



## **Mako** User Instructions

### **Features:**

**Precision Machined all Stainless Steel Construction**

**VERY Powerful, Exhaustless and QUIET!**

**Works in Extreme Cold and in the Vacuum of Space!**

**Compact size- 5/8" x 3-1/4"**

**Fairly Lightweight at about 3-1/2 oz**

**Stainless Cap Screw Houses E-match and Doubles as Powder Measure**

**Comes with Installed Ring for Lanyard Attachment**

**Lifetime Tech Support**

### **Parts List:**

1 - SS Housing

1 - SS Line Cutter

1 - SS Cap Screw/Powder Measure w/Lanyard Attachment Ring

Replacement O-rings

1 Long Allen wrench for disassembly

Assembly Lube (Works better than anything I have found)

3 feet of Kevlar Lanyard Cord

Powder Measure Vials

Cotton Swabs (Q-tips)



**Dual Mako Kit**

## Instructions for use

### **Step 1 - Prepare the Initiator/Cap Screw**

Using the supplied lube, generously coat the inside of the Cap Screw

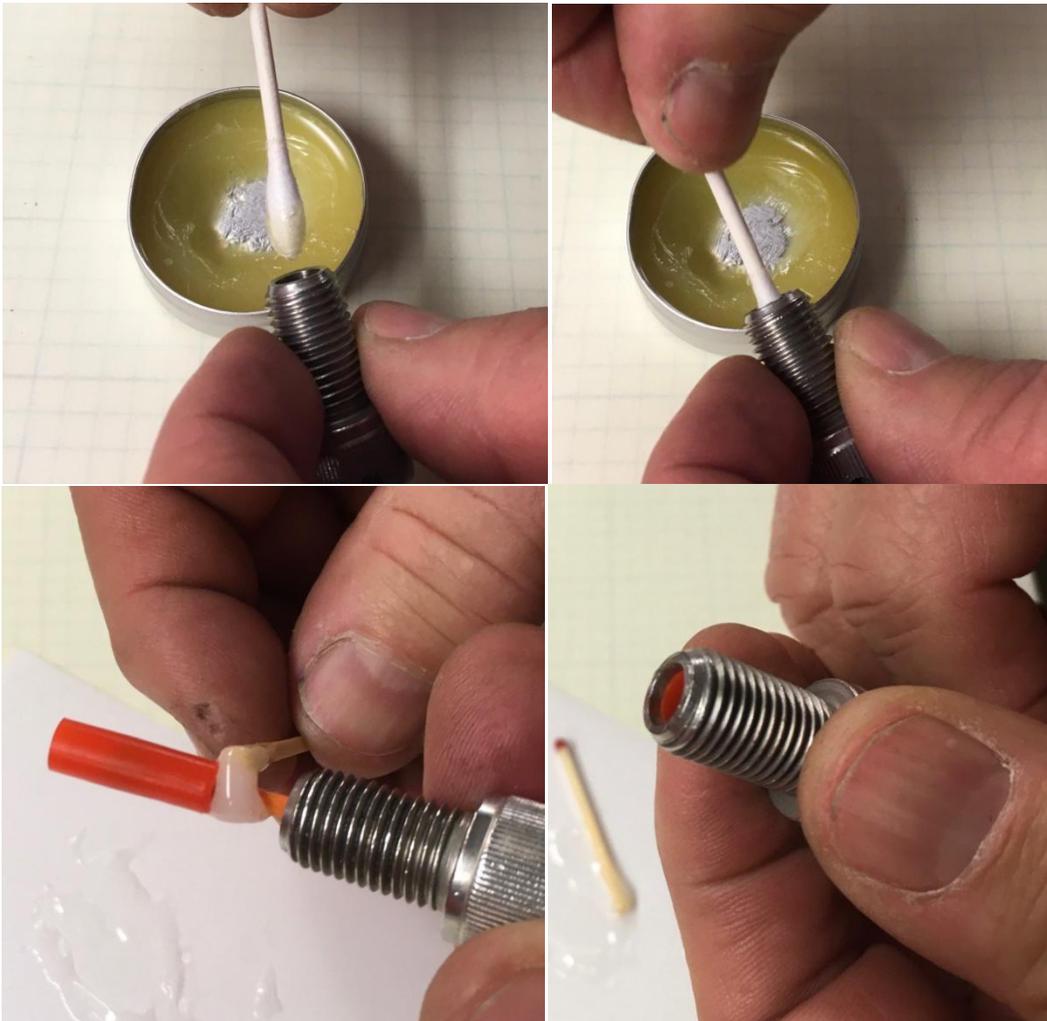
Slide the wire into the Cap Screw leaving room for epoxy sealant

Thoroughly mix quick set epoxy

Apply a "glob" of epoxy to the base of the e-match as shown below

Gently pull the e-match wire until the match tip is below the mouth of the Cap screw opening  
If this is all done correctly there should be a fair bit of epoxy that has oozed through and will be seen on the hex side of the Cap Screw.

**Note:** If you desire The Mako to be exhaustless, DO NOT SCRIMP ON THE EPOXY and you MUST allow the epoxy to completely cure!



### Step 2 - Prepare the Body

With the lube provided, lube the o-ring, the threads and the entire inside of your Mako cutter.



### Step 3 - Prepare and Install the Cutter Piston

Using the supplied lube, generously coat the Cutter Piston as shown

Insert the Cutter/Piston into the body. Because of the precise machining of the parts, some wiggling of the Cutter can be expected to get it to start.

Push the Cutter Piston down about 1/4" into the Body- DO NOT push the Cutter Piston more than 1/2" into the body! If this happens, use the supplied Allen wrench to push the piston back out a bit through the hole at the end of the device.



#### **Step 4 - Add Pyro to the Cap Screw**

Use the provided Powder Vial as a "scooper" to pour pyro into Cap Screw  
Add powder until the Cap Screw is full. Tap Cap Screw to settle powder.  
Powder should be level with the face of the Cap Screw



#### **Step 5 - Finish Assembling Cutter**

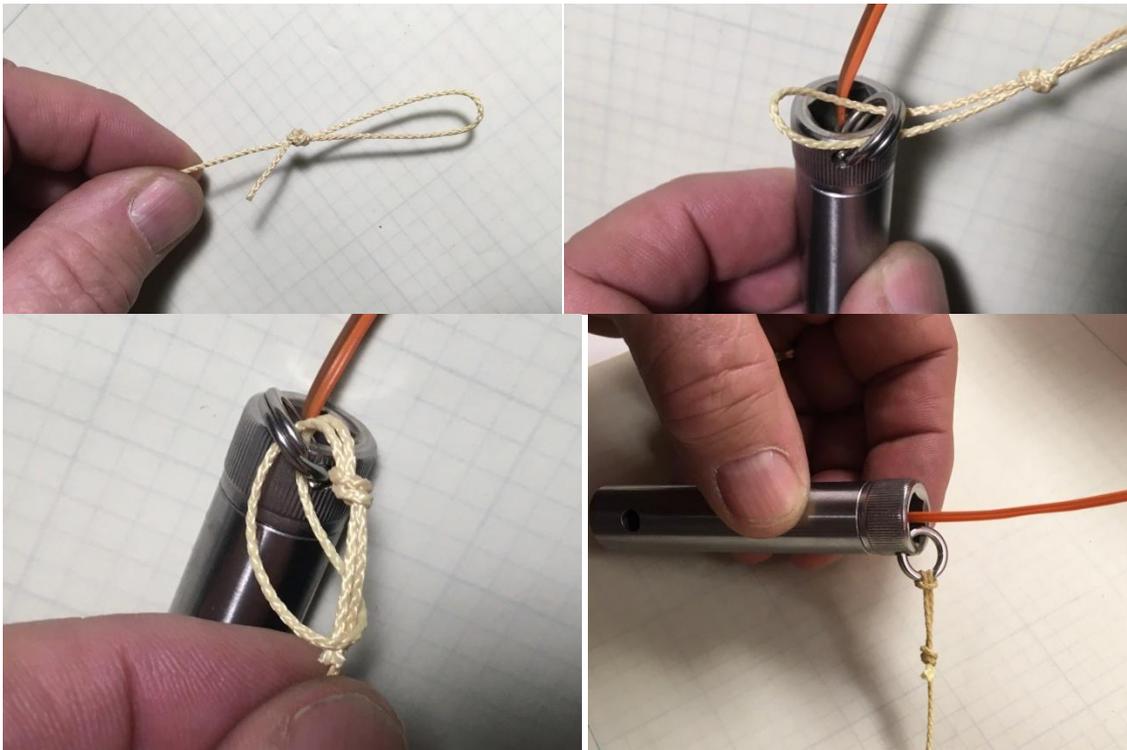
Invert the Cutter Body & insert the Cap Screw.  
Keeping the Cutter Body inverted, rotate the Cutter Body onto the Cap Screw  
Tighten hand tight only  
The Cutter Piston is now set and will not move until the device is activated





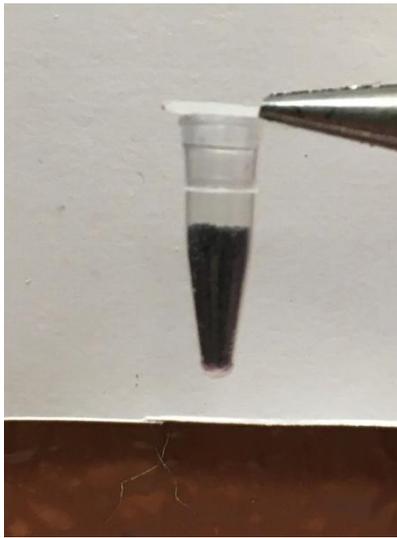
### Step 6 - Tie Lanyard

Secure your Mako cutter with some sort of lanyard.  
1 method is to fashion a loop with an overhand knot  
Insert loop through ring 1" or less  
Feed the rest of the lanyard through the loop and pull tight  
Secure the other end of the lanyard



## Let's talk about initiators & Pyro as they relate to your Mako Cutter

The Mako Cutter was designed to work with the genuine J-Tek e-matches, the non-regulated FireWire and the Chinese knock-off e-matches. Those of you that make your own e-matches, while they will also VERY likely work, **you will need to include the e-match sheath for the Screw Cap to be able to be used as the pyro measure!** Also you will need the sheath to protect the e-match from shorting through the stainless steel, also you need the sheath to best "pot" the e-match. The long and short of it is that it might be easier to just purchase the e-matches rather than try to use your own. Should you still insist on using your self made e-matches, you will then need to precisely measure 2.0 grains (Reminder: There are 15 grains to the gram) of BP for the device to work properly.



**2.0 grains of 3F BP**

As to Pyro... the pyro that I have tested includes BP in the 4F (FFFFg) and 3 (FFFg) granulation and Triple 7 in the 3F or "pistol" granulation. The Mako also MAY also work with Pyrodex (Pistol granulation), but the device has not been tested with Pyrodex so you will either have to test it for yourself or just use BP or Triple 7.

### **So what can you, should you cut with the Mako Cutter?**

The Mako Cutter was designed to cut as much Nylon cord as you can stuff through the .220" cutting holes! It will cut the larger Nylon zip-ties and it will even cut copper wire up to and including 12ga. While the Mako cutter has been tested with and will easily cut Kevlar, it is not recommended for you to feed your Mako a steady diet of Kevlar as it will dull the cutter! STEEL CABLE of any sort is NOT EVER RECOMMENDED as it will quickly destroy the cutter!

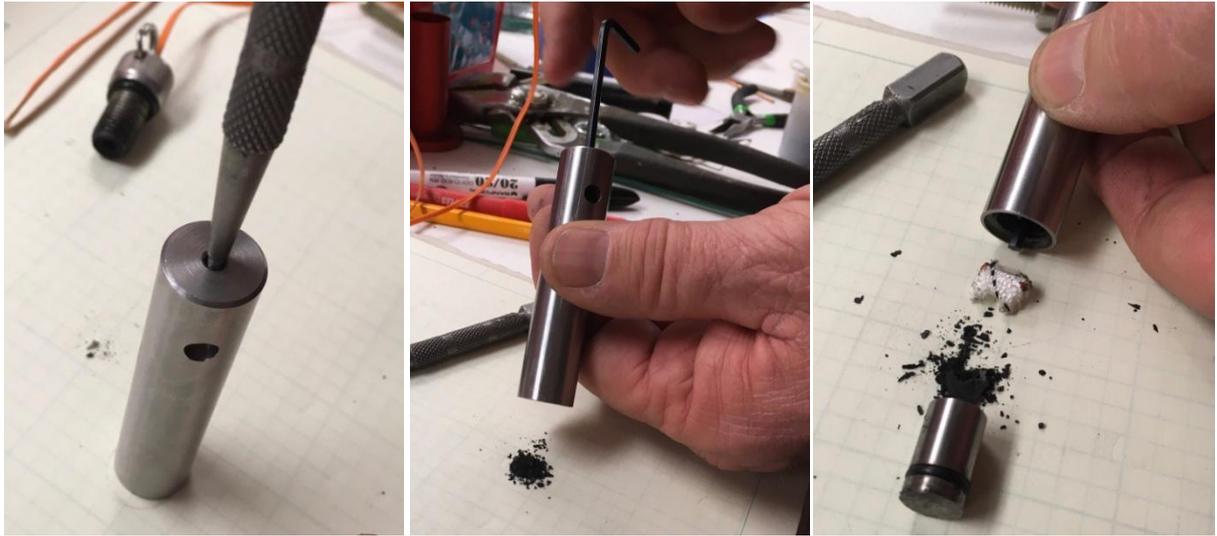
## After use Disassembly & Cleaning

### **Step 1 - Disassemble Cutter**

Disassemble completely (Do not remove the small o-ring that is inside the SS Housing, if it comes out, press it back in with a #2 pencil)

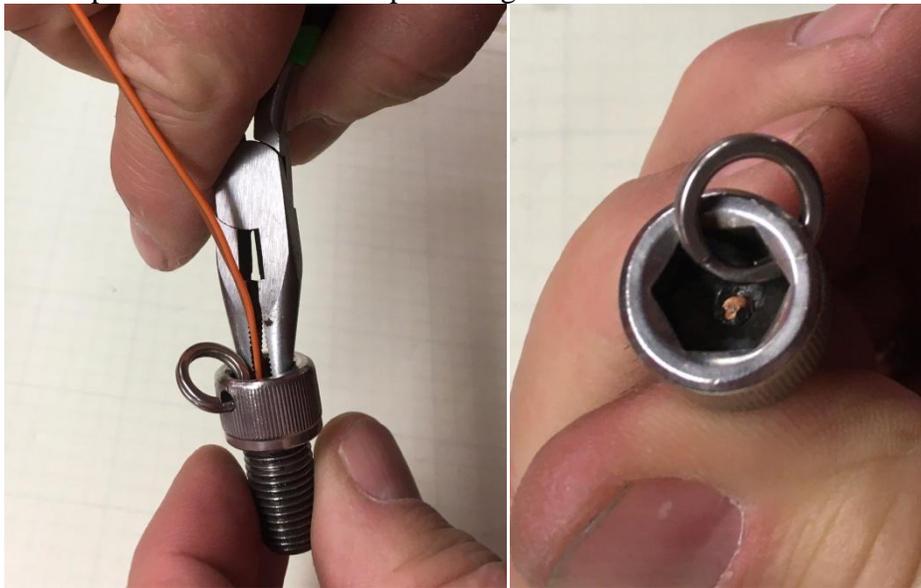
Use the supplied Allen Wrench to push out the Cutter piston.

Depending on what you just cut, the piston may require significant force to initiate movement. When the device was tested cutting 12ga solid copper wire, the piston required tapping (Through the end hole) with a small punch. Once movement was initiated, the supplied Allen wrench was all that was needed to press out the Cutter piston.



### **Step 2 - Disassemble Cap Screw**

With Needle Nose Pliers or Hemostats, grab the e-match wire as close to the Cap Screw as possible. Twist and keep twisting until the wire breaks off.



Obtain or make a **flat** tipped punch that measures .100" or smaller.

Place the Cap Screw into a 1/2" drive socket for use as support while you gently tap the wire, possibly having to break the remaining epoxy until e-match is freed. Remove with needle nose.

Check for and remove remaining epoxy (If any) by inserting any 1/4" threaded bolt. You will feel if there is any epoxy. Twist 1/4" threaded rod into epoxy and remove. If there is any epoxy it will be removed with ease using this threaded rod or bolt. Visually check for debris.



### Step 3 - Rinse & Clean

Wash all parts in hot water  
Swab the inside of Mako body with cotton swab or rolled up paper towel while still wet  
Swab again to dry and remove remaining residue

### Step 4 - Re-assemble for later use

Make sure all parts are dry before re-assembly.

**Important:** Be CERTAIN that the o-ring inside the cutter is still in place. If it came out during disassembly and cleaning, re-install it using the eraser end of a #2 pencil to push it home!

Re- install the Cap Screw seal/o-ring to the mouth of your cutter.

The o-ring that seals the Cap Screw to the Body may be cleaned and re-used many times and may never need replacement. Replacement o-rings are provided should you lose it!

Inspect the o-ring on the Cutter itself. If the assembly instructions were followed closely (i.e. lubing the threads and the Cutter) the Cutter o-ring should last MANY firings and still not need replacement. When you observe the Cutter o-ring to have damage, remove it with hemostats or fine tipped needle nose pliers. Replacement o-rings are provided.

The o-ring that is inside the device will last a very long time, repeated testing of this device showed no damage to this o-ring and it is expected to last dozens of firings. Replacement o-rings are provided should you deem replacement necessary.

**Important:** If you wish to replace the o-ring inside the unit, you MUST use the provided HARD o-ring! The o-rings that you find at your local hardware store are too soft and could allow your cutter to become damaged!

