

MegaVol 3000 Standard Operating Procedure

Prior to shipping the MegaVol to the monitoring site, it is recommended that the equipment is completely assembled and Air Quality Technician is familiarized with its operation including field calibration, filter changing and maintenance.

The MegaVol can be tested before being fully installed on site. To begin with, check the funnel assembly on the upper surface of the sampler for packing material or other foreign objects. Remove the filter cassette from the packaging and place the filter cassette within the cassette locaters on top of the sampler. Ensure the exhaust outlet on the side of the sampler is not obstructed and connect the sampler to the power supply, making sure that the supply voltage and frequency are correct for the sampler.

Turn the sampler on and observe the display. If the blower operates and the display shows a flow rate, the unit will most probably be ready for initial calibration.

Installation

1. Instrument must be installed on a level surface and securely bolted through the sampler feet.
2. From the plane of the sampler inlet, a 120° unobstructed conical angle must be achieved. Also, the vertical distance, H_o from the sampler inlet to the height of the nearest obstruction, and the horizontal distance of the sampler inlet, D_o must meet the relationship $2H_o < D_o$.

Assembly

1. Remove the two bolts and washers, located at the top of the back legs of the sampler, which will act as the pivot points for the inlet hood. Also remove the nut and bolt from the threaded insert on the stay, which extends from the small slot on top of the sampler. The stay supports the inlet hood during filter changes and calibrations.
2. Place the inlet hood on top of the sampler with the two mounting holes towards the rear of the sampler, lined up with the pivot screw holes. This may require moving the inlet hood to align the holes with the slots.
3. Insert the pivot screws through the holes in the inlet hood and sampler. The bolts should not be tightened at this stage.
4. Raise the inlet hood and insert the cassette on top of the sampler, if not already fitted.
5. The thumb-screws above the control panel should be screwed up into the inlet hood until finger tight.
6. Apply sufficient down-ward pressure to the rear of the inlet hood to ensure a good seal between the size selective inlet and the filter cassette. Whilst applying this pressure, tighten the pivot bolts securing the inlet hood to the sampler.
7. If fitted correctly, the inlet hood assembly will sit horizontally and will exert even pressure on the filter cassette when secured; see operations manual for diagram of proper alignment.
8. Check that the cassette seals, and check the pressure needed to tighten thumb screws and re-adjust the pivot bolts if required.
9. Raise the inlet hood slightly and attach the support stay to the lid using the screw and nut supplied. The screw passes through the lid, then the nut, then into the stay. The bolt must go through the hole directly above the stay (not the one near the corner of the hood). Tighten the

nut against the threaded insert of the stay. The screw should be able to pivot when the lid is opened. Adjust if necessary.

10. Open the inlet hood and check that it opens freely. The stay is used to support the weight of the inlet hood during filter changes and calibration. The stay also prevents the lid from opening too far. The stay acts like a catch to prevent the lid accidentally falling. Move the stay towards you to release the catch. Close the lid again and check that the cassette is evenly clamped when the thumbscrews are tightened.

Wiring

It is recommended that a class II earth-leakage circuit breaker (ELCB) – also known as GFI or RCD - be installed on the power circuit to the sampler. The ELCB shall be appropriately rated for all of the equipment installed on the circuit. Earth and neutral cables should be linked as shown in the following diagram

Brown-Live

Blue-Neutral

Yellow/Green-Earth

Set-up

Filter Deployment/Collection

1. Inspect filter for defects including degradation around the edges, holes etc.
2. Wear gloves, or utilize forceps/tweezers to place and collect the filter, only handling on the edges.
3. Note the filter number and write it down on the Chain of Custody (COC) record.
4. At the sampling site unlock and open the upper door. Undo the thumb-screws securing the front of the sampler inlet. Raise the sampler inlet and remove the filter cassette. Separate the upper and lower parts of the cassette and install a filter in the center of the lower cassette. Re-assemble the cassette and install the loaded cassette on the top plate of the MegaVol between the locating brackets.
5. The sampler inlet should then be lowered and secured using the thumb-screws. Apply slight downward pressure to the lid while tightening the thumb-screws. This ensures a good seal on the cassette.

Filter Shipment

Field Operation Checklist

- Site meets the relevant siting criteria for jurisdiction in which monitoring are to be performed.
- Electrical connections and earth leakage circuit breaker have been installed and checked.
- Sampler has been securely fastened to supporting structure.
- When using the optional SSI, the impaction shim has been greased and installed in the size selective inlet.
- Field calibration has been installed and details including the initial flow rate have been recorded in an appropriate log sheet.
- STP reference conditions have been entered in the Set-up Menu.
- The sampler timer has been programmed for the required run-time and sampling frequency.