



## 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 recommended 25-mm filter to collect the aerosol phase; the attached tube holder (rubber sleeve) holds the method-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

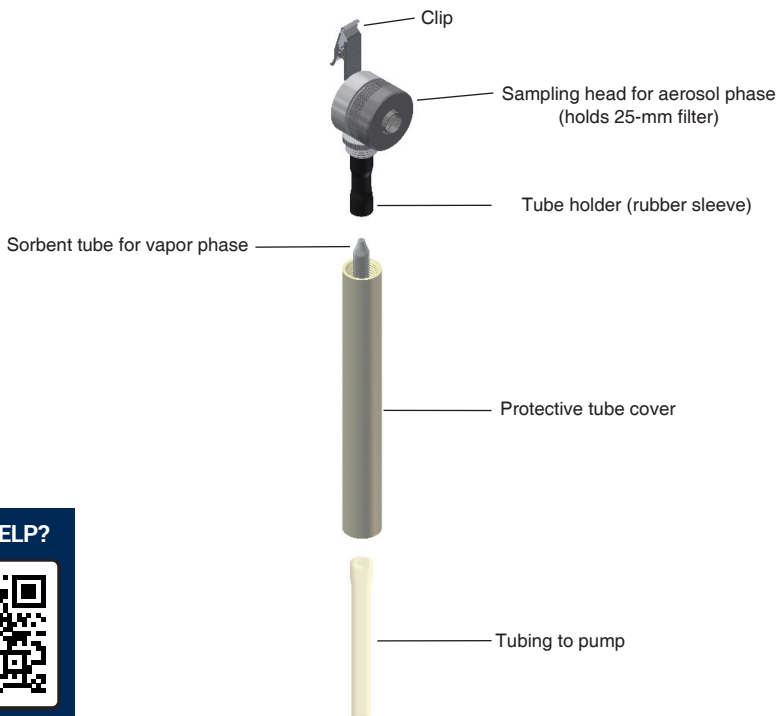


Figure 1. IFV Pro Sampler: Sampling Head and Sorbent Tube Holder

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## Performance Profile

<b>Flow Rate:</b>	1 L/min
<b>50% Cut-point:</b>	100 $\mu\text{m}$ at 1 L/min inhalable fraction
<b>Material:</b>	<i>Sampling head</i> – stainless steel front plate and filter cassette with 10.6-mm diameter inlet*; aluminum housing and outlet <i>Tube holder</i> – rubber <i>Tube cover</i> – plastic
<b>Maximum Operating Temperature:</b>	392 F (200 C) suitable for autoclaving and solvent washing
<b>Media:</b>	<i>Filters</i> – 25-mm glass fiber or quartz filter; or coated filter. Dependent upon compound of interest. <i>Sorbent Tubes</i> – 8 x 110-mm size. Dependent upon compound of interest. <i>See page 8 for Selection Guide.</i>
<b>Tubing:</b>	1/4-in ID
<b>Weight:</b>	2.4 oz (68 gm)
<b>Dimensions:</b>	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.

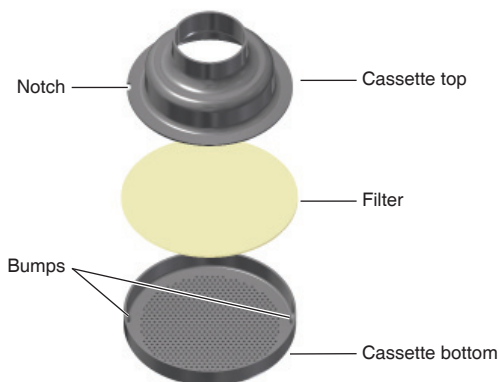
### Disassembling Sampling Head

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

### Filter Cassette: Opening, Installing Filter, and Closing

*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*).

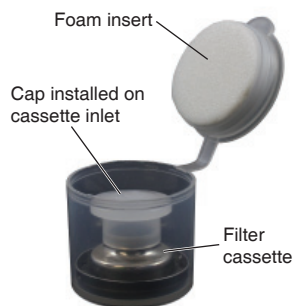


**Figure 3. Exploded Cassette**

### 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).

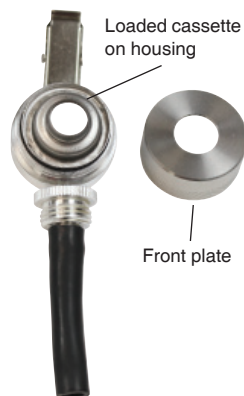
As an alternative, place the loaded sampling head with cap installed on the inlet (see *Installing Filter Cassette in Sampling Head*) in a plastic bag or other suitable container for transport.



**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. Install a new tube holder (rubber sleeve Cat. No. P3022A) on the sampling head outlet. **Note:** It is important to install a new tube holder before each new sampling operation.
3. Break the ends off the sorbent tube using a tube breaker.
4. 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 rubber sleeve and toward the pump.
5. Attach flexible tubing to the other end of the sorbent tube.
6. Insert the open end of the flexible tubing through the threaded end of the protective tube cover; slide the tube cover up and over the sorbent tube to the base of the sampling head.
7. Thread the tube cover onto the base and turn until snug.

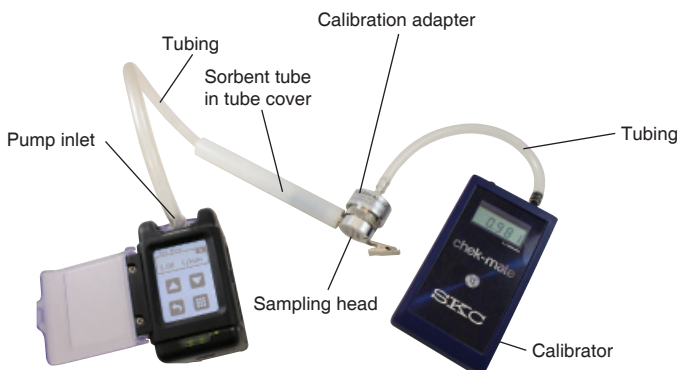


**Figure 6. Assembling Sorbent Tube and Protective Tube Cover with Sampling Head**

## Calibration

Calibrate pump flow rate using a calibrator, calibration adapter, and a representative loaded sampling head and sorbent tube in line. *See the calibration train in Figure 7.*

1. Following best practice, ensure that the sample pump has run for 5 minutes after charging to ensure a more stable flow.
2. Remove the cap from the cassette inlet and set it aside.
3. Place the calibration adapter outlet on the sampling head inlet and press firmly.
4. Using flexible tubing, connect the calibration adapter inlet to a calibrator.
5. Attach flexible tubing from the sorbent tube to the sample pump inlet.
6. Calibrate the flow rate to 1 L/min. *See pump and calibrator operating instructions.*
7. 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

**Note:** Before each new sampling operation, install a new tube holder (rubber sleeve Cat. No. P3022A) on the sampling head outlet.

1. Ensure that representative sampling media has been replaced with fresh, unused media (designated filter and sorbent tube) and that the cassette cap has been removed and set aside.
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. Start the pump and sample for the time specified in the method being used. *See pump operating instructions.*
5. Stop the pump. Detach the flexible tubing from the pump inlet.
6. Remove the protective tube cover and flexible tubing from the sorbent tube.
7. Remove the sampling media. Seal the sorbent tube ends with the caps provided. Place the filter cassette, with cap on, in the transport container; place the foam insert in the lid (Figure 4).
8. Remove and dispose of the tube holder.
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*). Ensure that the tube holder has been removed.
2. Place the front plate, housing, 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.
<b>IFV Pro Sampler</b> includes sampling head (aerosol sampler body, cassette, and front plate), protective tube cover, 10 extra tube holders (rubber sleeves), cassette cap, and cassette transport container, <i>requires 25-mm filter and 8 x 110-mm sorbent tube</i>	<b>225-49</b>
<b>IFV Pro Sampler Kit</b> includes sampler as described above, calibration adapter, and case, <i>requires 25-mm filter and 8 x 110-mm sorbent tube</i>	<b>225-49K</b>
<b>Filter Cassette</b> , stainless steel, with cap and transport container, <i>for 25-mm filter</i>	<b>225-4903</b>
<b>Tube Holders (Rubber Sleeves)</b> , pk/25, change after each sample	<b>P3022A</b>

Accessories
<b>Calibration Adapter</b>
<b>225-361</b>

## SKC Limited Warranty and Return Policy

SKC products are subject to the SKC Limited Warranty and Return Policy, which provides SKC's sole liability and the buyer's exclusive remedy. To view the complete SKC Limited Warranty and Return Policy, go to <http://www.skcin.com/warranty>.

# IFV Pro Filter and Sorbent Tube Selection Guide

Compound	Recommended 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