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## Air Pollution Monitoring Equipment

### Assembly Instructions

#### TE-6001-2.5-I PM2.5 SSI (Size Selective Inlet)

1 Box 32" x 32" x 26" 62 lbs.

1. Lift SSI, hood, hood spacer bag, and 5 oz. bottle of Media Oil from carton and place on table.
2. Cut cable tie on bottom of SSI that is holding strut and remove shoulder bolt and large washer.
3. Align middle of strut with hole in spacer and fasten with shoulder bolt and large washer, make sure large washer is on top of strut.
4. Place SSI on shelter and align shelter base pan 10-24 nutsert holes with holes in side of shelter and insert 10-24 x 1" bolts.

CAUTION: Before opening SSI, be sure that shelter is securely mounted to ground or floor. Use of out riggers to secure vertical orientation is strongly recommended.

5. Place SSI hood onto acceleration nozzle plate (top of SSI)
6. Locate hood spacer between hood and acceleration nozzle plate and loosely fasten with 10-32 x ½" thumb bolt, making sure plastic washer is in place. Do this loosely for all eight hood spacers, before tightening.
7. Open SSI by disengaging the six catches on bottom of Shelter Base Pan and lifting the SSI into the open position.

8. Remove cardboard and rubber bands that are covering filter holder assembly opening.
9. Lower filter holder assembly down through opening, making sure 8" x 10" gasket is under filter holder and the brass bolt assembly aligns with filter holder.
10. Close SSI and fasten the six catches.
11. Open middle section of SSI by disengaging the four hooks and lifting into the open position.
12. Remove the 2.5 Cartridge and place on flat surface with screen side up.
13. From the bottom side, unscrew the four captive nuts connecting oil media holder and clamp ring to the cartridge.
14. Gently lift the Jet Tube assembly off of the Clamp Ring and Oil Media Holder. Turn Jet Tube assembly over and lay on flat surface screen side down. This will avoid disrupting alignment of 40 Jet Tubes.
15. Remove the Clamp Ring from the Oil Media Holder.
16. Pour the entire bottle of Media Oil (5 ounces) onto the white porous plastic Media Ring.
17. Place the Clamp Ring onto the Oil Media Holder such that the alignment holes are in line.
18. Carefully place the Jet Tube assembly over the Oil Media Holder and attach with the four captive nuts. DO NOT spill oil.
19. Insert 2.5 cartridge into SSI. Make sure the two alignment pins are correctly inserted and aligned.
20. Close middle section and fasten with the four hooks for an air-tight seal.

## Hi-Vol PM 2.5 Sampler

The Hi-Vol PM 2.5 ambient air sampler is designed to provide owners of Tisch Environmental model TE-6001 PM-10 samplers with the option of retro-fitting existing equipment rather than procuring a new family of apparatus. An adapter is placed into the model TE-6001 sampler in lieu of the existing PM-10 fractionator. The adapter has a new plate that contains multiple impactor jets, which collect particles larger than PM 2.5 aerosol on a oil-wetted surface. The PM 2.5 aerosol is transmitted through the impactor and collected on a hi-vol filter.



### Technical Discussion

Ambient air enters the Hi-Vol PM 2.5 unit at a flow rate of 40 CFM (1.13 m<sup>3</sup>/min) through an opening under the weather proof hood. The air then flows into a stilling chamber and through a screen that is designed to prevent the entry of insects and large sized air-borne debris into the fractioning system. The air then flows through a set of 40 impactor jets that direct the air towards a wetted collection surface. Impaction of particles with sizes larger than 2.5 micron AD (i.e. non-PM 2.5 aerosol) takes place on a porous disc that is wetted with oil. Particles smaller than 2.5 micron aerodynamic diameter are vented from the impaction zone and flow downward to the sampling filter. The filter is standard 8 inch x 10 inch (203mm x 254mm) hi-vol collector.

### Advantages of the PM 2.5 Retrofit Approach

Tisch Environmental offers this retrofit kit because it allows characterization of PM 2.5 with existing methodologies. Neither extensive additional training is required nor is extensive additional apparatus needed.

- \* No need to procure expensive electronic balances for weighing filters.
- \* Sample flow measurement and control with the Tisch critical flow venturi. Flow rate determined directly in actual m<sup>3</sup>/min, which are the units that EPA requires for PM 2.5 data reporting.
- \* Existing quality assurance procedures that are used for PM-10 sampling are virtually unchanged for PM 2.5 sampling.
- \* Sampling methodology is essentially unchanged, so technical personnel will not need to be retrained.
- \* The cost of retrofit to a hi-vol is only a fraction of the cost of a sampler specially designed for PM 2.5



# Tisch Environmental, Inc. 2.5 $\mu$ m Retrofit High Volume Sampler

