Remote Launch Control System Setup

For UXO CF3 and SF1

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Remote Launch Control System Setup Procedure

Contents

This document contains the following:

Required Items

Things you'll need to perform this procedure

1. ☐ Client Side Box (yellow pelican case)
2. ☐ Tower Side Box (silver briefcase thing)
3. ☐ Three (3) Lithium Polymer 12V ignition batteries
4. ☐ Multimeter
5. ☐ Electrically actuated valve for inside setup
6. ☐ Phillips head screwdriver

Inside Setup

Do what you can inside to keep yourself from frostbite as much as possible.

1. ☐ Put two LiPo batteries in tower side box, in the white 3d printed battery holders.
2. ☐ Make sure the actuator switch is off (big black one with a 1 and 0 painted on it), clicked to "0".
3. ☐ Plug in both batteries. Lights on arduino should light up, relays should click.
4. ☐ Wire electric valve into the relay board labelled RFV (remote fill valve):
    5. ☐ Blue wire screwed into V1
    6. ☐ Red wire screwed into V2
    7. ☐ White wire screwed into G1
    8. ☐ Black wire screwed into G2
    9. ☐ Make sure no wire strands are poking out of screw terminal
10. ☐ Turn on actuator switch:
    11. ☐ If remote valve previously wasn't closed, it should now close. If not, go to troubleshooting guide.
12. ☐ Put battery in client side box. It plugs into the deans connector underneath the cutout, and isn't secured to anything (to be fixed).
13. ☐ Turn on client side box (flip power switch).
    14. ☐ Confirm that LCD lights up.
15. ☐ Turn keyswitch 90 degrees clockwise.
    16. ☐ Confirm that missile switches light up.

- ☐ Flip **Fill** missile switch
    - ☐ Confirm that Electrically actuated valve turns to open
- ☐ Confirm that there is no voltage from V1 to G1 on ignition relay board
- ☐ Confirm that there is no voltage from V2 to G2 on ignition relay board
- ☐ Flip **Primary Ignition Arm** missile switch and depress fire button
    - ☐ Confirm that there is 12V from V1 to G1 on ignition relay board
    - ☐ Confirm that there is no voltage from V2 to G2 on ignition relay board
- ☐ Have that person unflip **Primary Ignition Arm** switch and flip **Secondary Ignition Arm** switch, and depress fire button
    - ☐ Confirm that there is no voltage from V1 to G1 on ignition relay board
    - ☐ Confirm that there is 12V from V2 to G2 on ignition relay board.
- ☐ Disconnect electrically actuated valve from RFV relay board

End inside checks

Outside setup

- ☐ Find a good spot to put the tower side box. Put the tower side box there
- ☐ Connect remote fill valve to relay board labelled RFV:
    - ☐ Blue wire to V1
    - ☐ Red wire to V2
    - ☐ White wire to G1
    - ☐ Black wire to G2
    - ☐ Make sure no wire strands are poking out of screw terminal
- ☐ Connect tank vent valve to relay board labelled RVV:
    - ☐ Blue wire to V1
    - ☐ Red wire to V2
    - ☐ White wire to G1
    - ☐ Black wire to G2
    - ☐ Make sure no wire strands are poking out of screw terminal
- ☐ Connect injector valve to relay board labelled IJV:
    - ☐ Blue wire to V1
    - ☐ Red wire to V2
    - ☐ White wire to G1
    - ☐ Black wire to G2
    - ☐ Make sure no wire strands are poking out of screw terminal
- ☐ Ensure that ignition transmission cables are not connected to the rocket
- ☐ Connect ignition transmission cables to relay board labelled IGN:
    - ☐ Primary coil wires to V1 and G1 (polarity is irrelevant)

- ☐ Secondary coil wires to V2 and G2 (polarity is irrelevant)
- ☐ Make sure no wire strands are poking out of screw terminal

☐ Perform "Outside Tests" Procedure

☐ Disconnect both LiPos in tower side box to conserve power

☐ Turn off client side box to conserve power

End of setup procedure

Outside Checks

Perform during outside setup procedure and again immediately before test

☐ Turn on client side box (Ensure LCD lights up)

☐ Turn key switch (Ensure missile switches light up)

☐ Turn on tower side box actuator switch

☐ Confirm that all three electrically actuated valves are closed

☐ Flip **Fill** missile switch

- ☐ Confirm that remote fill valve opened

☐ Un-flip **Fill** switch

- ☐ Confirm that remote fill valve closed

☐ Flip **Tank Vent** missile switch

- ☐ Confirm that remote vent valve opened

☐ Un-flip **Tank Vent** switch

- ☐ Confirm that remote vent valve closed

☐ Flip **Injector** missile switch

- ☐ Confirm that injector valve opened

☐ Un-flip **Injector** switch

- ☐ Confirm that injector valve closed

The remainder of these checks are for the ignition system. They are unnecesary for cold flow test. This would be the end of checks for the cold flow procedure.

☐ Approach ignition leads (female quick connect side)

☐ Confirm that the ignition leads are not connected to the rocket.

☐ Probe for voltage across primary leads

- ☐ Confirm that multimeter reads 0 volts

☐ Flip **Primary Ignition Arm** missile switch

- ☐ Confirm that reading is still 0 volts

☐ Press **Fire** button

- ☐ Confirm that multimeter now reads 12 volts
- ☐ Release **Fire** button
  - ☐ Confirm that multimeter now reads 0 volts
- ☐ Un-flip **Primary Ignition Arm** missile switch
- ☐ Probe for voltage across secondary leads
  - ☐ Confirm that multimeter reads 0 volts
- ☐ Flip **Secondary Ignition Arm** missile switch
  - ☐ Confirm that reading is still 0 volts
- ☐ Press **Fire** button
  - ☐ Confirm that multimeter now reads 12 volts
- ☐ Release **Fire** button
  - ☐ Confirm that multimeter now reads 0 volts
- ☐ Un-flip **Secondary Ignition Arm** missile switch
- ☐ Un-flip all missile switches
- ☐ Turn off client side box

End of Checks procedure