



Tool Tip...

Anvil Cutter Length Gauge



Figure 1: Cutting equal length fuses.



Figure 2: Hole is drilled and tapped.



Figure 3: Stop plate, lock nut and threaded rod.



Figure 4: Assembled cutting jig is ready to go.

Measure Once, Cut Forever:

Lets face it, making fireworks has its monotonous moments. Cutting a thousand pieces of fuse to an equal length is one of those moments, but it doesn't have to be as painful or time consuming as you think. The tool modification presented here uses the age-old concept of a stop gauge to eliminate the repetitive task of hand measuring an equal distance over and over. The desired length is measured once, from the cutting blade to an adjustable stop plate, then the stop plate is locked into position using a wing nut. The operator can then cut as many pieces as needed without ever having to measure them. The piece being cut is simply inserted until it hits the plate, then cut. Multiple pieces can even be cut at the same time if a thin material such as black match is being cut.

The cutters used here are anvil type cutters purchased from the garden department of Home Depot. Anvil cutters are perhaps the safest and most popular tool used for cutting active materials such as quickmatch, blackmatch, time fuse and visco. While scissor type cutting tools use a shearing action that can trap powder between the blades and subject it to a high degree of friction, the anvil type cutters use a pinching action against a hard plate that separates the material being cut with a minimal amount of friction. It is for this reason that anvil cutters are the tool of choice when cutting fuse.

Since you may not always want the stop plate jig hanging off your cutters, it is designed to easily unscrew by hand. A small threaded hole in the bottom jaw of the cutter receives a threaded rod which in turn holds the stop plate. One nice feature of the anvil cutters is the thick aluminum plate on the bottom jaw, which makes an ideal material to drill and tap. The size of the threaded rod is not important, but it is probably a good idea to keep it around 1/8" diameter so it isn't too heavy and has small enough threads so that it takes at least two turns to secure it into the cutter plate. I used a 6-32 threaded rod for the one pictured. You will also need a tap and wing nut that match the threaded rod you use.

The first step is to fabricate the stop plate, which is made by using a hack saw to cut a 1/2" piece off of some 1-1/2" by 1/8" thick aluminum flat stock (available in most hardware stores). A threaded hole will also be tapped near the bottom of this plate, so use the appropriate bit matched for your tap size to drill the pilot hole. While you have the drill going, go ahead and drill an identical hole near the back of the anvil cutter bottom plate as shown in Figure 2. Be careful not to drill all the way through the anvil cutter jaw, but try to go at least 3/16" deep.

Now a hand tap is used to thread each of the holes you just drilled. When tapping the anvil cutter, be careful not to force the tap too hard once it gets near the end, as you could bottom it out and strip the threads out of the hole.

If this happens, just make another hole and try again.

Next cut a piece from your threaded rod that is about 5" long. You should now have a collection of parts that looks like Figure 3. There should be one clean end of the threaded rod that will thread into the cutters. From this end, thread the wing nut backwards onto the rod, then thread the stop plate on till it hits the wing nut. Spin this whole assembly into the hole you made in the anvil cutter and you are done!

To use the plate, simply back the wing nut off and spin the stop plate until the desired distance between the cut line on the anvil and the stop plate has been measured. Tighten the wing nut against the stop plate to hold it in position and you are ready to go. The length of the stop plate can allow you to cut several pieces of match at the same time, drastically reducing the time required for this repetitive task. 🔥

