



MULTIPURPOSE REFRIGERATED CENTRIFUGE (4 X 100 ML)

Multipurpose Refrigerated Centrifuge (4 x 100 mL) - ToronCent™ HSR MP100

ToronCent HSR MP100 compact refrigerated centrifuge occupies 380 x 660 x 330 mm of bench space and draws 1 kW. Fifteen rotors mount on the drive, covering microtubes, PCR strips, hematocrit capillaries, 15 and 50 mL conical tubes, blood collection tubes, 100 mL bottles, and 96-well plates. Speed reaches 18,500 rpm and relative centrifugal force reaches 29,302 x g. Chamber temperature sets anywhere from -20°C to 40°C, with pre-cooling available before the first run.

Peak speed and peak force belong to different rotors. The 12 x 1.5/2.2 mL angle rotor turns fastest at 18,500 rpm and 23,797 x g, while the 24 x 1.5/2.0 mL rotor generates the 29,302 x g maximum at 17,500 rpm. Two rotors carry the 4 x 100 mL format: an angle rotor rated 10,000 rpm and 10,744 x g, and a swing rotor rated 5,000 rpm and 3,773 x g. Sample geometry and required force decide between them.

Temperature control runs on a variable frequency compressor under PID regulation, which modulates cooling output continuously rather than cycling. A built-in condensation tank collects the water that forms on cold chamber walls, keeping it away from the drive housing and slowing corrosion. Rotor identification reads the installed rotor and holds speed at its rating. Named program memories, short spin, and adjustable free-parking time complete the operating set.

APPLICATIONS

Multipurpose Refrigerated Centrifuge (4 x 100 mL) - ToronCent™ HSR MP100 Applications

Small footprint and broad rotor coverage make this a fit for laboratories that need clinical, molecular, and plate formats without dedicating three instruments to them.

- **Clinical Chemistry and Hematology:** measures packed cell volume with the 24-place hematocrit rotor and prepares serum and plasma from blood collection tubes
- **Molecular Biology and PCR Workflows:** spins 8-strip 0.2 mL PCR tubes in a dedicated rotor and pellets nucleic acid precipitates at up to 29,302 x g
- **Immunoassay Laboratories:** processes ELISA plates, deep-well plates, and filter plate reagent kits in the microplate rotor
- **Cell Culture and Cell Biology:** pellets cells in 15 mL and 50 mL conical tubes, then harvests up to 4 x 100 mL per run
- **Protein Chemistry and Enzyme Assays:** collects precipitated protein while the chamber holds near 4°C to preserve activity
- **Satellite and Point-of-Care Laboratories:** a 380 mm width and 1 kW draw suit rooms where bench space and circuit capacity are both limited
- **Veterinary and Physician Office Laboratories:** hematocrit, serum separation, and sediment preparation run on one compact unit
- **Academic Teaching and Research Laboratories:** fifteen rotors let a single instrument serve varied coursework and project formats
- **Pharmaceutical and Biotechnology Quality Control:** clarifies in-process samples under controlled temperature



Standards

Supplier technical documentation for this model cites no international test standards, and torontech lists none the manufacturer has not published. Order documentation should include the declaration of conformity and factory calibration data, and laboratories working under an accredited quality system will qualify the unit through their own equipment verification protocol.

FEATURES

Multipurpose Refrigerated Centrifuge (4 x 100 mL) - ToronCent™ HSR MP100 Key Features

The specification favors format coverage and unattended reliability over raw capacity: fifteen rotors, continuous-modulation cooling, and a drain path for the condensate that sub-ambient operation generates.

- **Fifteen Rotor Options:** angle, swing, hematocrit, PCR strip, and microplate rotors cover 0.2 mL tubes through 100 mL bottles on a single drive
- **Dedicated Hematocrit Rotor:** a 24-place capillary rotor runs packed cell volume determinations at 13,000 rpm and 17,369 x g
- **PCR Strip Rotor:** six 8-tube strips of 0.2 mL tubes spin at 13,000 rpm and 16,020 x g without transferring samples to individual microtubes
- **VF Compressor with PID Temperature Control:** cooling output modulates continuously against the setpoint instead of cycling on and off
- **Built-In Condensation Tank:** collected meltwater drains away from the drive housing, which slows corrosion and extends service life
- **Pre-Cooling Function:** the chamber reaches temperature before samples arrive, removing the warm-up delay at the start of a shift

- **7-Inch Touchscreen:** setpoints and live run conditions display together on an interface that shows all parameters without switching views
- **Named Program Memories:** methods store under operator-assigned names rather than numbers, which makes recall unambiguous on a shared instrument
- **Eleven Acceleration and Twelve Deceleration Rates:** ramp selection plus settable free-parking time protects soft pellets and layered separations through braking
- **Automatic Rotor Identification:** the drive recognizes the installed rotor and enforces its individual speed limit as over-speed protection
- **Multi-Point Self-Diagnostics:** monitored faults include door interlock malfunction, over-speed condition, motor overheating, operator error, and communication loss
- **Short Spin Function:** a momentary spin collects droplets from tube walls without programming a full cycle
- **Low Acoustic Output:** noise stays at or below 62 dB(A), the quietest rating in this instrument family
- **Dual-Frequency Supply:** the unit accepts 50 Hz or 60 Hz at 220 V

THEORY & METHOD

Theory and Method

Compact chambers restrict rotor radius, and radius enters the force equation linearly: $RCF = 1.118 \times 10^{-5} \times r \times N^2$, with r in centimeters and N in rpm. Speed enters as a square, so a short-radius rotor turning quickly recovers the force that a long-radius rotor produces at lower speed. The 24-place microtube rotor uses that relationship to reach 29,302 x g inside a chamber small enough for a 380 mm bench footprint.

Packed cell volume measurement works differently from most separations. Blood drawn into a capillary tube spins until the red cells reach a stable packed column, and the ratio of that column to total sample length gives the hematocrit. The result depends on reaching complete packing rather than on collecting a pellet, so reference methods specify a force and duration sufficient to reduce trapped plasma to a negligible fraction. The dedicated 24-place capillary rotor holds 13,000 rpm and

17,369 x g for that purpose.

Running a chamber below ambient dew point condenses atmospheric moisture on every cold surface. Water pools at the chamber base, migrates toward the drive seal, and attacks the housing over months of operation. A dedicated condensation tank intercepts that water and holds it for disposal. Ramp control matters for the sample itself: eleven acceleration and twelve deceleration rates, plus a settable free-parking time, let the rotor coast to rest slowly enough to leave gradients and loose pellets undisturbed.

TECHNICAL SPECIFICATIONS

Multipurpose Refrigerated Centrifuge (4 x 100 mL) - ToronCent™ HSR
MP100 Technical Specifications

Parameter	Specification
Model	H1750R
Order Number	0202253000
Maximum Speed	18,500 rpm
Maximum RCF	29,302 x g
Maximum Capacity	4 x 100 mL
Speed Accuracy	±10 rpm
Time Setting Range	1 s to 99 min 59 s; 1 min to 99 h 59 min
Timing Modes	Start timing, speed timing, continuous timing
Temperature Setting Range	-20°C to 40°C

Parameter	Specification
Pre-Cooling Function	Yes
Refrigeration Unit	Variable frequency compressor with PID control
Display	7-inch touchscreen
Acceleration / Deceleration Rates	11 / 12, with settable free-parking time
Rotor Identification	Yes
Short Spinning	Yes
Noise Level	≤62 dB(A)
Voltage	AC 220 V ±22 V, 50/60 Hz (110V is also available)
Power Consumption	1 kW
Dimensions (W x D x H)	380 x 660 x 330 mm (15.0 x 26.0 x 13.0 in)
Packing Dimensions (W x D x H)	480 x 940 x 460 mm (18.9 x 37.0 x 18.1 in)
Net Weight	62 kg (137 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	0301805520	Fixed angle	24 x 1.5/2.0 mL	17,500 rpm	29,302 x g	—
No. 2	0301806110	Fixed angle	12 x 5 mL	15,000 rpm	15,840 x g	0.5 mL, 1.5 mL
No. 3	0301805310	Fixed angle	12 x 10 mL	13,000 rpm	17,370 x g	1.5 mL, 5 mL

Rotor	Order Number	Type	Capacity	Max Speed	Max RCF	Adapters
No. 4	0301805420	Fixed angle	6 x 50 mL	13,000 rpm	17,947 x g	1.5, 5, 10, 15, 20, 25, 30 mL
No. 5	0301805930	Fixed angle	6 x 50 mL (conical)	12,000 rpm	15,292 x g	15 mL conical; 50 mL round-bottom adapter included
No. 6	0301805710	Fixed angle	4 x 100 mL	10,000 rpm	10,744 x g	5, 10, 25 mL; 15 mL and 50 mL (conical/round)
No. 7	0301812510	Fixed angle	30 x 1.5/2.0 mL	14,000 rpm	22,140 x g	—
No. 8	0301812830	Fixed angle	48 x 1.5/2.0 mL	13,000 rpm	18,525 x g	0.2 mL, 0.5 mL
No. 9	0301812210	Fixed angle	6 x 8 x 0.2 mL (PCR strip)	13,000 rpm	16,020 x g	—
No. 10	0301856310	Hematocrit	24 capillary tubes	13,000 rpm	17,369 x g	—
No. 11	0302857500	Swing	24 x 1.5/2.2 mL	13,000 rpm	16,816 x g	0.2 mL, 0.5 mL
No. 12	0301806220	Fixed angle	8 x 15 mL (conical)	12,000 rpm	13,200 x g	5 mL
No. 13	0302891038	Swing	4 x 100 mL	5,000 rpm	3,773 x g	See adapter table below; bucket 0303891029
No. 14	0302852310	Swing (microplate)	2 x 2 x 96 well	4,000 rpm	2,200 x g	See plate table below; bucket 0303852351
No. 15	0301805020	Fixed angle	12 x 1.5/2.2 mL	18,500 rpm	23,797 x g	0.2 mL, 0.5 mL

Adapters: Rotor No. 13 (4 x 100 mL Swing)

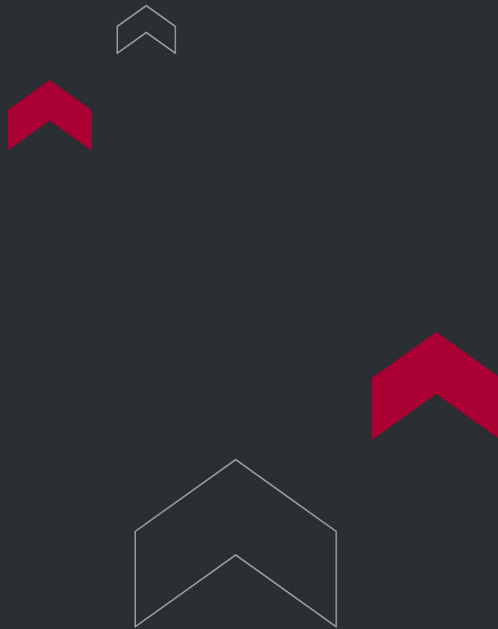
Adapter Configuration	Order Number
4 x 3 x 10 mL blood collection tube	0304852409
4 x 1 x 15 mL	0304891119
4 x 1 x 15 mL (conical)	0304891118
4 x 1 x 50 mL	0304891116

Adapter Configuration	Order Number
4 x 1 x 50 mL (conical)	0304891114

Plate Configurations: Rotor No. 14 (Microplate Bucket)

Configuration	Plate Capacity
2 x 6 ELISA microplate	2 x 6 x 96
2 x 2 deep-well plate	2 x 2 x 96
2 x 1 filter plate reagent kit	2 x 1 x 96

Custom plate configurations are available on request.



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