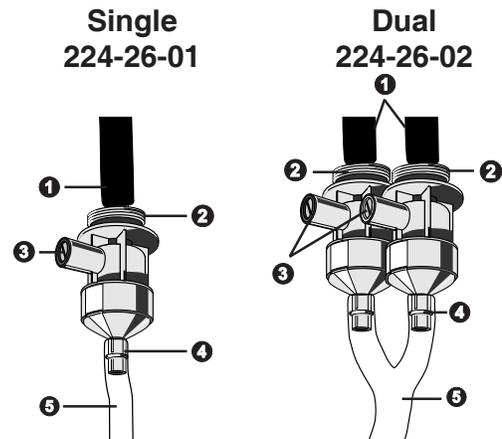




Adjustable Low Flow Tube Holder

The adjustable low flow tube holder is designed to be used for low flow applications from 5 to 500 ml/min using sorbent sample tubes.

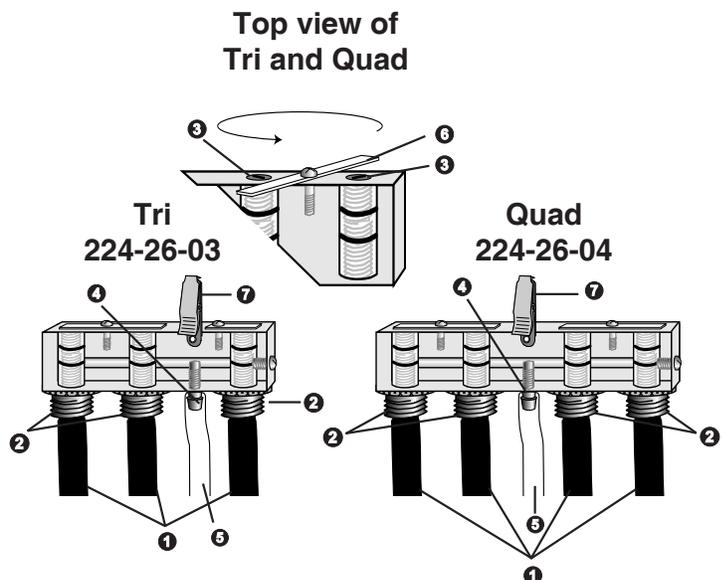
- ❶ Port and tube holder (rubber sleeve)
- ❷ Threaded fitting (fits all SKC protective tube covers)
- ❸ Flow adjustment screw (needle valve) (1 per port)
- ❹ Outlet (to pump)
- ❺ Tygon® tubing
- ❻ Anti-tamper cover (tri and quad models only)
- ❼ Collar clip (tri and quad models only)



Operation

For Single, Dual, Tri, and Quad Models

1. Set the pump to the low flow mode (*see pump operating instructions, low flow applications*).
2. Attach Tygon tubing ❺ to the intake port on the pump.
3. Determine the number of tubes needed for sampling. Break tips off the representative tube(s) for pre-sample calibration.
4. Insert the tube into the rubber sleeve of the first port ❶ with the arrow of the tube pointing toward the pump. Repeat for desired number of ports. Place an unopened tube in each unused port to “seal” it.



Operation *(continued)*

5. Calibrate the flow rate through each representative tube (*see Note A., E., F., and G. below*).
 - a. Set pump flow rate as directed in the pump operating instructions.
 - b. Connect the tubing from a calibrator to the exposed end of the tube in the first port.
 - c. Using a flat-bladed screwdriver (*see note D. below*), turn the flow adjustment screw (needle valve) ③ on the first port clockwise to decrease flow or counterclockwise to increase flow until the desired flow rate is indicated on the calibrator.

Note: *For tri and quad models, first rotate the anti-tamper cover(s) ⑥ to expose the flow adjustment screw(s) ③. Reposition anti-tamper covers ⑥ when calibration is completed.*
 - d. Repeat Steps 5 a. and c. for remaining active ports (*see Note B. below*).

Note: *Each port is controlled independently with its own flow adjustment screw (needle valve).*
 - e. Once flow is calibrated for each active port, it is recommended practice to repeat steps 5 b. through 5 d. before removing representative tubes.
6. Remove the tube(s) used for calibration from the ports and replace with the tube(s) to be used for sampling.
7. Thread the appropriate protective tube cover(s) onto the threaded fitting(s) ② on the tube holder.
8. Use the collar clip to attach the holder to the worker's clothing near the breathing zone.
9. Sample for the desired time (*see Note H. below*).
10. When sampling is complete, reinstate the representative tube(s) used for calibration in Step 5 and perform a post-sample calibration.

Special Notes

- A. It is good industrial hygiene practice to perform a pre and post-sample calibration.
- B. Changing the flow rate through any one port will not change the flow through the other ports appreciably. It is recommended practice to perform a second calibration of all active ports under your unique sampling conditions prior to sampling (*see Steps 5 b. through 5 d. above*).
- C. **Do not** use the flow adjustment screw to shut off flow completely as valve seat damage may result. Use an unopened tube to seal the port.
- D. **Do not** use an oversize screwdriver as thread damage may result.
- E. **Do not** calibrate several tube holders using only one pump. Calibrate each tube holder with the same pump that will be used for sampling. Calibrate before each sampling operation.
- F. When using a multiple port tube holder, set the pump for a flow rate that is $\geq 15\%$ higher than the sum of the flow rates through all connected tubes. *See pump operating instructions for details.*
- G. If the pump enters flow fault 15 to 20 seconds after the adjustable flow tube holder is attached, confirm that the pump has been set properly for low flow operation. *See pump operating instructions.*
- H. If you remove one tube from a multiple tube holder during the sampling period, **immediately replace it** with an unopened tube for the remainder of the sampling period.

Need technical assistance? Call SKC at 724-941-9701 or email skctech@skcinc.com.

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