

UNICO PowerSpin™ Centrifuge FAQ and Answers

Q: What is “RCF”?

A: RCF= Relative Centrifugal Force, also known as “g-Force”.

Q: Centrifuge RCF Calculation:

A: $RCF = 1.12 \times R \text{ (mm)} \times KRPM \times KRPM$

R: Centrifuge rotor radius (mm) KRPM: Centrifuge speed in thousands

Example: If rotor radius is 102mm, speed is 3.4krpm (3400rpm), Then,

$RCF = 1.12 \times 102 \times 3.4 \times 3.4 = 1320g$

Q: My centrifuge is making a lot of noise when running.

A: 1) Check to make sure the load is balanced

2) make sure that you are using the same kinds of tubes. (ie- if samples are in a glass then all counter balances must be glass. If plastic use all plastic)

Q: How long do I spin blood?

A: 10-15 minutes at 3400 RPM.

Q: How long do I spin urine?

A: 5 minutes at 2000 RPM.

The recommended speed and time is 400 *Relative Centrifugal Force* (RCF) for 5 minutes. On most centrifuges, 400 RCF equals about 1500 to 2000 rpm

Q: What kinds of rotors are used on PowerSpin Centrifuge?

PowerSpin model	Type of Rotor	Capacity
FX (C-806)	Fixed Angle	6 place x 10ml
FX (C-808)	Fixed Angle	8 place x 10ml
VX (C-816)	Fixed Angle	6 place x 10ml
VX (C-818)	Fixed Angle	8 place x 10ml
LX (C-856)	Fixed Angle	6 place x 10ml
LX (C-858)	Fixed Angle	8 place x 10ml
MX (C-8624)	Fixed Angle	24 place
MX (C-8612)	Fixed Angle	12 place
MX (C-8606)	Horizontal	6 place
MX (C-8604)	Horizontal	4 place
HX (C-826)	Horizontal	6 place

Q: What are the speeds of PowerSpin centrifuges?

PowerSpin model	Speed Control	Speed (rpm)
FX (C-806/808)	Fixed	3400
HX (C-826)	Fixed	3400
VX (C-816/818)	Variable	500-3400
LX (C-856/858)	Variable, linear	300-4000
MX (C-8604/8606/8624)	Variable, digital	1000-3400

Q: What is the speed accuracy for PowerSpin Centrifuge?

PowerSpin LX:	±100 RPM
PowerSpin VX:	±100 RPM at 3400rpm
PowerSpin HX:	±50 RPM at 3400rpm
PowerSpin MX:	Real time speed display ±5 RPM

Q: What is a fixed angle rotor?

A: A fixed angle rotor is a rotor with tube shields installed in a fixed angle (for example 45°). Tubes are inclined in the tube shield while being spun.

Q: What is a horizontal rotor, swing-out, or swinging bucket rotor?

A: A horizontal rotor and swing-out rotor are the same. It is a rotor that will swing out and the tube will spin horizontally. A horizontal rotor helps to generate flat separation line.

Q: What is RPM (or rpm)?

A: RPM means how many revolutions per minute the rotor spins.

Q: What is a variable speed centrifuge?

A: A variable speed centrifuge is a centrifuge with speed adjustment control. It may use knob (rheostats) or buttons (digital) to change speed.

Q: What is linear speed control and what is non-linear speed control?

A: Linear speed control is featured on the PowerSpin LX centrifuge and enables the user very accurate control over the speed of the centrifuge. It is correlated to the dial graduations.

Non-linear speed control is like a rheostat which allows the user to increase or decrease the power to the motor, but not accurately. The dial does not correlate to a specific speed on RPM.

Q: What is a speed control sensor?

A: Accurate speed control and digital speed display require real time speed monitoring. A sensor device is usually installed on or near the centrifuge shaft to monitor the spinning and send the speed data to the main processing unit for control and display. Unico PowerSpin M24 and HX centrifuges utilize digital sensor and control system.

Q: What is speed accuracy?

A: The speed accuracy is the speed variance from the speed specified. For example, centrifuge with specified speed 3400 ± 100 RPM may spin at a speed from 3300 RPM to 3500 RPM.

Q: What is a mechanical timer?

A: A mechanical timer used on UNICO centrifuges is an analog “time counter” used to count the time set and shut down the power at the end of the set time. It has a bell tone to signal the end of the run. It usually has a knob with a graduated scale. The most commonly used is a 30 minute timer.

Q: How accurate is a mechanical timer?

A: The analog mechanical timer is accurate to within 30 second/10 Min.

Q: What kind of safety lids are installed on PowerSpin Centrifuge?

A: PowerSpin LX, VX, FX: Power-off safety latch plus press-to-open latch release button. PowerSpin MX, HX: O-rpm interlock.

Q: What is the centrifuge safety latch and safety interlock?

A: A safety latch is required to prevent the lid from opening by accident. There are many different interlock designs, which can be grouped in two categories:

1. Power-shut-off safety latch: The centrifuge will not run unless the safety latch is engaged. If the lid is opened during spinning, the power will be shut off immediately.
2. O-rpm interlock: The centrifuge will not run unless the safety interlock is engaged. The lid can not be opened before the rotor stops spinning.

Q: How long should I spin my specimens?

A: Urines can be spun for 5 min. at 2,000 rpm (mid-range on most variable speed centrifuges). Blood specimens require 10-15 minutes spinning at 3,400 rpm.

Q: How do I check the speed of my centrifuge?

A: If you have a service company that maintains your other lab equipment, have them check your centrifuges each time they make a maintenance call and have them record the checked speed in a "centrifuge" log book. Or you may buy a "strobe" Tachometer.

Q: What sizes of tubes can I use in PowerSpin Centrifuges?

A: This depends on your applications. Unico centrifuges support:

- 0.5ml, 1ml, 1.5ml pediatric tube (Adapter p/n: C800-04 needed)
PowerSpin LX, VX, FX, MX, HX
- 4-5 ml (Ø13mm x 75mm) (Adapter p/n: C800-03 needed)
PowerSpin LX, VX, FX, MX, HX
- 10 ml (Ø16mm x 100mm) PowerSpin LX, VX, FX, MX, HX
- 15 ml (Ø17mm x 121mm) PowerSpin MX

Q: I have a lot of pediatric patients and have to use small (2ml) size tubes. I can't get the small tubes out of the regular tube holders.

A: Unico sells tube adaptors for use with pediatric or short tubes (2ml). The part number is C800-03 for 4-5ml tube, C800-04 for 2ml tube,

Q: Can I use microcentrifuge tubes 0.5ml and 1ml?

A: Yes, use PowerSpin C880 (13,000 RPM)

Q: What kinds of fuse and fuse ratings are used in PowerSpin?

A: Fuse type: Standard or slow blow fuse (size Ø5mm x 20mm)
Fuse rating: 250V 4A

Q: Where is the fuse holder and fuse located on PowerSpin centrifuges?

A: The fuse holder is a part of power inlet located on the back of the centrifuge. Use a Philips type screwdriver to take cover of the snap-in fuse holder off. Remove the fuse with the same type and rating fuse.

Q: What are the least number of tubes I can spin at once?

A: Balance is very important in centrifuge. So you have to put at least 2 tubes in, opposite positioning.

Q: My centrifuge won't spin!

A: Follow the procedures below to troubleshoot

- Make sure the volt is correct. 110V or 220V
- Is it plugged in? For PowerSpin LX, VX, FX, MX and HX, be sure to check the power cord plugs into the back of the centrifuge.
- Is it turned on?
- Set Timer. Centrifuge will not operate until the timer is set.
- Recheck to be sure the lid is down and locked.
- Check fuse (for PowerSpin it is located in the compartment where the power cord is plugged into the centrifuge).
- Make sure the Styrofoam packaging is removed from the rotor chamber.

Q: My centrifuge makes too much noise or is shaking.

A: Check the following areas

- Make sure the sample load is balanced.
- Unplug centrifuge, open lid and inspect to see that all the tube shields (tube-holders) are in place (none missing).
- If adaptors are used, be sure that they are complete or balanced (equal number opposite each other).
- If the rotor looks normal and all tube shields are in place, remove rotor by removing the rotor hold-down-bolt in the middle of the rotor, remove rotor and set aside, check inside guard-bowl for loose bits of glass or debris.