



REFRIGERATED MICROCENTRIFUGE (48 X 1.5 ML)

Refrigerated Microcentrifuge (48 x 1.5 mL) - ToronCent™ RM

ToronCent RM refrigerated microcentrifuge holds 48 x 1.5 mL tubes at full load and occupies 320 x 590 x 270 mm of bench. Eight rotors cover 0.2 mL PCR strips, 1.5 and 2.0 mL microtubes, 5 mL tubes, and spin columns. Maximum speed reaches 16,500 rpm and maximum relative centrifugal force reaches 26,054 x g. The chamber cools to -20°C and holds any setpoint up to 40°C within $\pm 1^\circ\text{C}$.

Rotor choice determines what a given run achieves. The 24 x 1.5 mL rotor produces both the 16,500 rpm ceiling and the 26,054 x g maximum. The 48-place rotor trades force for throughput, running at 13,000 rpm and 18,525 x g. Doubling capacity therefore costs roughly 30 percent of the available force, which matters for protocols specified above 20,000 x g.

A 316 stainless steel chamber resists the acids, solvents, and disinfectants that reach a microcentrifuge bowl. Hard-anodized 7075-T6 aluminum alloy rotors add surface hardness and corrosion resistance beyond what standard anodizing gives. Dynamic temperature control adjusts compressor output against the heat the spinning rotor generates rather than running at a fixed rate. Acceleration to full speed takes as little as 10 seconds.

APPLICATIONS

Refrigerated Microcentrifuge (48 x 1.5 mL) - ToronCent™ RM Applications

Sample preparation drives most of the duty cycle here: extraction kits, reaction setup, and small-volume clarification where temperature control protects the analyte.

- **Nucleic Acid Extraction and Purification:** runs silica spin columns in a dedicated 24-place rotor for DNA and RNA kit workflows

- **RNA Work and Reverse Transcription:** the chamber holds 4°C or below throughout the run, which limits RNase activity during handling
- **PCR and qPCR Preparation:** spins six 8-tube strips of 0.2 mL tubes per run to collect condensate and settle reaction mixes
- **Protein Precipitation and Clarification:** pellets precipitated protein and cell debris at up to 26,054 x g in 1.5 and 2.0 mL tubes
- **Cell Biology and Microbiology:** harvests small-volume bacterial and mammalian cultures in microtube and 5 mL formats
- **Clinical Research Laboratories:** prepares serum, plasma, and extracted samples in batches of up to 48 tubes
- **High-Throughput Sample Preparation:** the 48-place rotor doubles batch size wherever the protocol's force requirement allows
- **Forensic and Environmental Testing:** processes extraction eluates and small-volume digests under controlled temperature
- **Academic Teaching and Research Laboratories:** eight rotors and a 42 kg mass suit shared benches and rooms that get reconfigured often



Standards

The manufacturer publishes no international test standard references for this model, and torontech does not add citations beyond what the supplier documents. Ask for the declaration of conformity and the factory calibration record at order, then verify the instrument against the laboratory's own qualification protocol before putting it into regulated use.

FEATURES

Refrigerated Microcentrifuge (48 x 1.5 mL) - ToronCent™ RM Key Features

Two design choices carry this model: materials chosen for a bowl that meets solvents daily, and controls arranged so the two most frequent actions each get a dedicated key.

- **Eight Rotor Options:** seven fixed-angle rotors and one swing rotor cover 0.2 mL PCR strips, 1.5 and 2.0 mL microtubes, 5 mL tubes, and spin columns
- **Dedicated Spin Column Rotor:** 24 spin column tubes seat directly without adapters, which suits kit-based DNA and RNA extraction
- **PCR Strip Rotor:** six 8-tube strips of 0.2 mL tubes spin at 13,000 rpm and 16,020 x g with no transfer to individual tubes
- **316 Stainless Steel Chamber:** the bowl withstands the acids, solvents, and repeated disinfection that reach a sample prep instrument
- **Hard-Anodized 7075-T6 Rotors:** aerospace-grade aluminum alloy with a hardened anodic layer resists chemical attack and surface wear
- **Dynamic Temperature Control:** compressor output tracks the heat the rotor generates rather than running at a fixed rate, which improves accuracy and cuts energy use
- **Dedicated Pre-Cooling Key:** one keypress chills the chamber using parameters the instrument saves automatically

- **Separate Short Spin Key:** quick collection spins run without programming a cycle
- **Ten-Second Acceleration:** the fastest ramp brings the rotor to full speed in 10 seconds, which shortens total cycle time on repetitive protocols
- **Eleven Acceleration and Twelve Deceleration Rates:** ramp selection protects soft pellets and column membranes through braking
- **5-Inch HD Touchscreen:** setpoints and live run conditions display together on one screen
- **Three Timing Modes:** start timing, speed timing, and continuous timing, with the timer range selectable as 99 h 59 min or 99 min 59 s
- **Automatic Rotor Identification:** the drive reads the installed rotor and enforces its individual speed rating
- **Layered Protection:** over-speed, over-temperature, and motor over-heating cutouts operate alongside a self-locking door cover
- **Soft-Touch Lid Closure:** the lid closes without slamming, which reduces disturbance to tubes already loaded
- **Low Power Draw:** the unit consumes 700 W, the lowest in this instrument family

THEORY & METHOD

Theory and Method

Spin columns separate by filtration, not sedimentation. Centrifugal force drives buffer through a silica membrane while nucleic acid binds to it, so the useful parameter is flow rate through the frit rather than particle travel distance. Too much force compacts the membrane and slows flow; too little leaves residual buffer that carries ethanol into the eluate. Kit protocols therefore specify a narrow force window, commonly a few thousand $\times g$, and a dedicated 24-place spin column rotor carries the columns without adapters.

Place count and force compete inside a fixed chamber diameter. Adding tube positions means packing them closer to the axis or arranging them in a tighter ring, and radius enters relative centrifugal force directly through $RCF = 1.118 \times 10^{-5} \times r \times N^2$. The 24-place rotor reaches 26,054 $\times g$ while the 48-place rotor reaches 18,525 $\times g$ at a lower safe speed. Choosing

between them comes down to whether a protocol is force-limited or batch-limited.

Rotor drag heats the chamber in proportion to speed, and a small enclosed bowl has little thermal mass to absorb it. Dynamic temperature control reads that load and modulates compressor output against it, which holds the setpoint without the overshoot fixed-output cooling produces. Short spins present the opposite problem: a brief run gives refrigeration no time to correct drift, so pre-cooling the chamber ahead of the batch matters more than the control loop does, which is why pre-cooling gets its own key.

TECHNICAL SPECIFICATIONS

Refrigerated Microcentrifuge (48 x 1.5 mL) - ToronCent™ RM Technical Specifications

Parameter	Specification
Order Number	0202253002
Maximum Speed	16,500 rpm
Maximum RCF	26,054 x g
Maximum Capacity	48 x 1.5 mL
Speed Accuracy	±10 rpm
Time Setting Range	1 min to 99 h 59 min; 1 s to 99 min 59 s
Timing Modes	Start timing, speed timing, continuous timing
Temperature Setting Range	-20°C to 40°C

Parameter	Specification
Temperature Accuracy	±1°C
Refrigeration Unit	Non-CFC compressor, R134a refrigerant
Display	5-inch HD touchscreen
Acceleration / Deceleration Rates	11 / 12
Fastest Acceleration Time	10 s
Chamber Material	316 stainless steel
Rotor Material	7075-T6 aluminum alloy, hard anodized
Rotor Identification	Automatic
Noise Level	≤65 dB(A)
Voltage	AC 220 V ±22 V, 50 Hz (110V is also available)
Power Consumption	700 W
Dimensions (W x D x H)	320 x 590 x 270 mm (12.6 x 23.2 x 10.6 in)
Packing Dimensions (W x D x H)	430 x 780 x 450 mm (16.9 x 30.7 x 17.7 in)
Net Weight	42 kg (93 lb)

Available Rotors

Maximum speed and maximum RCF apply to each rotor individually, not to the instrument as a whole.

Rotor	Order Number	Type	Capacity	Max Speed	Max RCF	Adapters
No. 1	0301805020	Fixed angle	12 x 1.5 mL	16,500 rpm	18,360 x g	0.2 mL, 0.5 mL
No. 2	0301806110	Fixed angle	12 x 5 mL	15,000 rpm	15,840 x g	0.5 mL, 1.5 mL

Rotor	Order Number	Type	Capacity	Max Speed	Max RCF	Adapters
No. 3	0301805520	Fixed angle	24 x 1.5 mL	16,500 rpm	26,054 x g	0.2 mL, 0.5 mL
No. 4	0302857500	Swing	24 x 1.5 mL	13,000 rpm	16,816 x g	0.2 mL, 0.5 mL
No. 5	0301891186	Fixed angle	6 x 8 x 0.2 mL (PCR strip)	13,000 rpm	16,020 x g	—
No. 6	0301891116	Fixed angle	24 x spin column tube	13,500 rpm	19,764 x g	—
No. 7	0301812510	Fixed angle	30 x 1.5 mL	14,000 rpm	22,140 x g	0.2 mL, 0.5 mL
No. 8	0301812830	Fixed angle	48 x 1.5 mL	13,000 rpm	18,525 x g	0.2 mL, 0.5 mL



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