

8 Considerations When Choosing a Centrifuge

By Maurizio Merli, Product Director, Centrifuges, Thermo Fisher Scientific

Choosing a centrifuge can be a complicated process. With so many models and manufacturers and numerous features, continual improvements and innovations available on the market, it is not surprising that this can be a daunting task.

First, there is a good chance that the number of users and available space in your lab has changed since your last centrifuge purchase. In addition, new innovative procedures in the lab have mandated changes in centrifuge requirements. Specific features designed for these new protocols now provide users with a variety of platforms to suit their needs.

Next, evaluate your basic lab requirements. What is the speed, temperature and sample volume for the applications and protocols run in your lab? Once these are determined, the next step is sample format. Will microcentrifuge/PCR tubes, microplates, disposable conical tubes, bottles or polycarbonate collection tubes be used? With these requirements, you must then consider your rotor choices. Various rotors are available for different tubes and sample containers at various volumes and engineered for safety, comfort and performance.

The number of functions a centrifuge has or the high speeds it may go are not always the most important factors in determining which model is best for your lab. The ideal option for research and centrifuge performance is often determined by what is best for your sample and for the safety of your staff. For example, bioprocessing and multi-use environments may need a centrifuge with advanced programming capabilities, such as password protection. Laboratories with multiple users at different levels of experience require a flexible centrifuge with configurations and technologies to ensure safety, such as automatic rotor identification features. As you read on, keep in mind the specific needs of your lab to determine which centrifuge features mean the most to your research success.

1. Does The Model Have Automatic Rotor Identification?

Instant rotor identification innovations simplify and shorten run set-up times while eliminating the worry of over-speeding and other rotor accidents, especially in high speed centrifuges. With this technology, a specific magnetic pattern on the rotor is identified once it is secured into the centrifuge. The rotor name and specifications are automatically loaded into the centrifuge. As a result, these programmed centrifuge features eliminate the need to find and set rotor codes, streamlining the centrifuge run set-up process.

2. Does The Model Have A Convenient Rotor Locking System?

With traditional rotor tie-down systems, and especially when paired with heavier metal alloy rotors, rotor installation is sometimes arduous and requires proper technique and considerable hand strength to assure that the rotors are safely secured in the centrifuge chamber. However, with innovative advances in centrifuge design, rotors can now be safely and securely locked in the centrifuge with minimal effort. With push-button rotor exchange features, rotors no longer need to be bolted onto a centrifuge motor shaft and checked at regular intervals. As the rotor automatically and securely locks itself to the centrifuge, the need for hand tightening is eliminated, thus improving safety and ensuring that the rotor will not loosen during a run.



New innovations in centrifuges and rotors help the modern laboratory manage user and rotor activity with increased performance and speed.

Losing a sample or, in the worst case, the rotor itself due to a rotor system failure from improper installation is rare, but when it does occur it could damage the centrifuge, and also potentially injure lab personnel in the immediate vicinity. Especially in a shared laboratory setting with multiple users, new trouble-free rotor exchange systems enable removal of the rotor in just seconds, allowing for easy access and also cleaning convenience. Additionally, this feature provides the flexibility to quickly swap between your sample preparation protocols, from 0.2 ml through 1 litre, all with the same versatile centrifuge.

3. Is Onboard Rotor Management A Standard Option?

Meeting the evolving needs of academic research and production facilities demands an onboard system to keep track of run times, users and rotor functions. Run set-up is easy with intuitive touch-screen interfaces, which are standard with modern lab equipment. These interfaces, which feature bright, highly visible and durable displays, provide advanced training and programming options, such as video tutorials and user access controls with password protection.

Built-in features for rotor management enable end-users to monitor usage by rotor serial number, number of hours used or number of cycles. State-of-the-art technologies include operator and run reporting to assist with GMP/GLP compliance and multilingual instructions for run conditions, alert messages and password protection.



Push-button security and application flexibility with Thermo Scientific Auto-Lock rotor exchange, coupled with lightweight Thermo Scientific Fiberlite rotors, ensure optimal performance, extended rotor life and the safety of your samples and employees.

4. Are Corrosion-Free Rotors Available?

To enhance centrifuge performance and safety, manufacturers are offering alternatives to metal alloy rotors. Metal rotors are susceptible to corrosion and structural damage generated by centrifugal force stresses. Because of this, centrifuge makers have shifted to using more advanced materials for rotors, such as carbon fibre composites, which are lighter, more durable and corrosion-free, eliminating the need for derating or reducing speed over the rotor lifespan, and in turn a more secure product investment.

5. Does The Model Have Improved Ergonomic Design For Easier Rotor Installation And Removal?

In addition to the corrosion-free benefits, the use of carbon fibre rotors improves the performance and durability of your centrifuge, while improving safety and ergonomics. Traditional centrifuge rotors, which are made out of metal alloys, can potentially cause injury to laboratory staff during installation or removal from the centrifuge. Another limitation with heavy rotors is that you might have to call on another lab person to help remove the rotor from the centrifuge. The improved ergonomic features of modern centrifuges, combined with lighter weight rotors, make rotor installation and removal easier, reducing the chances of lower back injury and contributing to a safer work environment.

6. Is Containment Of Sensitive Samples An Option?

In today's modern laboratory the procedures and technologies that are necessary for departing liquid and solid components at a high speed are continuously improving. Choose rotor lids with certified biocontainment, and that click in place, ensuring securely contained samples, while shortening retrieval time compared to screw-on lids. Also, consider rotor lids where transparency enables early viewing of damaged tubes for added safety.

7. Consider Versatility

The centrifugation process is one of the most critical steps in a multitude of laboratory protocols, and most labs need more than one type of centrifuge. This is a significant investment and the most up-to-date protocols may require a wide range of rotors. By selecting a centrifuge model that supports a broad rotor portfolio, you enable multiple applications on one workstation.

General-purpose and large volume centrifuges are designed for a wide selection of rotors and most manufacturers have many high-capacity accessories that fit your samples safely and efficiently. There are also economical benchtop units that conserve valuable floor space while performing high-speed centrifugation tasks. Innovative features such as electronic imbalance recognition systems will accommodate to every rotor while keeping your lab safe. Rotors with efficient drives allow you to reach speeds of up to 50,000 x g in half of the time compared to a decade ago, enabling increased sample throughput. Look for manufacturers that are continually designing innovative rotors, with an extensive range of rotors such as fixed angle, microtube or swing-out to provide the most advanced tools for all your centrifugation needs.

8. Consider Access To An Expert Service Team

Centrifuge rotor maintenance is critical to the longevity of your investment and the safety of your workplace. Look for manufacturers that have on-site rotor inspection and

safety clinics with product service representatives that will evaluate the safety of your rotors and provide a comprehensive report for each rotor examined. As part of the inspection, representatives may also present information on proper rotor care and offer recommendations based upon the current rotor condition to maximise the performance of your centrifuge.

Additionally, customer service is also an important decision-making factor. Whether looking for a floor model, general purpose or small benchtop centrifuge, having access to an expert service team with readily-available parts and consumables is an important consideration for long-lasting, worry-free centrifuge operation.

Conclusion

New innovations in centrifuges and rotors help the modern laboratory manage user and rotor activity with increased performance and speed. Specifically, automatic rotor exchange and instant rotor identification are examples of technological innovations that simplify centrifuge operation without sacrificing performance, giving lab managers the assurance of proper usage and safety compliance they need. These features also provide centrifuge users with higher productivity, ease-of-use and confidence that successful sample processing has taken place.

It is important to understand which features to look out for when selecting your centrifuge to ensure optimal performance, extended rotor life and the safety of your samples and employees. These criteria should help you choose the right centrifuge and rotor system that works for your lab and contributes to your research success.



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