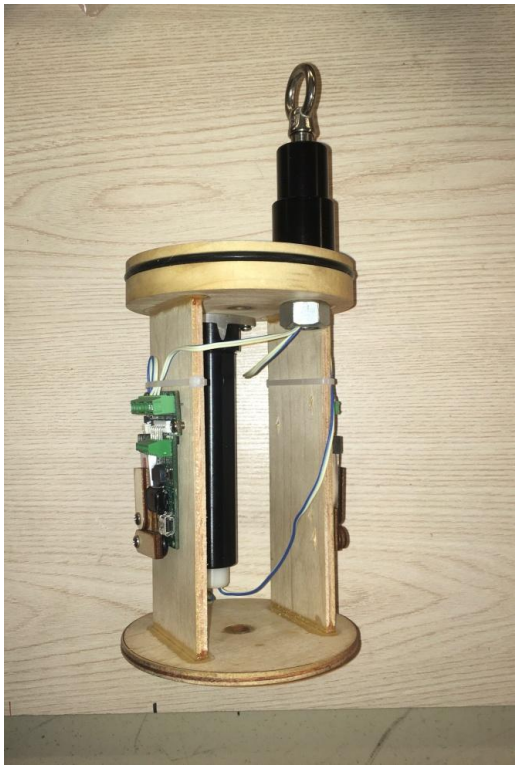
How do I setup the TD-2 in my Rocket?

I grew up during the Apollo time. Seeing the 3 main recovery parachutes on the Apollo Space Capsules was a thing of beauty! As a result of this, I do "1 plus 3" (1 drogue and 3 mains) with all of my larger rockets. While it is MUCH easier than one might think, it is also a bit different than you might be used to. I will show you how I do this with my 4-inch Jayhawk type rocket. The first time I did this was with another Jayhawk, a 5-inch rocket that was my L2 certification flight. It used a home-made tether and release device that later became the first Tender Descender. The TD-2 described below, is one of a new generation of tether and release devices from Tinder Rocketry.

1) Picture 1 is of my av-bay. Two Raven altimeters, one 12gm Peregrine CO2 ejection system and one bolted TD-2 tether and release device.
2) Picture 2 shows the top bulkhead of the same av-bay. Note I have added an aluminum gas conduit (An out-of-spec Peregrine Housing was used) use to route the CO2 gasses around the 3 mains.



3) The av-bay as it is mounted inside the coupler of the rocket. The eye-bolt secures the av-bay to the rocket.

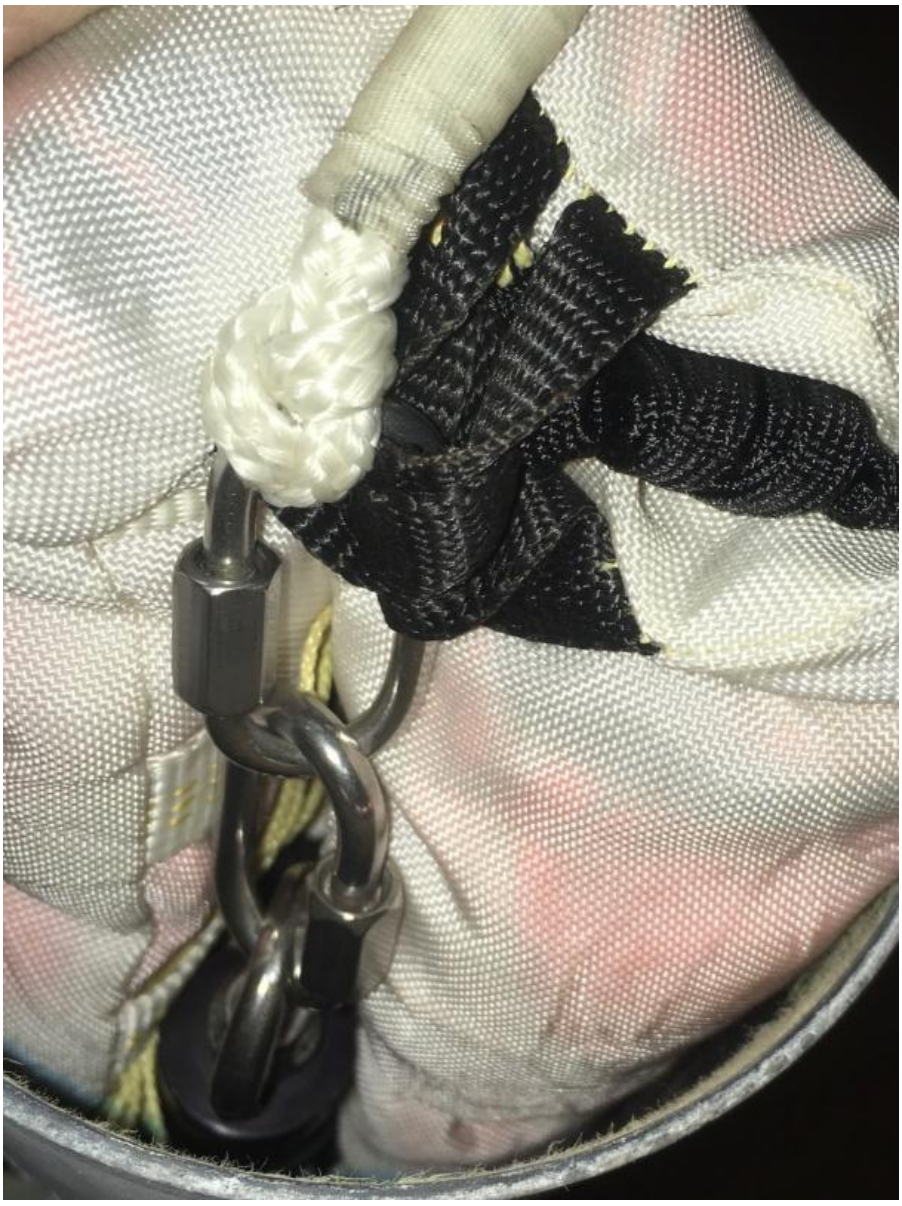
4) The three mains that I use in the 4" rocket. All 3 risers connect to the same quick-link.

5) The quick-link for the 3 mains, is connected to the center eyebolt.

6) The 3 mains are tucked into the coupler. Note the gas conduit is not obstructed.

7) The quick-link from the drogue and NC (Not shown) connected to all 3 of the loops on the top of the main d-bags.

8) The quick-link from the drogue and NC connected to the loops of the d-bags AND the TD-2. Note that while I do want significant force holding the d-bags to the TD-2 (So they will NOT fall out!) I still needed to use an additional quick-link as a spacer.



How this works...

At apogee, the Peregrine CO2 ejection system ejects the NC and frees the drogue (For this rocket I am using a 2-foot drogue)

The entire set up falls fairly fast with this small drogue.

The mains CAN NOT escape because they are held by the TD-2 with significant force.

When it is time for main deployment, the altimeter(s) activate the TD-2 and it releases.

The drogue is now pulling ONLY on the loops on top of the d-bags. Meanwhile the rocket is "falling away".

The risers and shroud lines are pulled from the d-bags until there is full extension. When the risers are fully extended, the mains get yanked from the d-bags for a very controlled deployment!

The drogue, NC and d-bags will separate from the main rocket that is now under 3 mains.

(This is truly a thing of beauty!)

NOTE: While the NC and drogue do separate from the rocket, I have never had them come down more than 70 yards from each other. Most of the time the NC and the main portion of the rocket are fairly close to each other. FYI, I always set my mains to deploy at 1000'.