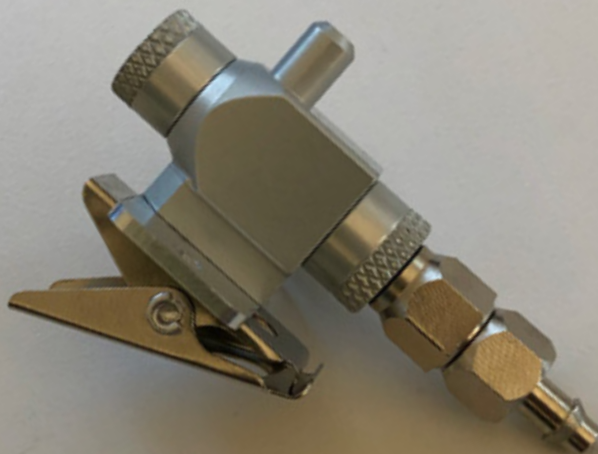


microCyclone™ 170 Size Selective Inlet

Operating Manual



Introduction

The microCyclone™ 170 is a sharp cut cyclone specifically designed to provide a PM2.5 particle size cut for the microAeth®. When connected to the inlet of a microAeth operating at a flow rate of 170 ml/min, the microCyclone separates and collects particles with a diameter larger than 2.5 microns from the air sampling stream. The separation of particles in the air stream by the microCyclone does not affect the black carbon measurement of the microAeth.

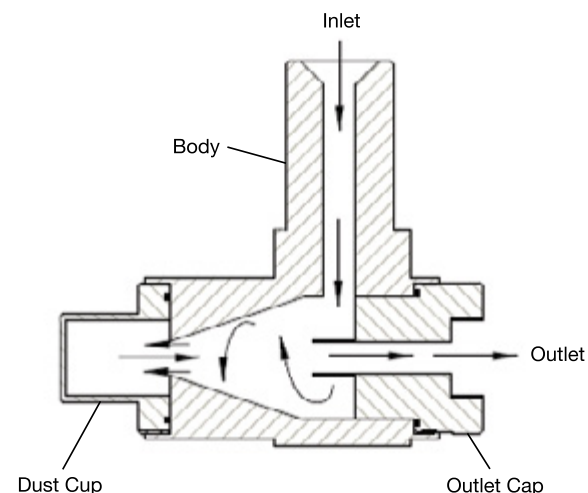
The outlet of the microCyclone connects to the inlet of the microAeth in order to eliminate large particles that can contaminate the instrument and cause an undesired increase in back pressure due to extra loading of the filter in the microAeth. The eliminated particles from the sample stream are collected in the dust cup of the microCyclone and therefore cleaning of the microCyclone is required. Cleaning intervals will vary based on the sampling flow rate of the microAeth and the sampling environment and concentrations.



Installation & Operation

The outlet cap of the microCyclone has 10-32 threads and comes with a barb fitting swivel connector that threads into it. The outlet barb fitting swivel connector attaches by tubing to another barb fitting swivel connector that is installed into the 10-32 threads of microAeth inlet. The microAeth can then be set to the desired flow rate to provide black carbon measurements with the corresponding particle size selective cut point of the microCyclone at that flow rate.

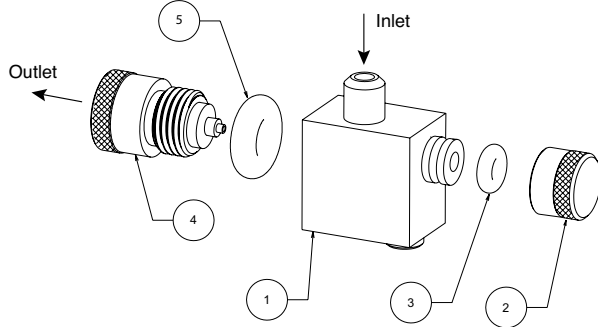
For a particle size cut point of PM2.5, the flow rate of the microAeth needs to be set to 170 ml/min. If the flow rate of the microAeth is set to 150 ml/min, the microCyclone will provide a particle size cut point of 2.9 microns in diameter.



Be sure to orient the microCyclone so that the Dust Cup is not susceptible to emptying into the sample pathway as this can occur when there is no active flow through the device. During pump operation, the force exerted by the sample flow is likely to keep debris inside of the microCyclone Dust Cup, however, when the sample is paused or stopped, if the unit is positioned in such a way to allow the Dust Cup to be emptied by gravity (e.g., at a 90-degree angle with the Dust Cup entryway perpendicular to the ground), the debris captured in this Dust Cup may enter the instrument.

Maintenance

The cleaning intervals of the microCyclone will vary based on the sampling flow rate of the microAeth and the sampling environment and concentrations. Follow the steps below to best clean the microCyclone. For cleaning, the microCyclone needs to be carefully disassembled. Mineral-free water and lint-free lab wipes should be used. If hard-to-remove deposits are found on surfaces of the microCyclone, an ultrasonic cleaning bath with mineral-free water can be used.



Label No.	Quantity	Description
1	1	Body
2	1	Dust Cup
3	1	O-ring for Dust Cap (small)
4	1	Outlet Cap
5	1	O-ring for Outlet Cap (large)

1. Remove the microCyclone from its installed sampling assembly with the microAeth.
2. Remove all tubing and extra air path components that are connected or screwed into the inlet and outlet ports of microCyclone.
3. Unscrew the dust cup and outlet cap from the microCyclone body.
4. Wet lint-free wipes with mineral-free water and remove all deposits from all surfaces. Be extra careful to remove all deposits from the inside of the dust cup, the internal cone feature of the outlet cap, and o-rings as these surfaces are the most likely to be contaminated.
5. Inspect all o-rings for shape and integrity.
6. Make sure that all components are dry before reassembly. Make sure that all o-rings are installed correctly and securely for piston seals.
7. Reassemble the microCyclone.

