easySPT200

User Manual

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Summary

1 PREMISE

easySPT200 is a volumetric sampler for the monitoring of pollens, spores and other particles suspended in the atmosphere of diameters ranging between 5 and 100u. Responds to UNI11108 rules: 2004 (Air Quality - Method of sampling and counting of pollen and fungal spores dispersed granules aero).
It allows daily or weekly sampling and is powered only by AC mains 220V 50Hz and the instrument has been made completely in aluminium for outdoor sampling.

2 TECHNICAL SPECIFICATIONS

2.1 Mechanical characteristics

Size Full	H:500mm L:600mm (with wind vane and rain protection)
Weight	15kg without legs , 23Kg full.
Height Tripod short legs	H: 300mm - ∅500mm
Height Tripod long legs	H: 1000mm -∅800mm
Material	Aluminum
Suction nozzle	2x14mm
Flow regulation	8 to 12 liters per minutes
Sampling surface	Transparent strip (easyStrip for example)
Sam. surface transaltion	2 ± 0,02 mm/h
Safety standard	CEE 73/23 and 89/336/EE

2.2 Electric Characteristics

Power supply	AC 220V 50Hz
Centrifigal pump power	30W/h
Fuse	0,5A

3 Configurations

The instrument is provided by default with short legs as in Figure 3.1 with an height of 300mm.
It's possible to order long legs as an accessories like in Figure 3.2. with an height of 1000mm.

Figure 3.1

Figure 3.2

It can also be provided with two different sampling head:

1. Daily head for24 hours sampling. Figure 3.3
2. Weekly head for 7 days sampling. Figure 3.4

Figure 3.3

Figure 3.4

These are the four possible configurations of easySPT200.

4 General Descriptions.

The instrument is composed by two main parts (Figure 4.1):

1. The rotating head.
2. The base with tripod.

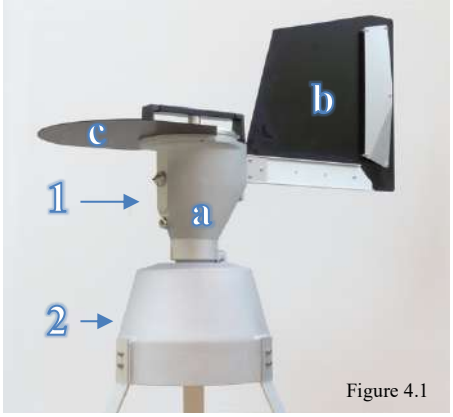


Figure 4.1

4.1 Rotating head

The rotating head is composed by:

a) Body
b) Wind vane
c) Rain shield.

The Body contain the sampling head (Figure 4.2) and, on the front side, the nozzle and the regulation screw (Figure 4.3). The sampling head is housed inside the aluminum body and is guided by a track on which it can slide. This is necessary when you need to change the sampling drum.
To open the cover and extract the head you need to push down the handle, rotate it of some degree to exit from the two guide, and after pull up to extract.

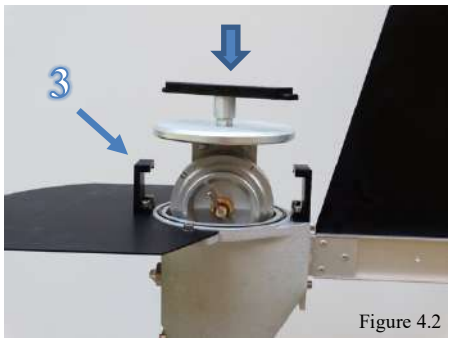


Figure 4.2

The nozzle is the orifice where air enter. The speed of the entering air can be regulated using the screw below the nozzle. By rotating it in clockwise direction the flow speed decrease, opposite if rotating in anti-clockwise. To make any regulation is necessary to have a flowmeter to measure the correct flow rate (we suggest easyFlux).

Complete the rotating head the presence of wind vane, to rotate the head in wind direction, and the rain shield to protect nozzle from rain.

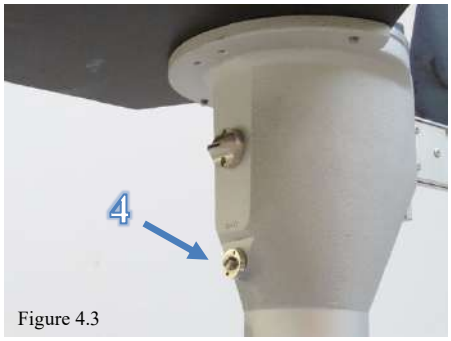


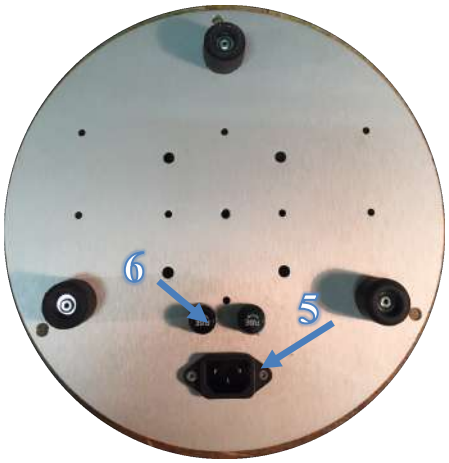
Figure 4.3

4.2 Base with Tripod.

The base of the instrument contain:

- the pump
- The socket for mains supply
- Fuses
- Short/Long legs.

The base is the fixed part of the instrument, and for this reason is equipped with tripod. The base plate contain the socket (5) for mains voltage plug and near it the two fuses (6). The tripod can be short, at least 300mm height, or long of at least 1000mm height. The tripod is fixed to the base with two screws each and for the transport is disassembled.



4.3 Assembly instructions.

For transport reasons the instrument is delivered with some parts separated. In particular:

- Wind vane
- Rain shield
- Short/long legs (tripod).

The wind vane is provided with a “slide” that must be inserted in the rear rail of the instrument. On the opposite side of the nozzle you can find the “rail” where to insert the wind vane. Before you must unscrew the screw using the provided Allen key. After that insert the wind vane and fix it using the same screw.

For the rain shield you have to unscrew the two screw present on the handle (Figure 4.2 number 3) and remove the little aluminum plate used only for transport.
When removed all parts put the rain shield until the two holes on the shield clash with the screw holes. At this point return the “handle” in the original position and screw using provided Allen key.

For what concerns the tripod, short or long legs, there are three locations in the base of the instrument. You can locate them because there are three “seat” with two hole each. Use the provided screw to fix the three legs.

4.4 Suction flow adjustement.

The instrument is adjusted before being sent. It’s provided with a flow rate regulation of 10 liters per minute. Using the front screw, Figure 4.3 number 4, you can adjust the suction flow rate around the default value of 10 l/m. By rotating the screw in anti-clockwise direction you increase the flow rate. By rotating the screw in clockwise direction you decrease flow rate.
This operation is necessary only if the suction flow rate changes over time. However is important, before executing this operation, to check if all is OK. In particular:

- Check the nozzle hole and clean it.
- Check the distance between the nozzle inlet and the internal drum.
- Check that the base plate of the instrument is screwed correctly.

5 Preparation of the drum with easyStrip

Below is the procedure for the preparation of a weekly sampling drum using easyStrip. The procedure remains valid even for the preparation with not threated strips. For the procedure we use a drum support, the double-sided adhesive tape, a pair of tweezers and of course the sampling tape.
Install the drum in winding base as shown in Figure 11.1. Before installing the strip is recommended to clean the drum with alcohol or other solvent by rotating the drum and dabbing with the same solvent. Wait until the solvent has evaporated before proceeding. Once cleaned apply the adhesive as shown in Figure 11.2 and 11.3 in correspondence of the mark line by put an amount which is approximately 6mm centered as to allow the fixing of the two opposite edges of the strip.

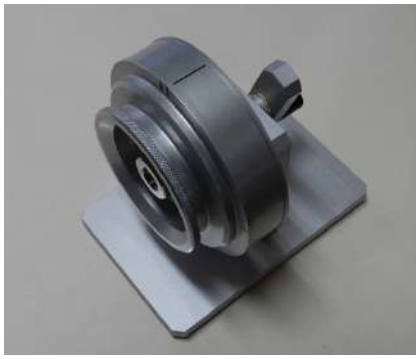


Figure 11.1

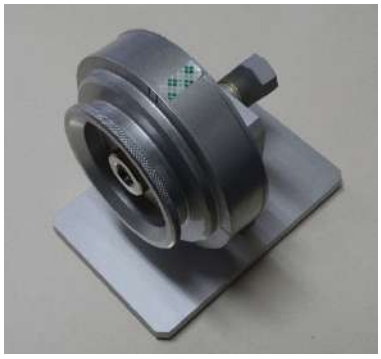


Figure 11.2


Figure 11.3

Pull easyStrip blister from the cartoon box and find the side that has a notch. The purpose of the notch is to keep raised the tape and to facilitate the extraction. Pull using the tweezers, a few cm of this tape as shown in Figure 11.4. Place the edge of the tape on the mark line and press with tweezers as shown in Figure 11.5. Begin to wrap holding in tension the tape (Figure 11.6)


Figure 11.4


Figure 11.5


Figure 11.6

Wrap around all the tape present in the blister. At this point press with the tweezers to fix it as in Figure 11.7.
At this point the procedure is finished and it is possible to extract the drum and install it on the weekly head of the instrument.

Figure 11.7

6 Cleaning and Maintenance

To maintain efficient the instrument some precaution must be taken:

a) Every time a new sample period is started check the nozzle orifice. It' must be completely free from obstacle, dust or other particles, otherwise there could be a loss in the suction.
b) The sampling drum must be clean before sampling. Use alcohol, or other similar diluent, to clean the drum surface before put strip on it.
c) Check the bottom of the rotating head of the instrument for the presence of water. Remove it if present.
d) Check the O-ring of the rotating head. Clean the surface and use some silicon grease on it. If powder or particles are present on O-ring there could be a losses in the suction flow.
e) During long period of inactivity please clean all instrument internally and externally. Remove water if present and leave the cap opened for a period to allow evaporation.
f) During long period of inactivity is suggested to place the sampler in a dry and protected place. Leaving the instrument on the outside with pump off could generate problem to pump or clock for humidity. Indeed with pump switched on the air flow inside the instrument and avoid humidity deposition.
g) After long period of inactivity is important to check the pump rotation before start instrument, because there could be a problem with bearings (humidity for example). For this reason insert plug and check that pump rotate correctly by earing the rotation rumor or by using the flow meter. If the pump doesn't start or the flow rate is too low, disconnect the plug to avoid motor overheat that could break. Contact our company to know what to do. PLEASE avoid to use oil or spry to solve the problem in particular if you aren't absolutely sure that it isn't conductive!!! If you use a conductive oil there could be a short circuit with burning of the motor.
h) If you notice that the drum stop before the end of 7 days there could be a problem with the clock. The instrument suck in air and dust. Dust may enter the clock and generate a rotation problem. In this case we suggest to substitute the clock. We can provide a new clock or refurbished one. If you return the broken one, and we detect that it's repairable, we can apply a discount on the new.

7 Warranty

Cavazza Anna Sas guarantees the instrument, when used according to the instructions in this manual, for a period of 24 months from the date of sale, with the exception of the pump and the batteries which are guaranteed only for the first 2 months from the date of sale.
Defective parts will be replaced free of charge once the actual defect is determined. The replacement will have to be done by our company and the return will have to take place ex our office.
The warranty does not cover failures or damages due to:

- Improper maintenance by the user.
- Unauthorized modifications to parts of the equipment.
- Use of non-original accessories.
- Neglect.

In case of return for repair or maintenance you need:

- If possible, pack the instrument using the original packaging.
- Attach to the shipment a descriptive document which contains all the information necessary for a quick diagnosis of the problem or the reasons for the return.
- Indicate the exact return address and all billing information for the invoice.
- At least one contact person for any requests and clarification. Then name, phone and email.

8 Packaging

The instrument is shipped with a packaging that guarantees its integrity during transport. It is advisable to check the goods upon receipt as the company Cavazza Anna Sas does not guarantee transport damages if the customer accepts the package from the courier. It is also advisable to keep the same packaging so that it can be reused in case it is necessary to return the instrument to our company. The responsibility for damages deriving from inadequate packaging will be of the customer.

9 Problems and solutions.

9.1 Suction flow

The instrument is sent adjusted with a suction flow of 10 liters per minute.
If, using flow-meter , the flow rate it's less than this value please check:

- Nozzle orifice. Check and clean it.
- Distance of the drum from orifice. Use a gauge to measure the distance of the of the drum from nozzle inlet. It must be between 23,7mm and 23,8mm.
- Check if the bottom plate is correctly fixed. If the three screw aren't correctly fixed the distance of the pump from top of the base could be too much to allow it to reach 10 liters per minute.
- Check if the bottom plate is perfectly flat. If, for any reason the base plate is convex the distance of the pump from top of the base could be too much to allow it to reach 10 liters per minute.
- If , for any reasons, the internal pump is changed could be possible that is impossible to reach 10 liters per minutes. This could be problem due to distance of the pump from top of the base. Probably the new pump have an efficiency less then old one. In this situation the only possibility is to increase just a little bit the 4 aluminum columns that fix the pump to the base plate. Unscrew the for screw that fix the pump to the base plate and add 4 washers under the 4 columns (washers of a least 1 or 1,5 mm in height maximum).

9.2 The pump doesn't start.

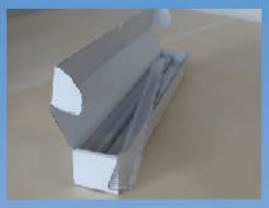
- Check if mains is present.
- Check the two fuses.
- Check manually if the pump runs by rotating crankshaft with your finger.

9.3 Rotating head doesn't rotate.

- Check the stop ring, Rotate to open it and avoid the block of the head.
- Check the alignment between the rotation head and the base. A strong blow could distort the shaft preventing rotation.
- Check if bearings are OK. There could be oxide that prevent rotation.

Components

easyFlux
Electronic flow meter, calibrated for the measurement of air flows from 0 to 100 liters per minute with precision of 1.5%. The flow sensor is equipped with pressure and temperature sensor to calibrate the measurements in every environmental conditions.



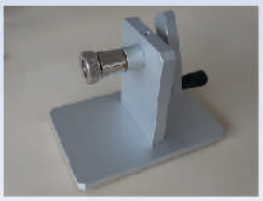
easyStrip
Silicone coated polyester tape, dimensions 20x349mm, thickness 0.05mm.
The tape is pre-treated with silicone fluid (polydimethylsiloxane with viscosity 100,000 cSt ± 10%) in cyclohexane solution.The sampling tape, supplied in blister pack, is prepared to be easily applied on the drum supplied with the instrument.

7-day Sampling Drum
Sampling drum into aluminium box for transport.

Tape cutter
Graduated cutter to divide the sampled tape. The graduations are used as a reference and report engraves every 48 mm corresponding to 24h of sampling. Once engrave has been identified, it is possible to position the presser and cut the tape using the supplied scalpel.

Gelatine with fuchsine, 50 ml or 250 ml.
Prepared according to UNI 1110800_2004 Italian National Standards.

Gelatine without fuchsine, 50ml or 250ml
Prepared according to UNI 1110800_2004 Italian National Standards.



Drum support
Winding base for easyStrip silicon coated tape and tape to coat with silicon manually. It supports the 7-day drum and allows easyStrip to be easily applied to the drum for sampling or detached after sampling.

Kit for Tapes and Samples preparation
Box containing: gelatine with and without fuchsine 50ml, silicone fluid solution 50 ml, scalpel with 10 blades, adhesive labels, double-sided bonding tape, sampling tape not treated (50 pcs), dropper for silicone solution, stainless steel tweezers, brush for silicone solution, 26mm x 76 mm microscope slides, 24mm x 50 mm slide cover glass, gelatine heating bottle.

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