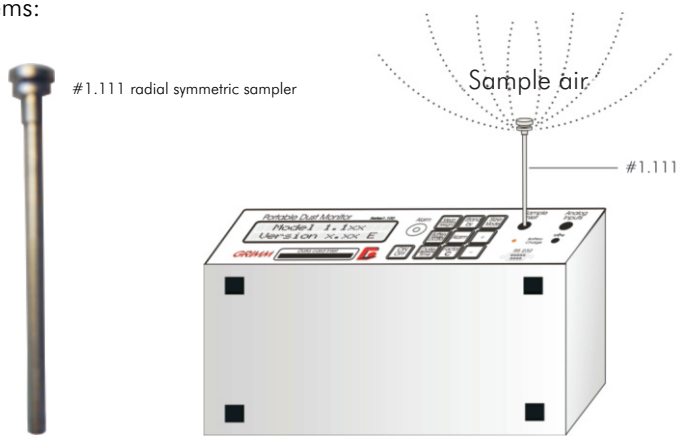
Isokinetic Sampling Set for GRIMM Dust Monitors
Serie #1.10x

The GRIMM Dust Monitors of the #1.10x series are provided with a volume controlled pump for a constant flow rate of 1.2 l/min (72 l/h). Therefore a size-representative sampling depending on the sampling location is of importance.
In order to ensure such a sampling, which is required for particle measurements (especially for particles larger than 1µm), the flow into the probe must be isokinetic, i.e. the speed and direction of the air flow entering the probe must be equal to those of the primary stream.
Depending on the sampling conditions, GRIMM offers different sampling systems:

☐ #1.111 Radial symmetric sampling head

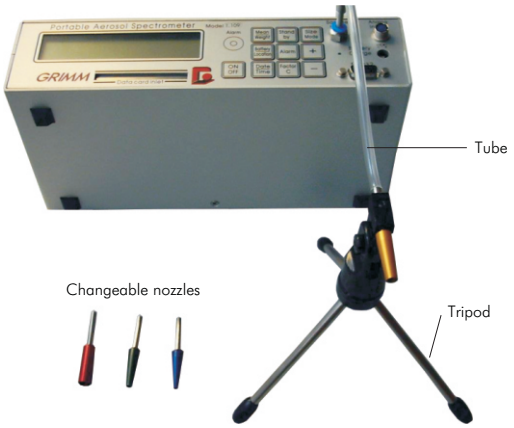
Application: Indoor and outdoor measurements (air velocity from 0 to 2.5 m/s, different wind directions).

For indoor measurements at work places and outdoor measurements, the sample head is attached to the air inlet. The Dust Monitor is now able to suck the sample air via the sample head through the measuring chamber (see figure on the right).



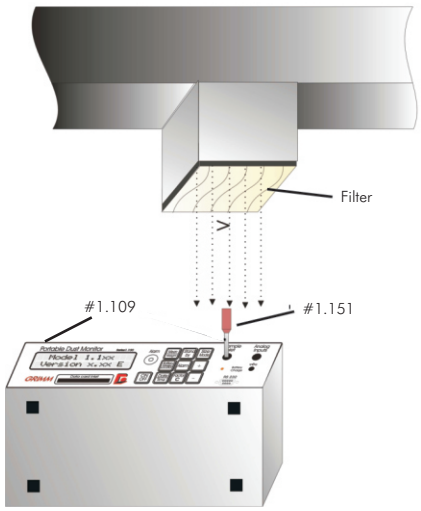
☐ #Isokinetic sampling probe for unidirectional air-flows (optional)

Application: Measurements in the air flow after filter systems (e.g. LAF-Boxes), where the air comes out almost constantly with a velocity up to 4 m/s.
This sampling probe consists of a tripod, a short tube and four interchangeable nozzles (depending on the air velocity):



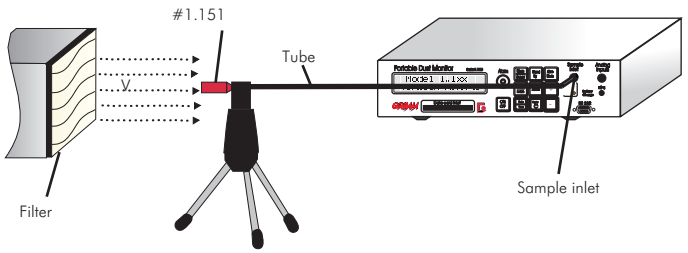
Nozzle colour	Air velocity range
red	up to 0.5 m/s
gold	up to 1.0 m/s
green	up to 2.0 m/s
blue	up to 4.0 m/s

Example 1 for installation



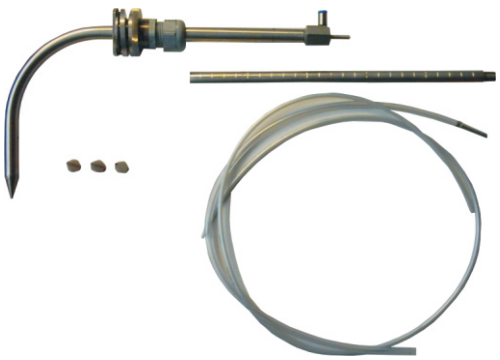
The nozzle should be choosen according to the airspeed, it should be oriented head-on towards the air flow (installation expl 2). The tube length between the nozzle and sample inlet at the dust monitor should be as short as possible to minimize the sedimentation of larger particles. When the air flows down from the top, it is possible to put the nozzle directly into the air inlet (installation expl 1).

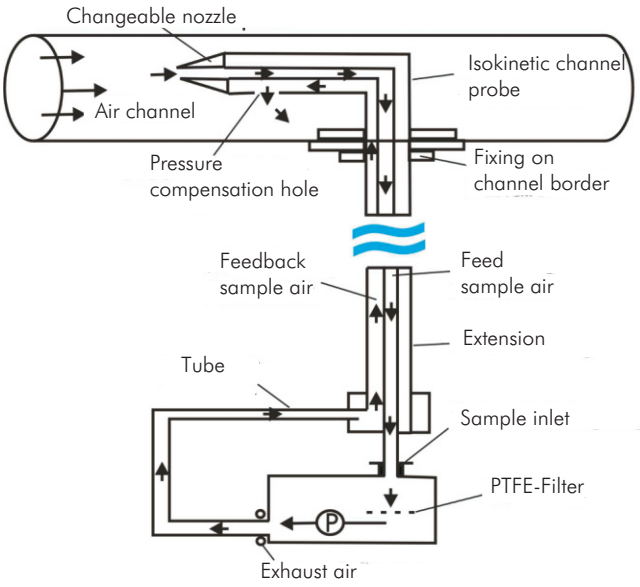
Example 2 for installation



#1.152 Isokinetic stainless steel sampling probe (optional)

Application: Sampling from air ducts or stacks where air is leaded through a filter. Suitable for air velocities up to 25 m/s. As there is always a slight overpressure or low pressure, it is possible to balance a pressure difference up to +/- 100 mbar with the sampling probe.
The volume controlled pump included in the dust monitor would try to balance that pressure difference by modifying the pump performance. As the sampling probe is consisting of a "pipe in the pipe", the sample is leaded in the inner pipe to the dust monitor and returned from the measuring instrument through the outer pipe back to the duct. So the sampling probe assures at the pump p=0.





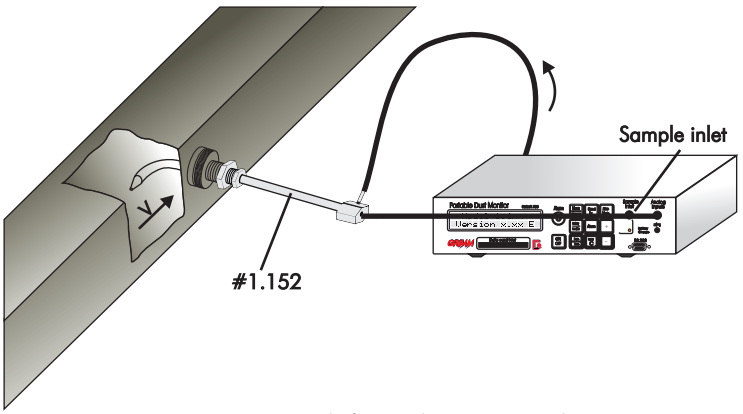
Funktional principle #1.152 isokinetic channel probe

The isokinetic sampling set includes 4 interchangeable inlet nozzles with different inlet diametre which can be screwed in, depending on the air velocity.

Inlet diameter	Air velocity range
3.0 mm	2 up to 4 m/s
2.0 mm	4 up to 8 m/s
1.5 mm	8 up to 16 m/s
1.0 mm	16 up to 25 m/s

For the installation of the #1.152 sampling probe in the air duct, a hole of Ø 35 mm is required. The hole can be closed if it is not used.

Note: If the filter efficiency should be measured according to ASHRAE, two holes are required (before the filter and after the filter). This allows either a sequential measurement up-stream and down-stream with one dust monitor, or a simultaneous measurement with two dust monitors (see #7.300 Portable Filter Tester).



Example for instalation in an air duct

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