



Operating Instructions

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IFV Pro Sampler Cat. No. 225-49

Description

The SKC IFV Pro Sampler collects mixed-phase (aerosol and vapor) contaminants simultaneously. The stainless steel sampling head with an IOM-style inhalable inlet holds a filter cassette with a specified 25-mm filter to collect the aerosol phase; the attached tube holder (black rubber sleeve) holds the specified sorbent tube to collect the vapor phase. The sorbent tube is protected by an open-ended plastic cover (*Figure 1*). IFV Pro is used with a sample pump capable of maintaining a constant flow rate of 1 L/min.



IFV Pro Sampler

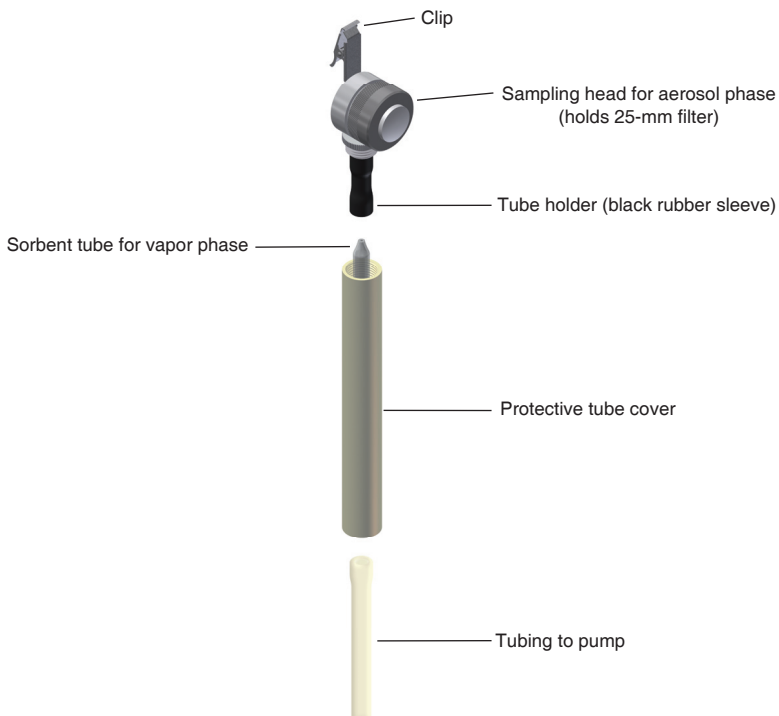


Figure 1. IFV Pro Sampler: Sampling Head and Sorbent Tube Holder

Performance Profile

Flow Rate: 1 L/min

50% Cut-point: 100 μm at 1 L/min inhalable fraction

Material: *Sampling head* – stainless steel front plate and filter cassette with 10.6-mm dia. inlet*; *aluminum housing and outlet*
Tube holder – black rubber
Tube cover – plastic

Maximum Operating Temperature: 392 F (200 C) suitable for autoclaving and solvent washing

Media: *Filters* – 25-mm glass fiber or quartz filter; or coated filter. Dependent upon compound of interest.
Sorbent Tubes – 8 x 110-mm size. Dependent upon compound of interest.
See page 8 for Selection Guide.

Tubing: 1/4-in ID

Weight: 2.4 oz (68 gm)

Dimensions: 8.5 x 1.2 in (21.6 x 3.17 cm)

* *Designed to meet the inhalable convention based on the scaling down technique described in the Final Report on research carried out under NIOSH-CDC Grant No. RO1-OH 03687-03, "Development of New Personal Aerosol Samplers," Vincent, J.H., et al., 2003.*

Inhalable Sampling Head Components and O-ring Placement (Figure 2)

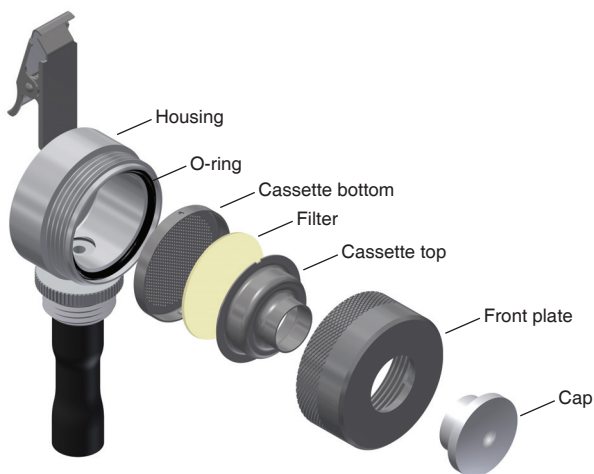


Figure 2. Configuration of Sampling Head and Filter Cassette

Preparation and Assembly



Wear powder-free gloves when handling cassettes and use forceps when working with filters to prevent the transfer of moisture, dust, or other contaminants onto the sampling media.

Disassembling Sampling Head

1. Remove the white cap from the sampling head inlet and set aside.
2. Unscrew and remove the front plate of the sampling head.
3. Remove the filter cassette.

Filter Cassette: Opening, Installing Filter, and Closing (*Figure 3*)

Tip: Place cap on filter cassette inlet for better grasp when opening cassette.

1. To open the cassette, twist the cassette top in the cassette bottom until the notch in the top (*Figure 3*) is aligned with one of the two bumps on the cassette bottom; tilt the notched side up and lift.
2. Using forceps, place a 25-mm filter on the support grid in the cassette bottom.
3. Align the notch in the cassette top with one of the two bumps on the cassette bottom and insert the opposite edge of the top under the opposite bump in the cassette bottom. Set the top into the bottom and twist to secure the cassette (*Figure 3*).

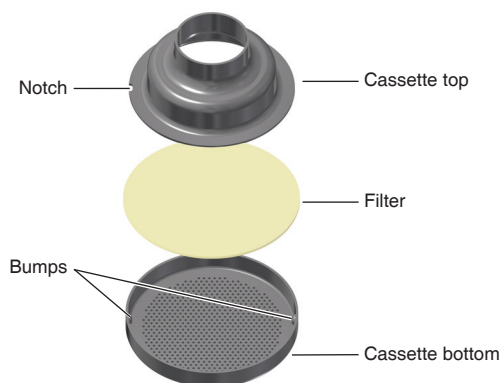


Figure 3. Exploded Cassette

Transporting Loaded Cassettes

If not ready to sample immediately or if transporting loaded cassettes to a sampling location, place the filter cassette (with cap in place on the inlet) in the transport container. Ensure that the foam insert is in the container lid (*Figure 4*).

An alternative to using the transport container is to place the loaded sampling head with cap inserted on the inlet (see *Installing Filter Cassette in Sampling Head*) in a plastic bag or other suitable container for transport.



Figure 4. Cassette in Transport Container

Installing Filter Cassette in Sampling Head

1. Ensure that the O-ring is positioned correctly in the top of the housing (*Figure 2*) and place the loaded filter cassette on top of the O-ring (*Figure 5*).
2. Replace the front plate on the housing and turn clockwise until tight. Tighten securely to achieve a good seal.
3. Install the cap on the inlet until ready to sample.

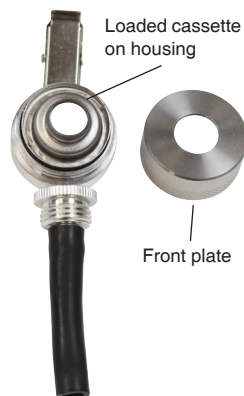


Figure 5. Installing Loaded Cassette in Sampling Head

Assembling Sorbent Tube and Cover with Sampling Head (*Figure 6*)

1. Unscrew the tube cover from the sampling head.
2. Break the ends off the sorbent tube using a tube breaker.
3. Insert the opened sorbent tube into the tube holder on the sampling head base. *Note: The arrow printed on the tube should be pointing away from the black rubber sleeve and toward the pump.*
4. Insert the other end of the sorbent tube into flexible tubing.
5. Insert the open end of the flexible tubing through the threaded end of the protective tube cover and slide the tube cover up and over the sorbent tube to the base of the sampling head.
6. Thread the tube cover onto the base and turn until snug.
7. Attach the flexible tubing to the sample pump for calibration and sampling.



Figure 6. Assembling Sorbent Tube and Protective Tube Cover with Sampling Head

Calibration

Calibrate pump flow rate using a calibrator, calibration adapter, and a representative loaded sampling head and sorbent tube in line.

1. Following best practice, ensure that the sample pump has run for 5 minutes after charging. This will ensure a more stable flow.
2. Place the calibration adapter outlet on the sampling head inlet and press firmly (Figure 7).
3. Using flexible tubing, connect the calibration adapter inlet to the calibrator.
4. Connect the flexible tubing from the sorbent tube to the inlet of the sample pump.
5. Calibrate the flow rate to 1 L/min. *See pump and calibrator operating instructions.*
6. Disconnect the calibrator and calibration adapter. Remove the representative filter cassette and sorbent tube. **Note:** *Keep representative media to verify flow rate later.*



Figure 7. Calibration Train

Sampling

1. Ensure that representative sampling media has been replaced with fresh, unused media, including designated filter and sorbent tube.
2. Connect the flexible tubing from the sorbent tube to the pump inlet.
3. Clip the sampler onto the worker's clothing in the breathing zone; clip the pump onto the worker's belt or place it in a protective pouch (*Figure 8*).
4. Remove the cap from the sampling head inlet.
5. Start the pump and sample for the sampling time specified in the method being used. *See pump operating instructions.*
6. Stop the pump.
7. Remove the sorbent tube, sealing the ends with the caps provided.
8. Remove the filter cassette and place it, with cap on, in the transport container; fit the foam insert in the lid (*Figure 4*).
9. Record all pertinent information.
10. Package samples as appropriate for shipment to a laboratory for analysis. *See Transporting Samples to a Laboratory.*



Figure 8. Sampling Train on Worker

Transporting Samples to a Laboratory

Filters

Place the cassette transport container in a plastic bag or suitable container. Package in a padded envelope along with pertinent sampling information and blanks. *See Sample Blanks.*

Sorbent Tubes

Pack the sample sorbent tubes, field (sample) blanks, and all pertinent information securely for shipment to a laboratory for analysis.

Sample Blanks

Load and handle the blank IFV Pro Sampler in the same way as the sampler used for sampling. Do not pull air through the blanks. For sorbent tubes, submit field blanks from the same lot as the sample tubes. Send blanks with samples to a laboratory.

Cleaning Sampling Head

1. Disassemble the sampling head (*Figure 2*).
2. Place the front plate, housing (remove tube holder from outlet), and filter cassette in an ultrasonic cleaner with water and a wetting agent such as mild soap. Components may also be cleaned with a solvent such as isopropyl alcohol. Clean the O-ring separately with water.
3. Wipe components using a clean, lint-free paper, cloth, or soft brush. Allow components to dry completely.

Ordering Information

Description	Cat. No.
IFV Pro Sampler includes sampling head (aerosol sampler body, cassette, and front plate), protective tube cover, cassette cap, and cassette transport container, <i>requires 25-mm filter and 8 x 110-mm sorbent tube</i>	225-49
IFV Pro Sampler Kit includes sampler as described above, calibration adapter, and case, <i>requires 25-mm filter and 8 x 110-mm sorbent tube</i>	225-49K
Filter Cassette , stainless steel, with cap and transport container, <i>for 25-mm filter</i>	225-4903

Accessories	
Calibration Adapter	225-361

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IFV Pro Filter and Sorbent Tube Selection Guide

Compound	Suggested Filter	Sorbent Tube
Acrylamide	225-702	226-10-04
Alachlor	225-702	226-30-06
Aldrin	225-702	226-30-06
Azinphos-methyl	225-702	226-30-06
Butylated hydroxytoluene	225-702	226-211
Carbaryl	225-702	226-30-06
Carbofuran	225-702	226-30-06
Chlorpyrifos	225-702	226-30-06
Clopidol	225-702	226-30-06
Coumaphos	225-702	226-30-06
Cresol, all isomers	225-702	226-211
Demeton	225-702	226-30-06
Demeton S-methyl	225-702	226-30-06
Diazinon	225-702	226-30-06
Dibutyl phosphate	225-702	226-30-06
Dichlorvos	225-702	226-30-06
Dicrotophos	225-702	226-30-06
Dieldrin	225-702	226-30-06
Diesel fuel as total hydrocarbons	225-702	226-09
Diethanolamine	225-702	226-214
Dioxathion	225-702	226-30-06
Disulfoton	225-702	226-30-06
Endosulfan	225-702	226-30-06
2-Ethylhexanoic acid	225-702	226-10-04
Fenamiphos	225-702	226-30-06
Fensulfthion	225-702	226-30-06
Fenthion	225-702	226-30-06
Fonofos	225-702	226-30-06
Glyoxal	225-9036	226-119-7
Malathion	225-702	226-30-06
Maleic anhydride	225-9028	226-213
Methomyl	225-702	226-30-06
Methyl demeton	225-702	226-30-06
Methyl parathion	225-702	226-30-06
Mevinphos	225-702	226-30-06
Monochloroacetic acid	225-702	226-10-04
Monocrotophos	225-702	226-30-06
Naled	225-702	226-30-06
o-Phthalodinitrile	225-702	226-83
Parathion	225-702	226-30-06
Pentachlorophenol	225-702	226-211
Phorate	225-702	226-30-06
Propoxur	225-702	226-30-06
Ronnel	225-702	226-30-06
Sulfotepp	225-702	226-30-06
Sulprofos	225-702	226-30-06
Temephos	225-702	226-30-06
Terbufos	225-702	226-30-06
1,1,2,2-Tetrabromoethane	225-702	226-10-04
Tetraethylpyrophosphate(TEPP)	225-702	226-106A
Thiram	225-702	226-30-06
Toluene-2,4-diisocyanate	225-9035	—
Toluene-2,6-diisocyanate	225-9035	—
Xylidene isomers	225-702	226-10-04