

OPERATION MANUAL

Clean Hood and Room Frame

Hood Assembly and Maintenance

Frame Assembly and Maintenance

Operating the Hood

CAD Drawings

Clean Team - Katie Hoffman, Daniel Marquez, Hannah Reed

Anevas Technology Inc.

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DISCLAIMER

This operation manual was prepared by students as part of a university course requirement. While considerable effort has been put into the project, it is not the work of licensed engineers and has not undergone the extensive verification that is common in the profession. The information, data, conclusions, and content of this report should not be relied on or utilized without thorough, independent testing and verification. University faculty members may have been associated with this project as advisors, sponsors, or course instructors, but as such they are not responsible for the accuracy of results or conclusions.

1. Overview

The clean hood is 24"x 48"x 40" and the clean room is 72"x 96"x 84", both produce a positive pressure to induce a controlled environment with a low count of particles per cubic meter. The units were designed by the Clean Team for Anevas Technology Inc. Anevas Technology is a company that tests and manufactures microcatheters for aneurisms in the brain. The units will allow for a controlled atmosphere that allows for proper testing and manufacturing of the devices.

1.1 Clean Hood Specifications

Table 1. Clean Hood Specifications

Item	Details	Qty.
FFU	24"x48" Terra Universal Fan Filter Unit	1
Aluminum Frame	(ASTM B221) Support frame	1
Polycarbonate	(UV treated) hood	1
Power Cord	Powers the FFU (14 gauge 3 wire)	1

1.2 Clean Room Specifications

Table 2. Clean Room Specifications

Item	Details	Qty.
FFU	24"x48" Terra Universal Fan Filter Unit	2
Powder Coated Steel Frame	(ASTM A36 Steel, TYPE of Powder Coat) Support frame	1
Power Cord	Powers the FFU (14 gauge 3 wire)	2

2. Clean Hood

2.1 Assembly/Operation

The clean hood is made of 3 components, the outer aluminum frame, the polycarbonate glass and the fan unit. HOOD ASSEMBLY REQUIRES 2 OR MORE PEOPLE and PROTECTIVE GLOVES. To assemble the hood:

1. Place the polycarbonate hood in the intended location for use, once assembled it will have to be disassembled to move. It should be assembled on a large sturdy flat surface.
2. When placing the polycarbonate hood wear gloves (edges can cause abrasions), the door should be accessible, and the bottom edge should be flush with the sturdy surface. As seen in figure 1.



Figure 1. Hood Orientation

3. The Aluminum frame is to be slid OVER the polycarbonate hood, best done if slid on with all corners of the frame level in height. The supporting trusses should be on the face opposite of the door. As seen in figure 2.



Figure 2. Frame Orientation

4. Make sure the frame is sitting around the polycarbonate hood and NOT resting on top of the hood.
5. Once the frame and hood are in place, the fan unit can be placed on top of the frame. Making sure that the fan is sitting evenly on the Aluminum frame. As seen in figure 3.



Figure 3. Fully Assembled Front View

6. Once assembled the interior of the hood should be wiped down with a water diluted isopropyl alcohol or with a water diluted ethanol cleaner. This consist of cleaning the all the surfaces within the hood ensuring no outside particles are within the hood. The perimeter of all exits should be wiped down also.
7. Once the unit is cleaned the fan is ready to be turned on and used.
8. In order to relocate unit, disassemble it entirely by unplugging and removing the FFU first, then remove the aluminum frame, and lastly the polycarbonate. Once items are at desired relocation follow steps 1 through 7.

2.2 Maintenance

The maintenance for the hood will consist of checking hardware for signs of rust, in which case the hardware should be replaced. Checking the epoxied seems of the polycarbonate for wear or potential cracking, in which the epoxy should be repaired or in severe cases redone. The pre filter for the fun unit should be checked and replace roughly every month. The HEPA filter for the fan unit will need to be replaced after the pressure produced is no longer positive.

Hardware that can be purchased at a local hardware store are:

Corner Brackets (1 ½" double wide stainless steel)
 Hinges (2" Narrow nonremovable pin)
 Machine Screws (#8-32 stainless steel)
 Nuts (#8-32 stainless steel)
 Handle (Stainless steel)
 Magnets (Neodymium)

Other components must be custom ordered, in which refer to the CAD package.

2.3 Troubleshooting

If issues occur with the Fan Filter Unit, please see the manual for assistance.

If issues occur with either the frame of the hood or the polycarbonate refer to CAD package.

To replace broken or damaged custom parts refer to the CAD package.

3. Clean Room Frame

3.1 Assembly

The Clean room frame is made of 2 components, the steel frame and the two fan units. ROOM FRAME ASSEMBLY REQUIRES 3 OR MORE PEOPLE. To assemble the room frame:

1. Referencing Figure 4, first Telescope A1-4 using a rubber hammer until the two halves of the roof are flush together.
2. Connect each leg to the corresponding lower support beams. Legs telescope D1-2 on the longer side of the room, C1-2 telescope on the shorter side of the room as seen on figure 4.
3. Lastly telescope B1-4 of the roof assembly to each leg as seen in Figure 4. This portion of the assembly will need a ladder and at least 3 or more people to lift and connect each telescoping corner to the corresponding leg. Once attached use a rubber hammer to secure each telescoped corner until flush.
4. To move the fully assembled room frame within the same given area, 4 people are needed, one person at each leg. Lift the entire unit together and move as needed.
5. To relocate the entire frame to another desired location, disassemble the entire unit, steps 3, then 2, then 1. To reassemble follow steps 1-3.

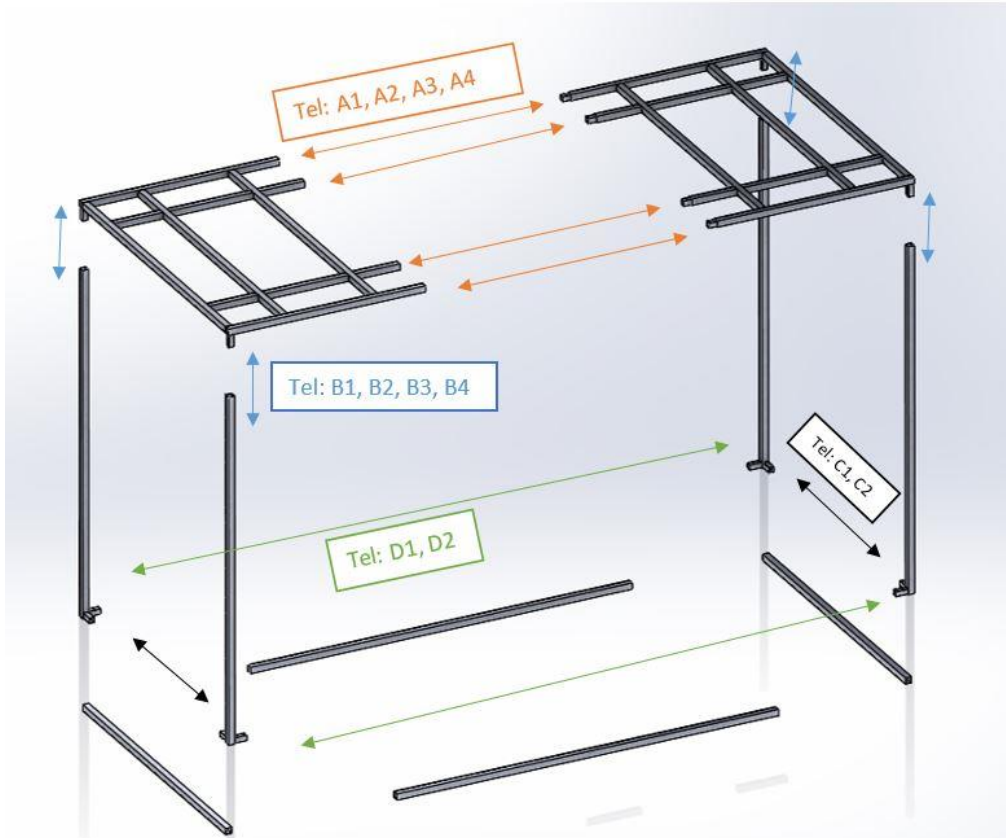


Figure 4: Exploded Room Frame with Labels

3.2 Maintenance

The maintenance for the room frame will consist of checking members for signs of rust or defects in the powder coat applied to the steel. To avoid wearing from powder coating avoid harsh chemicals that will erode the coat. The preferred cleaning method for the powder coat is to use a mild soap and warm water.

3.3 Troubleshooting

If any telescoping becomes stuck when assembling and/or disassembling the frame apply a form of lubricant to the given area and use rubber hammer to separate. If issues occur with the fan filter unit, please see the manual for assistance. If any issues occur with any specific frame part refer to cad package for assistance.

4. CAD Drawings

4.1 Clean Hood

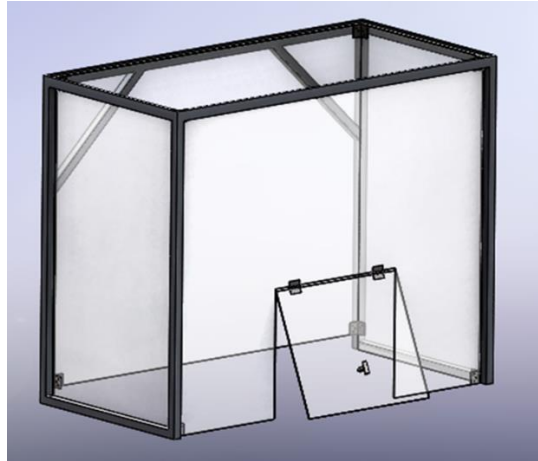


Figure 5. Isometric View of Hood

4.2 Clean Room



Figure 6. Isometric View of Room Frame

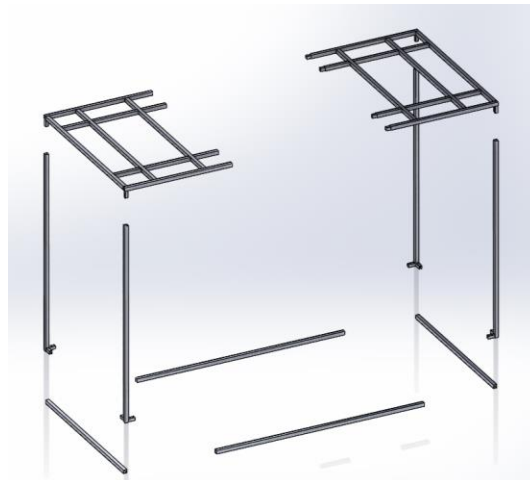


Figure 7. Exploded View of Room Frame