

- **Precise split ratio control**
- **Low dead volume fluidic design**
- **Stable to changes in viscosity or pressure**
- **Quick and reproducible split ratio adjustments**
- **Rugged construction for high pressure operation**
- **Available with both adjustable and fixed metering**
- **Ideal for LC/MS and capillary chromatography**

Advantage Flow Splitters make it easy to create split ratios from 1:1 up to as high as 20,000:1 and are available in three distinct formats: fixed, adjustable, and multi-port fixed. Splitters are available for both analytical range flows of 0.1-10mL/min and prep flow rates of 5.0-40mL/min.

The **Fixed Flow Splitter** provides a fixed split ratio with an extremely low dead volume. Delay volume on the low flow/capillary side is as low as 100 nanoliters depending upon the resistor cartridge selected. The flow split ratio

is not affected by changes in solvent viscosity, density or pressure and is extremely stable and reproducible. Unlike conventional splitters that use long lengths of capillary tubing, the Fixed Flow Splitter uses compact fluid resistor elements which are cartridges designed for easy replacement. Because of the extremely low internal volume of the fluid resistors, the solvent composition in both resistors at any instant in time is the same, therefore, viscosity changes associated with gradient runs do not impact the split ratio. Flow rate and viscosity changes will change the back pressure generated by the splitter, but will not affect the actual split ratio. Our Flow Splitters are configured for either post-column or pre-column applications.

The **Adjustable Flow Splitter** incorporates a metering valve, enabling split ratios to be modified frequently with flow changes that are stable and reproducible. The flow path contains two fluid resistors that form a parallel flow path. The low flow stream passes through a fixed resistor while the high flow rate passes through an adjustable fluid resistor (metering valve).

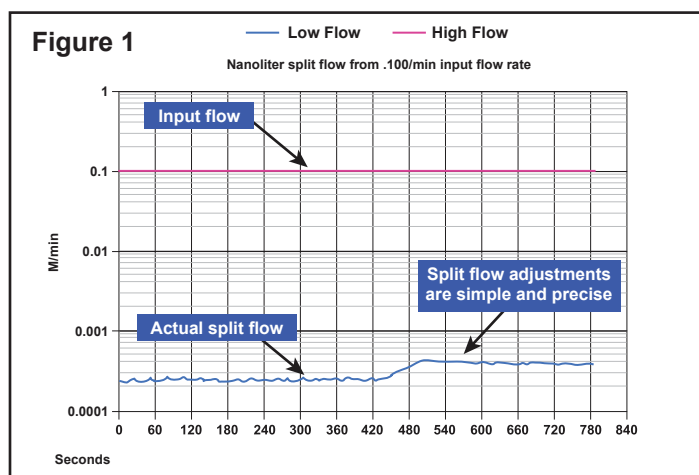
Both the fixed and adjustable flow splitter can be used for isocratic or gradient applications. Running gradients with solvents of different viscosities may result in a reproducible change to the split ratio.

- **Precise split Ratio control**
- **Ideal for LC/MS and capillary chromatography**
- **Stable to changes in viscosity or pressure**
- **Adjusts split ratio quickly and reproducibly**

Post Column Binary Fixed Flow Splitters are simple “plug and play” devices. The predefined split ratio eliminates tedious adjustments to capillary tubing. Split ratio changes are accomplished by changing the resistor set. The split ratio is determined by the ratio of fluid resistors installed in the splitter manifold. The pressure drop across a fixed splitter for post column applications is typically low (less than 500psi) and high for pre-column applications where the pressure is nominally 1500psi. Available in models for semi-preparative and analytical inlet flow rates.

Adjustable Flow Splitters allow you to easily create split ratios from 1:1 to as high as 20,000:1. A metering valve allows split ratios to be changed frequently with flow changes that are stable and reproducible (Figure 1). Model 62 splitter valve ratios are not affected by changes in solvent viscosities or pressure which makes this product acceptable for gradient and isocratic applications. Other applications include: SFC/MS, where large viscosity changes may be encountered during gradient runs; isocratic and gradient methods where a reproducible change in the split ratio is acceptable. Split ratios are created by two fluid resistors that form a parallel flow path. The low flow rate stream passes through a fixed resistor cartridge while the high flow rate stream passes through an adjustable fluid resistor (metering valve). The ratio of these two resistors creates the split flow ratio. Due to its rugged design, the resulting ratios are stable and repeatable to $\pm 1\%$. Unlike alternative splitter valves or tees, the input flow of the Advantage™ Adjustable Flow Splitter is not affected by actions such as pressure spikes or turning the pump off and on.

Pre-column splitting is used for micro, capillary and nano HPLC applications. Keep in mind that even though the split ratio created by the splitter valve will remain constant, when an HPLC column is installed there will be added resistance on the flow rate channel from the HPLC column. This added resistance must be factored in to make sure the fluid resistor selected for the flow splitter provides the correct split ratio.

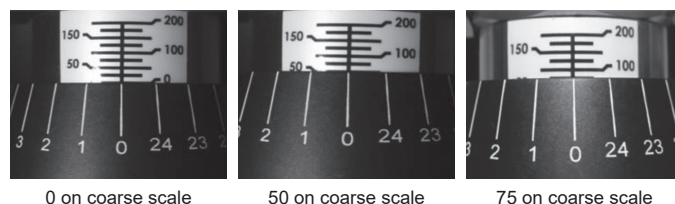


Precise Adjustments are Quick and Reproducible.

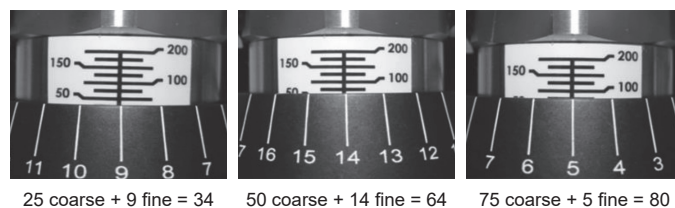
Reading and Adjusting Settings on 610 Adjustable Flow Splitter

Each 610 splitter is shipped with a Test Log and Chart that plot Vernier scale setting vs. Split ratio. The Vernier scale is marked, on splitter knob and body, to show splitter setting. The body is marked with a coarse scale, each line representing 25 positions.

This scale is read where the edge of the knob lies on the scale. When '0' knob mark aligns with body scale vertical line, we have exact coarse scale settings at labelled values:



The fine scale is marked on the knob, in 25 positions, numbered 0-24, and read as marks align with the vertical line on the body scale. 25 positions equal one complete turn of the knob, and one division on the coarse scale. This enables us to obtain all the settings between the coarse scale lines:



When ordering a pre-column flow splitter, please provide Analytical Sales with the column flow rate and back pressure. If the inlet flow rate or column pressure specifications are not provided, Analytical Sales will configure pre-column flow splitters assuming a 0.5mL/min inlet flow rate and a pressure drop across the column of 1500 PSI.

General Considerations

Cleaning

All wetted surfaces in the fixed series of flow splitters are either PEEK™ or stainless steel. Both materials can be sonicated in a variety of solvents and back flushed without problem. Only the Low Flow resistor cartridge in the adjustable series of flow splitters can be sonicated and flushed.

Routine Maintenance

Replace the inlet filter every few weeks or if the pressure drops across the splitter increases to more than 200psi. Never store the splitter with pure water as biological growth may cause clogging.

Model 62 Adjustable Metering for Direct Control

For Pre and Post Column Applications

- Bracket Mounted
- Adjustable Metering
- Precise Direct Control
- Fluid Resistor Technology
- Split ratios from 1:1 to 20,000:1
- Low dead volume
- Rugged steel design
- 5,000 PSI Valve Limit



Adjustable **Post-Column** Flow Splitters Analytical Range - 0.1-5mL/min Incoming Flow

Cat. No.	Description
62-414	Adjustable Splitter, Stainless Steel with -06 Resistor Cartridge, Ratio 1:1-20:1
62-413	Adjustable Splitter, Stainless Steel with -04 Resistor Cartridge, Ratio 5:1-100:1
62-412	Adjustable Splitter, Stainless Steel with -03 Resistor Cartridge, Ratio 15:1-250:1
62-411	Adjustable Splitter, Stainless Steel with -01 Resistor Cartridge Ratio 50:1-1000:1

Replacement Components - Model 61 & 62 Replacement Resistor Cartridges for Adjustable Post-Column Flow Splitter

Cat. No.	Description
61-115	Replacement Analytical -06 Resistor Cartridge, Ratio 1:1-20:1
61-114	Replacement Analytical -04 Resistor Cartridge, Ratio 4:1-100:1
61-113	Replacement Analytical -03 Resistor Cartridge, Ratio 15:1-250:1

Replacement Inlet Filters for Adjustable Post-Column Flow Splitter

Cat. No.	Description
66-063	Replacement Analytical Inlet Filter, 2µm x 0.063 dia., 5/Pkg

Adjustable **Pre-Column** Flow Splitters Analytical Range - 0.1-1mL/min Incoming Flow

These splitters will produce under 3500 PSI back pressure with water at 0.5mL/min

Pre-Column splitting is used for micro, capillary and nano HPLC applications. The split ratio created by the splitter valve will remain constant, however, when an HPLC column is installed there will be added resistance on the flow rate channel. This added resistance must be considered to ensure the fluid resistor selected for the flow splitter provides the correct split ratio.

Please provide the column flow rate and back pressure specifications. If these specifications are not provided, the pre-column flow splitter will be configured assuming a 0.5mL/min inlet flow rate and a pressure drop across the column of 1500psi.

Cat. No.	Description
60-104	Adjustable Pre-Column Splitter, Split Ratio Range 5:1-100:1

Adjustable **Semi-Prep** Flow Splitters Analytical Range - 5.0 - 40mL/min Incoming Flow

Cat. No.	Description
62-315	Adjustable Splitter, Stainless Steel, Ratio 1:1-20:1
62-313	Adjustable Splitter, Stainless Steel, Ratio 15:1-300:1
62-312	Adjustable Splitter, Stainless Steel, Ratio 100:1-2000:1
62-311	Adjustable Splitter, Stainless Steel, Ratio 1000:1-2000:1

For pricing, see analytical-sales.com

Fixed Binary & Multiport Flow Splitters

For Post Column Applications



- Fixed metering for precise control
- Fluid resistor technology
- Split ratios from 1:1 to 20,000:1
- Low dead volume
- Rugged stainless steel design

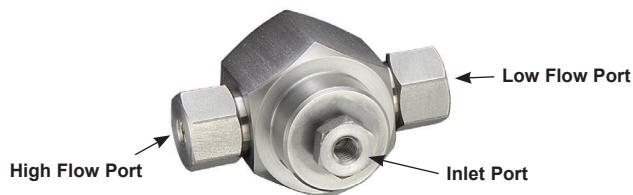
Advantage™ Fixed Flow Splitters are shipped with resistors installed that deliver the nominal stated split ratio. The split ratios have a tolerance range of ±10%. The exact split ratio is measured and is stated on the certificate shipped with the splitter. The input flow rate can be adjusted to compensate for the tolerance in split ratios. For instance, a 10% increase in input flow rate will result in a 10% increase in flow at both the capillary and waste stream channels. Flow rate and viscosity changes will change the back pressure generated by the splitter, but will not affect the actual split ratio.

These Fixed Flow Splitters are ideal for:

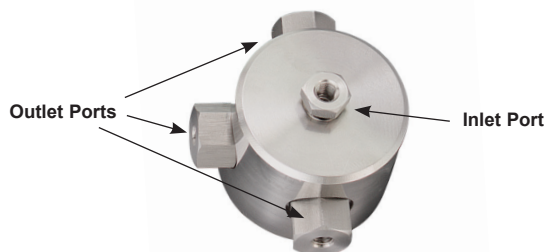
- LC/MS
- Flow fractionation
- Column flow splitting
- Capillary Chromatography

$$\text{Split Ratio} = \frac{\text{Inlet Flow} - \text{Low Flow}}{\text{Low Flow}}$$

Model 63 Binary Fixed Splitter, with its interchangeable fluid resistors, eliminates the need to cut capillary tubing to change the split ratio. Split ratios can be changed by replacing the resistor set.



Model 53 Multiport Fixed Splitter is ideal for applications that use multiple detectors and/or a fraction collector.



For pricing, see analytical-sales.com

Model 63 POST COLUMN Binary Fixed Flow Splitters

Analytical Range - 0.1-5mL/min Incoming Flow

Cat. No.	Description
63-423	Binary Fixed Splitter, Ratio 1:1
63-422	Binary Fixed Splitter, Ratio 3:1
63-424	Binary Fixed Splitter, Ratio 4:1
63-421	Binary Fixed Splitter, Ratio 5:1
63-420	Binary Fixed Splitter, Ratio 10:1
63-419	Binary Fixed Splitter, Ratio 20:1
63-418	Binary Fixed Splitter, Ratio 50:1
63-417	Binary Fixed Splitter, Ratio 100:1
63-416	Binary Fixed Splitter, Ratio 200:1
63-415	Binary Fixed Splitter, Ratio 500:1
63-414	Binary Fixed Splitter, Ratio 1000:1
63-413	Binary Fixed Splitter, Ratio 2000:1
63-425	Binary Fixed Splitter, Custom Ratio

Accessories and Replacement Components

Cat. No.	Description
63-111	Mounting Bracket for Fixed Splitter

Replacement Inlet Filters for Binary Fixed Flow Splitter Model 63

Replacing the inlet filter prevents clogging of the splitter

Cat. No.	Description
77-125	Replacement Binary Analytical Inlet Filter, 2µm x 0.063 Diameter, 5/Pkg

Replacement Resistors for Post Columns

Binary Fixed Splitters, Model 63

Cat. No.	Description
63-443	Replacement Binary Resistor, Ratio 1:1
63-442	Replacement Binary Resistor, Ratio 3:1
63-441	Replacement Binary Resistor, Ratio 5:1
63-440	Replacement Binary Resistor, Ratio 10:1
63-439	Replacement Binary Resistor, Ratio 20:1
63-438	Replacement Binary Resistor, Ratio 50:1
63-437	Replacement Binary Resistor, Ratio 100:1
63-436	Replacement Binary Resistor, Ratio 200:1

Model 63 SEMI-PREP Binary Fixed Flow Splitters

Analytical Range - 5.0 - 40mL/min Incoming Flow

Prep Range - 5.0-40mL/min Incoming Flow

Cat. No.	Description
63-405	Binary Fixed Splitter, Ratio 500:1
63-410	Binary Fixed Splitter, Ratio 1000:1
63-402	Binary Fixed Splitter, Ratio 2000:1

Replacement Resistors for Semi-Prep Columns

Binary Fixed Splitters, Model 63

Cat. No.	Description
63-435	Replacement Binary Resistor, Ratio 500:1
63-434	Replacement Binary Resistor, Ratio 1000:1
63-433	Replacement Binary Resistor, Ratio 2000:1

Model 53 Multiport Fixed Flow Splitter Manifold

Analytical Range - 0.1-5mL/min Incoming Flow

Multiport Splitters come mounted on a mounting Bracket

Cat. No.	Description
53-112	3-Port Splitter Manifold, Custom Ratio
53-114	4-Port Splitter Manifold, Custom Ratio