



CENTRIFUGE

Centrifuge

Precision Separation Solutions from Low-Speed to Ultra-High-Speed

A centrifuge is a fundamental instrument in any modern laboratory — a precision tool that uses controlled centrifugal force to separate substances of different densities suspended in a liquid medium. From routine blood-fraction work in a hospital pathology lab to the high-stakes isolation of viral particles, subcellular components, and nanoparticles in advanced research facilities, centrifugation underpins countless analytical, clinical, and biotechnological workflows.

Centrifugation spans three distinct performance tiers. Low-speed centrifuges deliver moderate centrifugal force and are ideal for everyday sample separation tasks such as red-blood-cell isolation, cell-cultivation steps, and basic clinical preparations. High-speed centrifuges step up performance to roughly $20,000 \times g$, making them effective workhorses for DNA/RNA purification, serum preparation, lipid removal, and broad molecular-biology applications. Ultracentrifugation pushes the technology to its limits — speeds of 30,000 RPM and beyond, with relative centrifugal forces above $100,000 \times g$ — enabling the separation of viruses, exosomes, macromolecules, and nanoparticles that simply cannot be isolated by any other technique.

Torontech offers a complete range of advanced centrifuge solutions engineered for the diverse needs of modern medical, clinical, and research laboratories. The portfolio spans the full spectrum: the compact Low-Speed Centrifuge PRO 1406/1406R for routine clinical applications; the ultra-quiet High-Speed Centrifuge PRO 2415/2415R optimized for DNA/RNA purification; the versatile 16-rotor High-Speed Centrifuge PRO 2418/2418R for general molecular biology; the High-Capacity & High-Speed Centrifuge PRO 2515/2515R for medium-throughput applications; and the flagship floor-standing UltraCentrifuge TT-UltraC30 delivering $110,000 \times g$ with a 6-liter capacity. Every Torontech centrifuge is engineered around intelligent safety — automatic rotor recognition, imbalance detection, soft brake, electronic lid locking, and program memory — ensuring reliable, repeatable, and operator-safe centrifugation, every run.

Spin Confidently with Torontech

Every successful experiment, every reliable diagnostic, every breakthrough scientific discovery begins with proper sample separation — and that means reliable, accurate centrifugation. A failed centrifuge run can mean a lost sample, a wasted experiment, or a delayed clinical result. The laboratories that consistently deliver world-class results are the ones equipped with centrifuges built for safety, repeatability, and long-term durability — and the Torontech centrifuge range gives you exactly that.

Whether you are running routine blood separations in a busy hospital lab, purifying DNA in a molecular-biology research facility, processing high-throughput biopharmaceutical samples, or pushing the frontiers of nanoparticle and virology research with ultracentrifugation, Torontech has the centrifuge platform engineered to meet your exact needs. From the compact, ultra-quiet PRO 1406 to the formidable 110,000 × g TT-UltraC30, every Torontech centrifuge is built to deliver world-class performance backed by industry-leading service and support.

Don't compromise on the instrument that separates success from failure in your workflow. Equip your laboratory with the centrifugation platform trusted by clinical professionals, R&D scientists, and biopharmaceutical engineers worldwide.

APPLICATIONS

Applications in Industries

Centrifuges are mission-critical instruments across virtually every science-driven sector. The Torontech centrifuge range supports an extensive list of clinical, research, and industrial applications, including:

- **Clinical Diagnostics & Hospital Laboratories** — Routine blood-sample preparation, plasma and serum separation, urinalysis, cell-pellet collection, and patient diagnostic workflows in hospitals, clinics, and pathology labs.

- **Molecular Biology & Genetics** — DNA and RNA purification, plasmid preparation, PCR sample handling, gene-expression studies, and molecular diagnostic workflows requiring ultra-clean, contamination-free centrifugation.
- **Biochemistry & Protein Research** — Protein precipitation, enzyme purification, fractionation of cellular extracts, and characterization of biomolecules across the full molecular-weight spectrum.
- **Cell Biology & Tissue Culture** — Cell harvesting and washing, sub-cellular fractionation, organelle isolation, microplate centrifugation, and stem-cell research workflows in cell-culture facilities.
- **Virology & Vaccine Development** — Concentration and purification of viral particles, exosomes, and viral vectors from cell-culture supernatants — a critical capability supported by the ultra-high-speed TT-UltraC30.
- **Pharmaceutical & Biopharmaceutical Industry** — Drug-discovery workflows, formulation analysis, quality control of biologic products, and clinical-trial sample preparation requiring high-throughput, reproducible centrifugation.
- **Immunology & Serology** — Antibody isolation, immune-cell separation, lymphocyte preparation, and serological testing in clinical, research, and reference laboratories.
- **Water Treatment & Environmental Testing** — Sample concentration for trace-contaminant analysis, particle-size studies, and wastewater characterization in environmental laboratories.
- **Nanoparticle & Materials Research** — Ultra-high-speed centrifugal separation of nanoscale samples, colloid characterization, and advanced materials research enabled by ultracentrifugation.
- **Universities & Research Institutes** — Teaching laboratories, graduate research, fundamental scientific investigations, and method development across biology, biochemistry, medicine, and materials science.

FEATURES

Why Choose Torontech for Your Centrifugation Needs

With more than two decades of experience supplying advanced laboratory and analytical instruments to clinical facilities, research institutes, biopharmaceutical companies, and universities across more than 60 countries, Torontech has earned a global reputation as a trusted partner for precision centrifugation solutions. Choosing a Torontech centrifuge means investing in more than just hardware — it means partnering with an organization committed to your laboratory's long-term success.

Complete Centrifuge Portfolio

Torontech offers a fully scaled centrifuge lineup — from compact low-speed benchtop units suitable for teaching and routine clinical work, through versatile high-speed and high-capacity models for molecular biology and busy commercial labs, all the way to the floor-standing ultracentrifuge for the most demanding research applications. Whatever your sample volume, speed requirement, or throughput need, there is a Torontech centrifuge engineered to fit.

Intelligent Safety Built In

Every Torontech centrifuge is engineered around comprehensive safety architecture — automatic rotor identification, real-time imbalance detection, electronically locked lids with rotor-recognition-controlled speed limits, recordable rotor service times with replacement reminders, soft brake to protect sensitive samples, and emergency manual lid release for unexpected power interruptions. Centrifuges store enormous kinetic energy when running; Torontech engineers treat safety as a first-class design requirement, not an afterthought.

Versatile Rotor Ecosystem

Every Torontech model is supported by an extensive rotor ecosystem — fixed-angle rotors for routine high-force separations, swinging-bucket rotors for microplates, deep-well plates, and gradient work, and specialized rotors for hazardous-sample applications with optional gas-tight caps. With up to 16 rotor options per model and broad tube-type compatibility (microtubes, PCR strips, microplates, 15/50 mL conical tubes, blood-collection tubes, and 400 mL bottles), Torontech adapts to your existing labware — not the other way around.

Advanced Engineering & Quiet Operation

Torontech engineers prioritize laboratory comfort and operator productivity. Models like the PRO 2415 operate below 60 dB — quieter than a normal conversation — while maintaining high-speed performance. Optimized airflow keeps samples cool during extended runs, automatic lid opening at run completion prevents overheating, and intuitive touchscreen + rotary-knob interfaces make every centrifuge accessible to operators at any experience level.

Expert Application Support

Torontech's team of application scientists and product specialists is available across multiple time zones to support installation, operator training, protocol optimization, calibration, and ongoing service. With offices and authorized partners throughout the USA, Canada, UAE, KSA, GCC, EU, India, APAC, Africa, and Latin America, professional support is always within reach.

Cost-Effective Value

Torontech delivers premium-grade centrifugation performance at a transparent, competitive price point — eliminating the inflated cost structures of legacy brands while maintaining the accuracy, durability, and feature set that demanding professionals require. From entry-level units to research-grade ultracentrifuges, every Torontech centrifuge is engineered to deliver outstanding return on investment.

TECHNICAL SPECIFICATIONS

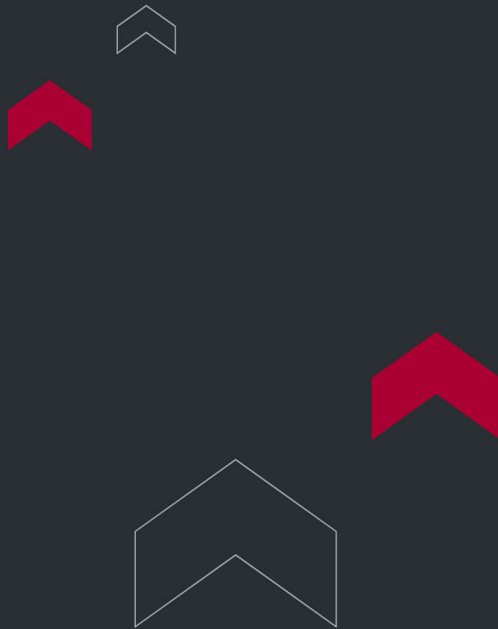
Product Comparison Table

Selecting the right centrifuge depends on your sample volume, required centrifugal force, throughput, and the specific separation challenges your laboratory faces. The table below provides a side-by-side comparison of all five Torontech centrifuge models — from the entry-level Low-Speed PRO 1406 to the flagship floor-standing UltraCentrifuge TT-UltraC30 — helping you identify the platform that best matches your laboratory's workflow.

Specification	PRO 1406/1406R	PRO 2415/2415R	PRO 2418/2418R	PRO 2515/2515R	TT-UltraC30
Centrifuge Class	Low-Speed	High-Speed (Compact)	High-Speed (Versatile)	High-Capacity High-Speed	Ultra-High-Speed Floor-Standing
Maximum RCF	Standard low-speed range	Up to ~20,000 × g	Up to ~20,000 × g	Up to ~20,000 × g (high-capacity)	110,000 × g
Maximum Speed	Low-speed routine RPM	High-speed RPM	High-speed RPM	High-speed RPM (large capacity)	31,200 RPM
Sample Capacity	Tubes from microtubes to standard clinical	Microtubes & molecular-biology volumes	0.2 mL – 400 mL tube range	0.2 mL – 400 mL tube range	Up to 6 Liters
Refrigerated Option	Yes (1406R)	Yes (2415R)	Yes (2418R)	Yes (2515R)	Yes (built-in, 4 °C @ max speed)
Vacuum System	No	No	No	No	Smart air-evacuation system
Rotor Options	10 different rotors	5 different rotors	16 different rotor models	14 rotors + versatile adapters	Multiple high-capacity rotors
Noise Level	Ultra-quiet	Below 60 dB (ultra-quiet)	Quiet operation	Quiet operation	Standard ultracentrifuge level
Form Factor	Compact benchtop	Compact benchtop	Compact benchtop	Benchtop (high-capacity)	Floor-standing
Safety Features	Auto imbalance, rotor recognition, emergency lid opening	Auto imbalance, rotor recognition, electronic lock, soft brake	Auto imbalance, rotor recognition, replacement reminders, soft brake	Auto imbalance, rotor recognition, optimized airflow	Auto rotor ID, automatic balance monitoring, smart safety

Specification	PRO 1406/1406R	PRO 2415/2415R	PRO 2418/2418R	PRO 2515/2515R	TT-UltraC30
Program Memory	50 SOPs, 8 shortcuts	50 SOPs, 8 shortcuts	50 SOPs, 8 shortcuts	50 SOPs, 8 shortcuts	Customizable programs
Control Interface	Rotary knob + touchscreen	Touchscreen	Rotary knob + touchscreen, quick-lock lid	Touchscreen	Advanced control with rotor recognition
Primary Applications	Clinical research, cell cultivation, blood separation	DNA/RNA kits, molecular biology, serum prep	Serum prep, hematology, cell culture, routine clinical	Medium-throughput molecular biology, microplates, PCR	Virology, vaccine dev, proteins, nanoparticles, ultracentrifugation
Best Suited For	Entry-level clinical & teaching labs	Quiet molecular-biology labs	Versatile clinical & research labs	High-throughput multi-rotor labs	Advanced research, biopharma, R&D

Every Torontech centrifuge — regardless of class — shares core engineering principles: automatic rotor imbalance detection, rotor recognition with speed-limit control, soft brake to prevent sample resuspension, electronic lid locking with emergency manual release, optimized airflow to minimize sample warming, and intuitive program-memory functions for repeatable workflows. The 'R' variants (1406R, 2415R, 2418R, 2515R) add active refrigeration to protect temperature-sensitive samples during extended runs, while the TT-UltraC30 includes built-in refrigeration and a smart air-evacuation vacuum system as standard.



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