



# The **Peregrine** CO2 Ejection System

## Features:

**Precision Machined Construction!**  
**Works with BP or BP substitute**  
**2 Complete CO2 Ejection Systems**  
**Lightweight- about 4-1/2oz - including CO2**  
**Uses commonly found 8 & 12gm CO2 Cartridges**  
**Works in a complete vacuum & in the deep cold of Space**  
**Lifetime Tech Support & Lifetime Unconditional Warranty**

## Parts List:

CO2 ctg Housings, (1 - 8gm & 1- 12gm)  
Mounting Cap Assemblies  
Single & Dual Charge Cups (With o-rings & Sealant Putty)  
New Design Alignment Collars & Lift Pistons  
Return Springs & Mounting Hardware  
Replacement o-rings, Powder Measure Vials  
8 & 12gm CO2 ctgs  
TR Assembly Lube, Cotton Swabs and more  
**In short, everything you need for two complete CO2 ejection systems!**



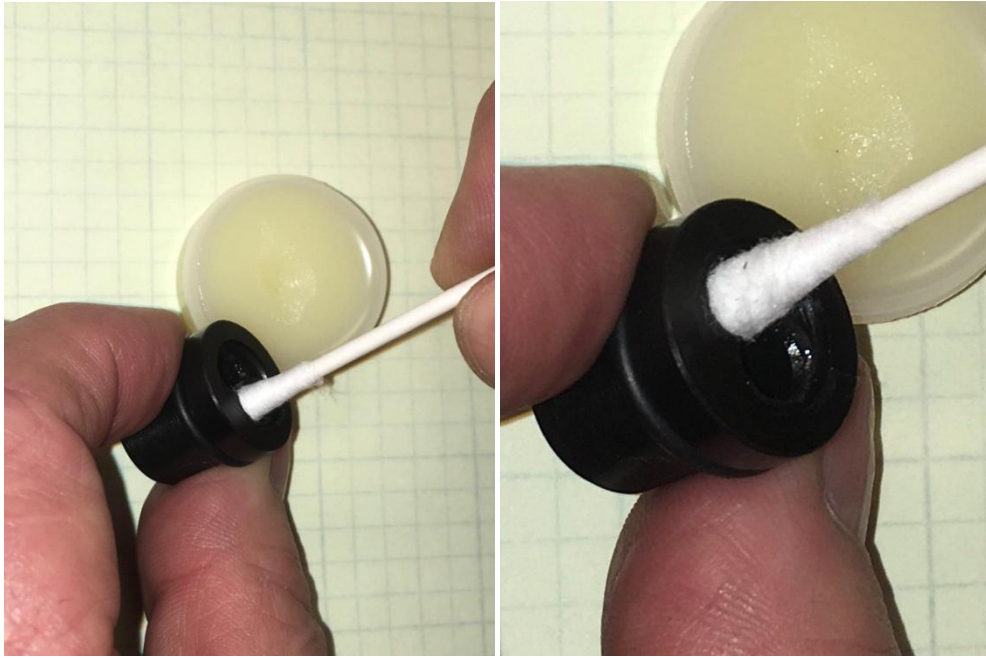
**Dual **Peregrine** CO2 Ejection Kit**

## 2-13-25 Updated User Instructions

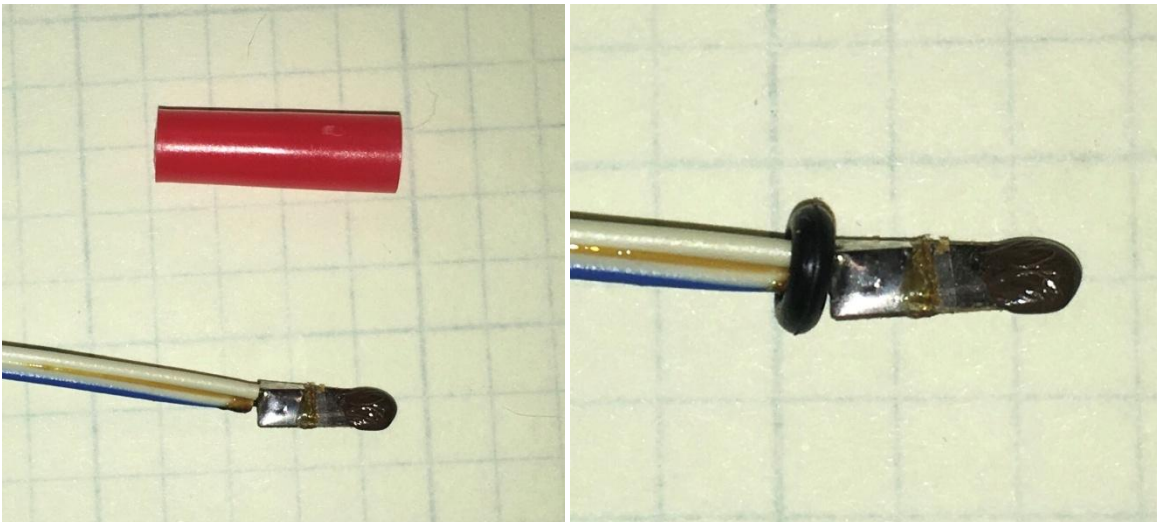
**Note:** These instructions are written for "rocketry folks" and it is assumed that all directions will be closely followed. If you are not a "rocket" guy or gal or you do not feel that you can follow these directions exactly, **please do not use this device!**

### Step 1 - Prepare the E-match & Charge Cup

Using the supplied lube, thoroughly lube the Charge Cup  
(The Dual Charge Cup is ALWAYS recommended for flight)  
**(Hint:** Don't be stingy with the lube and do not substitute other lubes!)



Remove the protective plastic cover from the e-match  
Slide one of the small black o-rings over the wire and up to the e-match head



## Step 2 - Sealing the E-Match in the Charge Cup

Sealing the gasses in every Tinder Rocketry device is **very important**. Traditionally e-matches have been "potted" or sealed in charge cups using epoxy.

### Traditional Epoxy Sealing Method

The traditional method for sealing e-matches into their housing has been epoxy. While sealing with epoxy does work, it takes time to cure, and can be a challenge to disassemble and clean. In addition, if the goal is to seal 100% of the pyro gasses 100% of the time, the epoxy sealing method is NOT the preferred method. In fact, with the introduction of the poster putty e-match sealing method, **I no longer recommend using epoxy to seal e-matches at all!** And, as a result, I will not even discuss sealing the charge cup with epoxy.

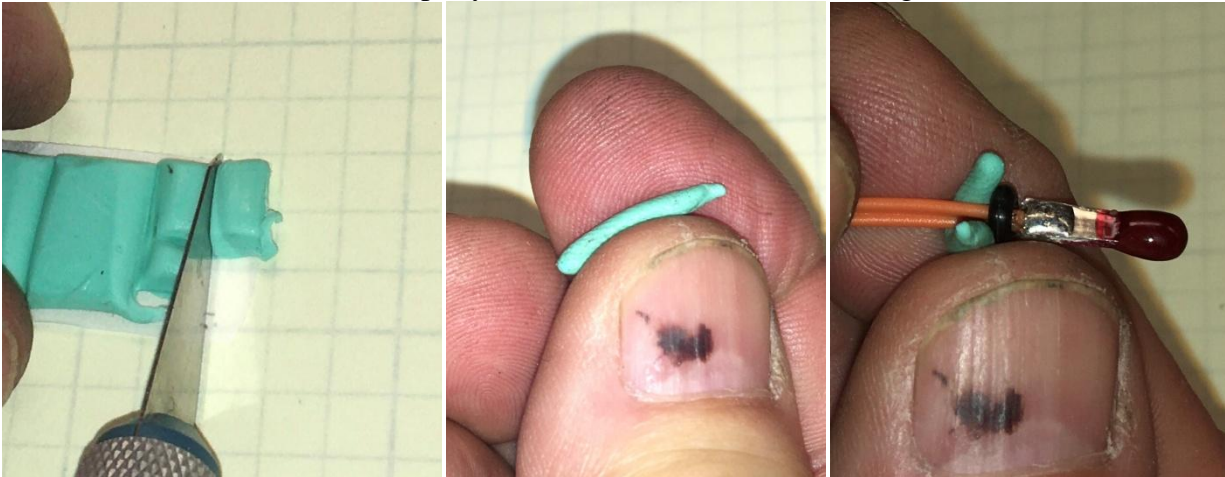
### Sealing the e-match in the Charge cup

Prepare the e-matches with o-rings and lube the Charge Cup as outlined in **Step 1 on page two**.

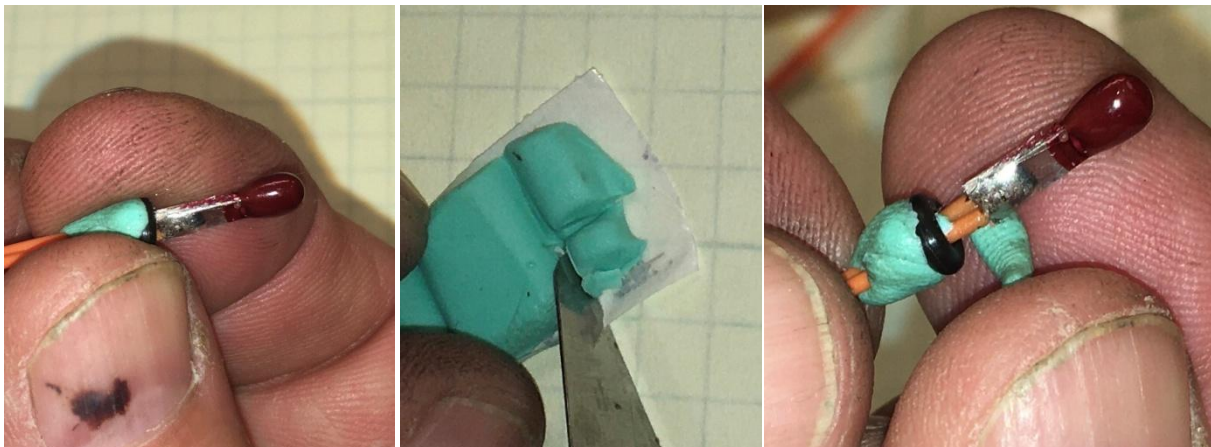
With a hobby knife cut one of the putty "squares" into quarter sections

Remove one of those quarter sections and roll it in your fingers

Fold the putty around the wire below the o-ring



"Roll" the putty covered wire/o-ring in your fingers to make sure the putty sticks to the wire. Use another quarter sections, roll in your fingers and apply it to the other side of the o-ring.

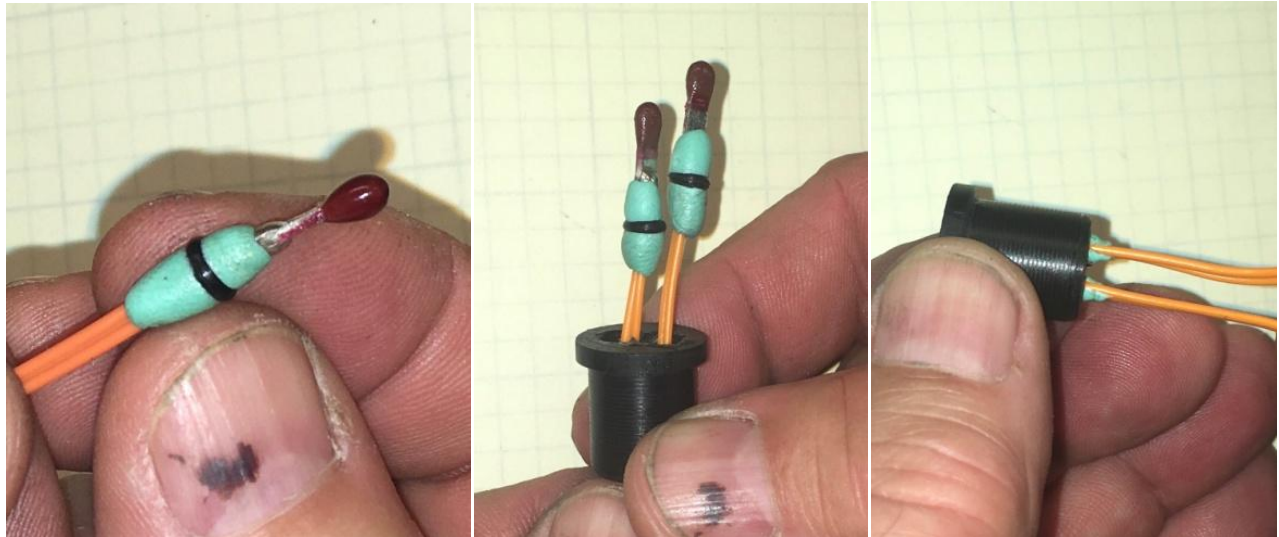


**Roll the whole thing in your fingers so that you have putty completely encircling the wire on both sides of the o-ring.**

Insert the putty prepared e-matches into the **lubed** Charge Cup  
Gently pull the e-match wire(s) until the e-match head is just below flush with the mouth of the cap

**Note:** You may have to gently tug on and wiggle the wire(s) while tugging, to get them seated properly, this is ok.

You also may very likely see the putty ooze through the wire hole along with the wire, this too is ok and expected.



The Putty Method of sealing the e-match has been tested at room temp, at about 0 F and over 140 F and it has been found to seal very well every time!

**This poster/mounting putty can be found on Amazon or at your local hardware store.**

The putty that is supplied in all Tinder Rocketry products is:

**"Holotap Removable Adhesive Poster Putty"**

found on Amazon and elsewhere.

Other poster putties have been tested and all have also worked well.

### Step 3 - Adding Pyro Powder to the Charge Cup

Fill one of the supplied Powder Measure Vials "to the line" with 3F or 4F black powder or BP substitute in the 3F or pistol granulation (Such as **Triple Seven or Pyrodex P**). Go ahead and "tap" the powder down a bit to settle the powder to get a good measure. There is no need to add extra powder.

You may find it convenient to fill the vials ahead of time and close the lid for later use.

Carefully add the pyro powder to the prepped charge cup, tap to settle powder if needed.

For those of us that have fat fingers, holding the powder measure vial with hemostats can be helpful.

Use one of the supplied "Red Dots" to seal the pyro powder in the Charge Cup

Press firmly to make sure the red dot sticks properly and set the Charge Cup aside.



### VERY IMPORTANT Note:

**Do not ever use smokeless powder in this device!** (Or any Tinder Rocketry device for that matter)

**Use black powder or black powder substitutes such as Triple Seven or Pyrodex P ONLY!**

**The powder from a "disassembled bullet" is NOT black powder!**

**The powder from a "disassembled fire cracker" is NOT black powder!**

(I tell you this because I have had a few customers that have used these powders with bad results!)

## Step 2 - Prepare the Housing and lube the parts

Wipe a generous amount of the supplied lube into the small end of the Housing.  
**Reach in with a well lubed Q-tip and swab the Housing to a depth of at least 1 inch.**

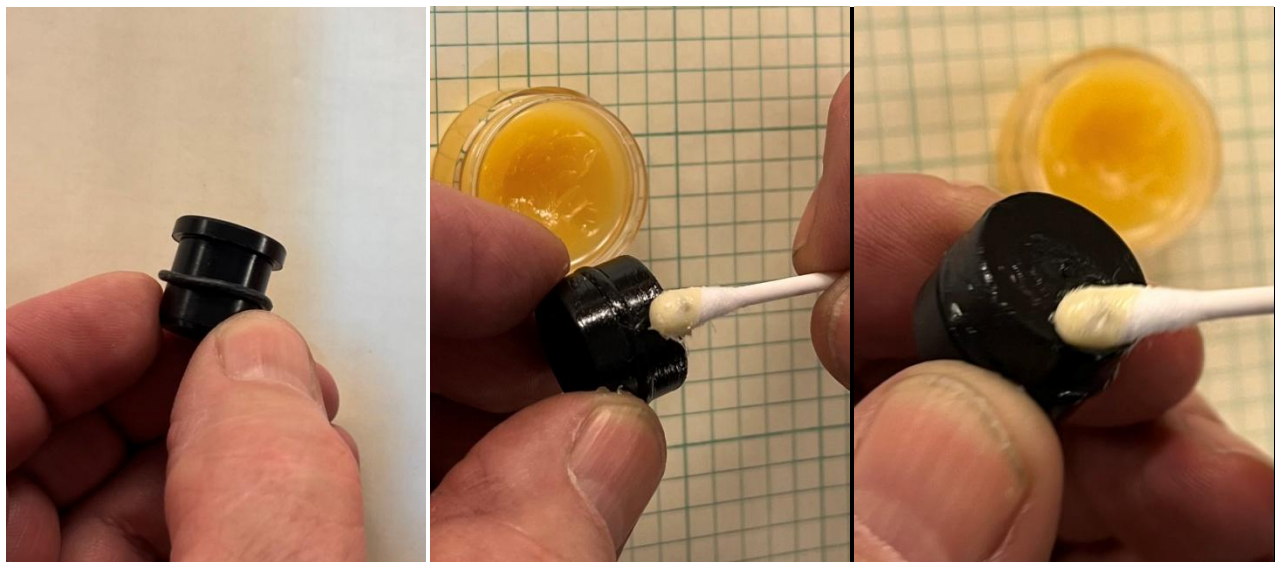
Note: The idea here is to get plenty of lube on both sides of the "step" in the housing.

**Hint: Don't be stingy with the lube!**



**Make sure that there is a thin o-ring on the Charge Cup** and with a Q-tip (Or your finger) lube it.

**Generously Lube the Push Piston.** Lube it WELL on both the bottom and the sides. Thoroughly lubing the Push Piston will both protect it from the hot gasses and make it MUCH easier to clean after use!



### Step 3 - Assemble the device

**Insert the completely assembled Charge cup into the lubed Housing.**

**Hint:** Save yourself some frustration by using the supplied plastic straw to aid in controlling the e-match wires while inserting the Charge Cup into the Housing!

Allow the Charge Cup to fall all the way into the Housing and do not pull further.

**At this point, Do not fully seat the Charge Cup!**



### **Insert and seat the lubed Push Piston**

Use a CO2 ctg to aid in seating the lubed Push Piston and Charge Cup.

Use your finger to push on the CO2 ctg to seat the Push Piston and the Charge Cup. This may require significant push force on the CO2 ctg, especially the first time the Push Piston gets seated.

**The Push Piston should push on and be touching the Charge Cup when it is pushed into place.**

The Charge cup and Push Piston are properly seated when just over 3/8" of the Charge cup is protruding out of the Housing.

**Important:** The reason the Push Piston needs to be touching the Charge Cup is to make certain that there is no space between the two.



### **Lube the Mouth of the Housing**





**Finish the Assembling the device...**

Choose the proper Alignment Collar for the size CO2 cartridge you are using



**8 and 12gm CO2 ctgs shown with the proper Alignment Collars**



**8gm ctgs & Alignment Collars**



**12gm ctgs & Alignment Collars**

**VERY IMPORTANT:**

**The WHITE Alignment Collar is for 8gm CO2 ctgs ONLY  
The BLACK Alignment Collar is for 12gm CO2 ctgs ONLY**

Place the PROPER Alignment Collar and Return Spring into the Housing and over the CO2 ctg  
Visually check to verify that the Alignment Collar is centered on the CO2 ctg



Attach the assembled Housing to the Mounting Cap.

Screw the cap on just snug.

**Note:** There is no need to over tighten as it will not work loose during flight!



**Your **Peregrine** CO2 Ejection Device is ready to attach to your rocket!**

(That is, if the Mounting Cap is not previously mounted to a bulkhead!)

## After use Disassembly & Cleaning

### Step 1 Disassemble the device

Clip the e-match wire(s) to about a half inch from the Charge Cup.

Remove the Housing from the Mounting Cap

Remove the spring & the Alignment Collar and remove and discard the spent CO2 ctg



With your finger, push out the Charge Cup and the Push Piston.

I find that placing the housing on a hard flat surface and using both thumbs is helpful.



You may not be able to completely push out the Charge Cup at this point, that's ok, it will come out easily when you take the housing to the sink in the next step...

## Take the Peregrine Housing to the sink

Rinse Housing inside and out with HOT water.

If the Charge Cup is still in the Housing, push it back in with a toothbrush and rinse again.

Now you should be able to push out the Charge cup with relative ease.

Add a little liquid soap to the housing.

Use the toothbrush inside the Housing to scrub while rotating the Housing.

Rinse the Housing inside and out.



Rinse the Charge Cup with hot water.

Push on the spent e-match wire.

Often it will just fall out, otherwise, pull it out.



Scrub the Charge Cup, Push Piston and Alignment Collar with the soapy toothbrush then rinse.



**Important note:** For best results, try to NOT use your wife's toothbrush!



At this point you might allow everything to air dry or use paper towels to dry everything inside and out.

When washing and drying the Push Piston, DO NOT remove the o-ring on the Push Piston unless it needs to be replaced.

(Note: The push Piston o-ring does not wear and may actually **never** need to be replaced!)

**VERY IMPORTANT:** If you ever feel that you need to replace the Push Piston o-ring, YOU MUST USE THE SUPPLIED O-RING AND NOT ONE THAT YOU FOUND AT THE LOCAL HARDWARE STORE!!

The supplied replacement o-rings for the Push Piston are very hard and **you must only use these!**

**WARNING:** If you use replacement o-rings you find locally, your Peregrine device will likely FAIL and will likely fail to release the CO2 properly for deployment and you know what that means for your rocket...

**Once clean and dry your Peregrine CO2 ejection device is ready for storage until next time...**

## **Plain talk about Pyro Powder**

Black Powder (BP) or BP substitutes in the 3F (fffG) or "pistol" granulation (Also 4F) are the only pyro powders that are to be used in the Peregrine CO2 Ejection device.

As 3F or 4F BP become more difficult to find, be assured that BP substitutes such as Triple Seven (Made for BP pistols) or Pyrodex P (Also made for BP pistols), work very well in the Peregrine CO2 Ejection device.

Please note that since the small amount of pyro powder is determined by the precise **volume** of the Powder Measure Vial, no weighing of this very small amount of pyro is needed.

**Also note that BP or the BP substitutes are all measured by volume, not by weight as they do have different weights for a given volume.**

**Under no circumstance should you ever use smokeless powder in the Peregrine device!**

(Do not use smokeless powder in any Tinder Rocketry device for that matter! )

**Use black powder or black powder substitutes such as Triple Seven or Pyrodex P ONLY!**

**The powder from a "disassembled bullet" is NOT black powder!**

**The powder from a "disassembled fire cracker" is NOT black powder!**

Much to my surprise, I have found that a few people have used these other pyro powders with bad results.

**Under no circumstance should you ever use any pyro powder other than BP or the BP substitutes listed above in this or ANY Tinder Rocketry device!**

## Choosing the Right CO2 Cartridge for your Rocket

*"Make everything as simple as possible, but not simpler."*

This is a quote from a really smart guy with bad hair, Albert Einstein.

Simple is good and simple is what we are going to try and do here...

### **Method 1:**

You may choose this method if you have flown your rocket (or you have ground tested it) and a known qty of BP has been determined for deployment. **The factor is 5. Whatever the qty of BP that you have used in your rocket, measured in GRAMS, multiply that by 5 to get about the equivalent grams of CO2 needed for the same deployment pressure.**

For example: A rocket that has been flown (or ground tested) with **1.5 grams** of BP, would need about 7.5 grams (**1.5 gms x 5**) of CO2 to achieve the same ejection pressure. In this example you would choose an 8gm CO2 ctg and that will likely work fine, but you will still want to ground test this in your rocket!

Example #2: A rocket that has been flow (or ground tested) with **2 grams** of BP, would need about 10 grams (**2 gms x 5**) of CO2 to achieve the same ejection pressure. In this case, round up and choose the 12 gram CO2 ctg and then ground test!

### **Method 2:**

You may choose this method if you have never flown nor tested your rocket and have no idea as to how much BP you might need for adequate deployment. I recommend that you first follow this link to the Rocketry Calculator website (<https://rocketrycalculator.com/rocketry-calculator/bp-estimator/>) where they have a very useful BP calculator and thoughts about how to determine how many grams of BP your rocket might need for BP deployment in your rocket.

**Warning: Do not let your head explode with all this discussion!**

Simply use this discussion to determine a STARTING POINT for your ground testing!

Once you have determined how many grams of BP that you would need to use in your rocket, use this number and go to Method 1. Then you must GROUND TEST!

One thing that I think is noteworthy, is that while these BP calculators are handy when you have no idea as to where to start, I find the amount of BP that is recommended is fairly low. That's why you need to ground test!

There you go! The focus here is to get you to a starting point where you will then ground test this CO2 deployment system in your rocket before flight!

*(Have I mentioned that you should ground test?)*

### A word on CO2 cartridges:

For rocketry flights using CO2 for deployment, more is OK! Unlike BP, it is really difficult to use too much CO2! Always use enough gas and **error on the high side when choosing a CO2 ejection cartridge!**

### Another word on CO2 cartridges:

The CO2 cartridges that are used in the Peregrine are very easy to find locally. In addition, if you buy local, you help to support your local merchant and you don't have to pay shipping! This said, always purchase high quality CO2 cartridges of a name brand you can trust. I have found that the very inexpensive, no-name-brand CO2 cartridges found on eBay, that are made in China, can be very inconsistent as to the amount of CO2 that is actually contained in that cartridge! If you cannot find these common CO2 cartridges locally, you can always order replacement CO2 cartridges directly from Tinder Rocketry.

### Final note:

This device has been specially designed and manufactured to the highest standards to do a job and do it well. I have gone to great effort to explain how to use this most excellent little device! If this device is used exactly as described, you can expect it to work 100% of the time, 100% as expected!



**Contact me if you see or feel that there have been omissions or if you still have questions.**

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