

# Volume and Resistance Compensator VRC

Patent Pending



Abbreviated impactors are designed to help reduce the burden of full resolution cascade impaction studies, following proper aerodynamic particle size distribution (APSD) profiling.

However, differences in total volume and flow resistance between a full resolution cascade impactor and its abbreviated counterpart is known to cause variability in the flow rate rise-time profiles between the two test set-ups. This difference reduces parity between test conditions, especially for passive, dry powder inhalers (DPIs) where start-up kinetics can be important.

The Volume and Resistance Compensator (VRC) enables analysts to match the flow resistance and flow rate rise-time profiles between the two test set-ups to ensure comparable conditions for aerosol generation, supporting improved equivalence in aerodynamic particle sizing measurements.

## VRC Key Features:



Suitable for use with all types of abbreviated impactors



Designed using Copley expertise



Easily adjustable for different set-ups



Ensures parity between test methods, improving data comparability



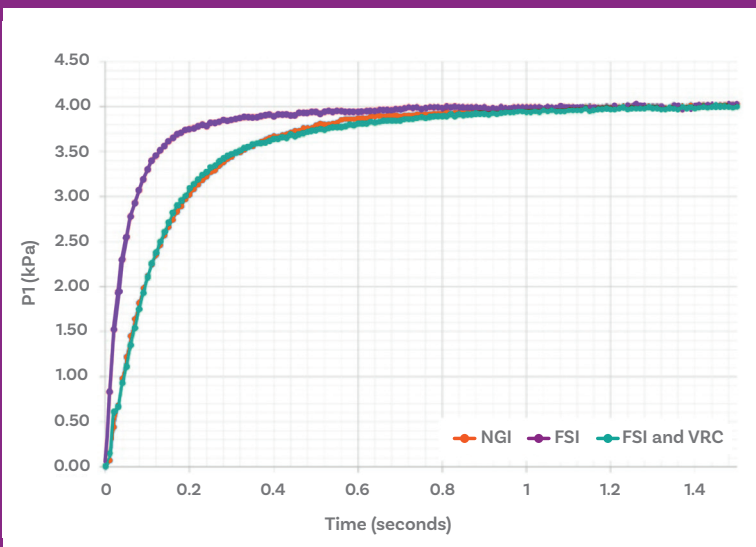
**TOP TIP**

Volume and flow resistance can be independently varied for precise flow rate rise-time matching.



The VRC connects inline between a critical flow controller and an abbreviated impactor.

Shown here (L to R): Fast Screening Impactor (FSI), **Volume and Resistance Compensator (VRC)**, Critical Flow Controller (TPK 100i-R) and High Capacity Vacuum Pump (HCP6).



### VRC Performance

This graph demonstrates how the NGI rise-time can be closely matched using the VRC with the FSI.

The purple line is the rise-time line with the **FSI only**.

The orange line is the rise-time with the **NGI only**

The green line is the rise-time with **both the FSI and VRC**

The VRC was adjusted to first match the flow resistance of the NGI, then the volume was adjusted to match the rise-time.

### Volume and Resistance Compensator (VRC)

Cat. No.	Description
5280	VRC - Volume and Resistance Compensator



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