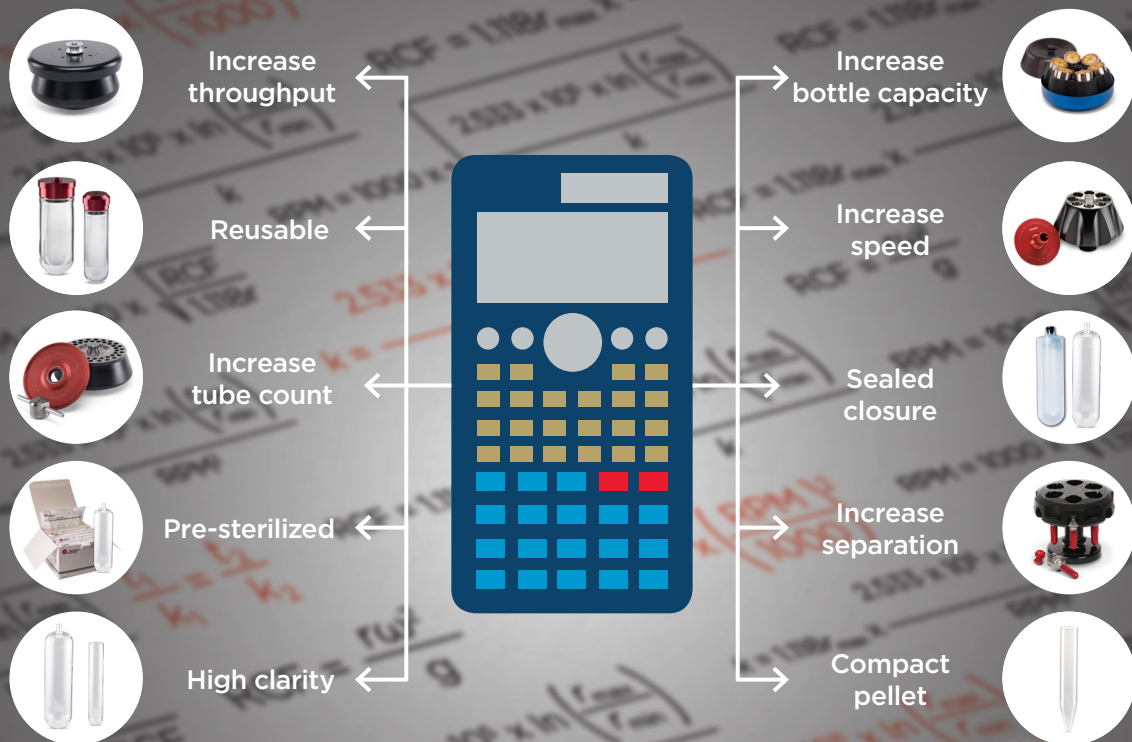




In this issue: Learn about RPM, RCF, k-factor, and protocol transfer tools

Issue | 003



How can I transfer an existing centrifugation protocol to a new rotor, bottle, or tube?

Protocol transfer is a common occurrence when scaling up a process to higher volume or improving efficiency by increasing speed. Though the process of going through a series of calculations to transfer an existing protocol can be a daunting and time-consuming task, Beckman Coulter offers convenient software tools and online solutions to facilitate seamless protocol transfer.

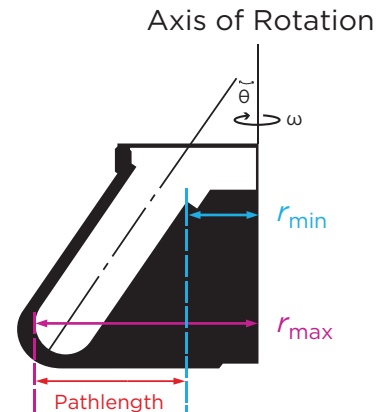


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Simplify Protocol Transfer

Speak the Same Language – RPM vs. RCF

Depending on the source, a centrifugation protocol may be described in units of RPM (revolutions per minute) or RCF (relative centrifugal field) – RCF is also known as g -force ($\times g$) and is typically reported for the maximum radius (r_{max}). RCF and RPM can be interconverted using the rotor radius, though transferring a protocol to a new tube, bottle, or rotor requires additional information on the existing and new setups.



	Fiberlite F9-6x1000 LEX	Beckman JLA-8.1000
RPM	9,000 RPM	8,000 RPM
r_{min}	194 mm	222.8 mm
Max g -Force	17,568 $\times g$	15,970 $\times g$
Pathlength	129 mm	103.8 mm
k-Factor	3,415	2,482
Run Time	10 min	7.3 min

Less is More $\Leftarrow \Rightarrow$
27% shorter run time

Equate g -Force with Performance – k -Factor

Switching from one rotor or tube to another often changes the r_{min} and r_{max} , and the maximum g -force does not capture efficiency. A metric called the k -factor considers pathlength and RCF to represent pelleting efficiency. The k -factor also accounts for run time and offers simple protocol conversions when using different rotors, tubes or bottles, adapters, and fill volumes.

Simplify Protocol Transfer – Available Tools

Properly transferring a centrifugation protocol requires more than simply matching RPM or RCF values, and tracking down rotor and tube dimensions can be a tedious process. Optima XPN ultracentrifuges include eXpert simulation software, including a streamlined tool for switching to new rotors or tubes. Additionally, the online rotor calculator offers pre-loaded specs to simplify protocol transfer.

Summary

Moving a centrifugation protocol to a new setup can be a chore to calculate by hand. Beckman Coulter offers tools to save you time and simplify protocol transfer. Click [here](#) to check out the rotor calculator tool, or visit beckman.com/spINSIGHTS to explore other topics.

Protocol Transfer with Optima eXpert Software

1. Input Current Protocol

Source Rotor

Rotor / Labware: VTI 90
5.1 mL; Ultra-Clear™; 344075

Rmin / Rmax: 58.1 mm
71.0 mm

Speed / Time: 45,000 RPM
6:00 (h:mm)

2. Input New Setup

Target Rotor

Rotor / Labware: VTI 50
39.0 mL; Ultra-Clear™; 344326

Temperature: 20.0°C

Speed: 50,000 RPM

3. Output New Protocol

Run Parameters

Speed: 50,000 RPM
Time: 8:32 (h:mm)
Temperature: 20.0°C



Rotor specifications as of September 1, 2019.

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