



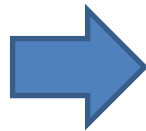
# Mx152 Option-10 Pyro Board Upgrade Instructions



FRONT

BACK

Kate 2.0 Transmitter  
Starting Configuration



FRONT

BACK

Kate 2.0 Transmitter + Pyro Board  
Ending Configuration

## Pyro Board Option-10 Upgrade Instructions

This document outlines the procedure that should be followed in order to upgrade a Kate 2.0 transmitter by adding an optional Pyro board. The Pyro board is used for firing pyrotechnic charges for staging and deployment events. The starting point is an Mx150 Option-10 Kate 2.0 Transmitter that is configured as a tracker only. An Mx152 Option-10 Conversion Kit includes a Pyro board and all the extra hardware needed to perform the upgrade.

The user must supply a battery to power the Pyro board. The battery can be a 9V alkaline or a 2S LiPo battery. Do NOT use a 1S or a 3S LiPo for the Pyro board battery! Contact Multitronix if you have any questions about the battery requirements. Email: [info@multitronix.com](mailto:info@multitronix.com) for more information.

## Revision History

| Rev | Date          | Description     |
|-----|---------------|-----------------|
| 1.0 | July 20, 2020 | Initial Release |

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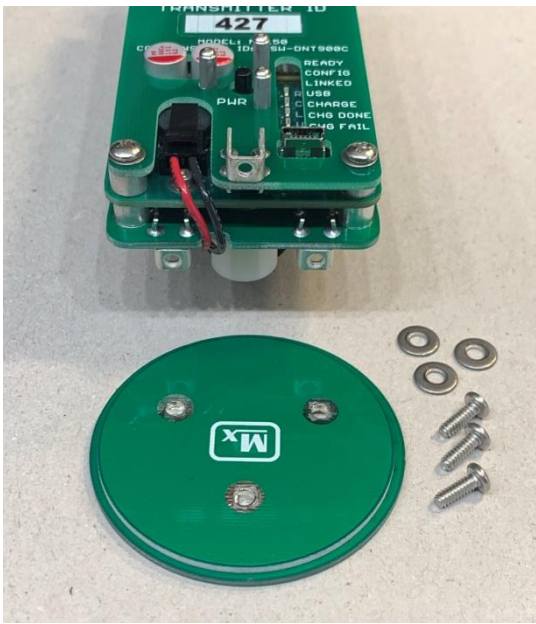
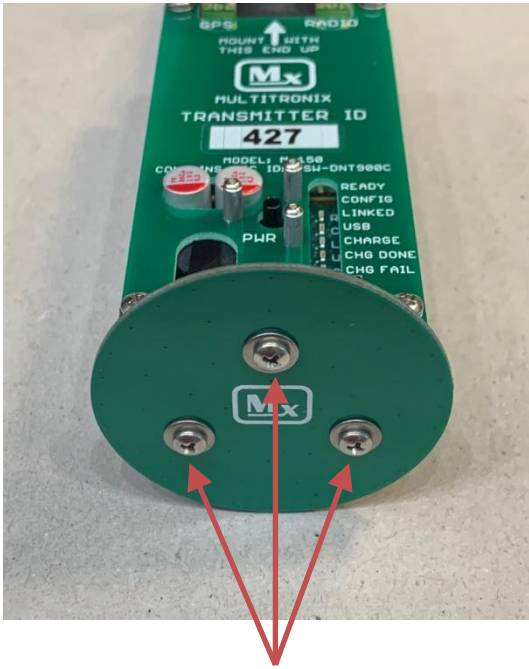
## **WARNING**

When a Kate 2.0 transmitter is dismantled there are a lot more electronic components exposed to the user than when it is full assembled. These components are very sensitive and are susceptible to damage by static electricity. This includes static discharges that are low enough in voltage that a human will not even feel anything when it happens!

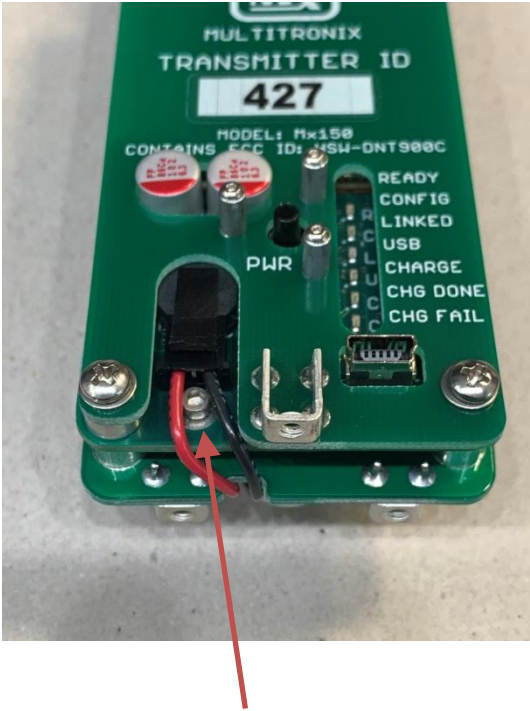
**Be careful handling the transmitter and the Pyro board! Only handle them by the edges. Avoid touching the electronic components on the circuit boards.**

Do not use a plastic table top as a work surface for performing the upgrade procedure outlined in this document. Almost all plastics generate and retain electrostatic charges. Especially, in low humidity environments. A wood table top is a better alternative.

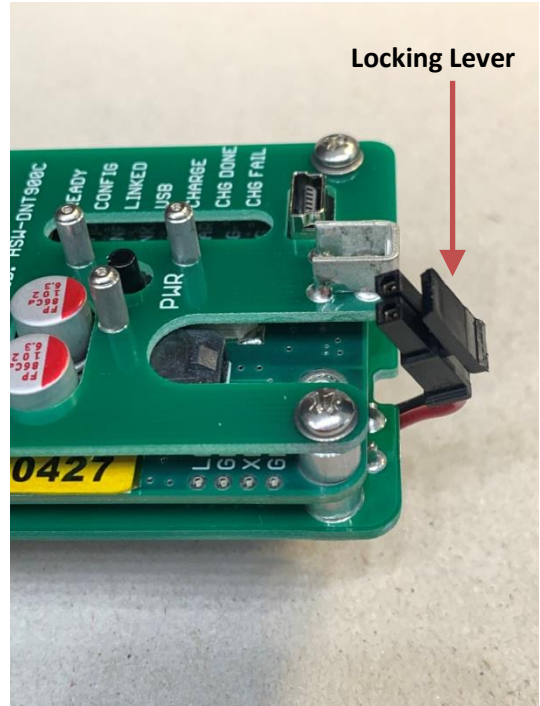
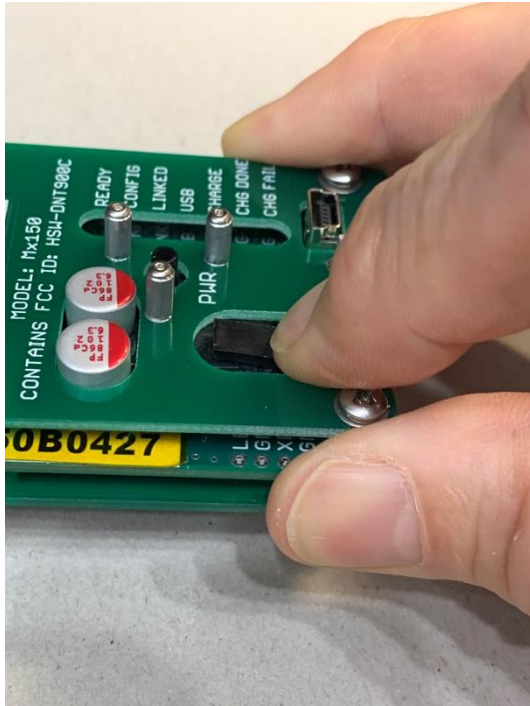
Also avoid working in an area with carpet. Carpets are notorious as generators of static electricity!



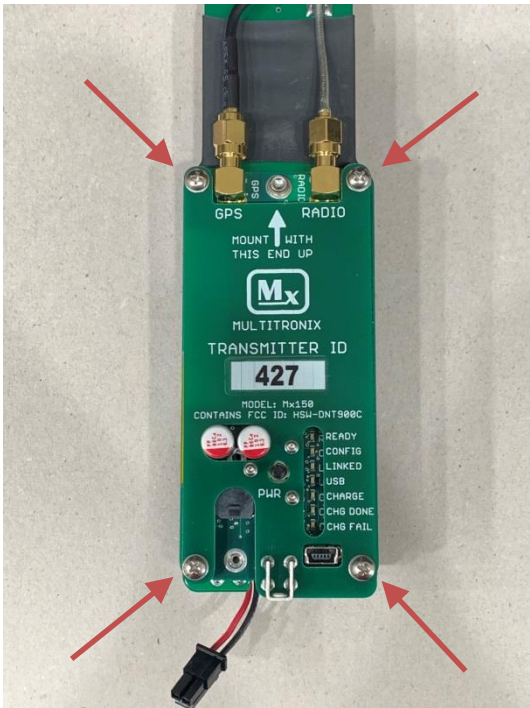
**Step 1:** Remove aft thrust plate by removing three screws. Set aside the thrust plate and screws. They are not needed for the pyro board option-10 configuration.



**Step 2:** Remove the small screw that prevents the battery connector from backing out. Use 5/64" Allen wrench. Save the small screw. It will be needed later.

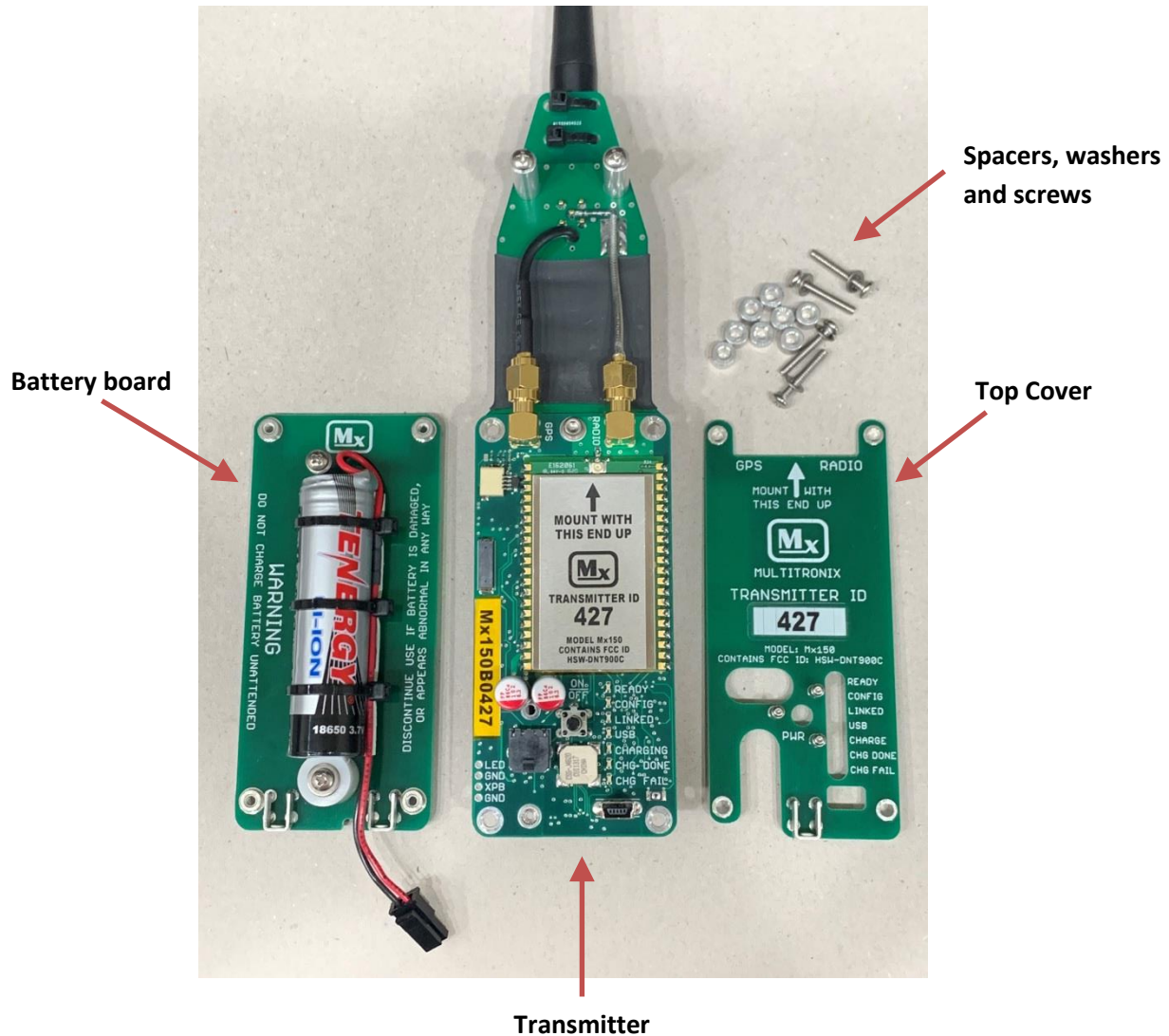


**Step 3:** Depress locking lever on battery connector and disconnect it.



**Step 4:** Use Phillips head screw driver to remove four screws that hold the stack together.

**Step 5:** Unstack all the circuit boards. Collect together all 8 spacers, 4 washers and 4 mounting screws. Save them along with the battery board in case you ever want to re-assemble the transmitter as just a tracker without a pyro board attached.

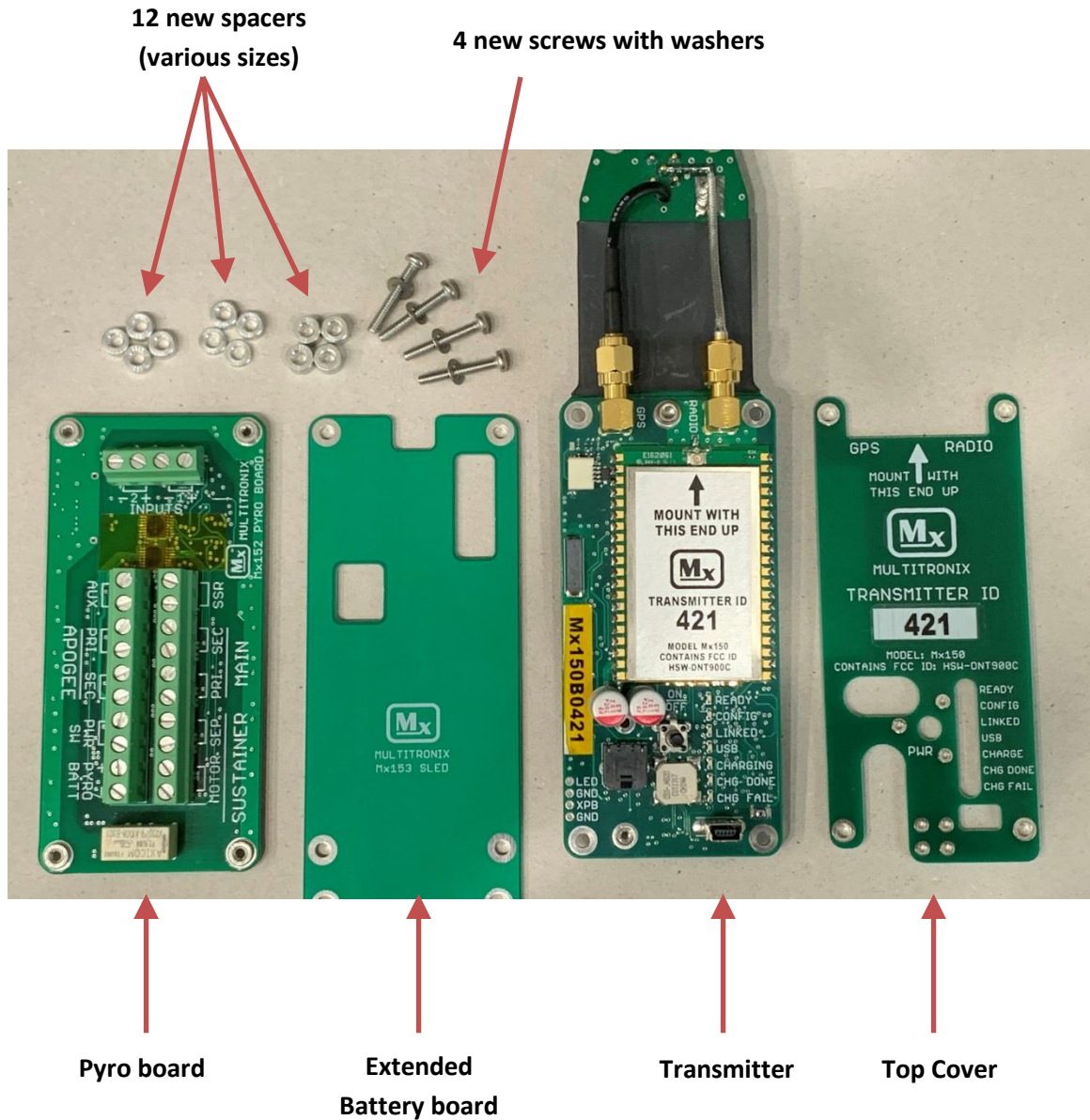


## WARNING

Be careful handling the transmitter! It can be damaged by static electricity. Only handle it by the edges. Avoid touching the electronic components on the circuit board.

**Step 6:** Carefully remove the Pyro Board from its antistatic bag. Be careful handling it. It can be damaged by static electricity. Only handle it by the edges. Avoid touching the electronic components.

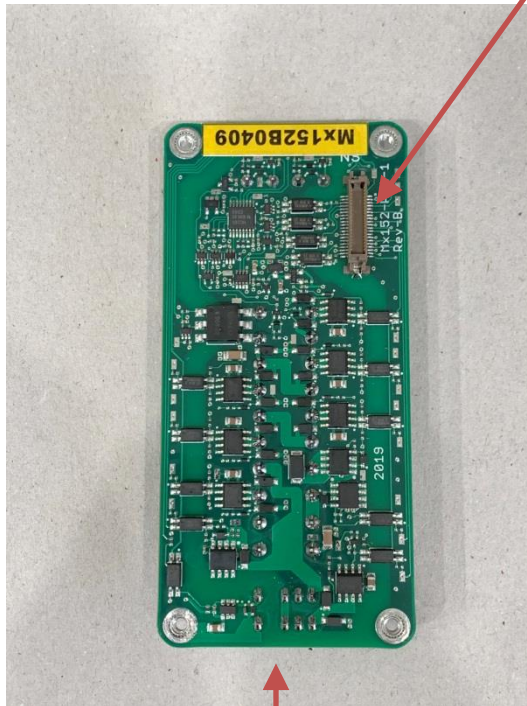
**Step 7:** Layout all the new parts needed for the pyro board configuration.



### WARNING

Be careful handling the transmitter and pyro board! They can be damaged by static electricity. Only handle them by their edges. Avoid touching the electronic components.

**These two connectors must be mated together when the boards are stacked.**



**Back side of Pyro Board**



**Battery board placed over the back side of the transmitter.**

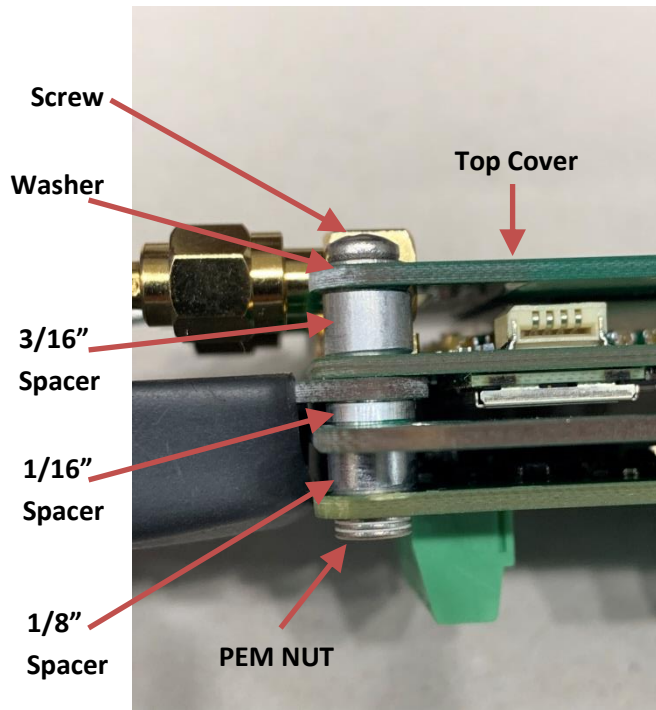
**Step 8:** Place the battery board over the back side of the transmitter such that the white connector on the transmitter is positioned into the rectangular opening on the battery board.

**Step 9:** Mate the brown connector on the back side of the pyro board with the white connector on the transmitter board. The battery board will be sandwiched between them. Gently push the boards together to mate the two connectors. Handle the assembly with extra care until all the mounting screws are installed.

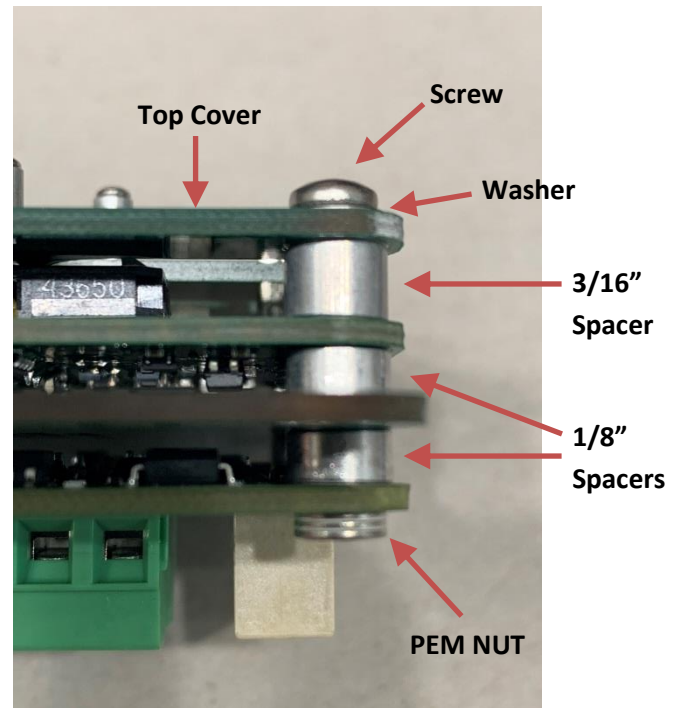
**Step 10:** Set the assembly down on your work surface with the pyro board on the bottom and the transmitter on the top. Place the top cover in the correct orientation on top of the transmitter. The stacking order can be seen in the pictures in the next step.



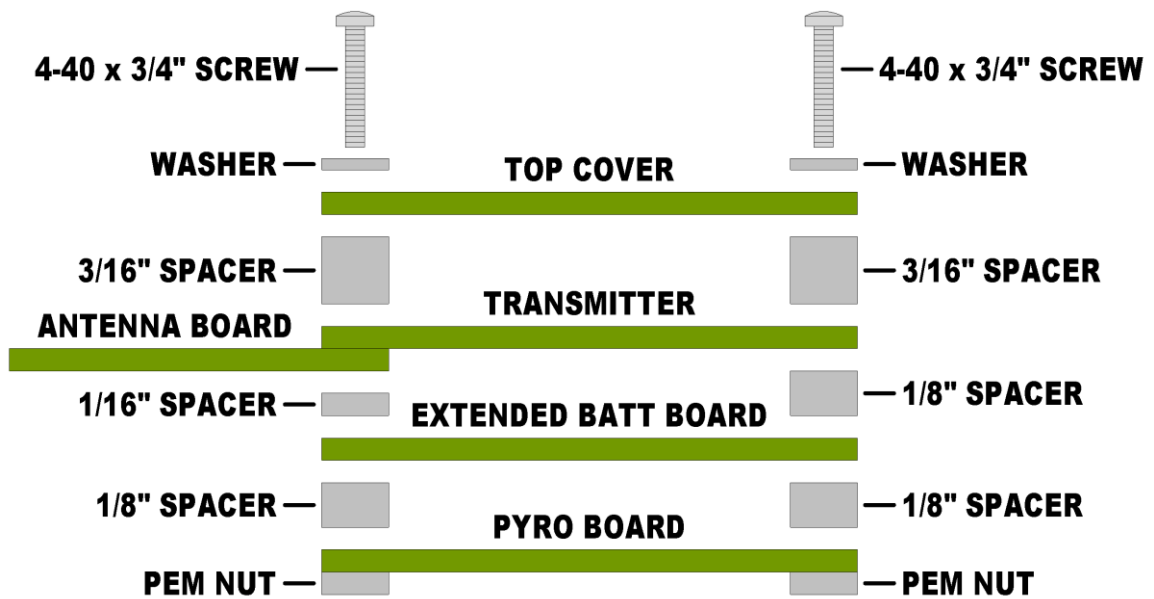
**Step 11:** Install the spacers, washers and mounting screws as per the photos and diagram below. Do one corner at a time paying special attention to get the correct size spacer in the correct location. Do not fully tighten the screws until all four are installed.



**Forward End**



**Aft End**



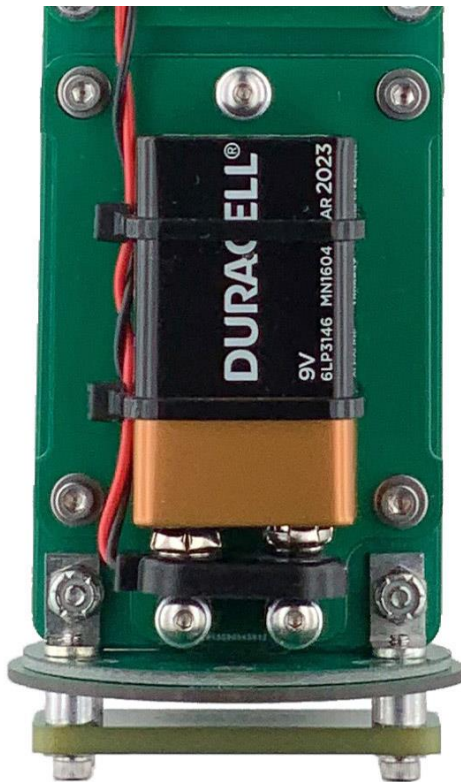
**SPACER STACKING ORDER**



**Pyro battery mounting board**

**Step 12:** Remove the pyro battery mounting board by removing the four screws indicated here. They require a 3/32" hex driver.

Collect the four screws and the four spacers from the underside too. They will all be needed later to put this board back in place in step #17.



**Step 13:** Zip-tie a 9V pyro battery to the small mounting board. Use two zip-ties. If desired, use the supplied rubber pad between the battery and the board to help keep the battery from shifting around. Alternatively, the battery can also be simply taped in place by wrapping strapping tape around the board and the battery. In fact, strapping tape is probably a better choice if a LiPo battery is used instead of a 9V battery due to the soft exterior of a LiPo.

The recommended orientation is as show here so that high acceleration pushes the battery into the connector contacts to maintain a secure connection. The two metal posts will support the battery under high G loads.

**Step 14:** Insert the Li-ion battery connector into the corresponding connector on the transmitter. Carefully push it in until it is fully seated and the locking lever is engaged and locked onto the mating part.

**Step 15:** Re-install the small retaining screw that was removed in step #2. Carefully spread the red and black battery leads apart and install the small retaining screw. It requires a 5/64" hex driver. **This screw is important!** It ensures the battery connector will not back out and become disconnected under high acceleration.

**Step 16:** Use three zip-ties to secure the Li-ion battery into the orientation shown here. Make sure the leads are coming out the top of the battery. It is very important that the battery leads are at the top because the top of the battery contains a safety circuit PC board built into it. We do not want the weight of the battery to be pushing down on that PC board under high acceleration. It is better to have the bottom of the battery resting on the aft bulkhead during high acceleration.

**Step 17:** Re-install the pyro battery board using the four screws and spacers that were removed in step #12.

**Step 18:** The last step is to connect the pyro battery leads to the PYRO BATT terminals on the pyro board. **Be extra careful to get the polarity right!** Also while hooking them up, make sure the battery leads do not touch each other or any exposed metal on the pyro board.

**Mx152 Option-10 assembly is now complete!**



**Top Side**

**Bottom Side**