



Setup Guide

Volatile Collection Chamber (VCC) Guillotine Box

VCC-GBOX-18x18x30

Analytical Research Systems, Inc.

Disclaimer

WARNING:

The VCC chamber is made with five large, fragile panes of plate glass. This plate glass can be VERY DANGEROUS if chipped or cracked in any way. The likely propagation of any crack or chip of the glass may result in at least one dangerous edge or shard.

Therefore, please be VERY CAREFUL and USE AT LEAST TWO PHYSICALLY-CAPABLE PEOPLE whenever moving this equipment.

INTRODUCTION

This Guide will show the suggested way to setup your Volatile Collection Chamber (VCC). [Figure 1](#) below depicts the I/O panel of the chamber and the order of the inlet, outlet, and accessory ports. Also shown are eight Volatile Collection Traps (VCTs), which will contain your sampled volatile organic compounds (VOCs) after each sampling run.

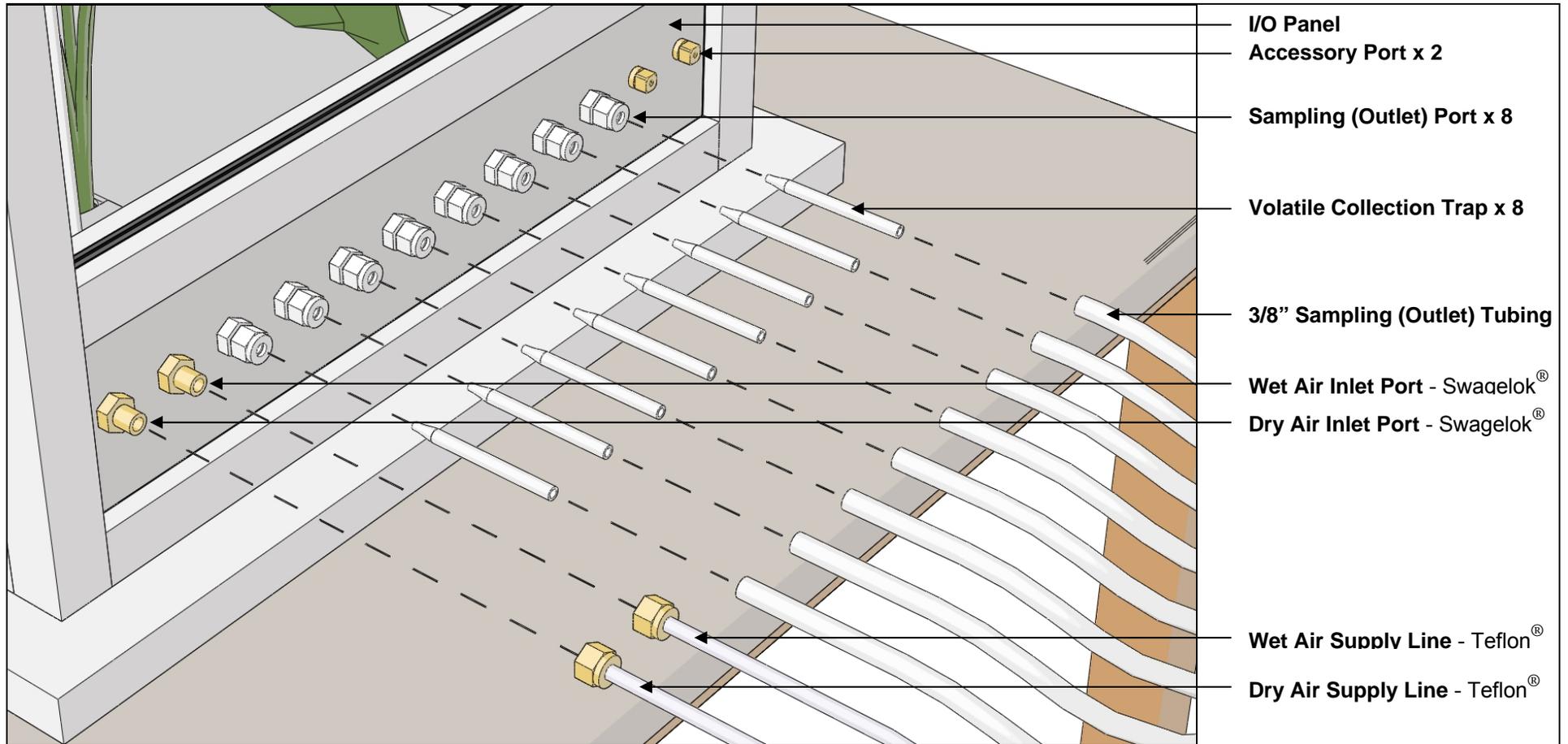


FIGURE 1

Parts List

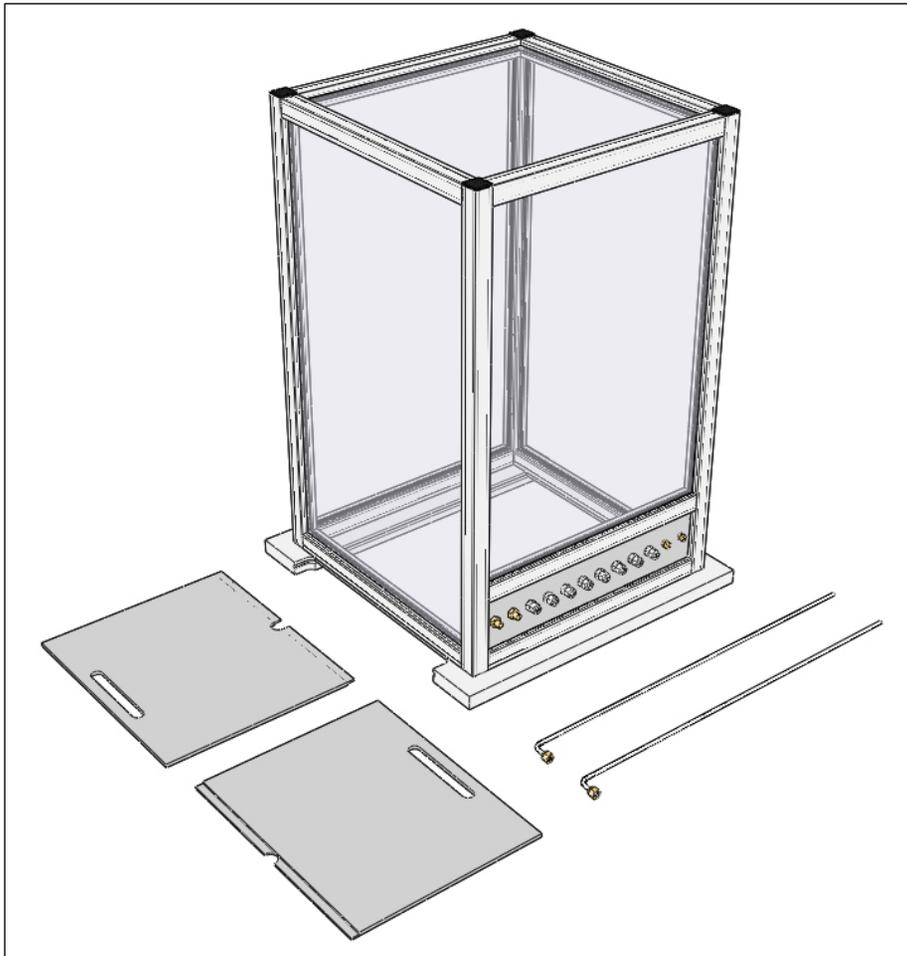


Figure 2

Please be sure that you have recovered all of the parts that are packaged with your shipment. [Figure 2](#) shows the standard (minimum) set of parts shipped for this VCC. Additionally, there is a bag of small accessory parts (fastening screws & port fittings), this Setup Guide, and a copy of your invoice / packing list. You may have additional parts depending on your order, so please check this against your purchase order before disposing of packing materials.

Temporarily place the parts somewhere out of the way, unless you have already prepared a supporting structure for bottom access to the VCC.

The next section will describe ARS's recommended way to support the VCC chamber, though your particular needs may require an alternative installation.

Supporting Your VCC

You will need to support the VCC in a way that allows the largest plant or object you might use to be inserted from below the chamber. ARS suggests the modification of a standard table using basic tools. Choose a table that can safely support more than 100 pounds (the chamber plus anything else you may normally place on the open area) and be sure that the material of the tabletop can be safely cut and that the cut will not weaken it to a point that it cannot carry the required weight. Ideally a solid wood or plywood top thicker than $\frac{3}{4}$ " and linear supports no further than 36" apart will be adequate.

In order to cut the hole, ARS suggests first finding the center of the table and then drawing the outline of the cutout based on the maximum object you will use inside the chamber (Figure 3). A 17- $\frac{1}{2}$ " x 15- $\frac{1}{2}$ " rectangular hole is adequate in that it will allow (approximately) the largest object possible. After drawing the outline on the table with a heavy marker, drill a hole inside two opposite corners (large enough hole to fit the blade of a jigsaw). Using a jigsaw (Figure 4), cut from one hole along one edge to the next corner and stop. Start again from the same hole along the perpendicular edge and repeat this process from the other hole to finish the cut-out.



Figure 3

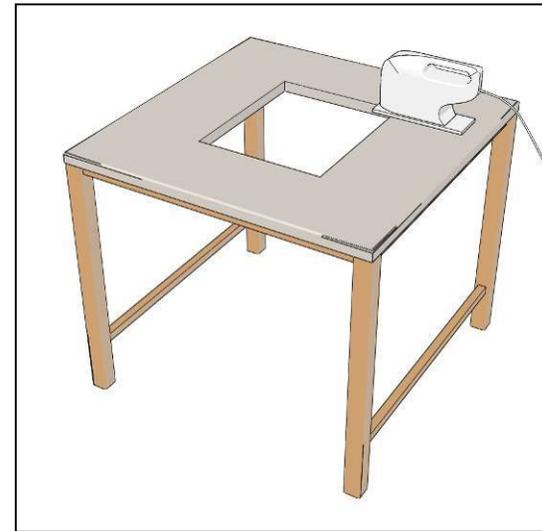


Figure 4

Placing The VCC



Figure 5

With at least two physically-capable people, very carefully set the VCC chamber atop your supporting structure and align with the opening as shown in [Figure 5](#).

Be sure to fasten the chamber to the supporting structure as it is a potential hazard, especially if used in a high-traffic or cluttered environment. One screw hole is provided at each corner of the base of the VCC in order to secure the chamber to the supporting structure. Wood screws are provided in the accessory bag.

I/O Panel Internal Connections

There are two stainless steel Air Inlet Tubes (one for wet air & one for dry air) included with your VCC. These tubes ensure that the inlet air (wet and dry) enters the chamber at the top, as the Sampling Ports (Outlet) are at the bottom of the chamber. This ensures air circulation throughout the entire volume and would lead to problems with the VOC sampling.

To install each tube: hand-tighten the Swagelok® nut onto the internal end of the Air Inlet Ports as shown in [Figure 6](#). Using a 9/16" wrench, further tighten the nut approximately ½-turn. If over-tightened, the threads of the fitting may become misshapen, making the connection difficult to use in the future. Ensure that the nut is tight enough to hold the tubing sturdily in vertical orientation ([Figure 7](#)) as it is otherwise unsupported.



Figure 6



Figure 7

Situating a Plant Specimen

With the VCC fastened in place and the Air Inlet Tubes installed inside the chamber, you may now position the plant specimen inside the chamber such as shown in [Figure 8](#).

Prior to installing the Guillotine Blades, it is very important that you wrap the stem of the plant with cotton where the blades will wrap around the plant. The cotton should sufficiently seal the chamber volume from the outside, cushion the plant, and allow it to grow unobstructed.

See [Figures 8 & 9](#) Below

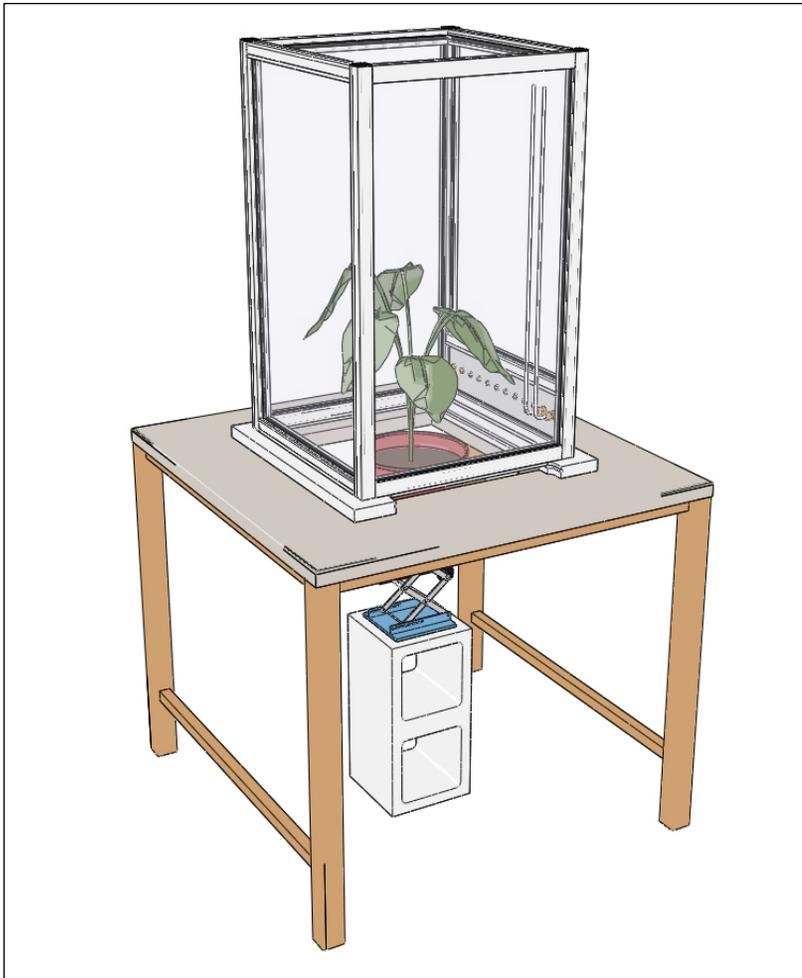


Figure 8



Figure 9

Properly Configured Blades & Plant



Figure 9

I/O Panel External Connections

The Sampling Tubing ($\frac{1}{4}$ "I.D., $\frac{3}{8}$ "O.D.) should be flexible vinyl tubing, or a material with similar properties. The Sampling Tubing must hold firmly to the ends of the VCTs and be strong enough to resist $\frac{1}{2}$ ATM of vacuum, but does not need to be chemically inert, as the volatiles have been extracted by the VCTs. The Sampling Tubing should be inserted approximately $\frac{3}{8}$ " over the straight end of the VCTs (Figure 10). Then insert the VCT into the Sampling Ports and tighten the nuts on the Sampling Ports **only hand-tight** so that the VCT is held firmly; do not over-tighten or tighten with a wrench (Figure 11). Also, be sure to close-off any Sampling Port(s) that are not in use or not connected to your Volatile Collection System (VCS) as any leak will introduce immeasurable air and void all results.

Insert the Air Supply Lines (wet and dry) from your Humidified Air Delivery System (HADS) or Variable-Humidity Air Delivery System (VHADS) to the VCC using $\frac{1}{4}$ "O.D., chemically inert tubing (e.g. Teflon[®] or Aluminum) into each loosened nut of the Air Inlet Ports (Swagelok[®]). Be careful to insert the tubing as far as possible, hand tighten the nut, then turn the nut approximately $\frac{1}{2}$ -turn with a $\frac{9}{16}$ " wrench. When fully connected externally (standard configuration), your system should look similar to Figure 12.

The Accessory Ports are provided for any additional attachment of your choosing (i.e. additional sampling ports, sensors, etc.). Make sure to use fittings with $\frac{1}{4}$ "NPT threads when using these ports. As always ARS will be happy to provide you with standard or custom components for use in these ports.

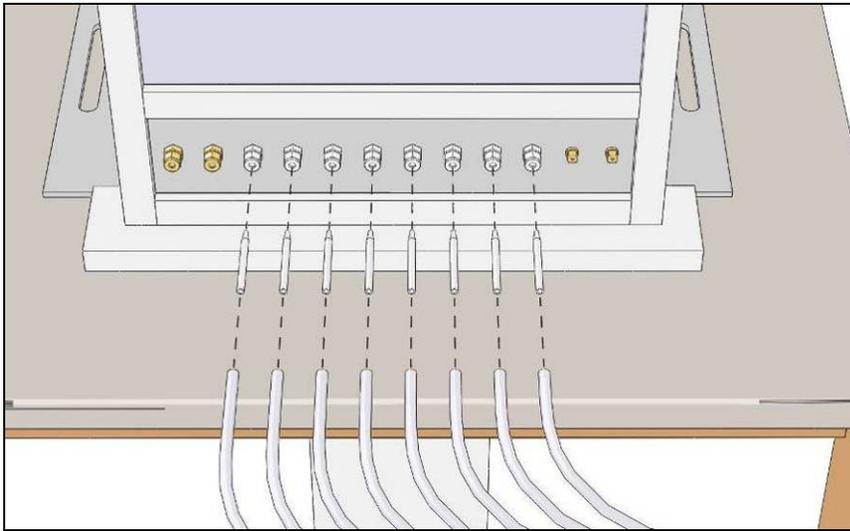


Figure 11

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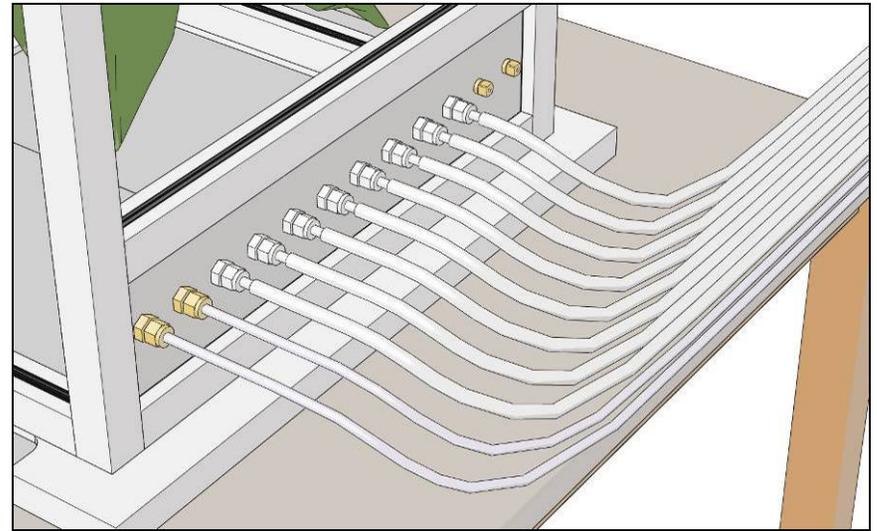


Figure 12

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Finalizing the Installation

Ensure that your VCC installation is secure and stable. Ensure that the tubing is routed so that a person cannot easily trip or get tangled. Also, be sure that all of the ports are either connected to another system or blocked-off tightly. You should end-up with a VCC setup similar to [Figures 12 & 13](#) below; though the supporting air (supply and sampling) systems are not shown (Air Delivery and Volatile Collection Systems).

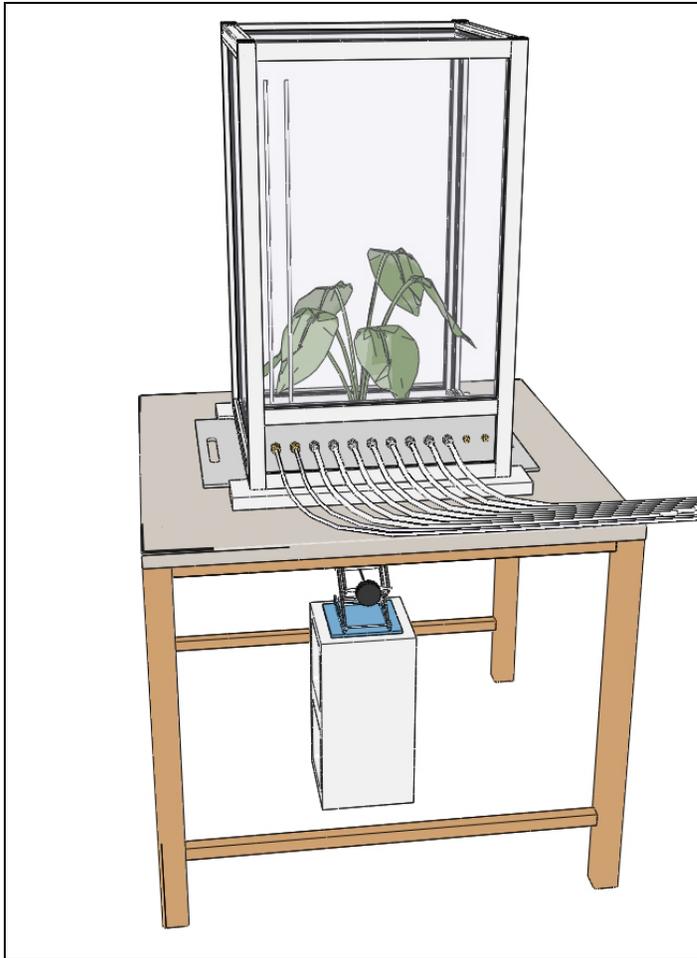


Figure 12

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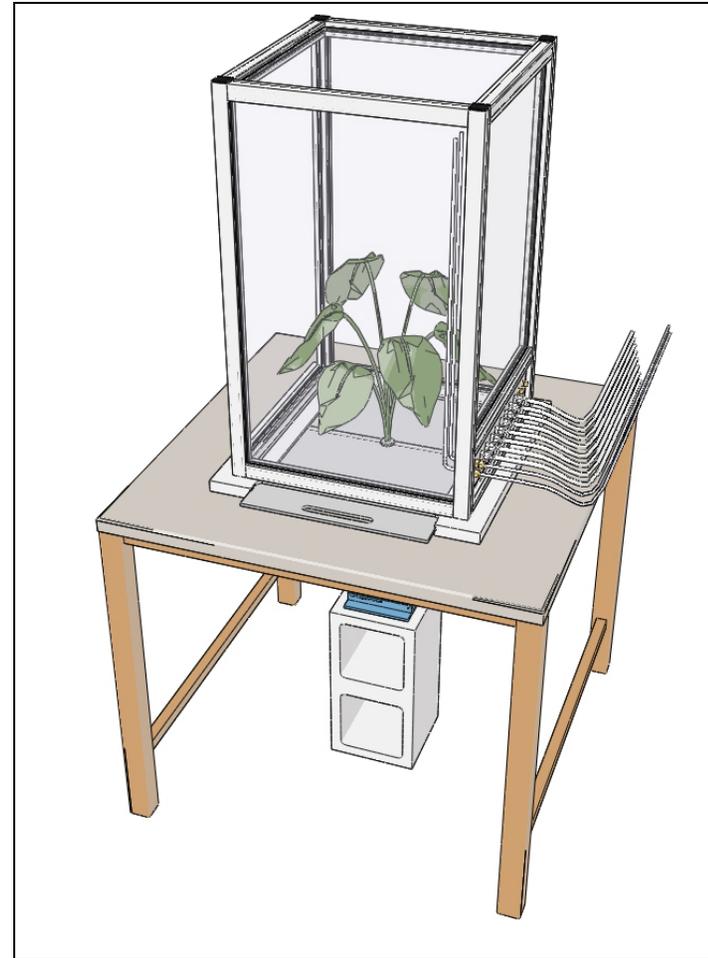


Figure 13

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We Appreciate Your Business



Please do not hesitate to contact ARS regarding any issues, questions, or suggestions you may have.

We want to thank you again for your business and hope that you will purchase from ARS again.

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