Check list for rocket SunSeeker

Overall data

Building time:	December 2014
Weight on pad:	28,000 g
Length:	3915 mm
Diameter:	114 mm
Possible motor(s):	CTI O3400
Expected altitude:	9,500 m

Inhaltsverzeichnis

Prepare Motor

See enclosed instructions …..... ☐

Pre-Flight Preparation Computer

Test Voltage of LiPo Main-E-Bay, min 7,6 V ..... ☐

Test Voltage of both LiPos Nose-Cone, min 3,2 V ..... ☐

Switches in OFF-Position …..... ☐

Connect Power-Plugs …..... ☐

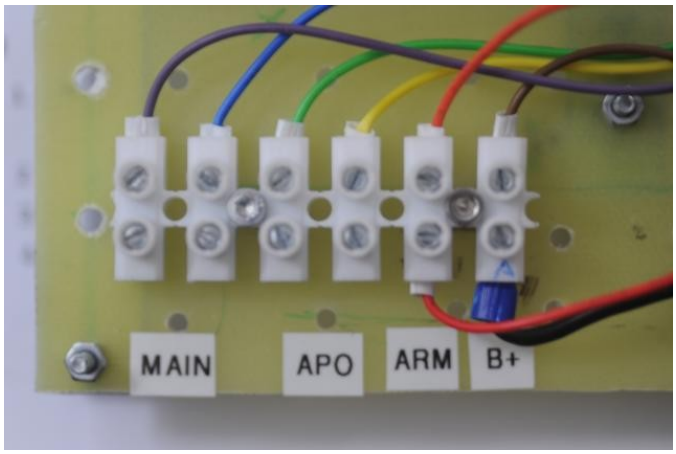
Switch on Telemega while holding it horizontal..... ☐

Check connectivity with Bluetooth and USB-based receivers …..... ☐

Check the programming: fire at apogee, antenna up
and GPS sync (may take a while) …..... ☐

Switch off Telemega..... …..... ☐

Check Altimax cabling (see picture) …..... ☐



Picture 1: ARM-Cables must be connected (orange and red). B+ leads to positive battery

Switch on Altimax …..... ☐

Expected signal **Beep-Beep-Beep, Bip-Bip-Bip-Bip, Beeeep** …..... ☐

Check the programming, fire apogee+1sec and main at 300 m …..... ☐

Switch off Altimax.....…..... ☐

Switch off Telemega..... ☐

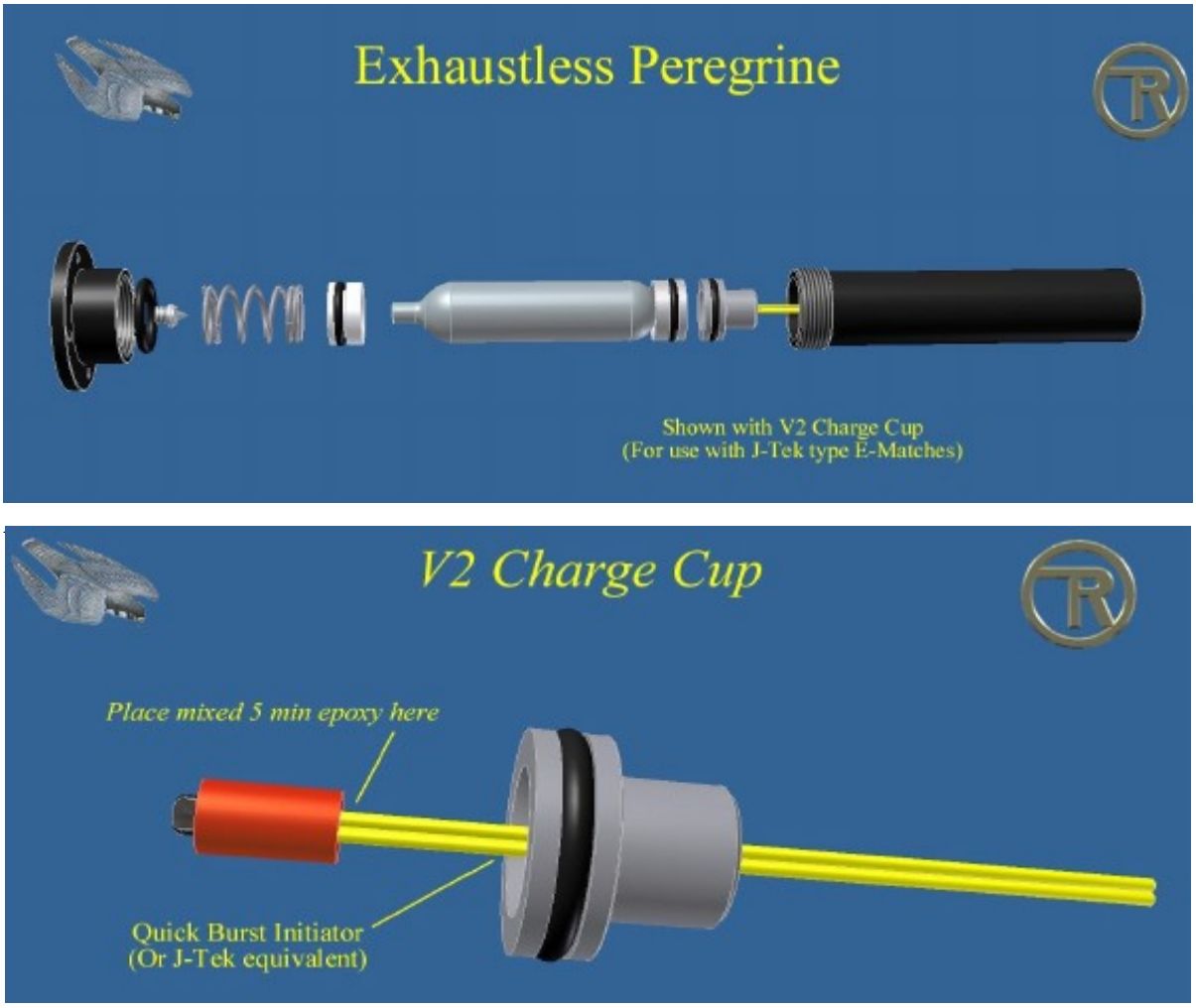
Pre-Flight Preparation Ejection System

Prepare 2 * SN-0 or equiv..... ☐

Internal resistance SN-0 1-4,5Ω (might be different)..... ☐

Upper ejection charge (drogue at apogee)

Prepare two CO2-Canister with Peregrine manual. 0,17g BP..... ☐



Picture 3: Peregrine igniter schematics

Install Peregrine system at the Nose-Cone Bulkhead. Use 4 M3x20 screws ..... ☐

Install Peregrine system in the upper Coupler Bulkhead. …..... ☐

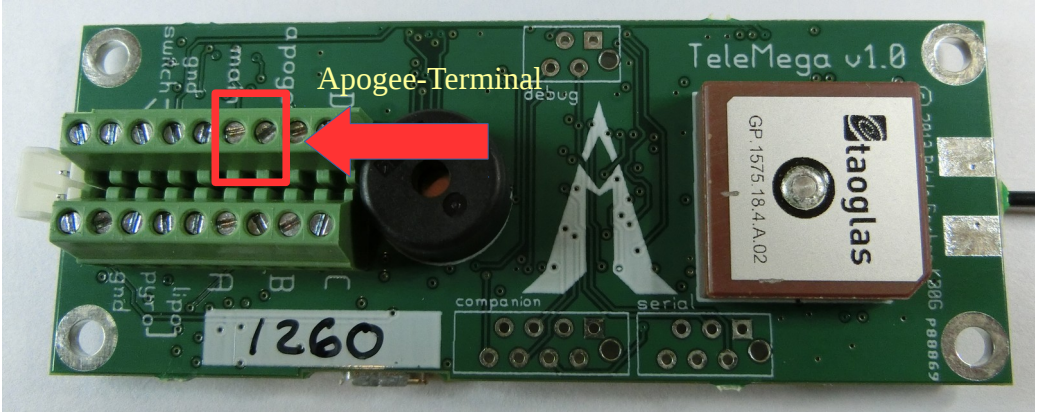
Switch on Telemega while holding it horizontal..... ☐

Check connectivity with Bluetooth and USB-based receivers …..... ☐

☐

Slide Telemega assembly half-way onto nose cone allthreads..... ☐

Connect igniter wires to Altus Telemega, left row, connector three and four from above ….....….…..... ☐



Picture 4: Telemega terminal

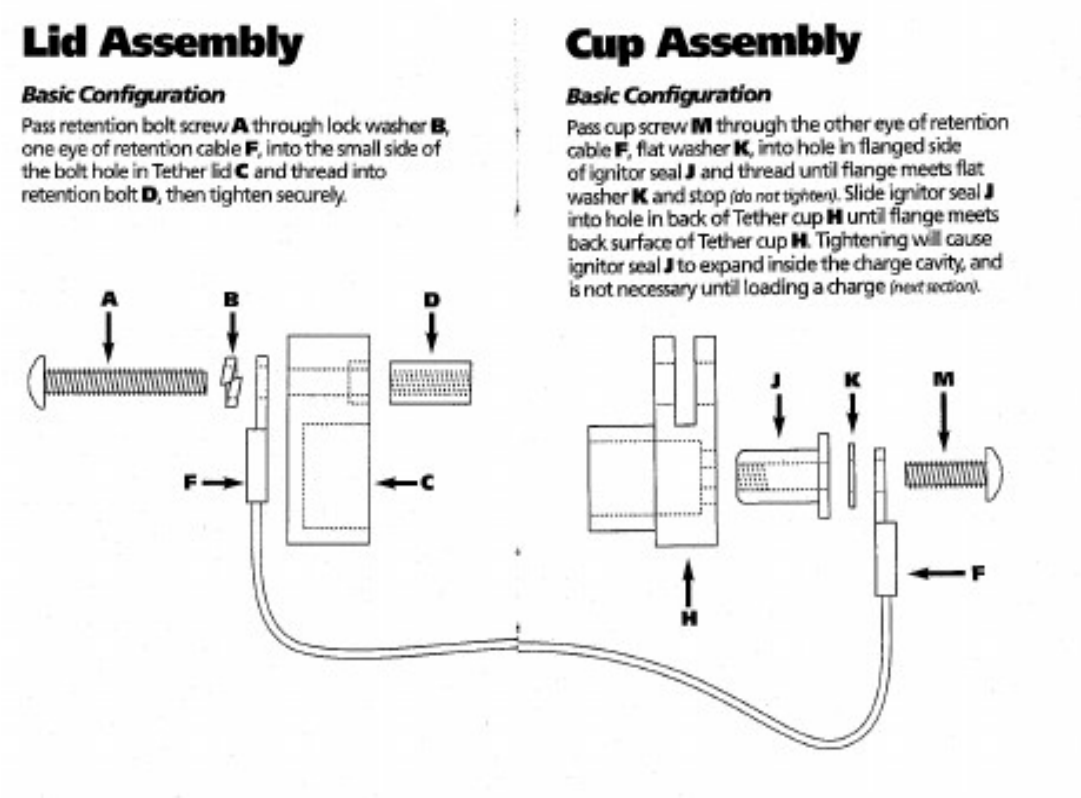
Secure all cables with cable ties..... ☐

Push Telemega assembly all the way up. Secure with 2 large washers and M5.... ☐

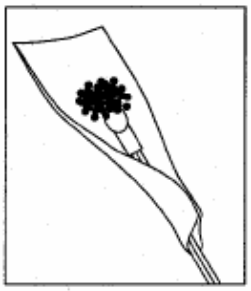
Attach Nose-Cone bulk head onto nose cone. Secure with 2 M5 nuts. Assembly from the bottom: Big washer, small washer, nut …..... ☐

Lower Ejection charge (main at altitude 300 m)

Prepare the Tether with „Defy Gravity“ manual. (Type In-Line)..... ☐



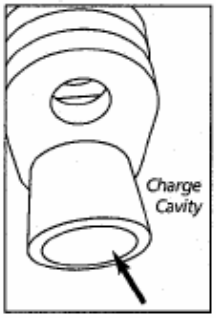
Loading A Charge



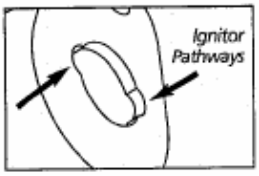
Form a "spoon" of masking tape around the head of an electric match type ignitor. Two ignitors may be used for some redundancy. Place a small amount of ffff black powder or a fine grain black powder substitute, such as Pyrodex, in a pile on the head of the ignitor.

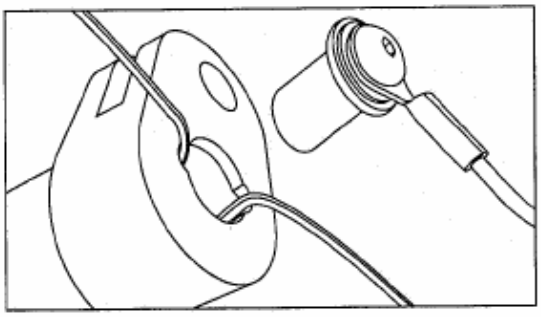
Approximately one-eighth to one-quarter gram, or about two to four times the size of the ignitor head should be used, but you should perform some ground tests to achieve the appropriate amount for your use. Fold the tape up and over the head to form a small packet of tape to contain the black powder and keep it in good contact with the pyrogen on the head of the ignitor.

You may want to apply a thin coat of grease to the inside of the Tether charge cavity and Tether lid to aid in post firing clean up. Insert the charge,



ignitor leads first, into the charge cavity and feed the ignitor leads out the hole in the back of the Tether cup. Pull through until the charge is nearly completely in the cavity and position the ignitor leads to seat into the ignitor pathways. Insert the ignitor seal and tighten the cup screw until snug. Do not overtighten. Observe the seal expanding inside the charge cavity as you tighten the cup screw. This will seal the ignitor pathways from any gases escaping once the charge is fired. After tightening the seal, you will have a little more room in the cavity to position the charge below the rim of the cavity, allowing the lid to seat properly. After the lid is put on the cup, place some masking tape on the sides to insure the cup does not loosen or vibrate off. When the charge is fired, the tape will break.





Behind the Mount *continued*

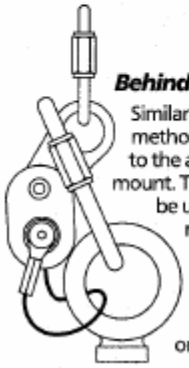
There are some variations to this method. Use a one-eighth quick link instead of a retention tab

Or feed a line of nylon or even ste your shock moun retention bolt in Tether.

For high force applications, using both retention tabs side-by-side for extra strength, will provide extreme anchoring power, tethering and releasing loads up to 500 pounds.

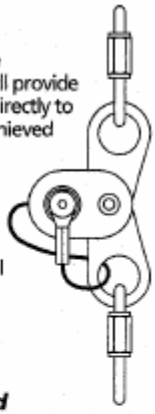
Behind a Link

Similar to the behind-the-mount method, this uses a quick link attached to the anchor point, such as the shock mount. This alternative method would be used if the shock mount does not lend itself to the first method either due to position or size. Also, as in the first method, retention tabs may be used, or another quick link, or just a line.



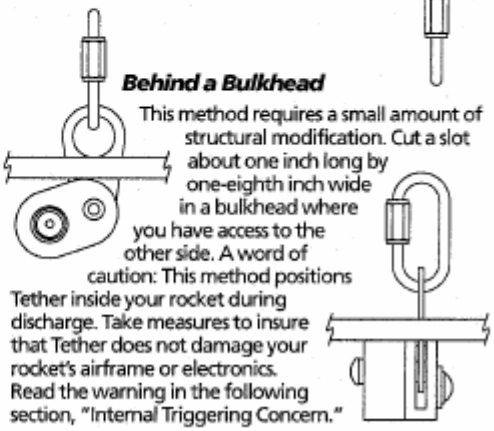
In-Line Method

Using both retention tabs, this time positioned opposing each other, will provide retention with little stress applied directly to the unit itself. Cleanest release is achieved with this method as well. A good application of this method is one where less pull from the tethered item may be expected, however arranging Tether this way can still support a great deal of force as well — up to 300 pounds.



Behind a Bulkhead

This method requires a small amount of structural modification. Cut a slot about one inch long by one-eighth inch wide in a bulkhead where you have access to the other side. A word of caution: This method positions Tether inside your rocket during discharge. Take measures to insure that Tether does not damage your rocket's airframe or electronics. Read the warning in the following section, "Internal Triggering Concern."



Extend igniter wires, secure with shrink wrap ……..... ☐

Run extended wires through upper coupler installation ..... ☐

Tether retention cap with wire through it must be attached to the bulkhead attachment loop (see section Assemble Air frame).....…..... ☐

Tether retention cap without wire through it must be installed with DROGUE shock cord to the bulkhead attachment loop …..... ☐

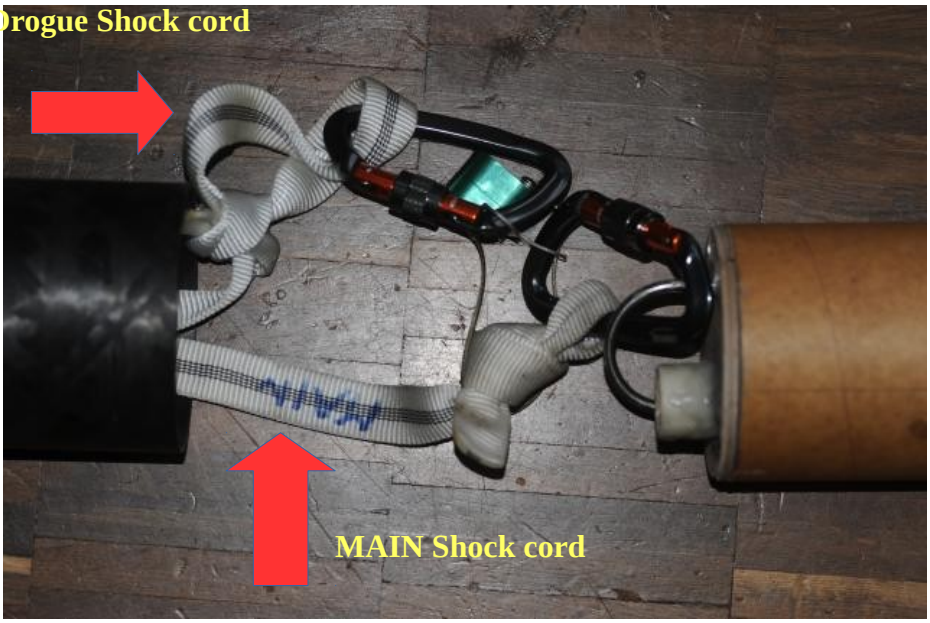
Assemble Air frame

Run main shock-cord and drogue shock cord through longer part of payload tube..... ☐

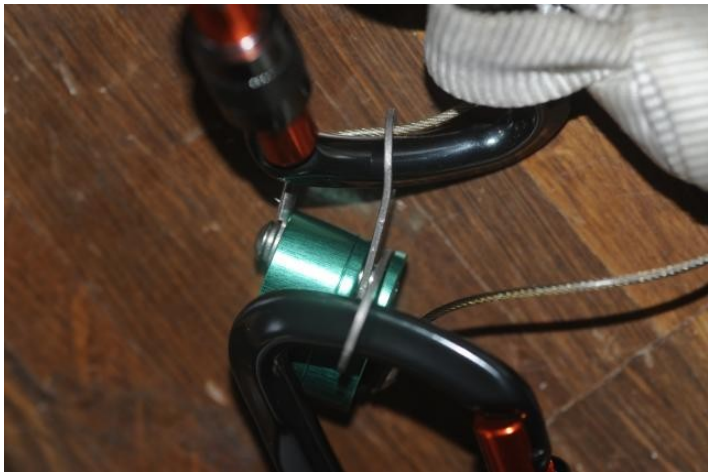
Run 2 allthreads (M5, marked RED) through longer part of payload tube through the attachment CR holes. Red side must come in first..... ☐

Attach drogue shock cord to teather cap on upper coupler (the one without wire through it …..... ☐

Attach main shock cord to upper coupler attachment point …..... ☐



Picture 5 Attachment of shock cords to coupler



Picture 6: Tether details

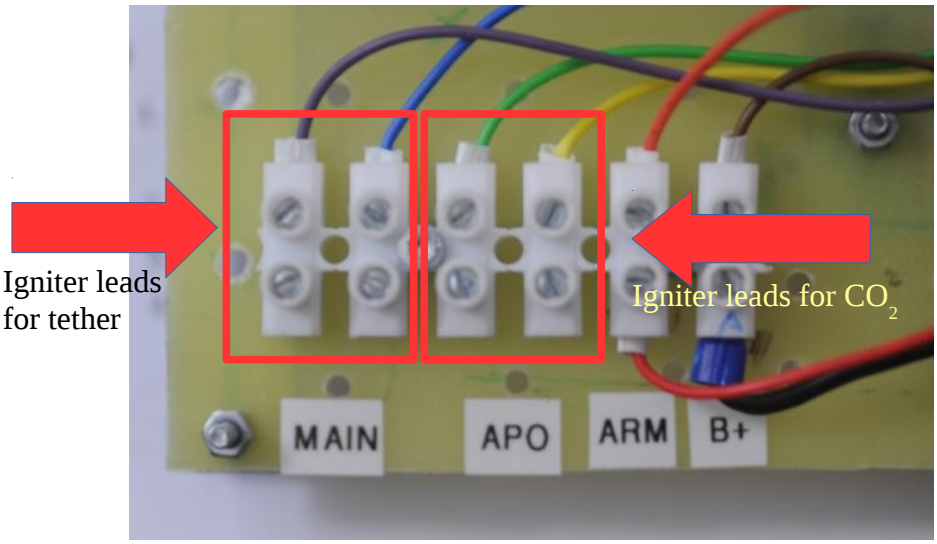
Insert allthreads from payload tube into coupler and slide coupler into shorter side of payload tube..... ☐

Put larger washer and M5 nut onto both allthreads.
Tighten coupler into payload tube …..... ☐

Push Altimax computer bay onto both allthreads. Do not push full forward..... ☐

Attach igniter wires from CO_2-cartridge to „APO“ terminal …..….…..... ☐

Attach igniter wires from tether to „MAIN“ terminal …..... ☐



Picture 7: Altimax terminal

Start computer [ALTIMAX] (screw type switch). Signals
Bip-Bip, Bip-Bip, Bip…bip…bip…bip…Beep, bip-bipp, bip-bip..... ☐

Switch computer off …..... ☐

Attach cable ties to switchboard to secure igniter wires..... ☐

Push computer assembly fully forward. Attach with large washer
M5 nut onto allthread …..... ☐

Slide carbon-fiber coupler onto computer assembly and into payload tube.
Align switch opening holes. Run allthreads through lower bulkhead..... ☐

Put larger washer and M5 nut onto both allthreads.
Tighten carbon fiber coupler in place …..….…..... ☐

Put 2 M5 nuts over the allthreads. Turn down until nut is aligned with red sign..... ☐

Put wooden ring onto allthreads. Push down towards the nuts..... ☐

Push fiber glass coupler tube into upper motor cover tube..... ☐

Slide upper motor cover tube onto allthreads. Run allthreads through motor retention..... ☐

Use large washer and M5 nut and tighten assembly …..... ☐

Rocket body should be rigid at that point!

Prepare recovery system

Pack main chute 1 into deployment bag. Do not attach bag to chute …..... ☐

Close bag. Fold and secure chute lines onto deployment bag …..... ☐

Pack main chute 2 into deployment bag. Do not attach bag to chute …..... ☐

Close bag. Fold and secure chute lines onto deployment bag …..... ☐

Fold main shock cord into loops, secure with rubber band …..... ☐

Attach intermediate cord onto both deployment bags (black nylon). Use simple snap hook for that..... ☐

Attach screw hook onto loop in black nylon. …..... ☐

Run drogue shock cord through the screw hook..... ☐

Picture 8: Main chutes assembly

Fold remaining drogue shock cord into loops, secure with rubber band …..... ☐

Attach chute 1 shock cord and chute 2 shock cord to main shock cord …..... ☐

Push main shock cord into payload tube …..... ☐

Push deployment bag 1 into payload tube …..... ☐

Picture 9: Bag1 must be inserted with opening cover downwards. Chute lines must point up.

Push deployment bag 2 into payload tube …..... ☐

Attach drogue and drogue shock cord onto nose cone attachment point …..... ☐

Push drogue shock cord and drogue chute into payload tube …..... ☐

Push nose cone assembly onto payload tube. Align computer switch hole …..... ☐

Slide fin can onto motor tube …..... ☐

Slide lower motor cover tube onto motor tube …..... ☐

Screw motor assembly into motor retention in upper motor cover tube …..... ☐

Note: it might be necessary to not finish the last step at that point in order for easier transport to the pad.

The rocket is ready to put on pad!

Pre-Launch Check

Rocket slides easy into tower..... ☐

Start computer [ALTIMAX] (screw type switch) in main bay. Signals Bip-Bip-Beep, Beep-Beep-Beep-Beep, Beeeeep..... ☐

Start computer [TELEMEGA] (screw type switch) in nose cone. Connect with Bluetooth and cable telemetry …..... ☐

Telemega should show:
GPS lock
Apogee charge installed
Status: ready to fly/awaiting launch …..... ☐

Insert igniter in motor……..... ☐

Secure igniter …….... ☐

Attach igniter to start box..... ☐

READY TO FLY