, so the instructions mention to "disconnect when not charging"! And also to limit charging to about 1 hour as this is generally enough for a near capacity charge, 3 hours will be enough for a full charge.

On connecting the mains there is no LED lights. With a cold battery inserted, the green LED lights, trickle charging the battery at about 10mA.

On pressing the start push the red LED lights & 12V relay is operate through the 330R & the battery's thermal switch. The relay contact shorts out the green LED & apply the full whack to battery.

When the battery pack has had enough of storing chemical energy it heats up & at about 50°C its internal thermal switch brakes the relay hold circuit dropping the charge back to the green LED trickle.

MY CURE

- 1/ Araldite in the new fuse to the mains winding outer layer & brown tape over.
- 2/ Felt pen the transformer black (increases dissipation by 30%).
- 3/ Cut away upper case vent hole internal plastic, unblock the slotted holes.
- 4/ Drill new holes in bottom & top of case, not blocked by components.
- 5/ Change 15A link wire for 2A fuse wire on track of PCB, readily replaceable.
- 6/ Replace the 13A mains plug fuse with a 3A.
- 7/ Saw across slots of screws for ready access.

On testing all works OK. But I have not put in a totally flat battery pack to see if the fuse wire survives yet.

As a good measure I also blackened the drill motor, as these tiny motors also gets very hot & are easy to burn out on a stall!

Why Don't U send an interesting bul?

73 de John, G8MNY @ GB7CIP