

Use of PUF foams with the CIS Conical Inhalable Sampling Head and the Size Selective Adaptor for the Microdust.

As more and more research was being undertaken on particle sizing over the past few years, it was found that more differentiation was required on particle fractions as well as just the mass of the sample taken.

PUF foam inserts have been extensively tested by the Health & Safety Laboratory (HSL) in the UK and have now been proven to provide effective cut offs at different particle sizes. These fractions are for PM₁₀, PM_{2.5}, Thoracic and Respirable.

In essence, the Polyurethane foams are used as filters, which trap particles in the foam matrix, only allowing particles below the cut points to pass through the foams and onto the collection filter media.

CIS Personal Sampling Head



This head can now be used for sampling under MDHS 14/3 and utilises the foams as size selective media.

exactly the same as for the personal sampling head, and here particles that pass through the foam, pass through the measuring chamber providing an instantaneous reading for the dust as well as allowing the sample to pass through onto the filter.

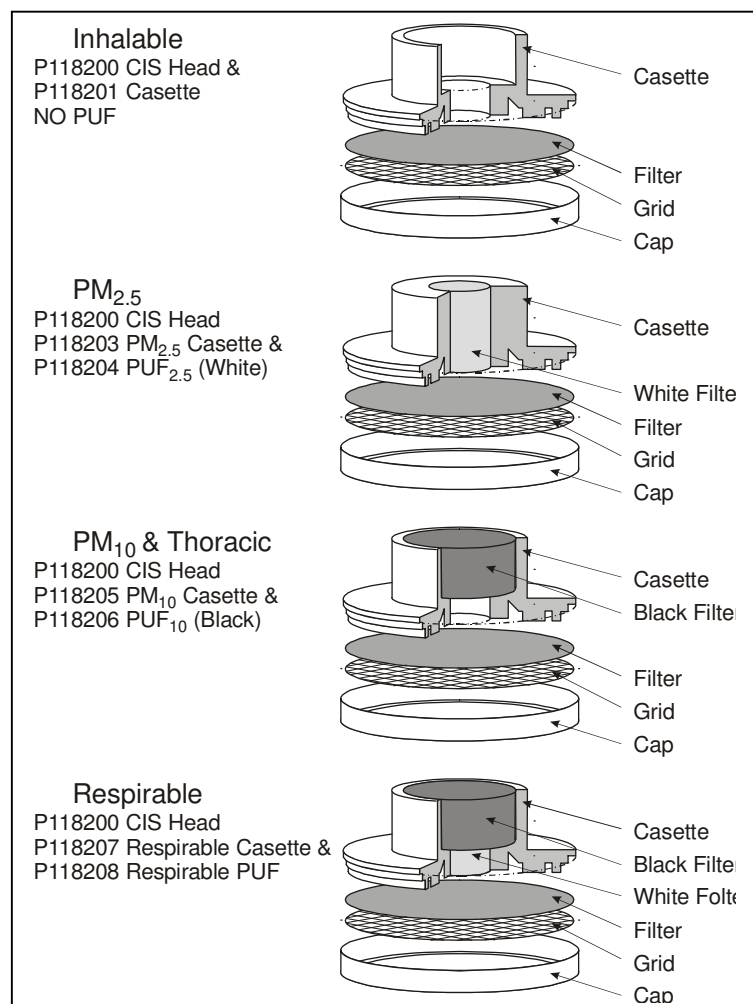
The foams are used as follows:

Inhalable: No foams

PM 2.5: P118203 Cassette & P118204 White foam

PM₁₀: P118205 cassette & P118206 Large black foam

Respirable: P118207 cassette & P118208 PUF (which is both the medium white foam with the large black foam)

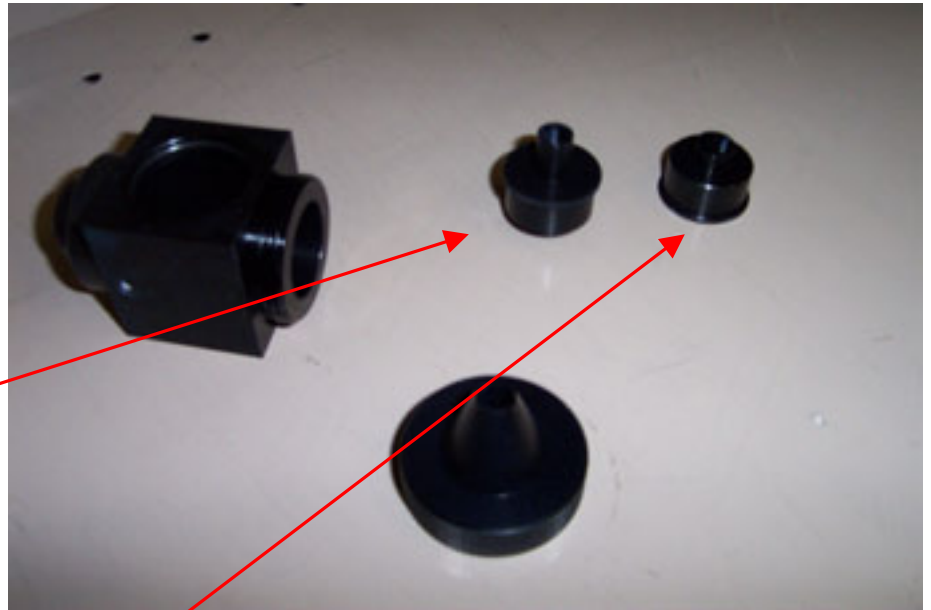


Microdust Size Selective Adaptor: 151280B

This head can be used with the Microdust and utilises the foams as size selective media. Exactly the same as for the personal sampling head, and here particles that pass through the foam, pass through the measuring chamber providing an instantaneous reading for the dust as well as allowing the sample to pass through onto the filter. Foams and both adaptors are included with the size selective adaptor.

The only difference to the above diagram is that the cassettes are replaced with metal versions.

One for PM 2.5 foams:



The other for the PM10 & respirable:

Microdust Environmental Enclosure 176091A

Similar metal adaptors are also supplied with the microdust environmental enclosure and can be used for sampling the different fractions. Again two versions are supplied with the unit.

Inserting the foams:

The PUF plugs should be inserted carefully into the cassettes. The PM10 foam is actually 10mm deep whilst the portion of the cassette it fits is only 8mm. The overflow caused is acceptable since the sampler cone will enclose it.

It is very important that the lower surfaces of the PM 2.5 & Respirable white foams do not come into contact with the filters- at least 1mm spacing is required.

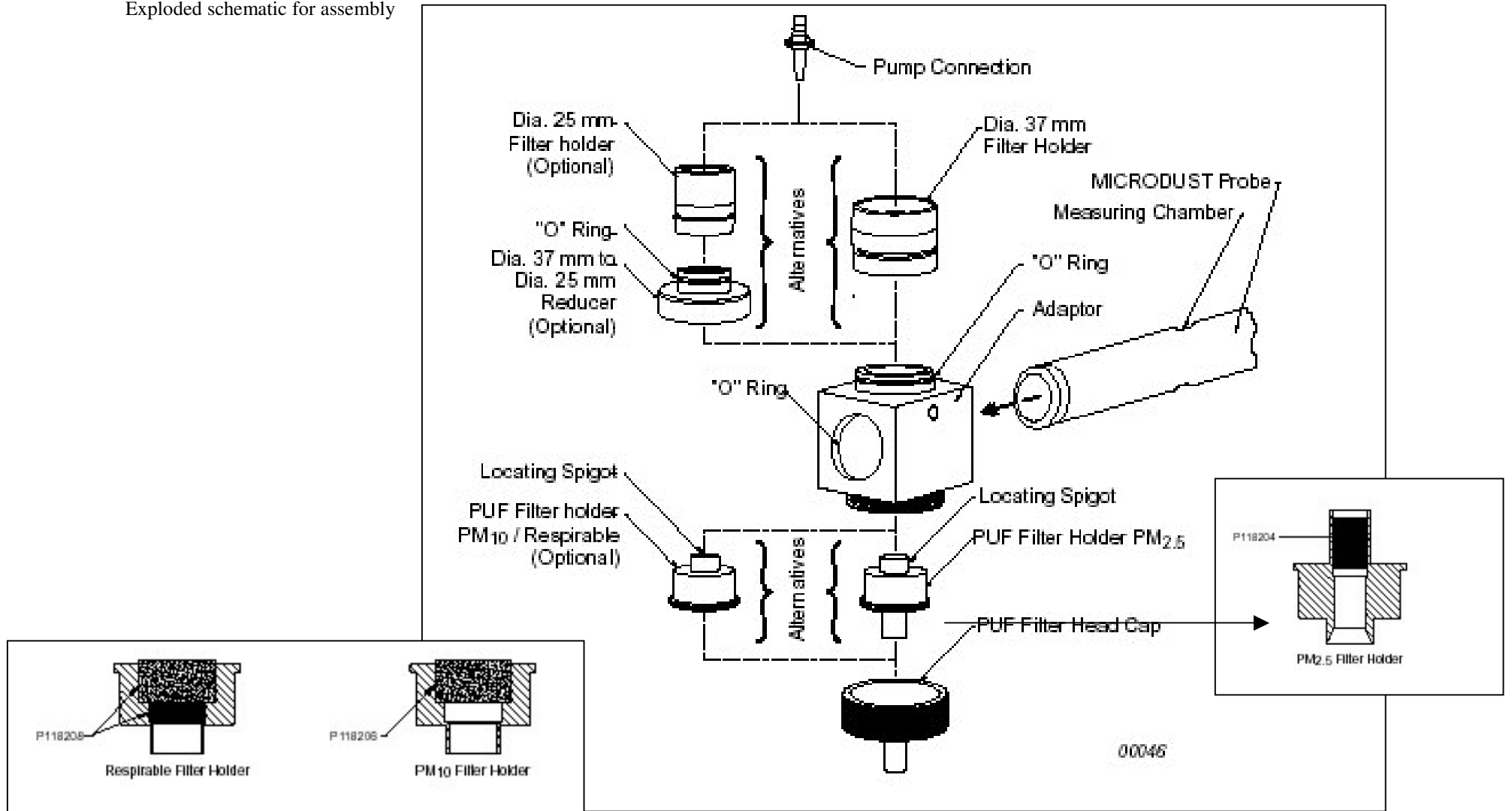
The twin respirable foams especially should be checked once loaded. Foams should be handled with tweezers and plastic gloves if they are to be chemically analysed following sampling.

If filters are to be used for gravimetric analysis they should be pre treated by washing in distilled water, cleansed in an ultrasonic bath, rinsed again then dried at 70 degrees C. Foams should be sealed in clean environments.

PUF's can also be used for XRF and ICP analysis following washing, ashing or dissolution of the foam matrix. Blanks should be used.

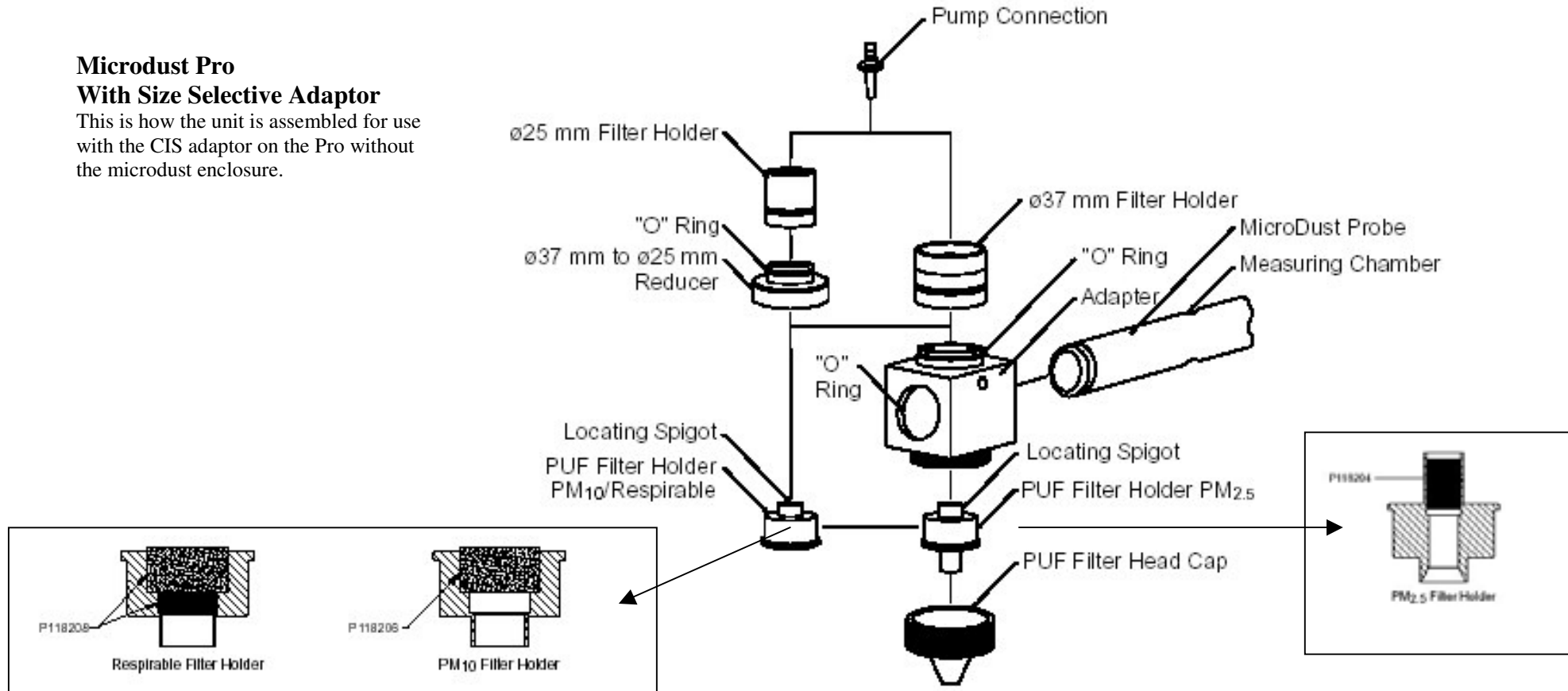
Size Selective Sampling for PM10 & PM2.5 with the Microdust Enclosure

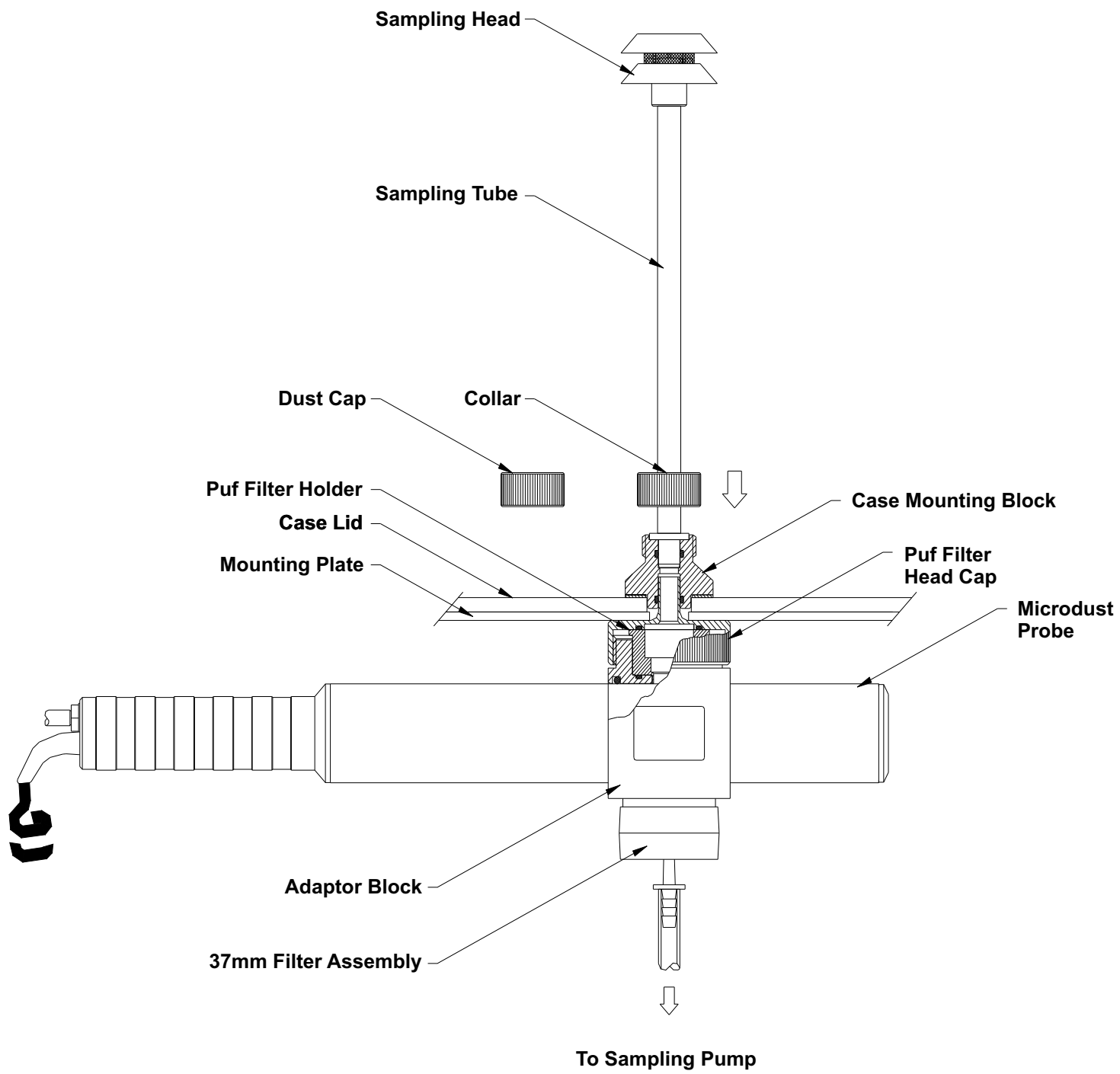
Exploded schematic for assembly



Microdust Pro With Size Selective Adaptor

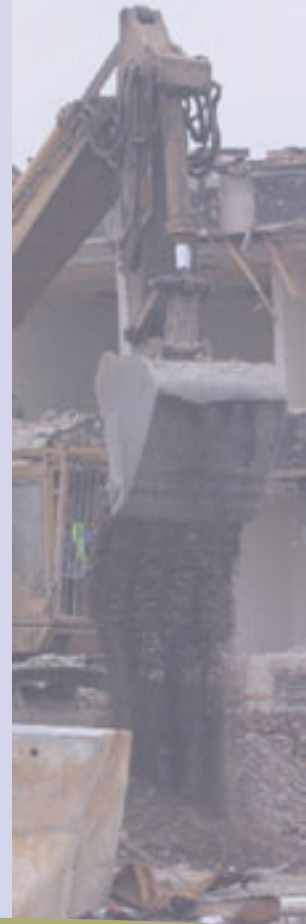
This is how the unit is assembled for use with the CIS adaptor on the Pro without the microdust enclosure.







Area and boundary nuisance dust level monitoring



KEY FEATURES:

- Gravimetric / real time data
- Ideal for site surveys
- Ease of operation
- Operates up to 19 hours*
- Samples for PM₁₀, PM_{2.5} and respirable fractions
- Individual instruments can be removed and utilised separately
- No external power supply required
- Ideal for remote locations
- Indoor/ Outdoor applications

INTRODUCTION

For site operators and managers who have a requirement for area monitoring, the Dust Detective is an ideal survey tool, which is quick to assemble, easily deployed and provides data which can be downloaded for evaluation and reporting purposes. The unit is supplied complete with a Microdust Pro real time dust monitor, Apex Lite air sampling pump and operates off internal alkaline batteries for up to 19 hours*.

Both gravimetric and real time dust data can be obtained, and foam inserts can also be used which allow size selection of PM₁₀, PM_{2.5} & respirable fractions to be taken.

The unit can be purchased without instruments as an accessory for existing users of Microdust Pro and Apex sampling pumps.

Dust Detective Static Sampling Enclosure

Features

The Dust Detective is a ruggedised enclosure which can hold a Microdust Pro real time dust monitor together with an Apex standard or Apex Lite personal air sampling pump. The unit is simple to assemble and allows static air samples to be undertaken on site.

The (IP65) enclosure is fully weatherproof, and can be secured in location with padlocks (not supplied) for extra security.

The air sample is drawn into the enclosure via filters if required to allow gravimetric samples to be obtained. These filters can also be used to determine the nature of the particulate pollution for source apportionment issues. The Microdust Pro allows real time dust levels to be recorded and data downloaded at the end of the sampling period. Graphs with summary data can be generated. The internal dry cell batteries allow operation for over 19 hours*.

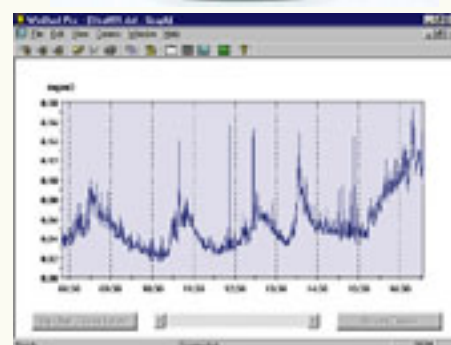
Respirable, PM₁₀ & PM_{2.5} fractions can also be monitored by utilising special inlet foams on the sampling inlet.



Win Dust Software Profiling

This dedicated software package supplied with the Microdust Pro, allows the user to identify trends in dust levels, areas of concern and hot spots which will require action, remediation or further attention.

Records can also be kept on file for future reference.



Technical Specification

Refer to Microdust Pro and Apex Personal Air Sampling Datasheets.



*Please note unit should not be used for extended sampling periods outdoors as the optics will be affected by moisture and aerosols.

Batteries: Apex Lite and Microdust Pro each operate from internal AA alkaline batteries.

Battery life Typically >19 hours. (*Life of Alkaline batteries may be reduced when operating at low ambient temperatures).

Operating conditions: Relative humidity of 5 to 90% (non condensing).
Temperature 0 to 40°C.



Ordering Information:

Dust Detective Kit: 176171A Comprising: Rugged Enclosure complete with Microdust Pro unit, adaptors, PUF filters, software, download cable and Apex Lite air sampling pump, alkaline batteries.

Dust Detective Enclosure 176170D** (Consists of adaptors, PUF filters and enclosure only).

**Additional Instruments can be ordered separately for kit: (see opposite).

P104124: (utilises dry cell Apex Lite)

P104105: (Utilises Apex standard with charger base)

NiMH Rechargeable cells for Microdust pro: -B148. Charger: -PC18.

Casella CEL

Regent House
Wolseley Road
Kempston
Bedford, MK42 7JY
Tel: +44 (0) 1234 844100
Fax: +44 (0) 1234 841490
E-mail: info@casellacel.com
Web: www.casellacel.com

Casella USA

17 Old Nashua Road
#15, Amherst
NH 03031
U.S.A.
Toll free: +1 (800) 366 2966
Fax: +1 (603) 672 8053
E-mail: info@casellaUSA.com
Web: www.casellaUSA.com



Shows P104105 kit comprising Microdust Kit, Apex Starter kit, Apex pump and charger



Shows P104124 kit comprising Microdust Kit, Apex Starter kit, Apex Lite pump and pre weighed filters

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