

Article Overview

A flow acquisition splitter divides the effluent from a single column into multiple flow paths or detectors, with split ratios controlled by fluid resistors or tubing dimensions.

Understanding the Splitter

Flow acquisition splitters are used to distribute column effluent to multiple detectors or collection points while maintaining reproducible split ratios. Splitters can be fixed, adjustable, or automated, and they rely on fluid resistors or restrictor tubing to control the flow to each path. The split ratio is determined by the resistance in each flow path, which can be adjusted by changing resistor cartridges or tubing dimensions.

Installation Steps

- o **Mount the Splitter:** Secure the splitter plate or body in the instrument oven or designated location. For GC applications, Agilent's G3183B splitter is mounted on the oven wall for thermal stability.
- o **Connect Column and Detectors:** Attach the column outlet to the splitter inlet using deactivated fused silica tubing or compatible connectors. Connect the splitter outlets to the detectors or fraction collectors using tubing of appropriate length and diameter.
- o **Install Restrictors or Resistors:** Use the supplied fluid resistors or cut tubing to achieve the desired split ratio. For adjustable splitters, select resistor cartridges to modify the flow distribution.
- o **Add Makeup Gas (if required):** Some splitters, especially in GC, require a source of makeup gas to maintain pressure balance and prevent atmospheric contamination.

Operation and Adjustment

- o **Check Split Ratios:** The split ratio is calculated based on the relative resistance of each flow path. For fixed splitters, the ratio is predefined and stable; for adjustable splitters, it can be modified by changing resistor cartridges.
- o **Monitor Flow:** Ensure that all connections are leak-free and that the inlet filter is properly seated. Flow blockages can be isolated by temporarily plugging one resistor port and checking the other.
- o **Compensate for Flow Changes:** Changes in solvent viscosity or flow rate may affect back pressure but generally do not alter the split ratio in post-column applications.

Maintenance and Troubleshooting

- o **Clean and Sonicate:** Wetted surfaces (PEEK or stainless steel) can be sonicated and flushed to remove contaminants. Low-flow or high-flow resistor cartridges may require separate cleaning.
- o **Replace Filters and Resistors:** Replace the inlet filter every six months or if pressure drops exceed 200 psi. If a resistor cartridge cannot be restored, replace it with a new one.

o Avoid Biological Growth: Do not store the splitter with pure water to prevent clogging .

Applications

Flow splitters are widely used in LC/MS, capillary chromatography, flow fractionation, and pre/post-column splitting. They allow simultaneous detection with multiple detectors, fraction collection, or sample diversion while maintaining reproducible flow ratios . By following these steps, a flow acquisition splitter can be installed, configured, and maintained to provide accurate, reproducible splitting of column effluent for analytical applications.

Flow Splitters | Restek ... Flow Splitter

QuickSplit (TM) AS650 Automated Flow Splitter Automatically maintains constant split ratio during gradient runs, pre-column or post-

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Flow Acquisition Splitter

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Our Flow Splitters are configured for either post-column or pre-column applications. The Adjustable Flow Splitter incorporates a

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The 181-Split allows for reproducible, even flow splitting from 10 $\mu\text{L}/\text{min}$ to $> 2.5 \text{ mL}/\text{min}$. By testing multiple device

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