

The logo for Titian, featuring the word "titian" in a lowercase, sans-serif font, enclosed within a white, teardrop-shaped graphic element.

{ APPLICATION NOTE }

Volume Checker Integration with Mosaic

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Mosaic Sample Management is Titian Software's comprehensive, customisable, modular software product to control and monitor all aspects of sample storage, preparation and delivery. From small biotech to global pharma, Mosaic helps to provide a seamless, error-free sample supply chain and audit trail.

Mosaic Sample Management is a tailored solution for all sample management requirements, configured through expert consulting services.

Mosaic SampleBank and Mosaic FreezerManagement are Mosaic packages, optimised and pre-configured for rapid deployment:

- FreezerManagement keeps track of samples in freezers and provides a comprehensive audit trail as samples are accessed and aliquoted.
- SampleBank provides full inventory tracking capabilities coupled with sample ordering and workflow management in a simple package. It offers seamless start-up and ongoing performance for busy sample managers.

Mosaic's modular approach means that it is simple to upgrade or extend the software's functionality whenever it is needed.

Introduction

The ability to accurately measure solution tube or plate well volumes can be an essential requirement for some laboratories, for reasons such as:

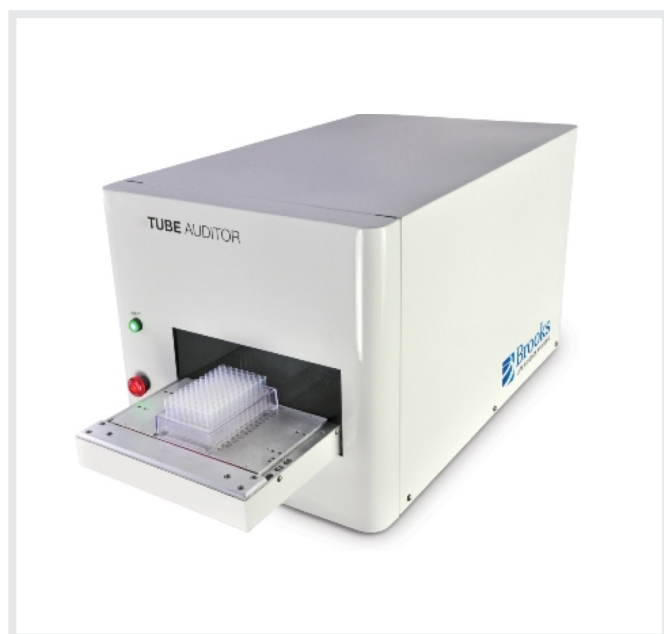
- Receipt of sample deliveries where it is necessary to verify the volume and report back any discrepancies
- Using a volume checking device is faster than using capacitance detection on a liquid handler
- The need to periodically audit tube solution stocks to verify solution availability

Titian have integrated volume checking instruments from both Brooks and BioMicroLab with Mosaic sample management software to provide an easy solution for capturing this data within Mosaic as part of a workflow or as an ad hoc operation.

Compatible Devices and Operations

Currently Titian support the following compatible devices from Brooks Life Sciences and BioMicroLab:

- Brooks Tube Auditor™
- BioMicroLab VolumeCheck™50, 100 and 384



Brooks Tube Auditor™

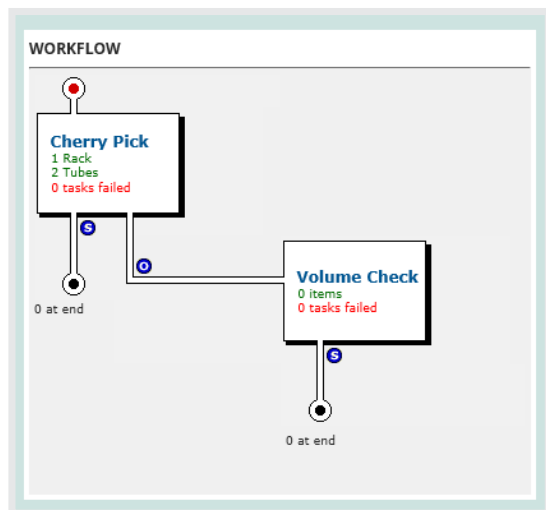


BioMicroLab VolumeCheck™50, 100 and 384

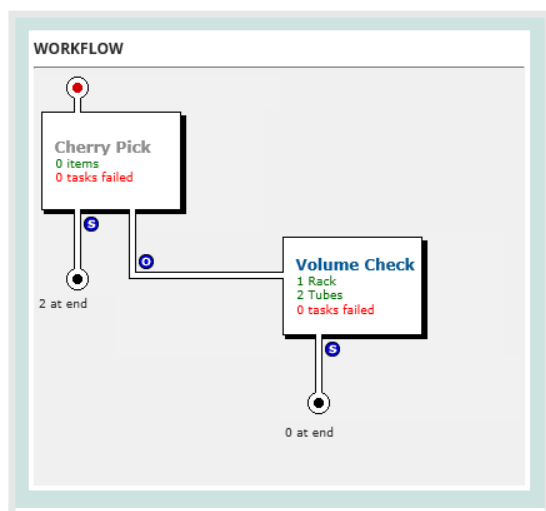
A Volume Checking workflow step can be added to a Mosaic order for specific tube processes. Mosaic monitors output files created by the volume checking instruments so that when data associated with the instrument appears, Mosaic updates the appropriate volume information in the workflow and inventory.

Use Case 1: Updating Tube Volumes within a Mosaic Order

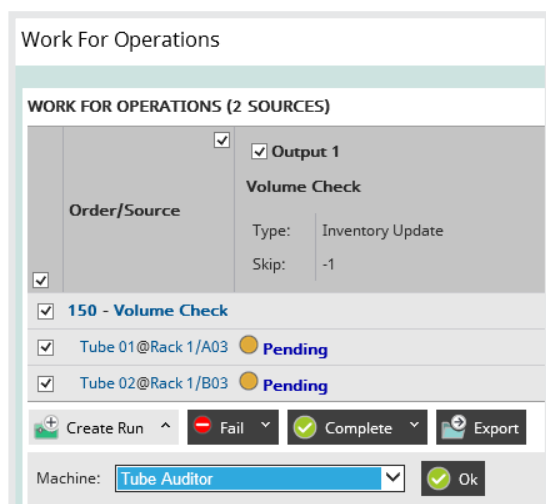
This use case describes the steps to process a Mosaic order containing a Volume Check operation type.



The 'Workflow' screen shot shows the workflow diagram of a Mosaic order that requires a Cherry Pick transfer of solution from two source tubes into two new tubes that then require an enforced Volume Check operation.



After completion of the Cherry Pick step the operator clicks on the Volume Check hyperlink.

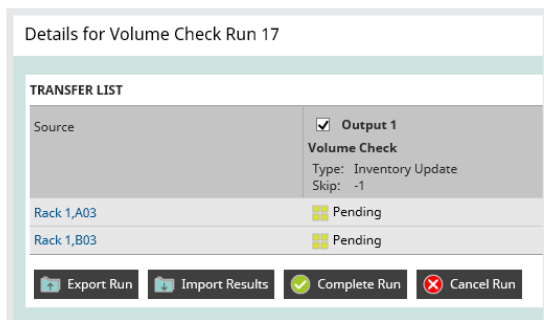


The 'Work For Operations' screen displays a table with the following data:

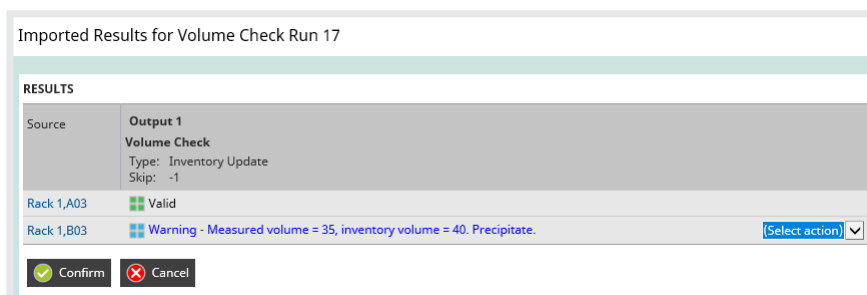
Order/Source	Volume Check
150 - Volume Check	Type: Inventory Update Skip: -1
Tube 01@Rack 1/A03	Pending
Tube 02@Rack 1/B03	Pending

Below the table, there are buttons for 'Create Run', 'Fail', 'Complete', and 'Export'. At the bottom, the 'Machine' dropdown is set to 'Tube Auditor'.

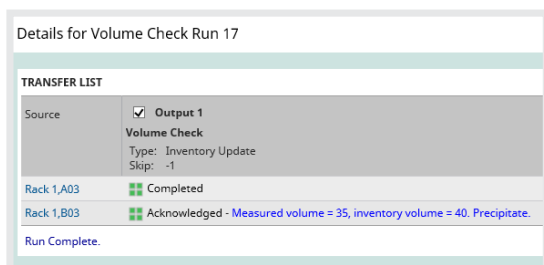
This launches the 'Work for Operations' run creation web page. The operator selects all tubes requiring the Volume Check operation, and then clicks "Create Run".



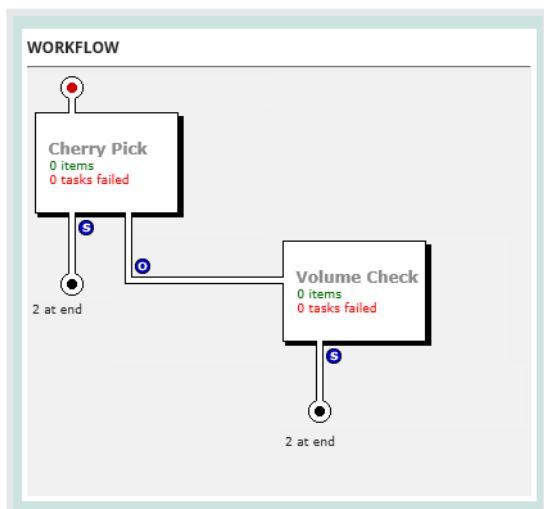
The details are now displayed in the 'Details for Volume Check Run' window. At this point the operator should use their volume check instrument to measure the tube volumes. The instrument will normally be configured to deliver its results automatically to Mosaic via a swept folder.



Mosaic processes all files in this swept folder. For any tubes that have active pending Volume Check runs, it updates the inventory volumes and also acknowledges the Mosaic Run as being completed.



For any tubes where there is a significant volume variance from the expected volume, the operator can choose to either Complete (accept) the updated information or Skip (ignore) it, before then confirming acceptance of the Run results.



Reviewing the order in the 'Workflow' window we can now observe that all process operations are now completed.

Use Case 2: Ad-Hoc Tube Volumes Update



Volume Check runs can also be carried out on an ad hoc basis without requiring an explicit Mosaic order workflow step.

After receiving result files, Mosaic will automatically update the tube volume information in inventory. If measured volumes differ by more than a configurable percentage, the ad hoc run details are presented to an operator to review (see runs menu list below).

Run Id	Order Id	Run Type	Operator	Created	Transfers	State	
18	Ad hoc	Volume Check	BUILTIN\Administrators	05-Feb-2019	2	Pending Review	
17	150	Volume Check	DEMOMOSAICSB8\Administrator	05-Feb-2019	2	Completed	↓
15	Ad hoc	Volume Check	BUILTIN\Administrators	05-Feb-2019	2	Cancelled	↓
14	149	Volume Check	DEMOMOSAICSB8\Administrator	05-Feb-2019	2	Completed	↓
13	Ad hoc	Volume Check	BUILTIN\Administrators	05-Feb-2019	2	Cancelled	↓
12	149	Volume Check	DEMOMOSAICSB8\Administrator	04-Feb-2019	2	Cancelled	↓

After selecting the appropriate run hyperlink, a run's details are displayed and can be individually processed.

Imported Results for Ad Hoc run created by File Sweeper Run 18

RESULTS

Source	Output 0	
Rack 1,A03	Valid	
Rack 1,B03	Warning - Precipitate.	Skip ↓

Confirm Cancel

Summary



Titian Software's Mosaic integration of the Brooks Tube Auditor™ and BioMicroLab VolumeCheck™ 50, 100 and 384 volume checking instruments provides convenient and efficient options for using these invaluable volume checking technologies. Individual instruments can be configured to allow either process workflow volume updating, or ad hoc volume updating, via automatic Labware Importer functionality.

About Titian Software

Titian Software is the industry leader in providing sample management software for life sciences. Using our Mosaic software, our customers see significant benefits in terms of throughput, response times, error rate reduction, sample conservation and cost savings due to markedly reducing the labour associated with managing sample collections. We also use our experience of integrating laboratory instrumentation and robotics into our systems to ensure that our clients make best use of their investment in research and development technologies.

At Titian Software, our development efforts never stop as we continue to advance Mosaic sample management software toward higher levels of efficiency and practicality for the user. The ongoing collaborative relationship between Titian and hardware vendors continues to ensure that new applications are made available on a timely basis to fulfill our customer's research goals. We pride ourselves on taking into account customer feedback for all of our Mosaic modules to drive our product to be the best it can be. It's all part of Titian's commitment to providing innovative solutions that make life easier for sample management professionals.

About the author

Paul Kay

After 16 years as a medicinal chemist at Roche, Paul moved to Organon (later Merck) where he specialised in compound management and automation systems for 10 years. He joined Titian in 2011 as a business application consultant.

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