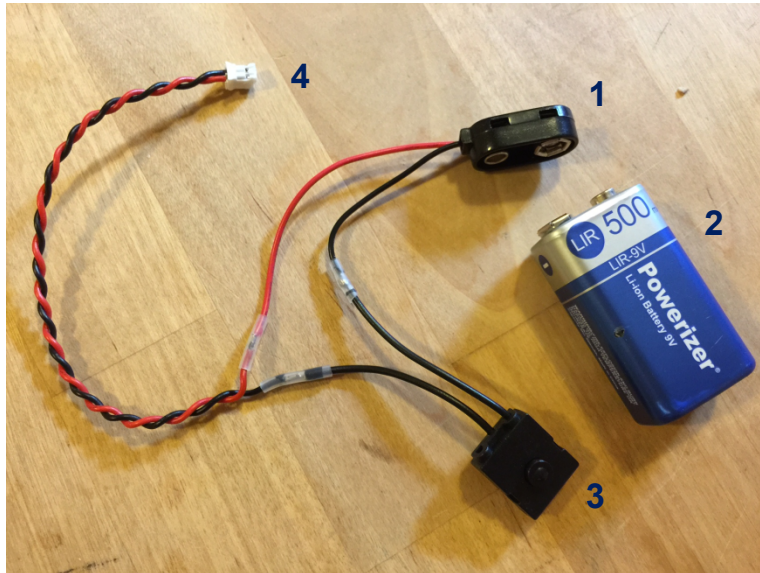


Power Supply



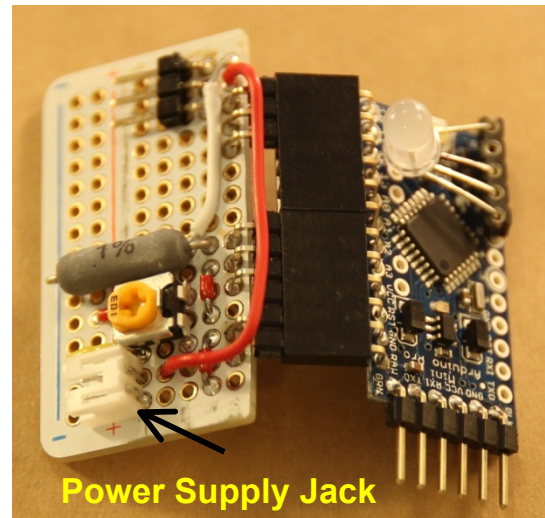
The power supply provides 9 volts of direct current to the buoyancy engine controller where the voltage is reduced to approximately 7 volts by a resistor. The power supply includes a snap connector, a 9 volt rechargeable Lithium battery, and a push button switch which is the ON/OFF control for the circuit.

The power supply also includes a plug that connects to the buoyancy engine controller by sliding into the power supply jack on controller's circuit board.

Buoyancy Engine Controller

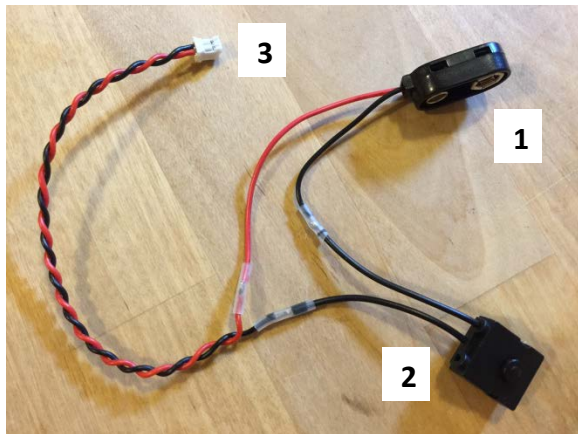
The main components of the power supply are:

1. 9 VOLT SNAP CONNECTOR – Connects battery to power supply circuit.
2. LITHIUM BATTERY – Provides 9 volts of rechargeable power.
3. PUSH BUTTON SWITCH – The ON/OFF control for the circuit.
4. POWER SUPPLY PLUG – Provides power to the buoyancy engine controller by plugging into power supply jack.



To solder together the power supply, follow the instructions below.

Power Supply Build

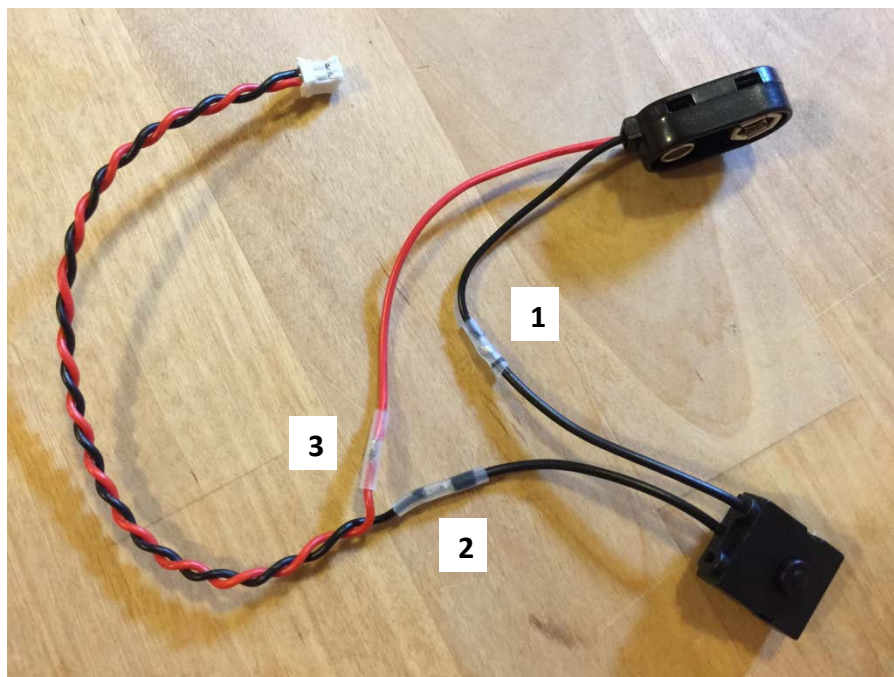


1. The circuit includes a 9 volt snap connector (1), pushbutton switch (2), and a power supply plug (3).

Safety Goggles Required



Power Supply Circuit



There are three solder joints that need to be protected with shrink tubing:

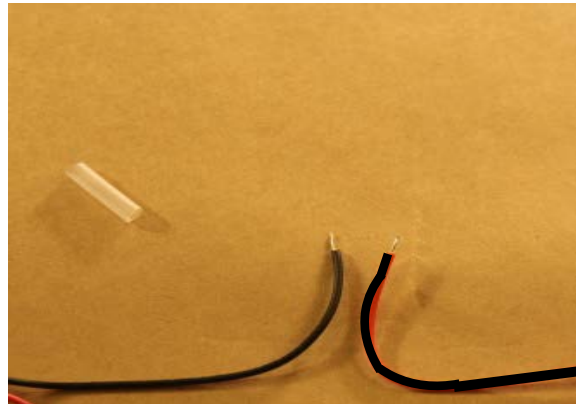
1. **Black** wire of snap connector to **black** wire of pushbutton.
2. **Black** wire of pushbutton to **black** wire of plug pigtail.
3. **Red** wire of plug pigtail to **red** wire of snap connector.



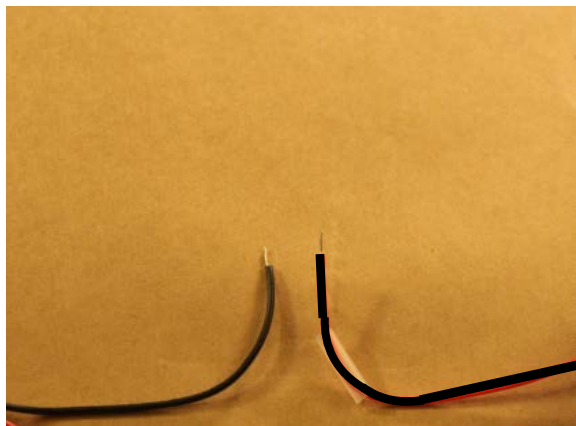
2. General soldering instructions for connecting two wires: Strip approximately $\frac{1}{4}$ " of plastic insulation from wires to expose metal strands.



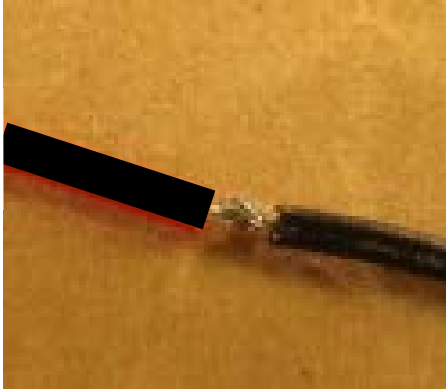
3. Expose metal strands.



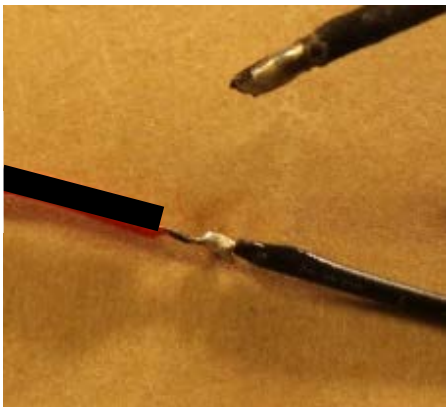
4. Cut a $\frac{3}{8}$ " length of heat shrink tubing.



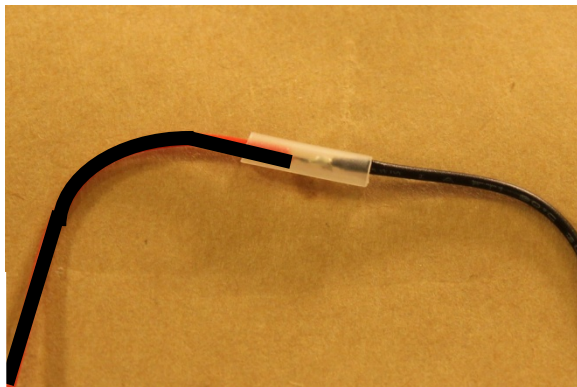
5. Place heat shrink tubing over one wire before twisting wires together and soldering.



6. Twist wires together.



7. Solder joint. (Hot solder burns!)

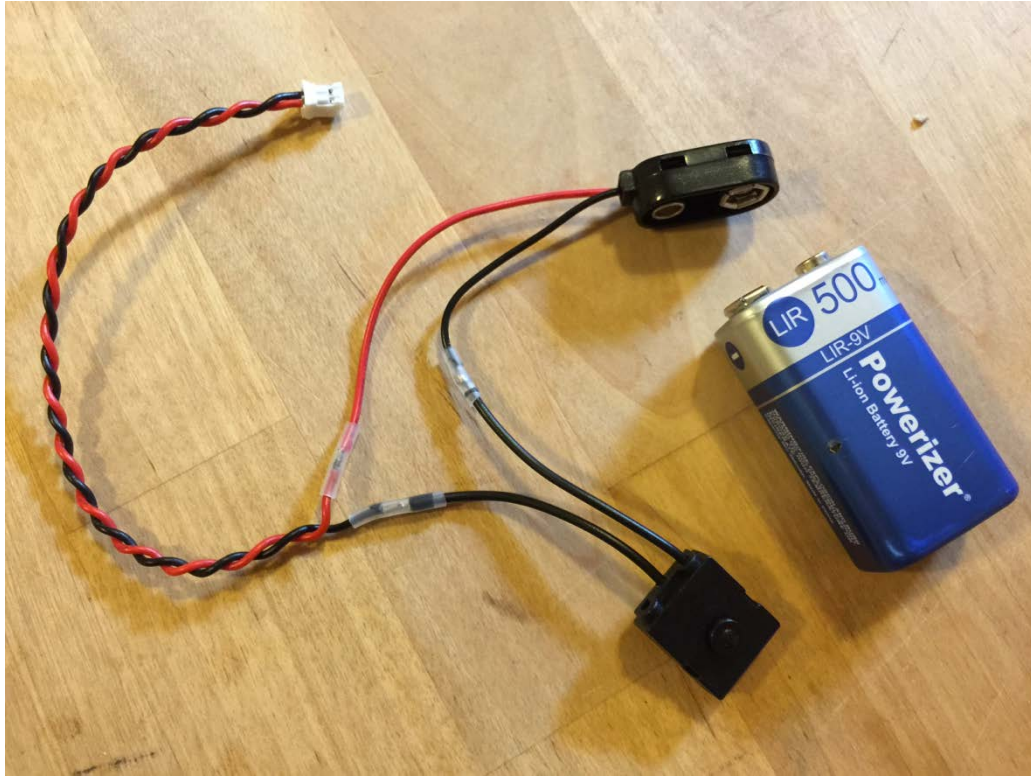


8. Slide heat shrink tubing over soldered joint.



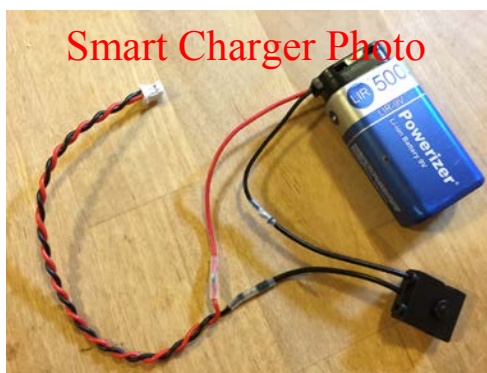
9. Carefully use heat gun to shrink tubing over joint to add strain relief and prevent exposed metal surface from shorting the circuit (electrical insulation).

Repeat the procedure above for the other two solder joints.



Power Supply Circuit with 9 Volt Lithium Rechargeable Battery

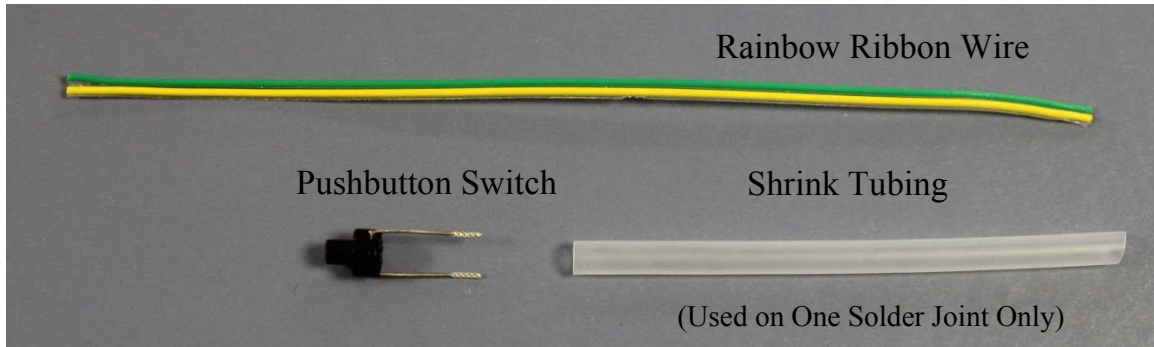
Looks good! More work ahead



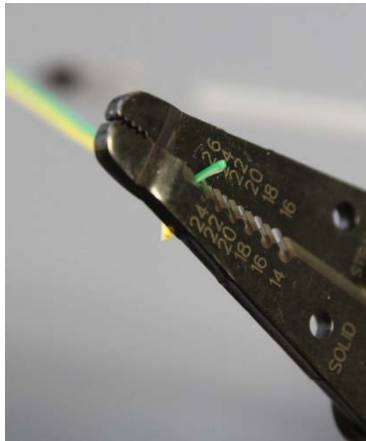
You may charge you battery with the approved Smart Charger. Read and follow the Operating and Safety Instructions provided with the charger.

When charged set the battery aside for later use testing the Buoyancy Engine.

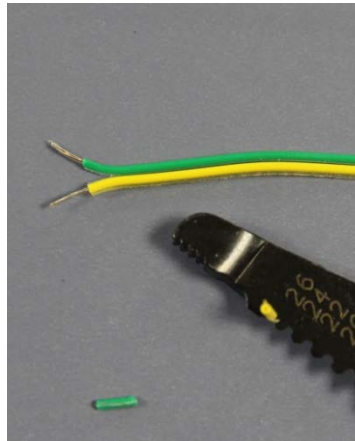
While your soldering iron is hot, you may as well prepare the Pushbutton Switch:



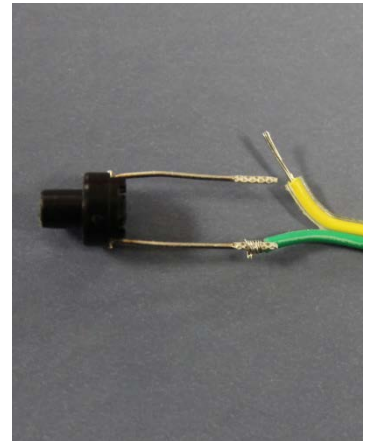
Strip Wires



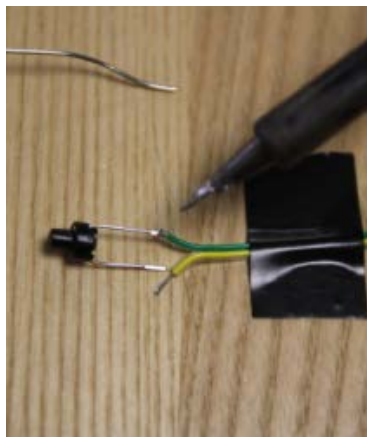
Remove ~1/4" of Plastic



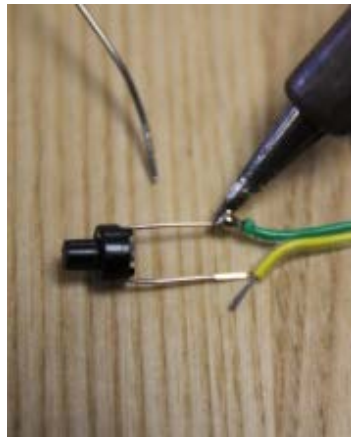
Wrap one Wire around a Pin



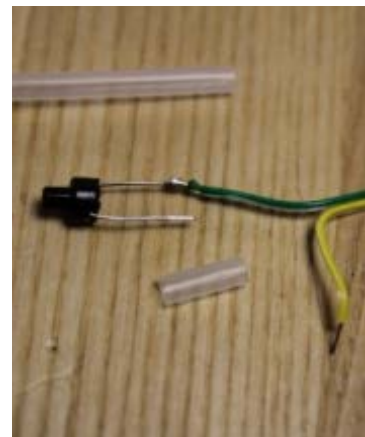
Secure Wire



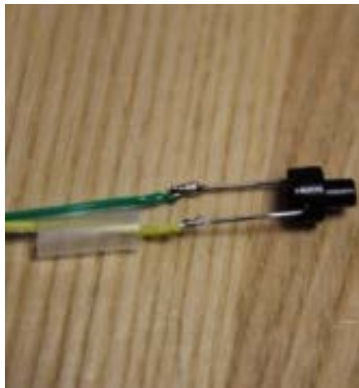
Solder



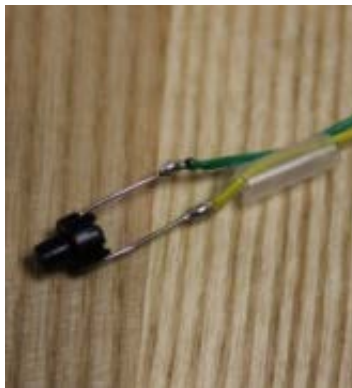
Use Shrink Tubing
(Only on One Wire)



Wrap Wire around Pin



Solder



Position Tubing and Shrink



Save the Wired Pushbutton Switch for the Buoyancy Engine Build



The pushbutton switch will act as a “limit” switch in the buoyancy engine to prevent moving mass/plunger from crashing into and stalling the servo. It provides a reliable position at which the mass/plunger will change direction. You’ll see.