1. PCB

Solder Teensy, MPRLS, H bridge with short male headers. Sand the sensor & H-bridge a little. MAKE SURE TO SOLDER THE H-BRIDGE AT THE OPPOSITE SIDE!!!

Remember to cut the 5v trace on the Teensy

Solder Qwiic with short female headers

Use sandpaper to get rid of tabs ON THE CUSTOM PCB

Test fit onto the base part

Solder resistors (300K for Red, 100K for Green. Red is placed at the front position).

Solder buttons

Solder the female headers to the custom PCB. Use the components in place to help alignment if necessary. For longer rows, solder the ends first to ensure alignment!

Fixate the POT to the base. Test fit again with Teensy and LED attached (do not attach MPRLS and H-bridge at this time yet!). Adjust if Necessary.

Solder the LED in position. Make sure they snap to the housing on the base at the other side.

Prepare a 130mm long solid-core wire. Detach the custom PCB, and solder one end of the wire to the POT position on the PCB.

Attach the PCB back to the base, and solder the other end to Position 3 on the linear POT

Keep the custom PCB inside the base, and solder the rest of the POT connections

Solder the wires onto the motor (Red wire – 100cm, Black Wire – 90cm). Mind the orientation of the motor and the color placement. Cover the connection with heat shrink.

2. Mechanical

Carefully take the finished PCB assembly out of the base. Use 2x16mm bolt and insert the button extension mechanism.

Feed in the air tube. LENGTH~, You will have room to trim it down later.

Attach back the PCB. Adjust the bolts until it engages with the buttons well. After that, add the MPRLS and the H-bridge, and secure then PCB with M2 screws.

Attach the motor and insert the motor wires to the PCB from the hole. Do not strip the wire to length until you've made sure your connection is correct.

Attach the VIN wires for the motor. I used a JR connector for my own power distribution board.

Slide the inner-piston in; take off the rubber seal from the syringe and attach it to the front of the inner-piston

Attach the lead screw nut to inner-piston with M3x12 or M3x10. Attach the lead screw to the shaft coupler

Slightly lift the inner-piston and screw the lead screw in the nut.

Optional: apply some Vaseline to the rubber seal.

Attach the inner piston assembly to the POT slider. Make sure the setup could slide back-and-forth smoothly.

Now take the syringe clamp ring and attach it to the outer part of the syringe from the front, slowly fit the piston inside the syringe, and secure the clamp to the base with M3x10 or M3x12 bolts (Nut-pulling). Remember to feed the tube through the hole on the syringe clamp.

3. Pneumatic

Attach the tube ring to the tube.

On the other side, attach 3/32-luer male&female tubing and Y connector. Make sure the tube is routed correctly, and cut the excess from the MPRLS side.

Attach the tube to the MPRLS and secure it with the ring.

Attach your own controller, the power-distribution board, and the unit is good to go!