# MODELS COVERED

VCM-400 (4')
VCM-600 (6')

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Thank you for choosing a Design Filtration Microzone VCM Laminar Flow Hood. With proper care and maintenance, your cabinet will provide many years of service.

This unit is designed to provide a particle-free work environment by filtering the air through a high efficiency particulate air filter; a HEPA filter. The cabinet is designed to operate under constant positive pressure in order to maintain the cleanest work environment possible within the work space itself.

Please be sure to read this manual before operating your cabinet, as it contains important information to assist you in using your cabinet safely and to get the most out of its unique features.

Important information should be filled in below and this manual kept on hand at all times for quick and easy reference, as well as a field reference for certifiers or service personnel.

### Laminar Flow Hood Information:

- **Model Number:** ____________________________
- **Serial Number:** ____________________________
- **Date of Manufacture:** _________________________
- **Date of initial installation:** _____________________

For replacement parts, warranty information or any other inquiries, please contact Design Filtration Microzone at:

Toll Free: 1-888-636-8609 or www.dfmzgroup.com

### 1. APPLICATIONS & WORKING ENVIRONMENT

This Laminar Flow Hood is designed to provide either a horizontal or vertical curtain of clean air over the interior working surface. It is used to maintain high levels of cleanliness for laboratory grade requirements whether used in the medical, electronic, bioscience, nuclear or life sciences industries.

This equipment should only be used when the following conditions have been met:

- To be used indoors only
- Temperature of the room should be between 15°C and 35°C
- Relative humidity of the room should be <75%
- Air pressure range should be between 70kPa and 106kPa
- Power supply requirement: AC 115 V
2. SHIPPING

Design Filtration Microzone assembles and factory tests each unit prior to shipping. On occasion, damage can occur during the transportation of your new Laminar Flow Hood. You should inspect your unit for damage that may have been caused and report it immediately to your transportation company.

All shipments are F.O.B. Design Filtration Microzone. All claims for damage due to shipping should be filed with the carrier. Design Filtration Microzone and its dealers are not responsible for shipping damages.

Your Laminar Flow Hood has been factory tested and set for appropriate airflows, however all HEPA filtered equipment should be certified by a qualified technician prior to use.

3. INSTALLATION

Prior to Installation

Before installing your new Laminar Flow Hood please note: The base stand is on the top or back of the cabinet when packed for transport. It should be removed FIRST before installation. Then:

- Inspect the crate carefully for any exterior damage
- If the unit was transported during extreme temperatures, place the crate in heated/cooled area for 24 hours to allow all the components to come to room temperature
- Prepare and clean the area where the cabinet is to be installed
- During and after unpacking inspect the interior and exterior of the hood itself to be sure that it is free from damage before completing the installation
- Use the packing list (please see page 9) to be certain that all components are present, including all the necessary hardware
- Gather the tools required before beginning assembly and be sure you have read and understood all the instructions in this manual

Location

It is important that your new Laminar Flow Hood is installed correctly and in the best location possible. It should be located in such a way that the airflows within the cabinet will not be disturbed by overhead ventilation systems, doors that open and close frequently, or heavy traffic areas. Being located too close to any of these things will have a negative impact on the airflows within the cabinet.

In order for the cabinet to run well, and for ease of service and maintenance, there should be no less than 15 cms (or 6") of clearance on all sides of the cabinet.
**STEP 1:** Assemble the base stand using the hexagon bolt M10 (x10) flat washer (x10) and spring washer (x10) as shown below and tighten securely.

**STEP 2:** Once the head section has been placed onto the base stand, use M10 hexagon bolt, spring washer, flat washer and M10 hexagon nut to attach the head section to the base stand as shown below. Be sure to tighten all connections securely.
Installation Notes

The universal casters have leveling pads that can be adjusted to correct for uneven floors.

Be sure the interior of the unit is entirely cleaned out of all packing materials, including any smaller fragments as they could damage the motor/ blower or HEPA filter.

Check all connections, bolts, screws, etc... that are inside the working area of the hood to be sure that nothing is loose.

Install the fluorescent lamp and the UV light (if being used). UV bulbs should not be handled with bare hands, as residual oils can affect the intensity of the UV output.

After installation, your certifier or DFMZ representative can assist with training and any questions you might have about the safe operation of your new laminar flow hood

4. PACKING LIST

VCM-400 PACKING LIST

<table>
<thead>
<tr>
<th>Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Body</td>
<td>1</td>
</tr>
<tr>
<td>Base Stand</td>
<td>1</td>
</tr>
<tr>
<td>Fluorescent lamp (T5 28W)</td>
<td>1</td>
</tr>
<tr>
<td>UV lamp (T8 30W)</td>
<td>2</td>
</tr>
<tr>
<td>User Manual</td>
<td>1</td>
</tr>
<tr>
<td>Test Report</td>
<td>1</td>
</tr>
<tr>
<td>Hexagon bolt M10×55</td>
<td>3</td>
</tr>
<tr>
<td>flat washer x 10 + spring washer x 10 + M10 nut</td>
<td>2</td>
</tr>
<tr>
<td>Socket head wrench</td>
<td>1</td>
</tr>
</tbody>
</table>

VCM-600 PACKING LIST

<table>
<thead>
<tr>
<th>Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Body</td>
<td>1</td>
</tr>
<tr>
<td>Base Stand</td>
<td>1</td>
</tr>
<tr>
<td>Fluorescent lamp (T8 36W)</td>
<td>1</td>
</tr>
<tr>
<td>UV lamp (T8 40W)</td>
<td>2</td>
</tr>
<tr>
<td>User Manual</td>
<td>1</td>
</tr>
<tr>
<td>Test Report</td>
<td>1</td>
</tr>
<tr>
<td>Hexagon bolt M10×55</td>
<td>3</td>
</tr>
<tr>
<td>flat washer x 10 + spring washer x 10 + M10 nut</td>
<td>2</td>
</tr>
<tr>
<td>Socket head wrench</td>
<td>1</td>
</tr>
</tbody>
</table>
5. PARTS IDENTIFICATION

1. Primary efficiency filter
2. Tubular motor - window
3. LCD display
4. Rocker switch
5. Fluorescent lamp
6. Side window glass

7. Gas tap
8. Deck plate
9. UV lamp
10. Socket
11. Base stand
6. INITIAL START UP

- Connect the power supply.
- Switch power on using black toggle switch.
- Press the “power” button on the touchpad.
- Before beginning any work inside the cabinet, wipe down the interior work space with alcohol or other disinfectant, close the window all the way and turn on the UV lamp (if so equipped) for at least 30 minutes.
- If no UV lamp is installed, leave the window at working height following disinfection and allow the unit to run for at least 30 minutes.
- Upon the completion of work in the hood, always wipe the interior with a disinfectant, then close the window all the way and turn the UV lamp on for 30 minutes. After 30 minutes, turn the UV lamp off and power off the hood, leaving the window fully closed.
- UV lights should be tested on a regular basis. If the UV light is used regularly, we recommend replacing it each time the hood is certified to maintain maximum effectiveness.

7. AIRFLOW ADJUSTMENTS

Before beginning this section, confirm that no obstacles are present in the air lines from the differential sensor to the plenum.

**NOTE: THIS IS TO BE PERFORMED BY A QUALIFIED TECHNICIAN ONLY.**

1. For the most accurate setting, ensure that the pre-filters are installed and the sash is fully opened.
2. Turn on the Main Power toggle switch. The display will momentarily illuminate and there will be an audible ‘beep’. DO NOT PRESS the red Power switch on the keypad.
3. Press the “airflow” buttons simultaneously and hold for 5 seconds. (See Control Panel Diagram on page 11.) The hood will start and the display will indicate a Speed Adjustment Service Mode. An “H” value will be displayed in the upper left hand corner of the display. Adjust the fan speed to obtain a nominal 80-100 fpm, using the “side to side” arrow buttons (#6 and #7 on Control Panel Diagram – page 11).
4. Check the airflow using either a calibrated thermal anemometer. If the value attained in the step does not reflect the displayed fpm value, then a further adjustment of “air speed value coefficient” display will be required. Located to the right of the UV time display is a number with a range of 1 to 255. By using the airflow buttons this value can be lowered to drop F.P.M. display speed or increase number to raise the F.P.M. value. Typically, there is a fluctuation on average of 10 F.P.M. PLEASE NOTE THIS FEATURE IS FOR A GUILDE ONLY AND DOES NOT NEGATE THE NEED FOR YEARLY CERTIFICATIONS.
5. Press the “Airflow” button simultaneously and hold for 5 seconds to lock the speed. The unit will now run at the pre-set speed indicating the proper down flow.
6. Turn off the Main Power toggle switch to exit the Speed Adjustment Service Mode.
8. TECHNICAL PARAMETERS

<table>
<thead>
<tr>
<th>Parameters</th>
<th>MODEL VCM-400</th>
<th>MODEL VCM-600</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Size (W x D x H)</td>
<td>52” x 32 ⅝” x 82 ¾”</td>
<td>72” x 32 ⅝” x 82 ¾”</td>
</tr>
<tr>
<td>Internal Size (W x D x H)</td>
<td>48 ¾” x 25” x 24”</td>
<td>68 ⅜” x 25” x 24”</td>
</tr>
<tr>
<td>Shipping Weight With Stand</td>
<td>550 lbs. (250 kg.)</td>
<td>724 lbs. (328 kg.)</td>
</tr>
<tr>
<td>Shipping Weight - Console Only</td>
<td>443 lbs. (201 kg.)</td>
<td>568 lbs. (258 kg.)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>AC 110V +/-10%</td>
<td>60Hz +/-1Hz</td>
</tr>
<tr>
<td>Consumption</td>
<td>900 W</td>
<td>1100 W</td>
</tr>
<tr>
<td>Airflow Velocity</td>
<td>81 – 99 FPM average</td>
<td></td>
</tr>
<tr>
<td>UV Lamp</td>
<td>30 W</td>
<td>40 W</td>
</tr>
<tr>
<td>HEPA Filter 99.999%</td>
<td>1190 x 570 x 117 mm</td>
<td>1690 x 570 x 117 mm</td>
</tr>
<tr>
<td>Noise</td>
<td>≤ 65 dB (A)</td>
<td></td>
</tr>
</tbody>
</table>

Note: “Consumption” includes fan operation to run unit – this basic operation consumption should not exceed 500W

9. REPLACEMENT PARTS

<table>
<thead>
<tr>
<th>Parts</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement HEPA filter for VCM-400</td>
<td>20PR0004</td>
</tr>
<tr>
<td>Replacement HEPA filter for VCM-600</td>
<td>20PR0007</td>
</tr>
<tr>
<td>UV light for VCM-400</td>
<td>20PR0005</td>
</tr>
<tr>
<td>UV light for VCM-600</td>
<td>20PR0006</td>
</tr>
<tr>
<td>UV light ballast for VCM-400</td>
<td>20PR0010</td>
</tr>
<tr>
<td>UV light ballast for VCM-600</td>
<td>20PR0011</td>
</tr>
<tr>
<td>Light ballast for VCM-400</td>
<td>20PR0012</td>
</tr>
<tr>
<td>Light ballast for VCM-600</td>
<td>20PR0013</td>
</tr>
<tr>
<td>115-volt motorized impeller</td>
<td>17MI0006</td>
</tr>
<tr>
<td>Capacitor for motor – 8mf</td>
<td>17MC0006</td>
</tr>
<tr>
<td>Front window glass for VCM-400</td>
<td>20PR0014</td>
</tr>
<tr>
<td>Front window glass for VCM-600</td>
<td>20PR0015</td>
</tr>
<tr>
<td>Control panel – LCD complete system</td>
<td>20PR0001</td>
</tr>
<tr>
<td>Tubular motor - window</td>
<td>20PR0003</td>
</tr>
</tbody>
</table>

10. OPERATION OF THE HOOD

Differential Pressure Alarm

If the pressure falls outside of the required specifications, an alarm will sound to alert the user. It’s possible that the fan speed can be increased to correct this, or it may be time to replace the HEPA Filter inside the unit. Please contact your service personnel to do this.
Connect the power supply, turn on the main power toggle switch then lightly press the “power” button on the control panel. The display will show: “▊▊▊▊▊▊▊▊▊” FAN”, “0.00m/s”, “LIGHT”, “UV”, “UV TIME:0000HOURS”. Then the system will go into Stand-By Mode.

FAN CONTROL - With the sash at working height, press the fan button one time. The buzzer will sound, the display will briefly show “FAN” and “▊” then the display will go blank, and the fan will start. If the window is completely closed, the fan will not come on.

FLOURESCENT LIGHT CONTROL - Press the button one time, the buzzer will sound and the light will come on.
on. The LCD display will read “LIGHT”.

💡 **UV Lamp CONTROL** - With the window fully closed, press the button one time. The buzzer will sound once, and the UV lamp will come on. While the UV is lit, the LCD display will read “UV”. The UV lamp will only come on if the sash is lowered completely. If it is not lowered all the way and the button is pressed, the buzzer will sound, but the light will not come on.

💡 **ELECTRICAL OUTLET CONTROL** - When this button is pressed, the buzzer will sound once, and the LCD display will read “SOCKET” and there will be power available to the electrical outlets located inside the work area. Pressing the button again will cut power to the outlets.

🔍 **SASH DOWN CONTROL** - Press and hold this button to lower the sash, release the button when desired height has been reached.

🔍 **SASH UP CONTROL** - Press and hold this button to raise the sash, and release the button when desired height has been reached.

**NOTE:** WHEN THE SASH IS FULLY CLOSED, THE UV AND FLUORESCENT LAMPS WILL WORK, AND THE FAN WILL NOT. WHEN THE SASH IS IN AN OPEN POSITION, THE FLUORESCENT LIGHT AND FAN WILL WORK, BUT THE UV WILL NOT.
11. AIR FLOW DIAGRAM

12. CLOCK ADJUSTMENT

With the unit in standby mode, press the light button. The minutes on the clock will flash and can be adjusted using the arrow up/down keys. After adjusting the minutes, press the fan button to be able to adjust the hours by using the arrow keys. Once the correct time is set, press and hold the light button for approximately 5 seconds. Alarm will sound indicating that the time has been set and saved.
13. MAINTENANCE

A full maintenance cycle/certification should be performed once per year, or every 1,000 working hours. Please remove power to the unit before servicing.

The frequency of working hours will affect the service frequency.

A full certification should be performed, and a detailed report provided by your certifier once per year or more.

Cleaning should be performed on a daily basis using the following methods:

- Non-working area should be cleaned with mild detergent and water (or stainless cleaner on the stainless steel parts) and then wiped dry with a soft clean towel.
- Working area should be cleaned using alcohol or other suitable disinfecting agent.

⚠ Please ensure that the disinfecting cleaner is suitable for use on stainless steel to avoid damage.
14. ELECTRICAL WIRING DIAGRAM
15. TROUBLESHOOTING
1. **NO POWER**
   a. Confirm that the unit is plugged in correctly and that there is no damage to the power cord. A multimeter can test that there is sufficient power at the electrical outlet to run the unit.
   b. Ensure that the fuses are intact. Replace if necessary.
      i. To access the fuses, open the front cover of the unit and support the cover using the two support brackets at either side. The fuses can be found on the right hand side inside two small black inline housings.
   c. If fuses are ok, keep the cabinet open and use a multimeter to test the input voltage of the transformer (should be the same as the supply power) and test the output voltage (should be 12v). If the voltage is lower than 10 V, replace the transformer.
   d. If after checking all electrical is okay, and unit is still not working, the control board should be changed.

2. **DISPLAY SCREEN IS BLANK**
   a. Open the front control panel and secure with support arms.
   b. Confirm that the electrical connection to the board is good.
   c. If all is good but display is still blank, display requires replacement.

3. **BUZZER WILL NOT SOUND**
   a. Change out the control panel.

4. **WINDOW WILL NOT GO UP OR DOWN**
   a. Test the voltages between CN8 (up door/down door) and the power lock (black rocker switch). If there is no voltage showing at any of these points, the control panel needs to be replaced.
   b. If the voltage output is normal at the above locations, then confirm the connections to the window motor are good, and test the voltage output of the motor. If there are no voltage outputs, the motor needs to be replaced.

5. **INTERIOR OUTLETS HAVE NO POWER**
   a. First confirm that the power is on to the interior electrical outlets by pressing and trying the outlet again.
   b. Test the outlets with a multimeter to confirm whether there is power and inspect for damage.
   c. Check that the fuses are intact, and replace if necessary.
   d. If problem persists, open the front panel of the
cabinet and check all voltages going to the electrical outlet and confirm all connections are secure.

6. FLOURESCENT LAMP DOES NOT WORK
   a. Confirm that the connections at each end of the bulb are secure.
   b. Remove the bulb and check to see if the ends are blackened. If they are, then replace the bulb.
   c. If the bulb is good, then check the voltage going to the light ballast, if there is no power and all connections are secure, replace the control panel.

7. UV LIGHT DOES NOT WORK
   a. Using a cloth, or gloved hands, check that the connections at each end of the bulb are secure.
   b. Look at the inside filament of the bulb – if it is broken then replace the bulb.
   c. Lift the front panel and check that the connections to and from the control panel are secure. (UV ballast is located inside the front cover on the right hand side)
   d. Check the voltage between the UV ballast and the control panel – if there is no power going to the UV ballast, replace the control board. If there is no power output at the ballast, replace the light ballast.

8. FAN WILL NOT TURN ON
   a. First ensure that the window is OPEN when trying to operate the fan. If the window is closed the fan will NOT come on. This is a factory setting and should not be tampered with.
   b. Open the front panel of the cabinet and check that there is no damage on the UV interlock switch or its connecting wire. If there is any damage, replace the overtravel limit switch or re-connect the wire.
   c. Check the connection between the fan and the circuit board to ensure that it is secure – reconnect if necessary.
   d. If connections are good, but fan is still not running, connect the fan directly to the power – if the fan will not run, it needs to be replaced.

16. FAN AND HEPA FILTER REPLACEMENT
1. To replace the fan assembly:
   a. Ensure that window is fully lowered and ensure that unit is powered off and disconnected from power source.
   b. Loosen the screws on the sides of the lifting front panel.
   c. Lift the front panel and secure using the two support arms on either side.
   d. Undo the white window lift straps, noting position of strap ends.
   e. Unplug the power cord located inside the upper right hand side near the fan housing.
   f. Undo the bolts holding the pressure bars across the top of the fan housing and lift bars away.
   g. Lift off the fan housing and disconnect all electrical connections.
   h. Undo the 8 nuts (4 at the front and 4 at the back) that secure the fans within the housing cover.
   i. Replace the fan unit, reconnect and reassemble making sure that the pressure bars are secure.
   j. Make sure straps are level.

2. To replace the HEPA Filter:
   a. Follow steps (a) through (g) for fan replacement.
   b. HEPA Filter can only be removed once the fan housing has been lifted out.
   c. Gasket must be on BOTH sides of the filter frame to ensure a good seal.
   d. Installation: Reinstall in reverse order as above.

PLEASE NOTE: HEPA Filters are fragile and must be handled with extreme care to avoid punctures or other damage which will have a direct impact on the effective operation of your equipment. Your hood should be fully certified by a qualified professional following a HEPA Filter replacement to be certain the airflows are correct and that there are no leaks in the filter.
All repairs should be performed by qualified Certifiers only. If you do not have a certifier that you work with, please contact DFMZ and we can help you find a qualified certifier in your area.

Please make sure that all electrical requirements are met before connecting and using this equipment. This equipment requires a three prong outlet. DO NOT remove the third prong in order to use an incompatible outlet. If necessary, contact a qualified electrician to install a properly grounded three prong outlet.

Maximum weight of objects on the work surface should not exceed 23 kgs or 50 lbs.

If possible, try to avoid the use of equipment that could shake or vibrate the hood (such as a centrifuge or spiral oscillator). The vibrations given off by this type of equipment can lead to shedding of particles from the HEPA filter, resulting in unclean work area or exposure to the operator.

NEVER USE OPEN FLAME INSIDE CABINET – open flames will disrupt the airflow and cause damage to the filter. If high temperature sterilization is required this should be done outside the cabinet.

HEPA Filters have a limited service life. Debris accumulates on the face of the filter, leading to pressure drops. The alarm will indicate when the pressure has dropped beyond acceptable levels, at which time you should contact your certifier for service/HEPA filter replacement.

All sealed openings on the cabinet should not be tampered with. If a situation arises where access is required, please contact a qualified certifier or DFMZ for assistance.

Storage period for this equipment is one year. Following any extended storage, the equipment should be carefully cleaned, inspected and fully certified before first use.

DFMZ Group is not responsible for any damage or injury resulting from incorrect use of this equipment.

18. SERVICE/MAINTENANCE NOTES
19. WARRANTY
Design Filtration Microzone warrants the equipment to be free of defects in materials and workmanship from the date of invoice. The VCM Laminar Flow Hood shall be warranted against defects for a period of two years. Any units or parts found to be defective during this period will be replaced or repaired at our discretion. The buyer agrees to assume all transportation charges prepaid for return of unit to factory for repair. Design Filtration Microzone will not accept charges for removal or re-installation.

Design Filtration Microzone will not accept any returned items without prior written consent. Design Filtration Microzone is not responsible for repair or replacement by misuse or abuse by incorrect operating procedures of its equipment. Pre-filters and carbon filters carry no warranty against loading. Any modifications or changes made to equipment by customer without written consent of Design Filtration Microzone will void the warranty.

Model number and serial number located on your VCM Laminar Flow Hood must be provided to verify invoice date. Failure to provide will void warranty.

FOR FURTHER INFORMATION, PLEASE CONTACT US DIRECTLY.
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info@dfmzgroup.com