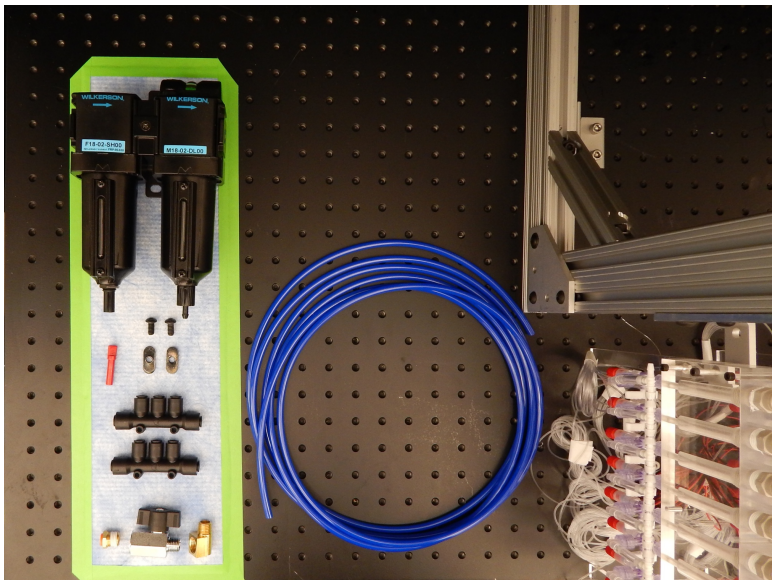
Step-by-Step Build Setup Guide # 2

Pneumatic Control System Module 2: Filter Assembly to House Air

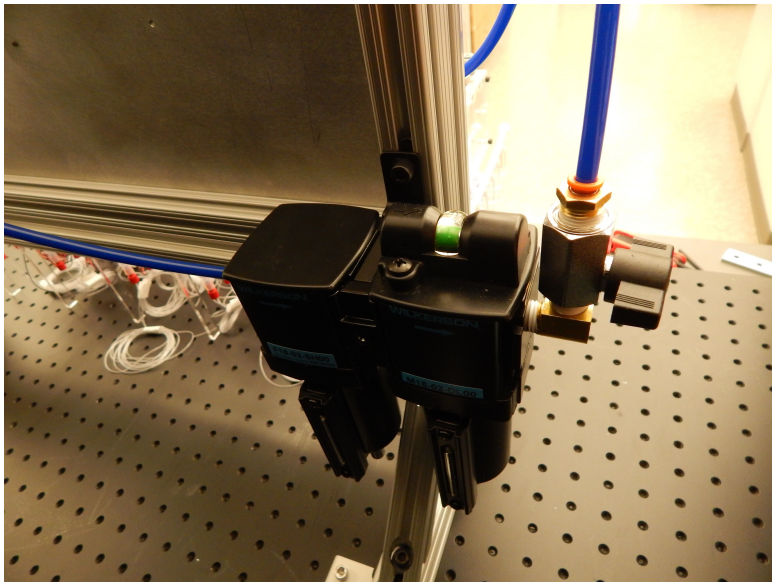
(!) Tip: You can replace the filters in this assembly with disposable syringe filters to conserve costs, if the filters are switched frequently. For long-term use, we don't recommend this modification as dust and other air contaminants can decrease the lifetime of regulators if disposable filters are not replaced regularly.

1. Begin by assembling **Parts T – Y** and **Parts C, E,** and **S** for the dual filter assembly. Use **Tubing T1** for the connections between components.



2. Join the two filters using the Filter Joiner Clamp, **Part X,** with **Filter V** facing closer to the house air connection (follow filter arrows). Attach **Part C** to **Filter V**.

3. Assemble the other filter parts to **Filter Y** as given on the module overview schematic, leaving approximately 3-4" of **T1** between each connection from the filter assembly. Attach to the flow control board. Connect longer segments of **T1** to span to each regulator on the Flow Control Board in the following step.

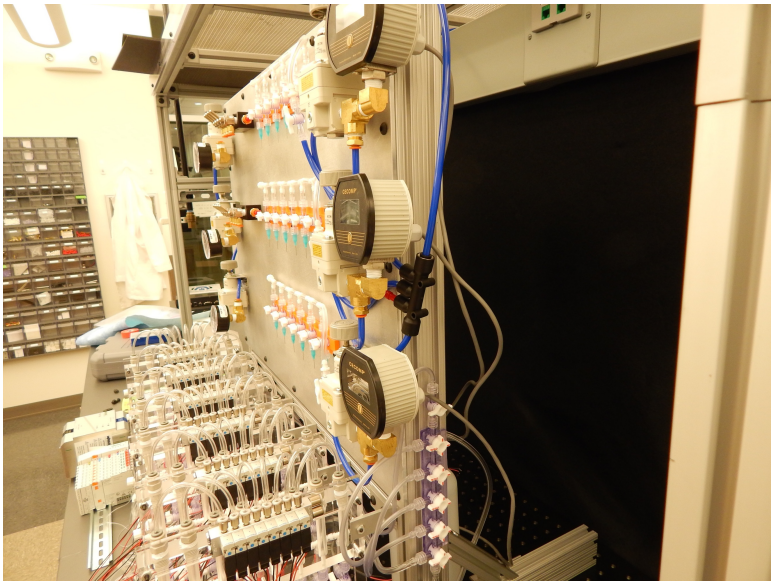


4. Create long segments of **T1 Tubing** to deliver compressed air to each regulator on both sides of the board using the 3-way push-to-connect manifolds (**Part T**) split. Connect the regulators to the 3-way push-to-connect manifolds on the left side as shown below.

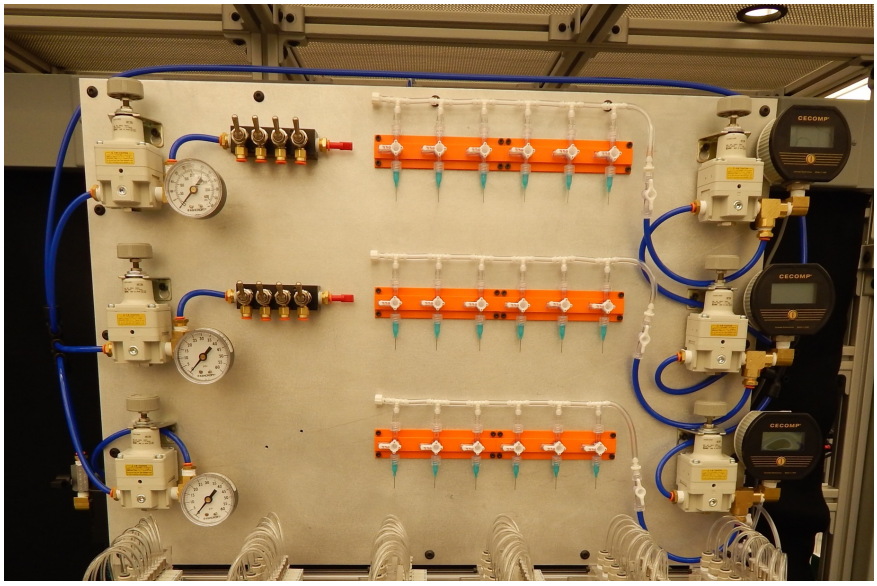
(!) Tip: We typically run tubing to air connections at the very end of all assemblies (shown by the completed control valve manifolds in the above image). This is an arbitrary decision; you can connect tubing at any time. We just find it helpful to do it all at once.

5. Using the end of the **Part T** run tubing to the right side. Complete the same connections for the right side using another **Part T**. Use the red end-stop plug (**Part S**)

to cap the end connection of **Part** T on the right side. These connections pressurize the regulators installed in **Module 1**.



6. The completed setup for air delivery from the filter assembly should appear as follows:



7. Finally, connect the whole filter assembly to a source of high pressure (>40 psi) air. House air or compressed air sources can be used. We typically mount to compressed air using a high pressure regulator connected to **Parts C** and **V** and then run **T1** from the filter assembly to the air source. Connections will vary based on your lab's air access.

(!) Tip: We've found compressors instead of house air to be difficult to use as an air source because the regulators we've chosen use open pressure feedback, which means they leak a bit to maintain tight pressure control. This leakage causes compressors to cycle on frequently, making the lab environment excessively noisy. We recommend using a house air connection with a regulator over the external compressor option. Compressed air gas cylinders are also a viable option.

You're finished with Module 2!