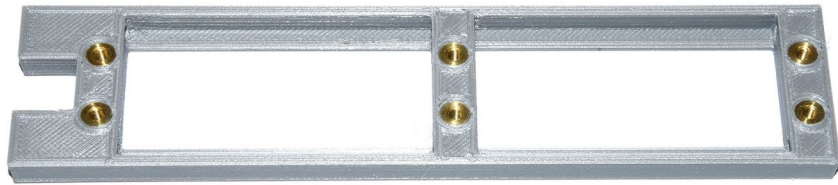
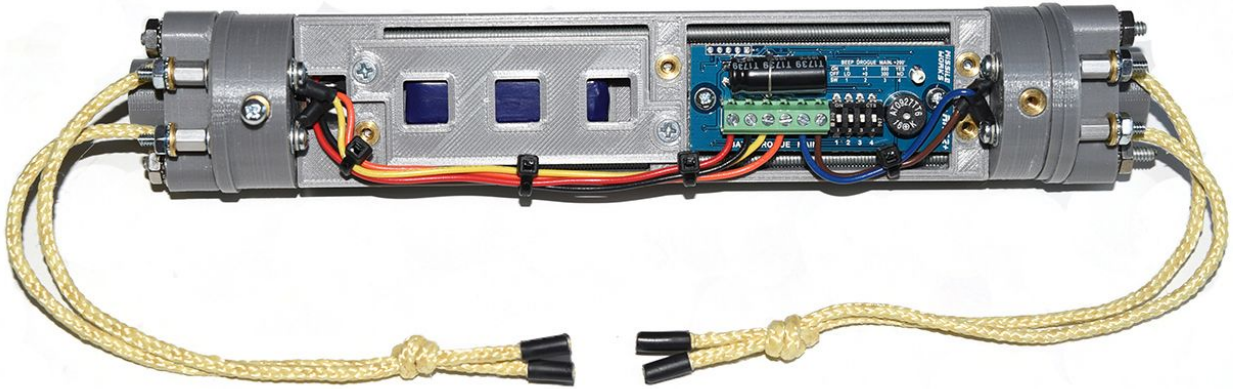


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Introduction

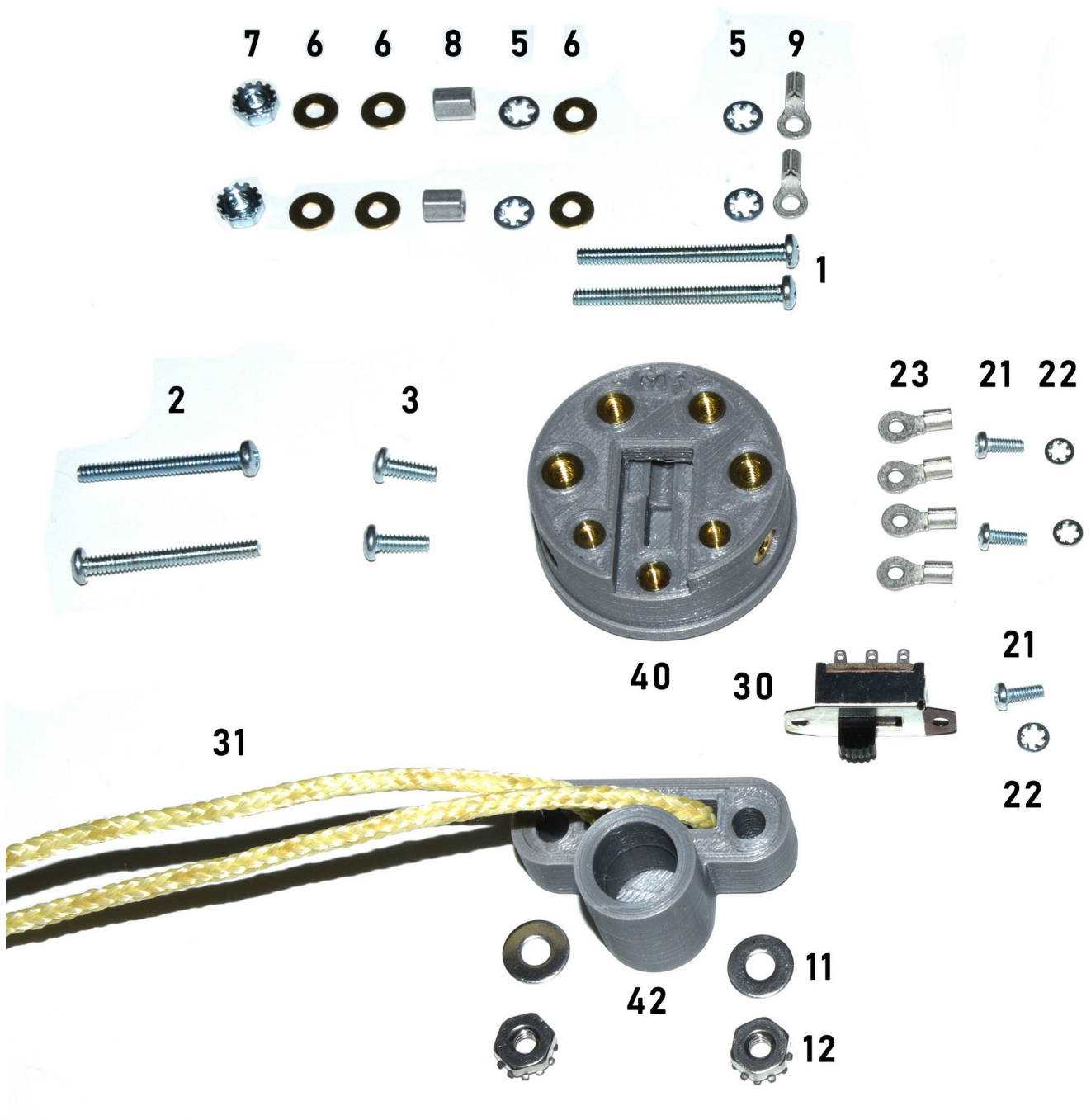
Thank you for purchasing a BT60 hybrid bay manufactured by SMT Designs! We want you to be satisfied with your purchase, so please get in touch with us if you have any questions or issues assembling your bay – www.smtdesigns.com/store

The BT60 hybrid bay is designed to be an easy to assemble and reliable electronics bay for use in low, medium and high power rockets. Its modular design allows for a wide variety of device and battery support. This guide includes parts identification, preparation of parts and the basic assembly of the hybrid bay.

Parts Identification

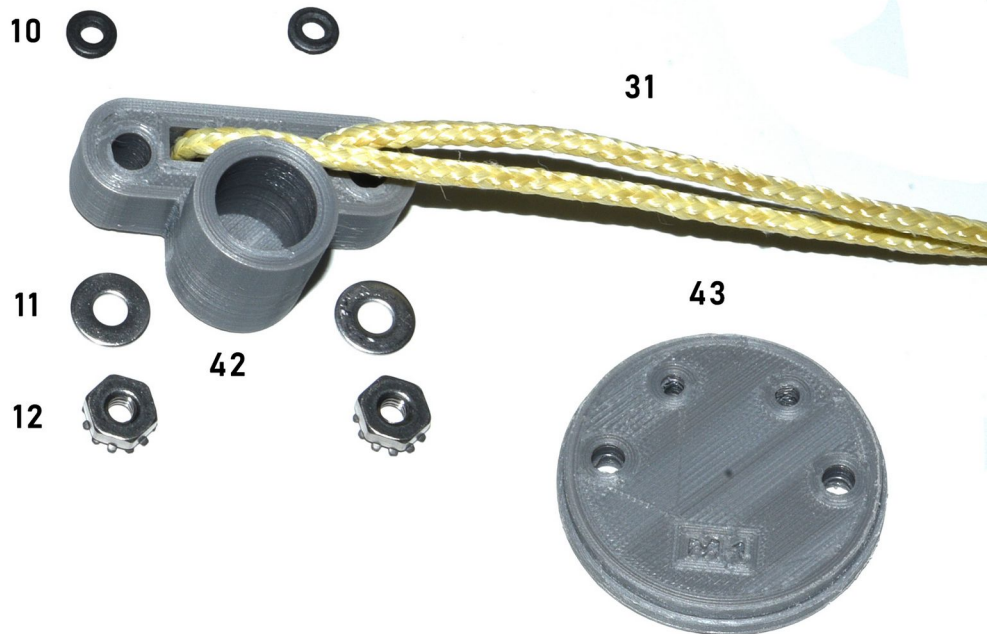
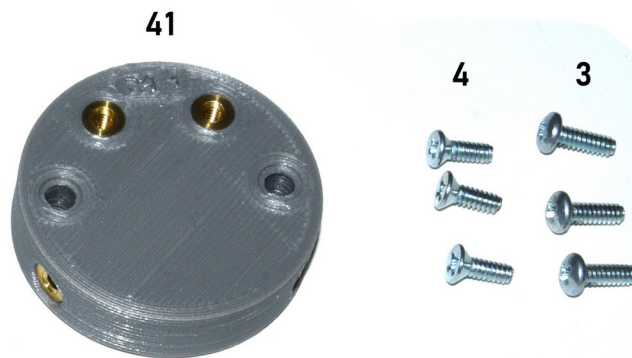
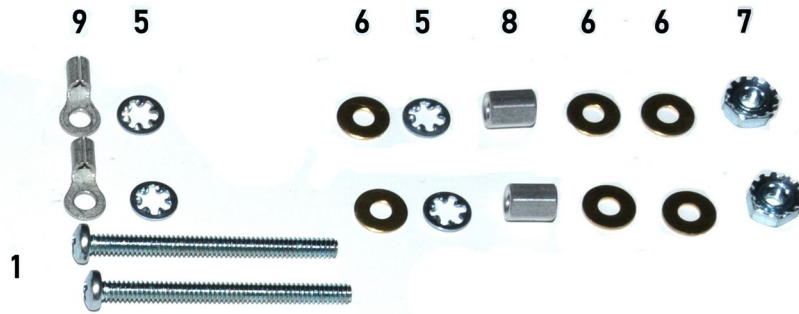
ID #	Quantity	Description		
1	4	4-40 1-3/8" machine screw		
2	2	4-40 1" machine screw (arming)		
3	5	4-40 5/16" machine screw		
4	3	4-40 5/16" flat head screw		
5	8	#4 internal lock washer		
6	12	#4 brass washer		
7	4	4-40 KEP nut		
8	4	4-40 1/4" 3/16" threaded spacer		
9	4	#4 solder terminal		
10	2	#6 rubber sealing washer		
11	4	#6 flat washers		
12	4	6-32 KEP nuts		
21	3	2-56 1/4" machine screws		
22	3	#2 internal lock washers		
23	4	#2 solder terminal		
30	1	momentary slide switch		
31	2	18 inch x 0.12 Inch KEVLAR cord		
40	1	BT60 switch end cap v2		
41	1	BT60 mtg ring v2		
42	2	BT60 Charge canister/shock cord tie		
43	1	BT60 end cap v2		
44	1	BT60 tray v2		

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Switch End Cap Parts (top)

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End Cap Parts (bottom)

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Preparation

There are some preparations that should be done before the bay can be assembled. These include deployment wires, power wiring, and arming switch.

Deployment and Power Wiring

SMT Designs includes a set of colored wires and has developed a recommended color code for wiring an electronics bay to assist in the identification of connections in a bay both on the bench and in the field.

SMT Designs Color Code

	Color	Purpose
	Red	Positive Power - Device
	Black	Negative Power - Ground
	Yellow	Apogee +
	Orange	Apogee -
	Blue	Main +
	Brown	Main -
	Green	Switch Wiring



Prepared Wires

Note: deployment wires use #4 terminal lugs and power wiring use #2 terminal lugs

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Wire Preparation

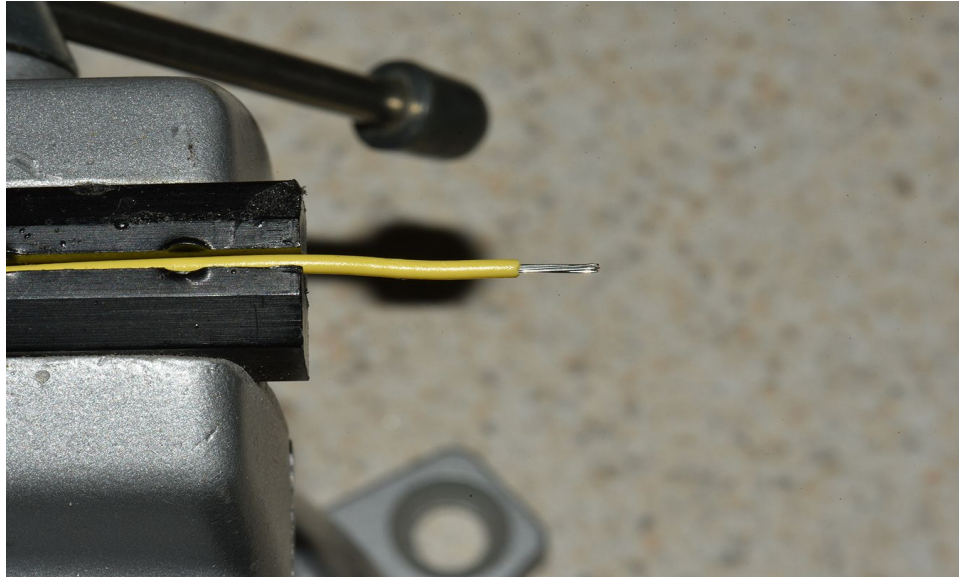


Illustration 1: Strip 1/4 inch of insulation off wire

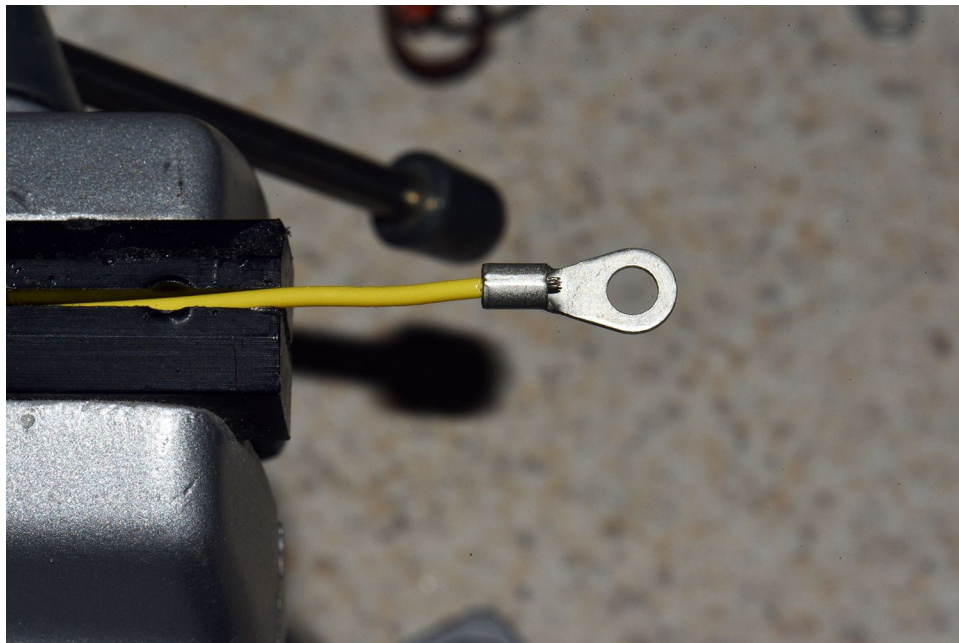


Illustration 2: Slide terminal lug onto wire

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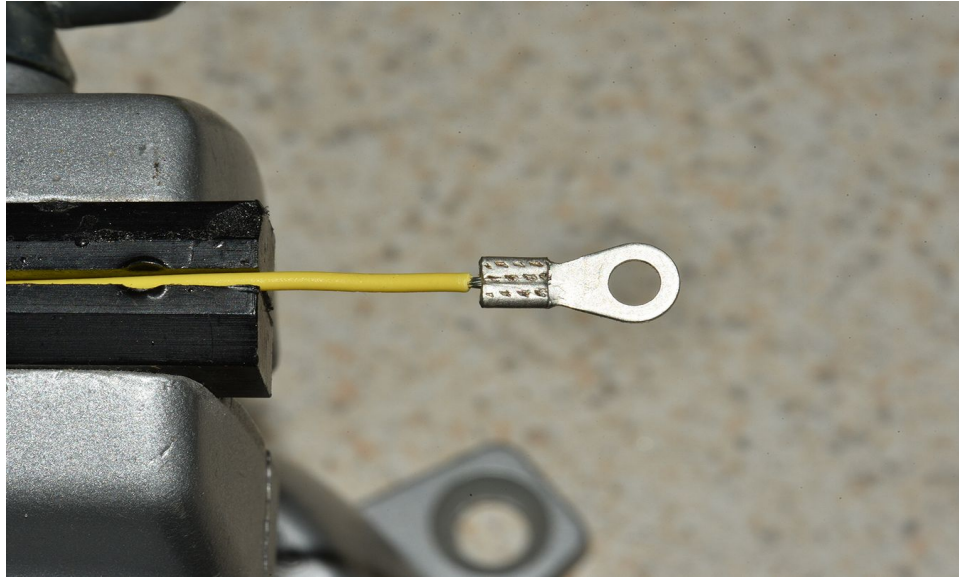


Illustration 3: Crimp terminal onto wire

Note: you can crimp one side of the lug onto the wire, and then crimp the other side over

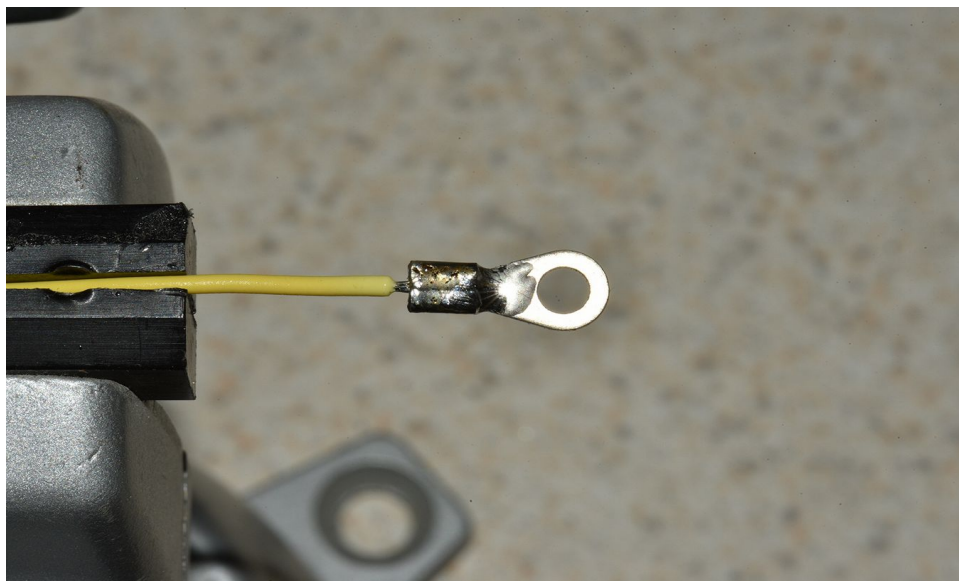


Illustration 4: Solder terminal - solder should wick into lug and fill lug

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Illustration 5: Slide a section of large heatshrink over lug and shrink tubing

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Switch Preparation

note: green wire is used for devices that have switch terminals such as the StratoLoggerCF. The guide assumes a device that does not have switch terminals, so red wire is typically used. Also, make sure the switch is in position shown when soldering to prevent solder flux from flowing into the switch contacts

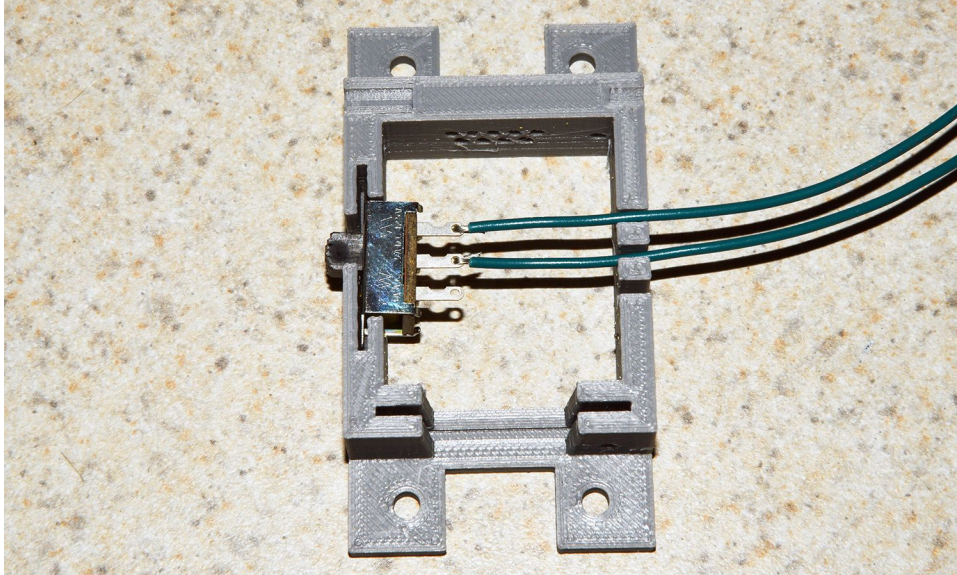


Illustration 6: Attach wires to center and post farthest away from actuator

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Illustration 7: Slide small section of heatshrink tubing over posts



Illustration 8: Shrink tubing

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Bay Assembly

Locate the charge canister/shock cord ties and the KEVLAR cords



- 1) Feed the KEVLAR cord through the canister holes on each side. Note: the heatshrink on the ends of the cords is an adhesive type and will not typically just pull off. It is suggested to use a small flat blade screwdriver to push the cord through the holes. Repeat for both canisters.

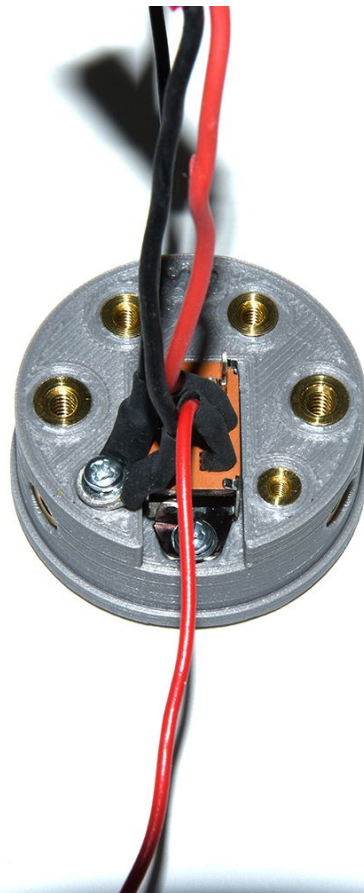
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Completed Charge Canister/Shock Cord Tie Assemblies

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Locate the Switch End Cap Parts



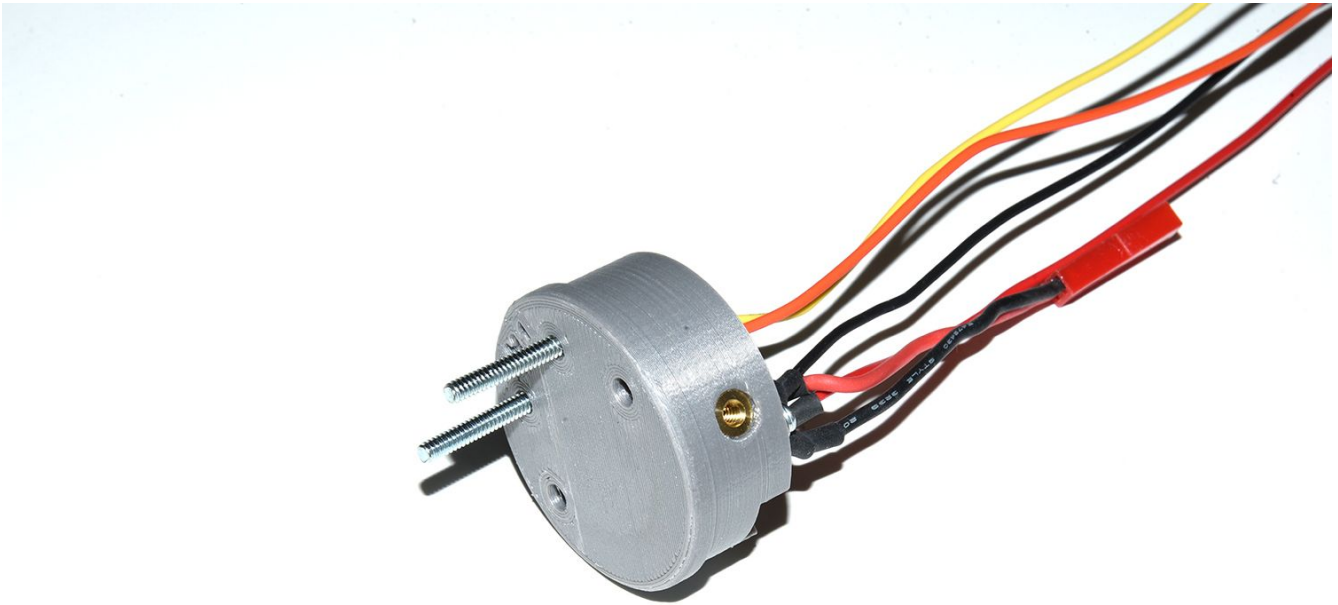
- 2) Install switch using a #2 internal lock washer, a 2-56 machine screw, and tighten. Note: the middle terminal of switch is the red wire from the battery cable and the outside terminal (closest to 2-56 mounting screw is a red wire that will be the switched power to the device).
- 3) The tie point on the left is used to connect the black battery cable to a black wire that is the negative/ground connection for the device. Use a #2 internal lock washer and a 2-56 machine screw to connect the two terminal lugs. Note: don't completely tighten the tie point screw at this time/.

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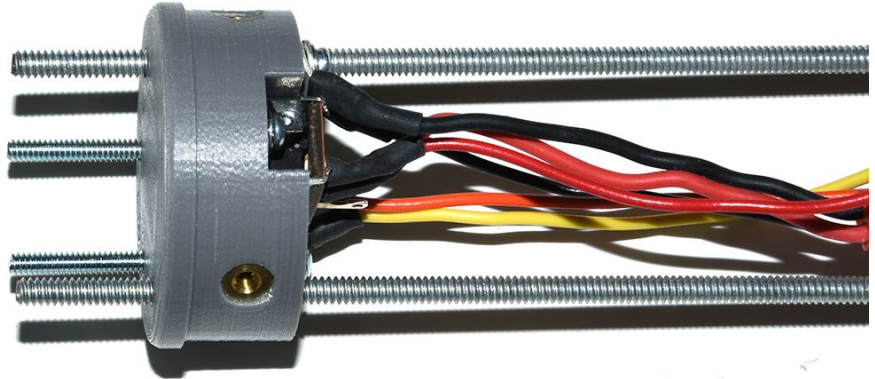
- 4) Prepare hardware and wire connections for deployment channel (drogue colors shown here – main colors are brown and blue). Note: either end can be drogue with the other being main.

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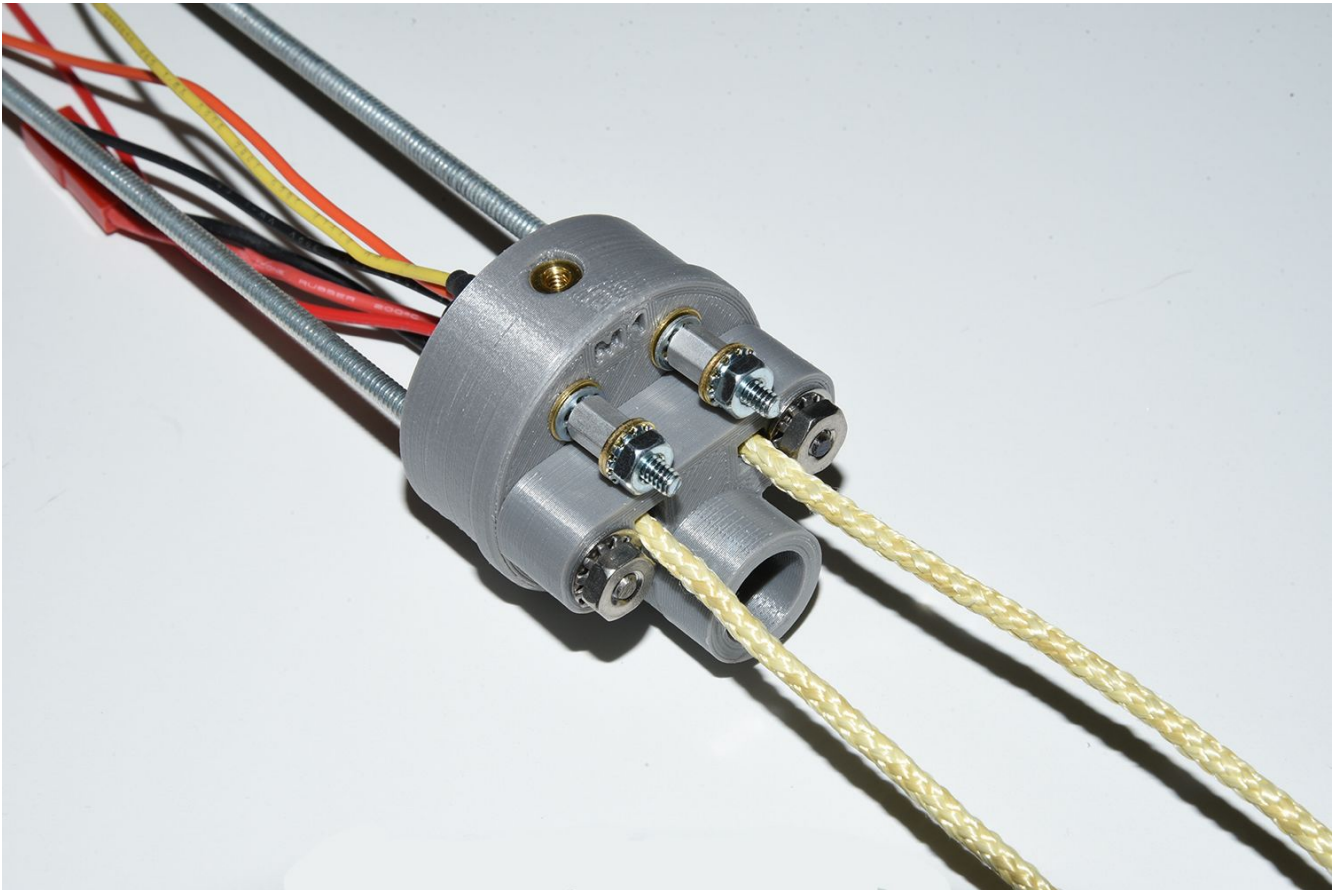
5) Install deployment channel hardware and tighten

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- 6) Install 6-32 threaded rods in switch end cap. The rod ends should extend 0.625 inches (5/8) out.

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- 7) Install remaining deployment channel hardware and tighten (#4 brass washer – lock washer – 4-40 threaded spacer (tighten) – (2) #4 brass washer – 4-40 KEP nut), then install charge canister followed by a #6 flat washer, a 6-32 KEP nut and tighten.
- 8) To make sure there is clearance for the hardware and wires at the switch end cap, temporarily slide the notched end of the tray down over the threaded rods. Use it as a position guide for the wires and tie point terminal lugs with the tray flush against the inside surface of the switch end cap. Once everything is clear, tighten the tie point screw.

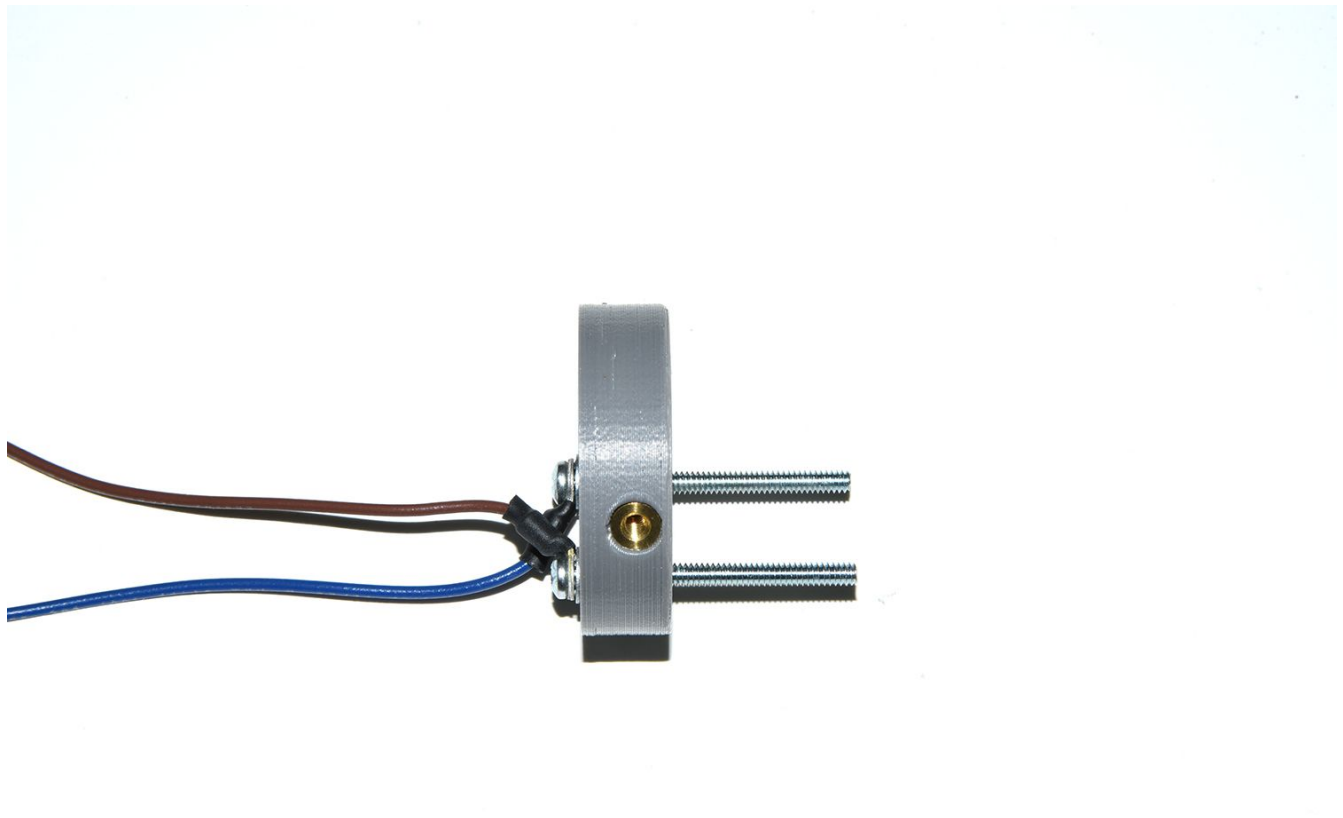
Completed Switch End Cap Assembly

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- 9) Prepare hardware and wire connections for deployment channel (drogue colors shown here – main colors are brown and blue). Note: either end can be drogue with the other being main.

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10) Install deployment channel hardware and tighten

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Final Assembly



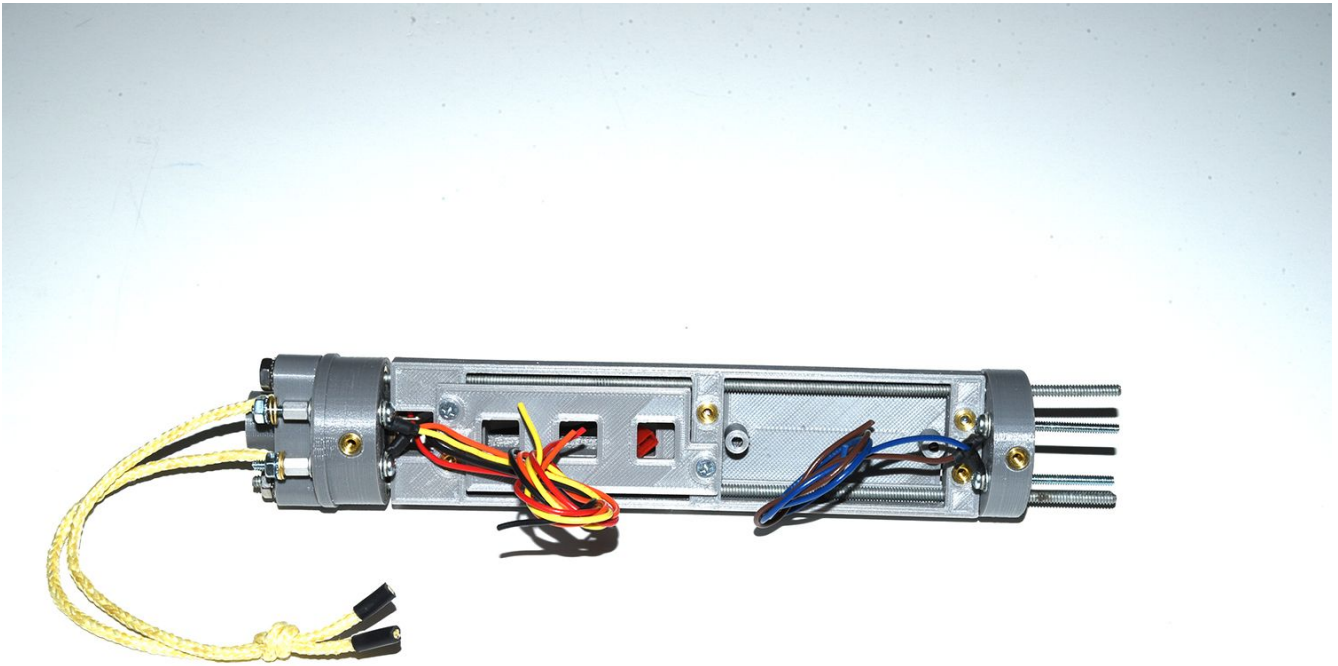
Top View

Bottom View



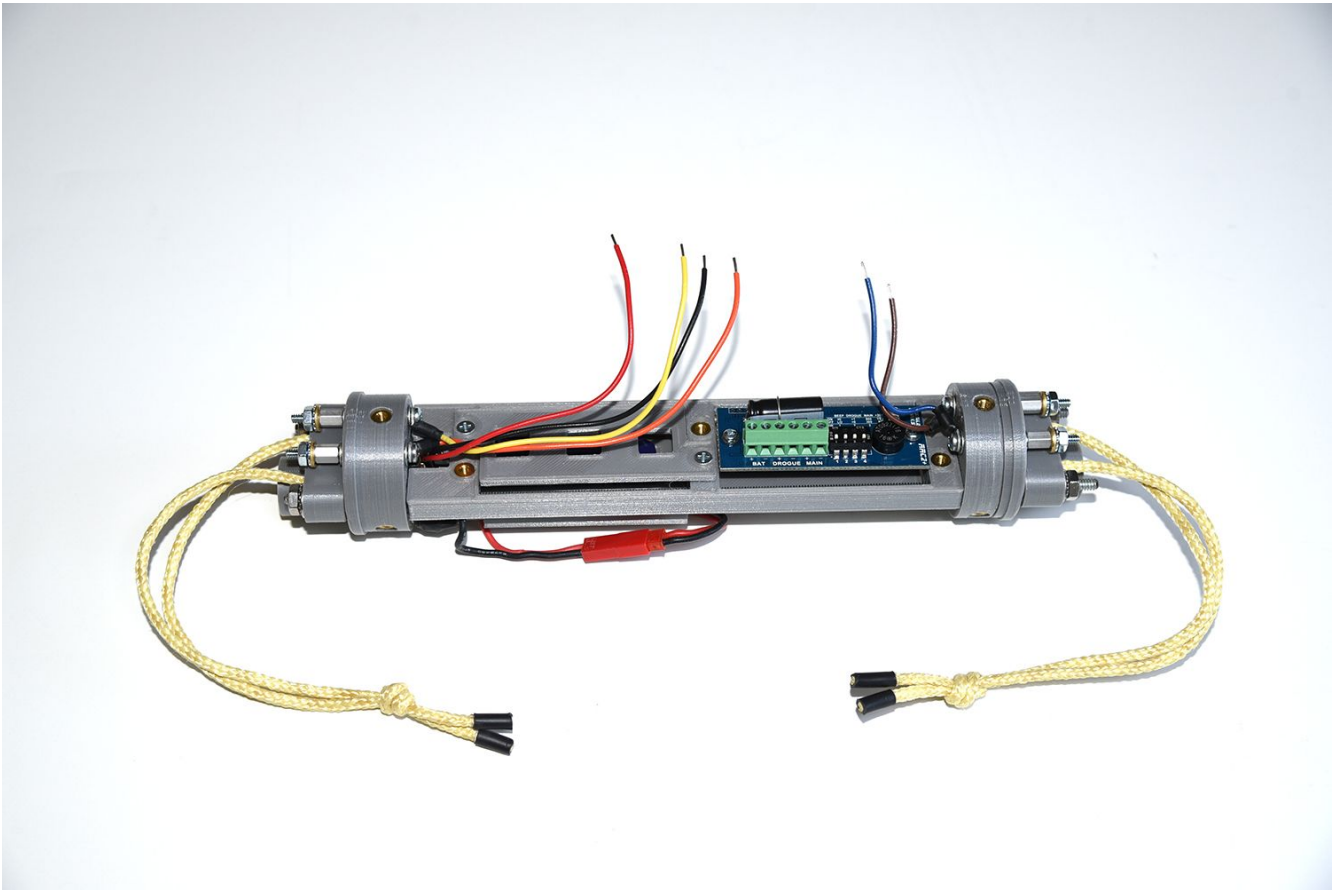
- 11) Install battery carrier in left slot of tray (switch end cap side) and device carrier in right slot.
Note: Turnigy 300mAh LiPo and RRC2+ carriers shown above. All device carriers for the BT60 hybrid bay install from the bottom of the tray.

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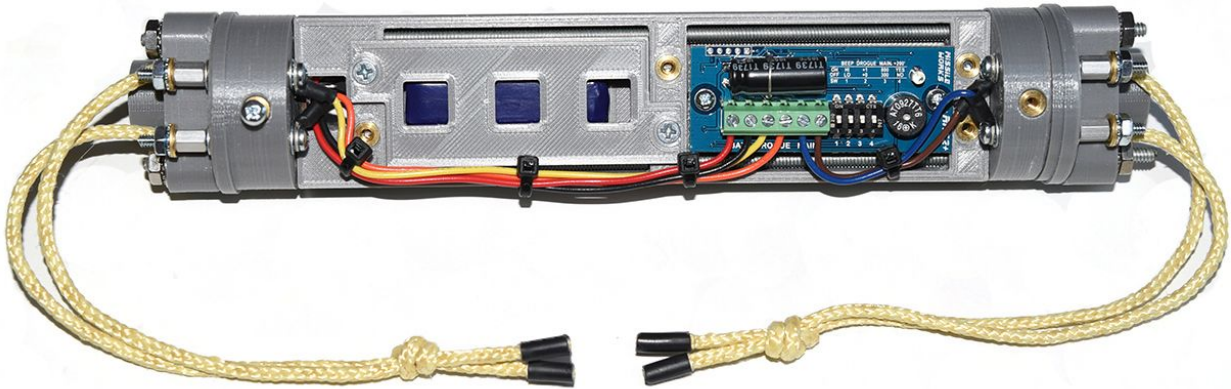
- 12) Slide notched end of tray and end cap assembly over threaded rods (charge channel hardware should be as shown in the photo above).

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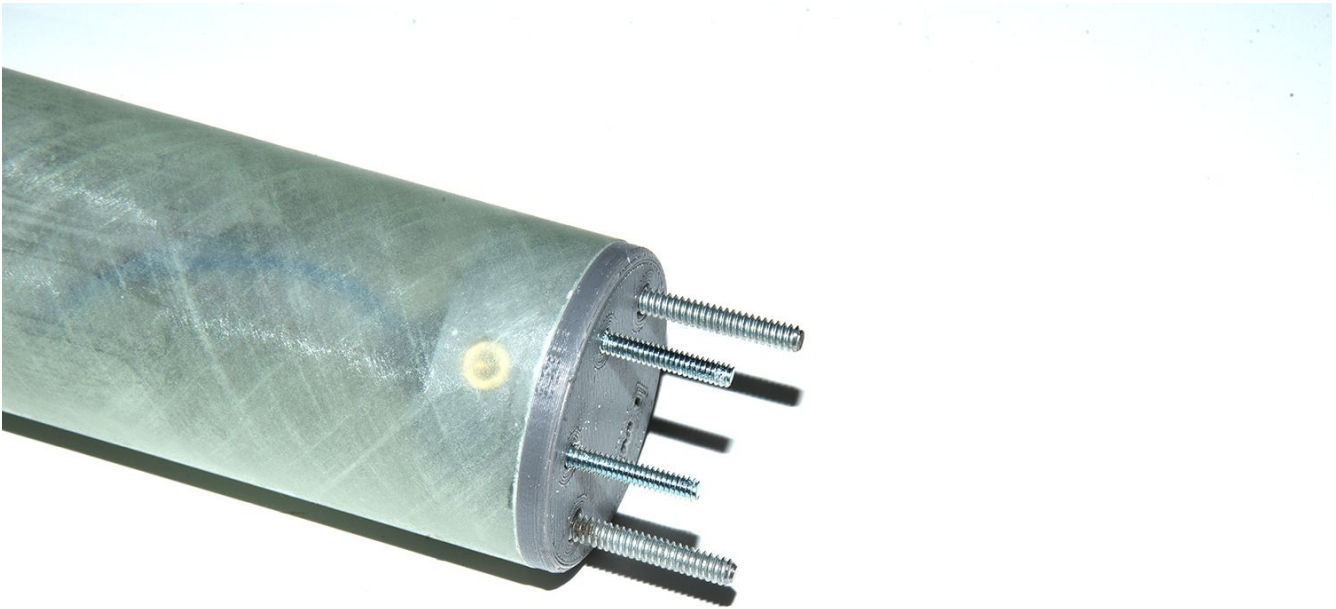
- 13) Install device in carrier using the supplied hardware that came with the carrier.
- 14) Route wires to where they go and strip 1/8 inch of insulation off their ends. Note: wire length can be shortened or just left as-is.
- 15) Tin the stranded wire ends to prevent fraying.

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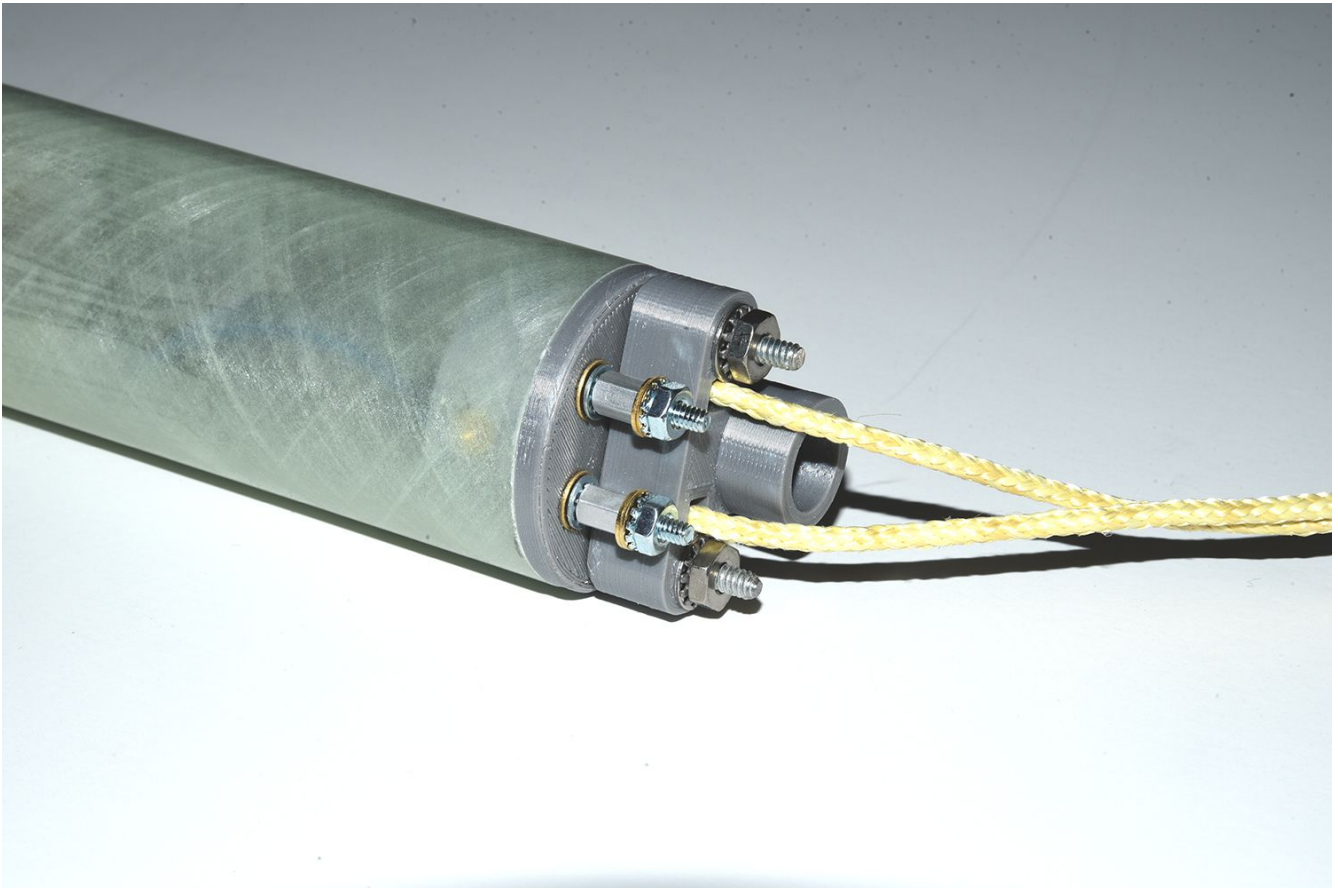
- 16) Connect deployment and power wires to device. Tie wraps are included to dress the wires and keep things clean and organized.
- 17) Install battery and bench test the bay using an arming switch in the switch end cap. Note: turn the arming screw until the switch is turned on and the device powers up. If the arming screw tightens up before the altimeter turns on, then there may be a wiring issue that must be investigated before proceeding.

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- 18) Install the bay into the bay coupler tube and put the end cap on. Note: it is assumed at this point that bay mounting holes, the arming screw hole, and vent holes have already been located and drilled. Also, depending on the rocket configuration, the mounting ring holes do not need to be used unless the configuration requires that the bay be located where two air frames come together and are supposed to be both mounted to the bay (shotgun deployment – always pushing out the parachutes). The more common small rocket arrangement has the switch end up and mounted to the upper air frame with the main parachute. The lower half of the electronic bay slides into the booster section of the rocket with the drogue parachute. There is hardware included in the kit for all of these arrangements.

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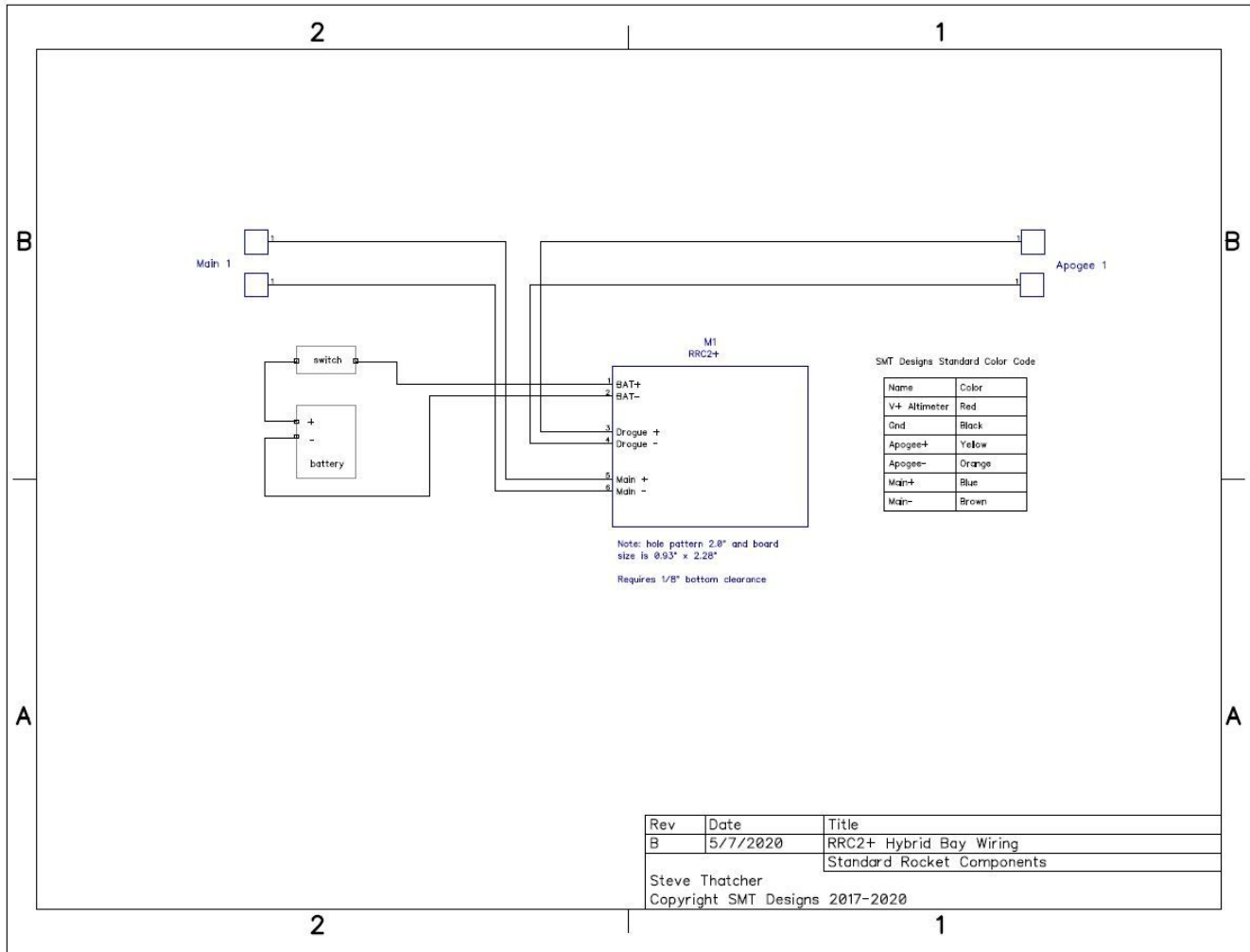
- 19) Field prep the bay by installing the deployment channel hardware and tighten, Note: there are two #6 rubber seals that should go on the threaded rods at this point before the charge canister is installed. Once the charge canister is in place, then install a #6 flat washer and a 6-32 KEP nut on each rod and tighten.

Completed Bay Assembly

Further Notes

- 20) The charge canisters are designed for up to 2.5 grams of 4F black powder and should last many launches. Using Pyrodex, Triple7 or other types of powder can reduce the useful life of the canisters. Also, do not use centrifuge hard plastic tubes to try and protect the canisters. The centrifuge tubes will act as shrapnel when they break apart due to the black powder. That shrapnel can damage both the canister and the rocket.
- 21) The arming screw length should be shortened a bit if needed so when the screw is turned down to turn the altimeter on, it should be flush with the rocket air frame (not the coupler tube). If it extends up, shorten it so it is flush. Doing that will keep the screw from applying excessive force to the switch mechanism.

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Hybrid Bay Wiring Diagram (RRC2+)

Please visit us at www.smtdesigns.com/store for more rocketry products as well as technical documentation to assist you in your projects.

Thank you for being a SMT Designs customer

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