



TORONTECH



HIGH SPEED CENTRIFUGE (6 X 50 ML)

High Speed Centrifuge (6 x 50 mL) - ToronCent™ HS 50

ToronCent™ HS 50 laboratory high speed centrifuge reaches 16,500 rpm and 26,054 x g while weighing 20 kg and drawing 400 W. Seven angle rotors cover 0.2 mL PCR strips, microtubes, 10 mL and 30 mL tubes, and 6 x 50 mL conical work. Biochemistry, molecular biology, and quality control laboratories use it for protein precipitation, nucleic acid recovery, and routine pelleting. The 325 mm wide housing leaves room on a crowded bench.

Every rotor in the set is a fixed angle design, which suits pelleting rather than density gradient separation. Rotors are machined from 7075-T6 aviation grade aluminum alloy and hard anodized, a combination that carries high rotational stress and resists corrosion caused by salts, solvents, and buffers. A brushless DC motor drives the spindle with no carbon dust and no brush replacement over the service life. Speed holds within ± 30 rpm.

A backlit LCD shows running parameters at a glance, and multiple user-defined programs store recurring methods for recall. Nine acceleration and ten deceleration rates let operators tune the ramp to the sample. Soft-touch lid closure secures the chamber without a hard slam, and the lid stays locked while the rotor turns. Protection routines watch for over-speed conditions and motor overheating. Run time is set in whole minutes up to 99 minutes.

APPLICATIONS

High Speed Centrifuge (6 x 50 mL) - ToronCent™ HS 50 Applications

The ToronCent™ HS 50 fits laboratories whose daily work sits in microtubes and 50 mL tubes rather than bulk bottles, and where bench space and budget both matter.

- **Protein Precipitation and Biochemistry:** recovers ammonium sulfate and acetone precipitates, clarifies lysates, and concentrates fractions at up to 26,054 x g

- **Molecular Biology and Nucleic Acid Work:** pellets DNA and RNA precipitates, spins purification columns, and clears digests in 1.5 mL and 2.0 mL microtubes
- **PCR Sample Preparation:** collects reaction volumes in 48 PCR tubes per cycle using the strip rotor, clearing condensate before thermal cycling
- **Cell Culture Support:** pellets and washes cells in 15 mL and 50 mL conical tubes for small and mid-scale culture work
- **Microbiology:** harvests bacterial cells and separates culture supernatant for downstream assay or plating
- **Pharmaceutical Quality Control:** clarifies formulations and prepares samples ahead of chromatographic or spectroscopic analysis
- **Clinical and Diagnostic Laboratories:** separates serum and plasma in 10 mL tubes for routine analyte testing
- **Food and Beverage Analysis:** separates solids and aqueous phases in dairy, juice, and extract samples for compositional testing
- **Environmental and Water Testing:** concentrates suspended solids and microbial biomass in 30 mL and 50 mL sample tubes
- **Teaching Laboratories:** gives students a light, low draw platform for microtube and conical tube protocols



FEATURES

High Speed Centrifuge (6 x 50 mL) - ToronCent™ HS 50 Key Features

The ToronCent™ HS 50 pairs a brushless drive with aviation grade rotors in the lightest housing of the ToronCent™ high speed range.

- **16,500 rpm Maximum Speed and 26,054 x g:** pellets fine precipitates and subcellular material that general purpose lab centrifuges leave in suspension
- **Seven Fixed Angle Rotors:** covers 0.2 mL PCR strips, 1.5 and 2.0 mL microtubes, 5, 10, and 30 mL tubes, and 6 x 50 mL conical tubes
- **Brushless DC Motor:** removes carbon brush wear and brush dust from the maintenance schedule while holding speed within ± 30 rpm
- **7075-T6 Aviation Grade Aluminum Rotors:** carry high rotational stress at low mass, which keeps both the rotor and the instrument light
- **Hard Anodized Rotor Surfaces:** resist corrosion caused by buffer salts, acids, and solvent spills, extending rotor service life in wet chemistry work
- **9 Acceleration and 10 Deceleration Rates:** match the ramp to the sample so loose pellets survive the stop
- **User-Defined Program Memory:** stores recurring methods for direct recall, giving consistent parameters across operators and shifts
- **Backlit LCD Display:** keeps speed, time, and status readable at a glance in low light or a busy bench area
- **Soft-Touch Lid Closure:** secures the chamber with light hand pressure instead of a hard slam, reducing wear on the latch mechanism
- **Lid Self-Locking Interlock:** holds the chamber closed while the rotor turns and prevents opening until it stops
- **Over-Speed and Thermal Protection:** monitors rotor speed and motor temperature, halting the run before either exceeds safe limits
- **20 kg Net Weight and 325 mm Footprint:** moves between benches by hand and occupies the least bench width in the range

- **400 W Power Consumption:** draws less than comparable high speed units, suiting shared or lightly served circuits
- **Quiet Operation at ≤65 dB(A):** keeps sound suitable for open bench placement in occupied laboratory space

THEORY & METHOD

Theory and Method

Centrifugal separation replaces gravity with a radial acceleration field. Denser particles migrate outward through the medium until they collect at the tube wall. Relative centrifugal force describes the field: $RCF = 1.118 \times 10^{-5} \times r \times N^2$, where r is rotor radius in millimeters and N is speed in rpm. Speed contributes as its square, so the 24-place microtube rotor produces 26,054 x g at 16,500 rpm while the wider 6 x 50 mL rotor gives 12,840 x g at 11,000 rpm.

Fixed angle rotors hold tubes at a set pitch, so a particle travels only a short diagonal before striking the tube wall and sliding down to form a pellet. That short path clears a sample faster than a swinging bucket at the same g-force, which is why every rotor here uses the angled geometry. Keeping the tube mass close to the axis also lowers the stress the rotor body carries, allowing higher safe speeds. The trade is a sloped pellet and no density gradient capability.

Rotor material decides the speed ceiling. At 16,500 rpm a rotor rim experiences hoop stress proportional to the square of angular velocity and to the square of radius, and that load cycles on and off with every run. 7075-T6 aluminum alloy carries a high specific strength, meaning it resists that cyclic loading at low mass, which is what keeps the drive compact and the instrument at 20 kg. Hard anodizing adds a dense oxide layer that shields the alloy against buffer salts and solvent spills.

TECHNICAL SPECIFICATIONS

High Speed Centrifuge (6 x 50 mL) - ToronCent™ HS 50 Technical Specifications

Parameter	Specification
Maximum Speed	16,500 rpm
Maximum RCF	26,054 x g
Maximum Capacity	6 x 50 mL
Speed Accuracy	±30 rpm
Time Setting Range	1 min to 99 min
Motor Type	Brushless DC
Rotor Material	7075-T6 aluminum alloy, hard anodized
Display	Backlit LCD
Program Memory	Multiple user-defined programs
Acceleration Rates	9
Deceleration Rates	10
Lid Closure	Soft-touch, self-locking
Protection Functions	Over-speed, motor overheating, lid interlock
Noise Level	≤65 dB(A)
Voltage	AC 220 V ±22 V, 50/60 Hz (110V is also available)
Power Consumption	400 W
Dimensions (W x D x H)	325 x 420 x 325 mm
Packing Dimensions (W x D x H)	385 x 640 x 330 mm
Net Weight	20 kg

Angle Rotor Options

Max Capacity	Max Speed	Max RCF	Adapters Available
24 x 1.5 / 2.0 mL	16,500 rpm	26,054 x g	0.2 mL
12 x 5 mL	15,000 rpm	15,845 x g	0.5 mL, 1.5 mL
30 x 1.5 / 2.0 mL	14,000 rpm	22,150 x g	0.2 mL
6 x 30 mL	13,500 rpm	18,720 x g	5 mL, 10 mL
12 x 10 mL	13,000 rpm	17,320 x g	1.5 mL, 5 mL
6 x 8 x 0.2 mL (PCR strip)	13,000 rpm	16,020 x g	
6 x 50 mL	11,000 rpm	12,840 x g	1.5, 5, 10, 15, 20, 25, 30 mL



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