TCR TECORA
POLLUTION CHECK

OUTDOOR AIR QUALITY

INDUSTRIAL EMISSIONS

Compliant with:
VDI 2066 Part.10, EN 13284-1, EN 12341, ISO 23210-2009

Stack Impactors and Air Quality

Multistage Impactor PM_{10}, $PM_{2.5}$, PM_4 and PM_1 mod. MSSI

Fig.1 *Assembled Impactor with nozzle and cone for sampling in vertical position*

Fig.2 *Assembled Impactor with nozzle for sampling in horizontal position*

MAIN FEATURES

- Multi-stage cascade impactor for emissions
- Complies with VDI 2066 Part. 10 to EN 13284-1, EN 12341 and ISO 23210-2009
- Up to 5 particulate fractions on the same sample:

2 Stage Version	3 Stage Version	4 Stage Version
PM_{10} $PM_{2.5}$ Total	PM_{10} $PM_{2.5/4}$ PM_1 Total	PM_{10} $PM_{2.5}$ PM_4 PM_1 Total

- Material in contact with the sample:
  Titanium (AISI 316L stainless steel version available)

In order to meet the growing interest in fine particulate measurement and the progressive reduction of emission concentrations, **TCR TECORA®** has added to the already well established range of cyclones, manufactured according to the design provided by USEPA, the new multistage cascade impactor model **MSSI.**

The **MSSI** impactor is manufactured according to the design proposed by the **VDI 2066 Part.10** method and the **EN 13284-1** standard for reducing dust deposits on the walls and complies with the **EN 12341** standard on the "gravimetric reference method for determining the mass concentration of suspended particulate matter PM_{10} or $PM_{2.5}$". It also complies with the **ISO 23210-2009** method.

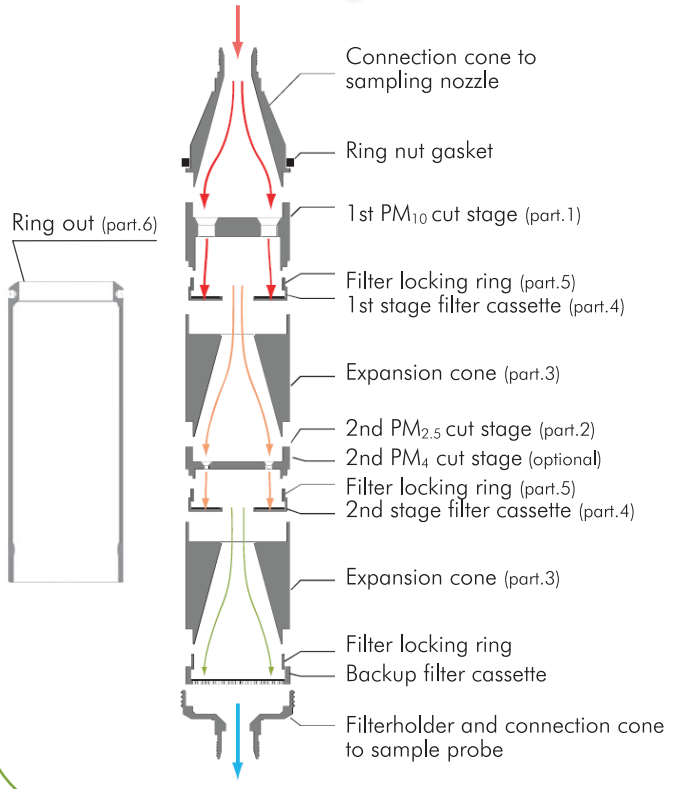
The use of filter cassettes avoids filter handling in the field.
The impactor can be supplied with two different inlet cones to allow both vertical and horizontal positioning with respect to the direction of origin of the gaseous flow in the duct (fig. 1 and 2). The impactor is sized for a high sampling rate, approximately 2.3m^3/h depending on the emission characteristics, to reduce sampling times and to be used with ambient PM heads.

The software for calculating the sampling rate, nozzle and other factors to optimise the quality of the measurement is supplied.

INNOVATION MADE IN ITALY

Multistage Impactor PM_{10}, $PM_{2.5}$, PM_4 and PM_1 mod. MSSI

2 Stage Version



3 Stage Version

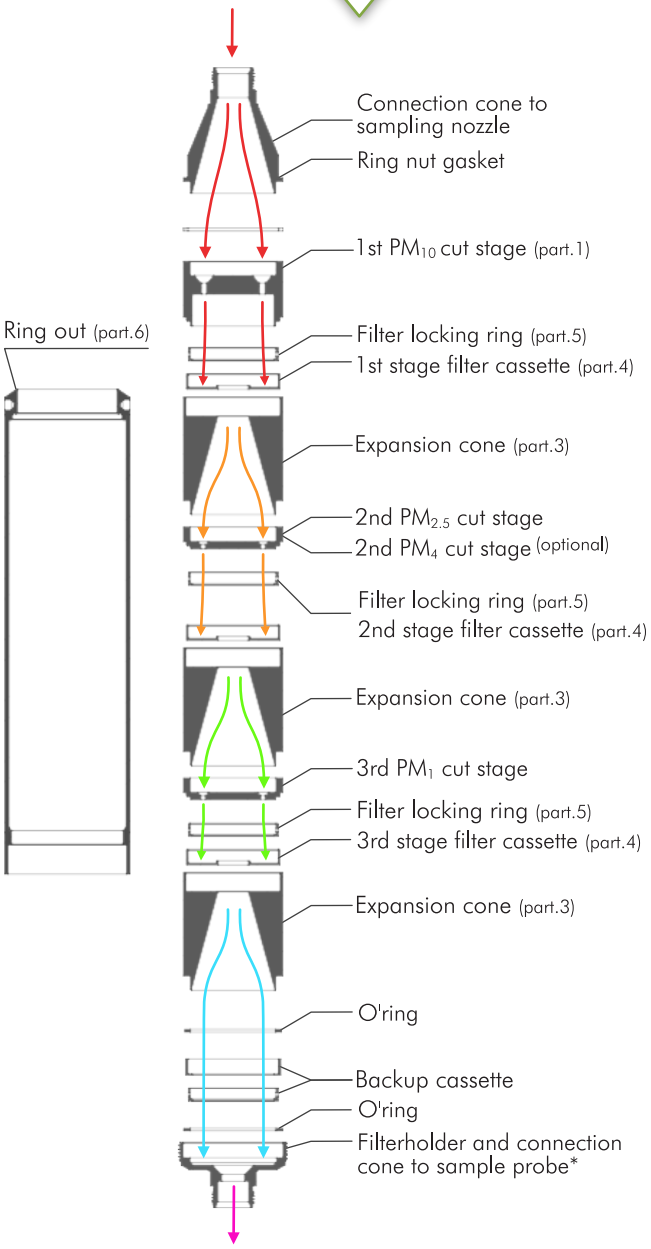


Figure 2 shows the operating principles of the PM_{10}:

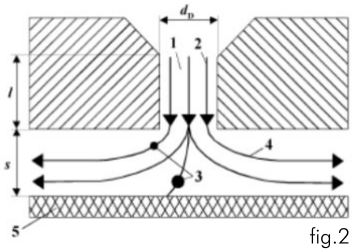


fig.2

1. Nozzle
2. Flow
3. Particle dust
4. Trajectory
5. Plates collector

l: Nozzle length

S: Distance between nozzle and plate manifold

n_d: Nozzle diameter

Particles suspended in the gas stream are sampled through the nozzle under isokinetic conditions.

The gas enters the impactor through the nozzle and the first expansion cone sorts the flow so that separation occurs equally at all nozzles of the separation plate.

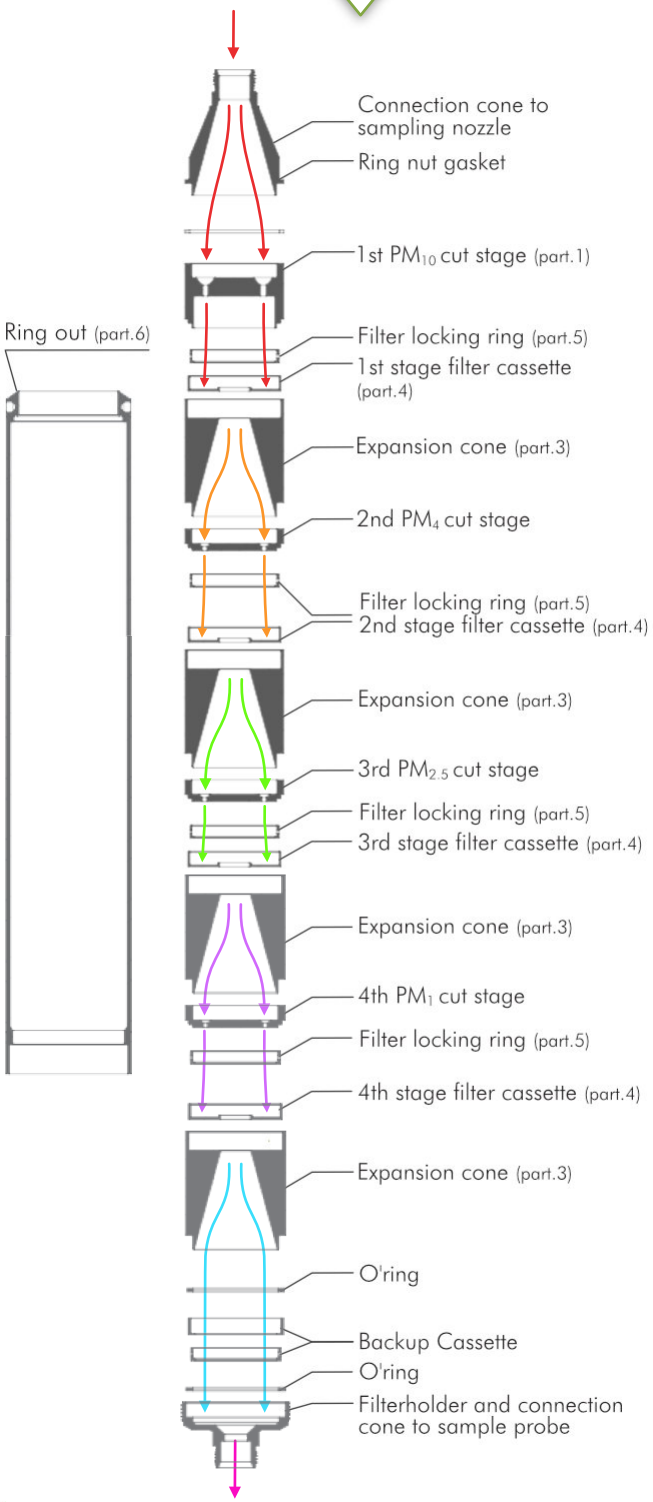
This operation is repeated in subsequent stages until the final filter.

The different acceleration to which the particles are subjected allows separation by inertia.

As the forces applied to the particle are greater than the force of gravitation, MSSI can work in any position.

The smallest particles on the last separation cyclone (<2.5 µm) are collected on a final filter.

4 Stage Version



MSSI IMPACTOR KIT CASE

The **MSSI multistage** impactor can be equipped with a metal case with dedicated compartments.
In this configuration, the following items are included:

MSSI Multistage Cascade Impactor Kit – 2 Stage

Part	Quantity	Description
1	1	1st Stage – PM_{10} Separation
2	1	2nd Stage – $PM_{2.5}$ Separation
3	3	Expansion cone
4	2	Perforated filter-holder cassette
5	1	Filter-holder cassette
6	1	47 mm filter punch
7	1	Spare gasket set
8	1	Carrying case

AISI 316L Stainless Steel: AC99-107-0010KP | **Titanium:** AC99-107-0000KP

MSSI Multistage Cascade Impactor Kit – 3 Stage

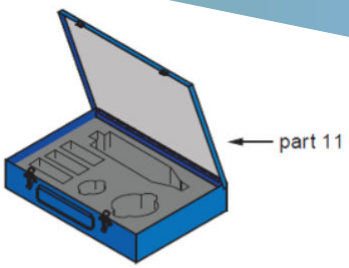
Part	Quantità	Descrizione
1	1	1st Stage – PM_{10} Separation
2	1	2nd Stage – $PM_{2.5}$ Separation
3	1	3rd Stage – PM_{1} Separation
4	4	Expansion cone
5	3	Perforated filter-holder cassette
6	1	Filter-holder cassette
7	1	47 mm filter punch
8	1	Spare gasket set
9	1	Carrying case

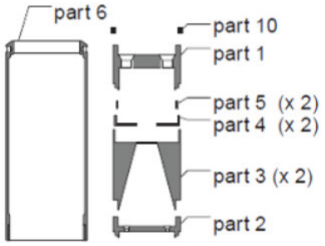
AISI 316L Stainless Steel: AC99-107-0013KP | **Titanium:** AC99-107-0015KP

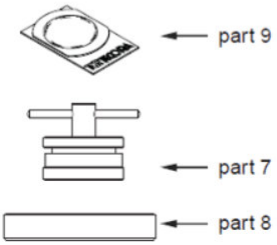
MSSI Multistage Cascade Impactor Kit – 4 Stage

Part	Quantità	Descrizione
1	1	1st Stage – PM_{10} Separation
2	1	2nd Stage – PM_{4} Separation
3	1	3rd Stage – $PM_{2.5}$ Separation
4	1	4th Stage – PM_{1} Separation
5	5	Expansion cone
6	4	Perforated filter-holder cassette
7	1	Filter-holder cassette
8	1	47 mm filter punch
9	1	Spare gasket set
10	1	Carrying case

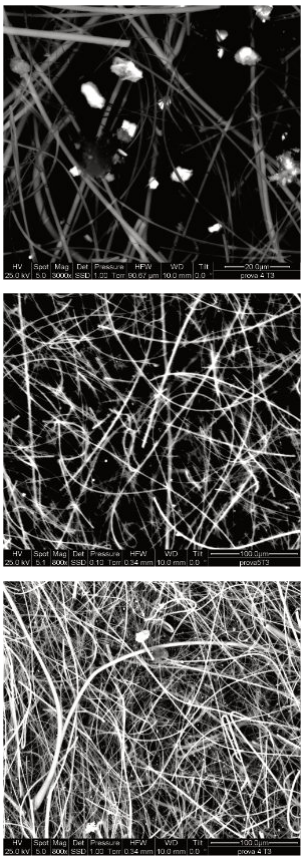
AISI 316L Stainless Steel: AC99-107-9919SP | **Titanium:** AC99-107-9920SP







Dimensional cutting studies performed using a SEM



The **MSSI Multistage Impactor** can also be used for dust monitoring when combined with air quality sampling heads.

Sampling Heads for Emission and Environmental Monitoring

EN | EN + PUF | Emissions | EPA | EPA + PUF

SAMPLING KIT

In order to allow the widest interchangeability with **TCR TECORA®** accessories, the **MSSI Impactor** can be used with the filter holders, curves and nozzles already in use for isokinetic total particulate sampling.

The impactor includes a die cutter to drill the required central hole in the 1st and 2nd stages, thus allowing the use of 47mm diameter flat quartz fibre filters or other commercially available media.

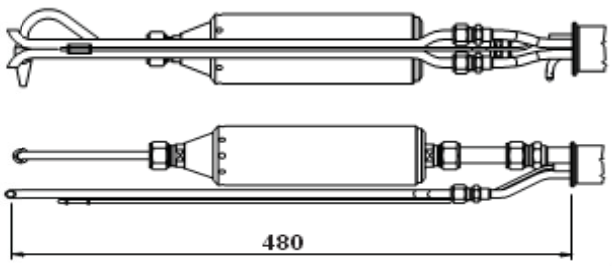
A base is also supplied to support the impactor during assembly.

Unified connections allow the **MSSI Impactor** to be used with **TCR TECORA®** monoblock probes and heated probes.

MSSI IMPACTORS MOUNTING DIMENSIONS (1 AND 2 STAGE) ON ISOKINETIC PROBE WITH XL-TYPE PITOT TIP

The dimensions of the impactor and the duckbill curve for horizontal positioning allow the use of the same XL-type Pitot tube employed with PM_{10} and $PM_{2.5}$ cyclones.

Pitot XL terminal:
P/N. AC99-099-0064SP



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