

# Adding A Magnetic Brake To The Penn Squidder

The Penn Squidder is still one of the most popular reels used for fishing today. I like it because it's the "right size" - it just feels good - not too big, not too small.

Unless you have a very well educated thumb, which I don't, it's not the easiest reel around to cast. To make this modification to your Squidder, you'll need an aluminum (not plastic or chrome) spool for the reel.

I've read a few different articles on the net about magging this reel and that reel, and I made a few notes here and there about magnets, magnet cups, etc.

I finally got around to ordering some magnets and cups, and I thought someone else might benefit from the results of my experiment. I ordered a couple different sized magnets, cups, and flat washers from Lee Valley Tools (find them in Google). For the Squidder, I used the 99K3101 magnet (1/4 round by 1/10 thick) and the associated magnet cups (99K3251 3/8 cup for 1/4 inch magnet).

I can't find the original article on the net anymore that I read, but whom ever wrote it suggested that size magnet, with two installed side by side, polarity's opposite.

Project sounded pretty simple - glue the cups into the side plate, drop in the two magnets - go fishing. Here's a picture of the cups, some small flat washers from my junk box, and a couple of the magnets (sticking to a pair of needle nose pliers).

Before you drop a magnet into one of the cups, you need to decide if you ever want to get it back out again. If you decide you do, then take a Dremel tool and cut a slot in the side of the cup, so that you can wedge the point of an X-Acto knife under the magnet to pop it out. You'll see the slots I cut in the magnet cups in the next few pictures.

I glued the two cups into the side plate of the reel with a few drops of Super Glue. Keep the cup centered between the edge of the clicker spring (so the clicker continues to work) and the edge of the chrome trim ring (so the spool doesn't hit the magnets). Before I glued them in, I cleaned the side plate and the bottoms of the cups with lighter fluid.

This particular Squidder has 3 in 1 oil in the bearings, and the spool tension is adjusted to leave a very tiny bit of knock in the back and forth movement of the spool (per Penn's instructions "Don't use the spool tension as a drag"). The spool on this reel spins VERY freely.

After I had the cups glued in, I dropped in two magnets (opposite polarity) and stuck the reel back together. With the reel in free spool, I gave the spool a good spin, and it seemed like I noticed absolutely no difference in the amount of time the spool would spin with the two magnets as it did with no magnets.

In other words, even though I hadn't been to the beach yet, it sure looked to me like adding the two magnets had accomplished nothing.

I had no clue how close the magnets actually were to the aluminum spool, and I didn't have any clay to stick in and figure it out, but it sure seemed like the magnets needed to be closer to the spool. I have other reels with adjustable magnetic brakes, and the braking effect of the magnets is obvious when you spin the spool - at this point, with the Squidder, it was not.

I had ordered 10 magnets, and they came in a little brown paper envelope all neatly stacked in a pile and held together by magnetism, which gave me an idea - stack some more magnets on top of the original two. So I popped in one more magnet on top of each stack, put the reel back together, and gave it another spin. Seemed

like maybe the magnets were starting to work, but still hard to tell.

I took the reel back apart again, and added the third magnet to each stack. Put it back together again, gave the spool a spin, and this time it was very obvious the magnets were working - the spool would spin in free spool with one magnet for maybe 25 seconds - with three magnets, it would spin for about five seconds.

I was pretty sure that three magnets in each stack was too much mag brake, but the only way to be sure was to go toss some lead around and see. So I went to the pier. With a three ounce sinker, and the reel on a seven foot stumpy pier rod, I could throw the thing as hard as I could possibly throw it and not even generate any fuzz, more less blow it up. Distance was about 60% of what I could throw three ounces with the same rod and no magnets, so the three magnets in each stack were obviously way to much brake.

I pulled the reel apart, and removed two magnets from each stack. Now I was down to one magnet in each cup as originally suggested in the article I had read. It only took one cast to confirm my suspicions that one magnet in each cup was equal to no magnets at all. After I got the line untangled and spooled back onto the reel, I pulled it apart again and added the second magnet to each stack.

With two magnets in each stack, I was able to generate an undesirable amount of fuzz, but with a little thumb on the edge of the spool, I managed to keep from building any seagull homes. I am, by no means, a good thumber. I can keep the Squidder from blowing up, but there is a noticeable decrease in distance when I start applying thumb pressure. So while it was obvious that three magnets in each stack was too many, it seemed like two wasn't enough.

Unfortunately, I didn't order any half magnets. So I took one magnet off stack one, flipped it over, and put it on top of stack two, which left me with three magnets in one stack, and one in the other. This actually wound up being the best combination I tested; I could throw the sinker with all the force I could generate, get just a tiny bit of fuzz, and wind up with about 90% of the distance I could generate with a good cast (no tangles) and no magnets. Still seemed like just a tiny bit too much brake.

After a half hour of testing I decided I needed something between 2 and 3 magnets in each stack, but that meant a trip back to the lab. I decided to add flat washers in the cups, under the first magnet, to make the position of the magnets closer to the spool. That was easier said than done. The washers used must be magnetic.

But with two stacks of magnets in the proximity of the cups, it didn't take me long to figure out that it was virtually impossible to assemble this mess because the magnets made the washers fly all over the place. Get the first pile together and then I couldn't lay washers in the second cup because the magnetism from the first stack would suck them right back out as fast as I put them in.

So back to the Super Glue. I removed all the magnets, glued two small washers in the bottom of each cup, gave that a minute or two to dry, and stuck the magnets back in (2 in each stack). The washers I used were approximately  $\frac{1}{3}$  the thickness of the magnets, so the final distance from the magnets to the spool wound up about  $\frac{1}{3}$  a magnet less than with three magnets, or  $\frac{2}{3}$  a magnet more than with 2 magnets. Here's a picture of the final configuration.

It may seem like it would be difficult to change the magnet configuration in the field; actually it's very easy. The Squidder spool comes out in about 10 seconds with no tools, and the only tool required to change the magnet configuration is a pair of needle nose pliers. The magnets stick to the pliers like glue, so it's virtually impossible to drop one and lose it.

I tested the final configuration the next day, as pictured, with one minor change in the reel itself. For the original tests, the reel was spooled with 25 lb test mono, and the spool was about  $\frac{2}{3}$  full. For the final test, the spool was completely full on 20 lb test mono. The pro's tell me that the more line that's on a spool, and the smaller the line is, the easier it is to blow up the reel when you cast.

A few project notes. Don't worry about which is north and which is south on the magnets. They come marked with a red dot. The red dot will disappear after you handle the magnets, so I don't know why they bothered to put it there. The magnets will magically stick together with polarity in the same direction without the red dots. After you have your two cups glued in, pull two magnets off your stack, and stick them in the first cup. Then pull the top one off with the needle nose and flip it over into the other cup. Any magnets added thereafter will magically flip themselves into the right position.

Don't forget to align the cups when you glue them in with the slots you cut in the right position so you can pop the first magnet out if you need to. Don't forget to order extra magnets; they are cheap and if you drop one on the floor, it's going to get lost in the rug or bounce on the tile and stick to something metal and you'll never find it again.

In the real world, there is no correct amount of magnetic brake for any reel that works in all situations, and the beauty of the newer conventional reels that come from the factory "magged" is the fact that the magnetic brake is ADJUSTABLE, and this one is not.

I'm not a scientist and I don't understand the magnetic theory that applies here. I've read that the magnets (or stacks in this case) being opposite polarity creates more braking power - maybe two stacks of three with the same polarity would be just what's needed for this reel. Or maybe one stack of bigger magnets would work too. I also bought some bigger ones when I ordered these that would stick right on the top of one of the 3/8 inch cups. It seems to me so far the critical element is distance from magnet to spool; by adding magnets to the two "stacks" I may be increasing the magnetic field, but I'm also making the magnets much closer to the spool.

The Squidder is a great reel for tinkering with different configurations because it's so easy to get apart and change the magnets.

I've also proven to myself that a tiny bit of distance between the magnet and the spool makes a whole lot of difference in the braking power of the magnets; the right way to do this would be to cut a hole in the side plate and install a contraption that had a knob so that the distance between the magnet or magnets and the spool could be adjusted as wind conditions and bait size required. But I don't know anybody with a machine shop, so that's not on my list of things to do.

I'm happy with the experiment, the overall results will be I'll get to spend more time fishing with the Squidder and less time educating my thumb. And I think I accidentally figured out something else in the process. The noise that a Squidder makes when you give it a good heave, the one that sounds like a B-52 taking off, is probably the bearings complaining about being squeezed up too tight. I've noticed that since I backed the bearing tension off a bit (as recommended by Penn), that noise is completely gone when my sinker takes off.

Finally, a word of caution. DO NOT place your thumb on the spool of Squidder while the sinker is still in flight. If you need to add some thumb, thumb the edge of the spool and not the line. Your thumb will thank you, and you'll still have a finger print left on your thumb...