



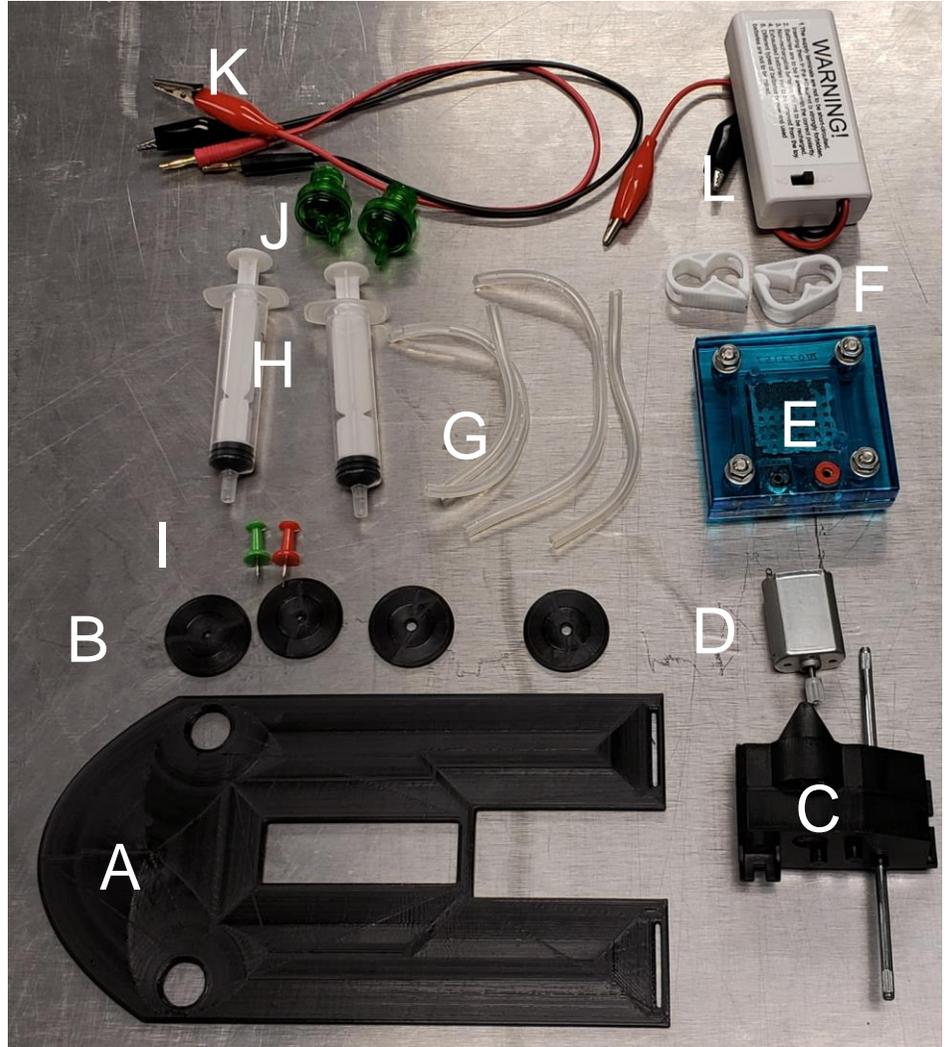
DIY Fuel Cell Car: Assembly Guide

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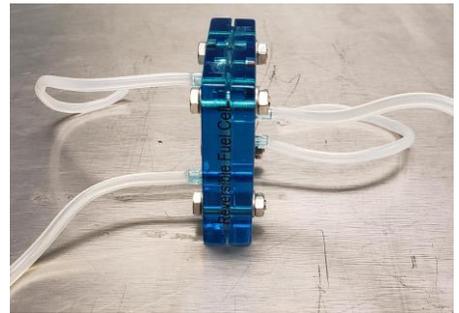
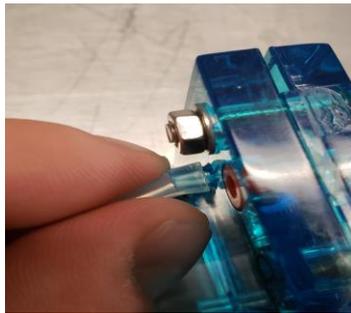
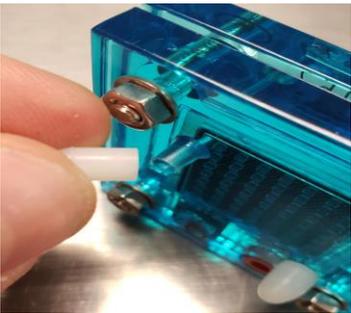
DIY FUEL CELL CAR PARTS LIST

- A) CHASSIS
- B) WHEELS
- C) TRANSAXLE
- D) DC MOTOR
- E) FUEL CELL
- F) GAS CLIPS
- G) SILICON TUBING
- H) GAS STORAGE SYRINGE
- I) FRONT AXLE PINS
- J) PRESSURE RELIEF VALVE
- K) POWER WIRES
- L) BATTERY BOX



STEP 1: ASSEMBLE THE FUEL CELL/ELECTROLYZER

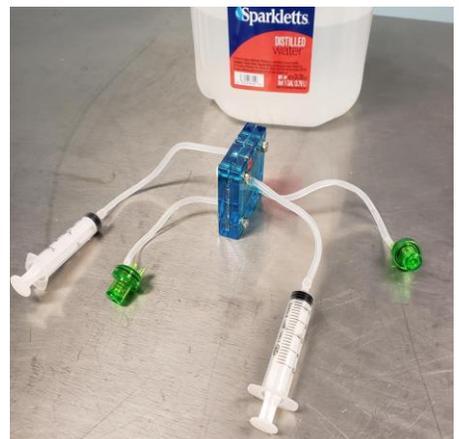
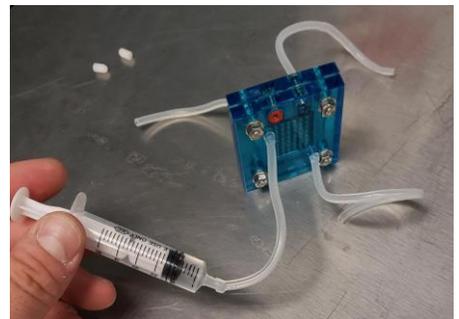
- Remove the Blue fuel cell from the package along with 2 green check valves, 2 white clips, and 4 pieces of silicon tubing.
- Cut the tubing to 4 inch lengths.
- Attach the tubing to all 4 ports on the fuel cell.



- Use the syringe to add 1 mL of distilled or deionized (DI) water through the top tube next to the positive (Red) side. Leave the tube connected for next step.

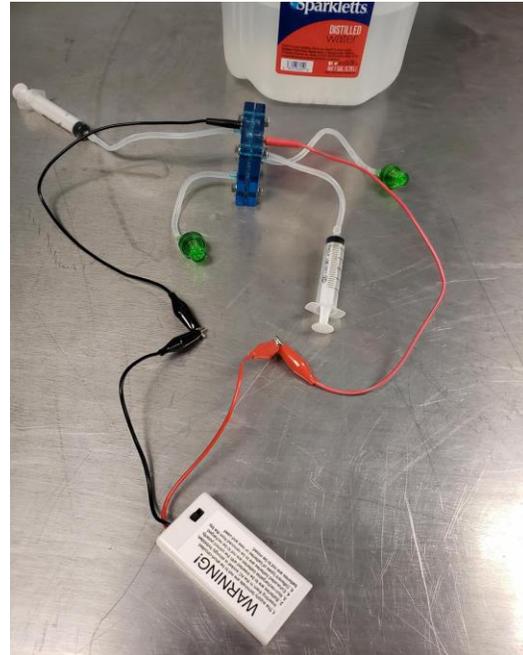
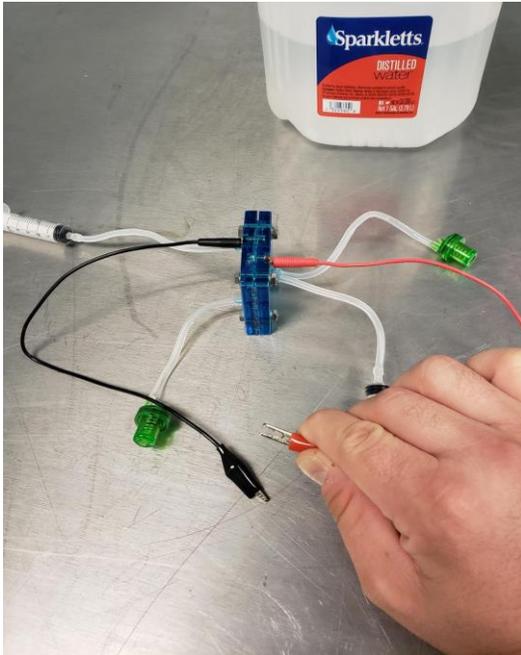
****Hint**** water should spill out of the bottom tube if done correctly

- Repeat for negative (Black) side.
- Connect the green pressure release valves to both bottom tubes. When your cell matches the picture move on to step .



STEP 2: GENERATING HYDROGEN

- Connect the positive and negative leads to the fuel cell. Be sure to match colors.
- Attach the alligator clips to the white battery box. Match the colors and turn the battery on.



- You should immediately notice small bubbles forming inside the fuel cell. After a few moments you will notice the syringes begin to fill up with what appears to be air. This is where our hydrogen and oxygen gasses are being stored for later use. Leave the battery on until both syringes are full. You may notice the Hydrogen is filling up roughly twice as fast as the Oxygen. The overflow valve on the hydrogen (negative) side will compensate for this offset. Once both syringes are filled proceed to step 3.



STEP 3: ASSEMBLE THE CHASSIS & TRANSAXLE

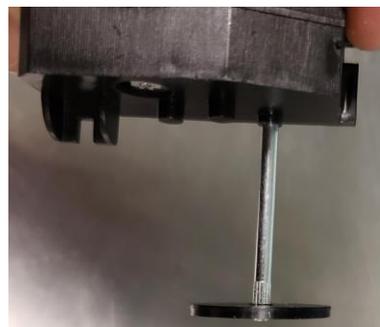
- Connect the front wheels to the chassis with the included push pins. Front wheels can be identified by smaller center holes.



- Attach the small DC motor to the transaxle with the red dot facing down. Make sure the flat side of the motor aligns with the flat side of the transaxle.

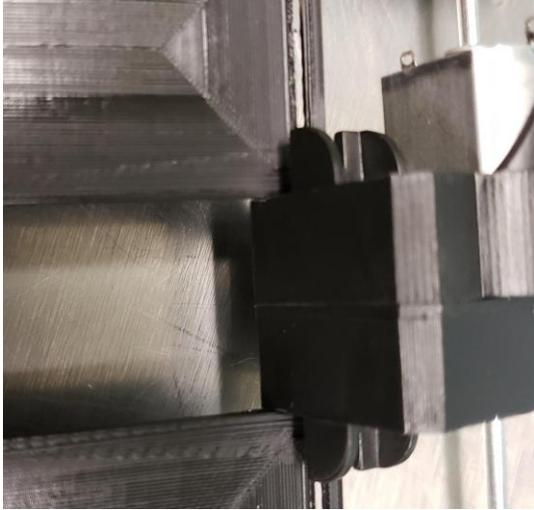


- Attach rear wheels to the ends of the transaxle. Push gently until they are on securely.

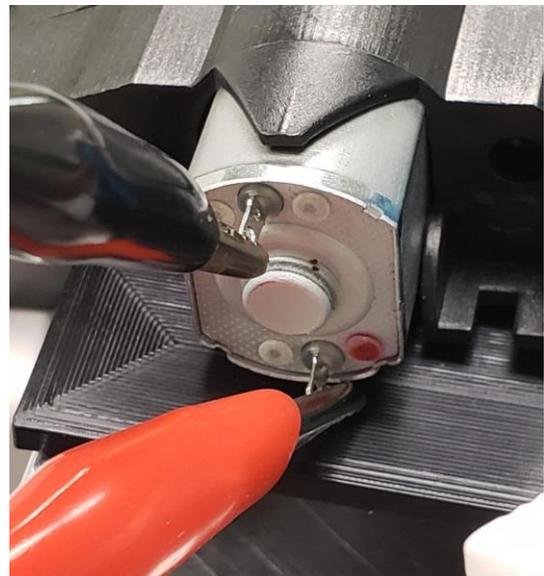
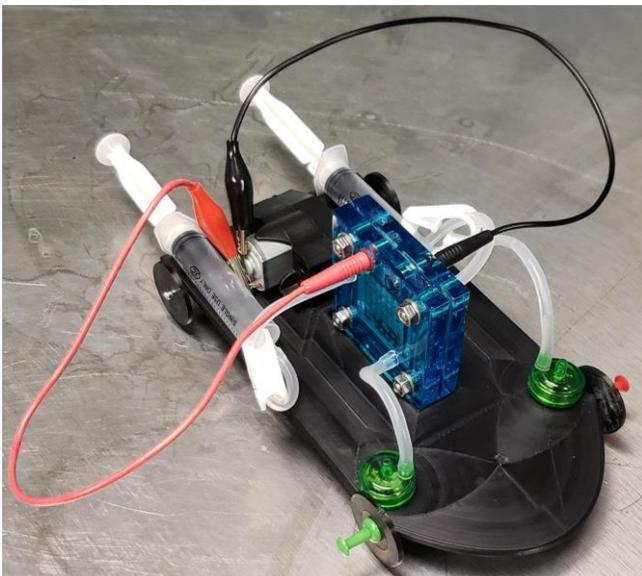


STEP 4: FINAL ASSEMBLY

- Attach the motor assembly to the chassis.



- Attach the fuel cell assembly to the chassis in the designated space. Be sure to support the chassis with the other hand as you may need to press firmly to make the fuel cell fit in the slot. Attach the purge valves and the syringes in the appropriate locations. Do Not attach the wires to the motor until you are ready to test. Once ready attach the alligator clips to the corresponding colors and place the car on the floor and watch it go.



TROUBLESHOOTING GUIDE

General:

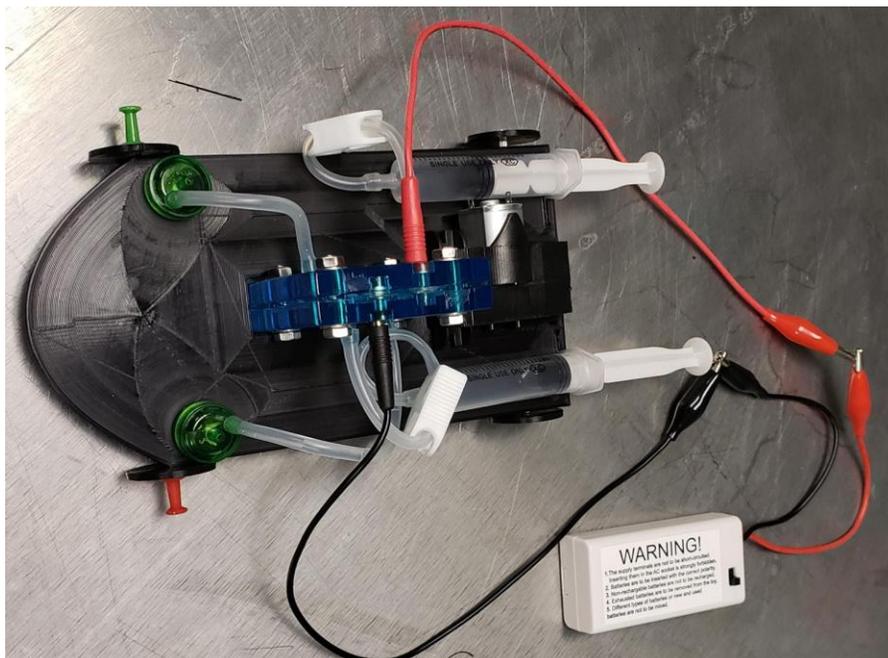
- **Adding drinking water into the Fuel Cell will severely impact its performance.**
- **Do not add anything but distilled or deionized water into the cell.**
- The Battery Box may or may not come with batteries included so please double check before testing.
- The fuel cell will perform better after a few cycles. This is because you allow the cell to humidify internally resulting in better and more reliable performance.

Wheel alignment

- If the rover wheels are not aligned properly this could create excess drag resulting in lost efficiency. Precious energy will be wasted overcoming the forces of drag on the wheels which will cause the car to not travel as far

Refueling:

- Disconnect the red and black clips from the motor and attach them to the battery box. Once syringes are filled with gas disconnect from battery and reattach to the motor.





TROUBLESHOOTING GUIDE

Motor will not run:

- Check all wires to make sure they are connected properly
- Purge the Cell - the cell needs to be purged of excess water build up in order to run properly. Refill syringes with H₂ and O₂ gas and manually press the gasses into the cell. Water should begin to squirt out of the green purge valves. And the motor should begin to run again. Continue to push gently until syringes are empty. Reconnect to the battery and refill once more to resume experiment. Be very gentle during this process as too much pressure from the syringe can cause the seal inside the fuel cell to burst. If this happens you may notice bubbles on the outside of the cell. If this happens the cell needs to be replaced.

No gas in 1 or both storage tanks:

- Check to see if either side looks dry inside. You should see a bit of condensation inside the cell. If not add some more Distilled water inside. Also, check the silicon lines to make sure there are no rips or tears. If so cut at the tear, reattach and try again.

Broken Seal

- A broken internal seal will cause the fuel cell to not work properly and you will not be able to power the car. A blown seal can be easily identified by bubbles will form on top of the cell where the 2 parts of the cell are joined. A blown seal can result from pushing water through the cell with too much pressure.

Humidifying the Cell

- The fuel cell will perform better after a few cycles. This is because you allow the cell to humidify internally resulting in better and more reliable performance.