TORONTECH

SWING ROTOR HIGH SPEED REFRIGERATED CENTRIFUGE (4 X 750 ML)

Swing Rotor High Speed Refrigerated Centrifuge (4 x 750 mL) - ToronCent™ HSR SB

ToronCent HSR SB swing bucket refrigerated centrifuge carries two horizontal rotors, 4 x 750 mL and 4 x 500 mL, alongside ten fixed-angle rotors on the same drive. Speed reaches 21,000 rpm and relative centrifugal force reaches 30,642 x g. The chamber holds any setpoint from -20°C to 40°C within ±1°C. Bench footprint measures 710 x 560 x 450 mm.

Both headline figures come from one rotor here, the 12 x 1.5/2.2 mL angle rotor, which runs 21,000 rpm at 30,642 x g. The swing rotors sit at the other end of the range: 4,000 rpm and 3,500 x g for the 750 mL configuration, 3,345 x g for the 500 mL. Volume and force trade against each other across the lineup, so the rotor named on a quote determines what a run can actually do.

Microprocessor control drives a touch panel and LCD display, with storage for 99 user-defined programs. Automatic rotor identification reads the installed rotor and holds speed at its rating before a run starts. Protection covers imbalance, over-speed, and over-temperature, and an electronic interlock keeps the door closed while the rotor turns. A non-CFC R404a compressor circuit handles the cooling.

APPLICATIONS

Swing Rotor High Speed Refrigerated Centrifuge (4 x 750 mL) - ToronCent™ HSR SB Applications

Two swing rotors plus a full set of angle rotors put bulk bucket work and high-force tube work on one instrument.

- **Blood Banking and Transfusion Services**: separates whole blood into packed cells, plasma, and platelet fractions in 4 x 750 mL buckets, with adapters carrying up to 27 vacuum collection tubes per bucket
- **Clinical Diagnostics**: prepares serum and plasma in four-bucket batches, with blood collection tube adapters available for both bucket sizes
- **Cell Culture and Bioprocess Development**: harvests bacterial, yeast, and mammalian cultures from flasks and small bioreactor draws without splitting the batch across runs
- **Molecular Biology and Genomics**: pellets nucleic acid precipitates and clears lysates on angle rotors reaching 30,642 x g
- **Protein Purification and Enzymology**: collects precipitated protein and removes cell debris while the chamber holds near 4°C
- **Immunoassay and Plate Processing**: spins deep-well and standard microplates using the microplate bucket fitted to the 4 x 500 mL rotor
- **Microbiology and Virology**: concentrates cultures and viral preparations inside aerosol-tight buckets when the sample requires containment
- **Pharmaceutical and Biotechnology Quality Control**: clarifies in-process and release samples under controlled temperature
- **Environmental and Water Analysis**: settles suspended solids from bulk field samples ahead of instrumental analysis


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ToronCent™ HSR SB
Swing Rotor High Speed Refrigerated Centrifuge
(4 x 750 mL)

Standards

Cence provides no international test standard references for the H2100R platform, and Torontech carries forward only what the manufacturer documents. Ask for the declaration of conformity and factory calibration record at the time of order, then qualify the unit under the laboratory's own equipment verification procedure before regulated use.

FEATURES

Swing Rotor High Speed Refrigerated Centrifuge (4 x 750 mL) - ToronCent™ HSR SB Key Features

The build centers on horizontal separation at volume, with a motor and control set chosen for the inertia that heavy swing rotors bring.

- **Two Swing Rotor Options**: 4 x 750 mL and 4 x 500 mL horizontal rotors mount on the same drive, so one instrument covers both bulk formats
- **Twelve Rotors Total**: ten fixed-angle rotors from 12 x 1.5/2.2 mL through 6 x 100 mL complement the two swing rotors
- **AC Frequency-Conversion Motor**: variable output frequency delivers smooth torque across the speed range, which suits high-inertia bucket loads
- **Aerosol-Tight Buckets**: sealed round buckets are available for both swing rotors when the sample calls for containment
- **Microplate Bucket**: deep-well and standard 96-well plates spin in the 4 x 500 mL rotor
- **99 User-Defined Programs**: stored methods recall in one step, which standardizes technique across shifts and operators
- **Ten Acceleration and Eleven Deceleration Rates**: ramp control keeps blood component layers and soft pellets intact through braking

- **Automatic Rotor Identification**: the drive recognizes the installed rotor and enforces its individual speed rating as over-speed protection
- **Imbalance Detection**: the control system halts a run when bucket loading falls outside tolerance, protecting the drive bearing
- **Electronic Door Interlock**: the lid stays locked while the rotor turns and releases only at rest
- **Non-CFC Refrigeration**: an R404a compressor circuit holds -20°C to 40°C within ±1°C without ozone-depleting refrigerant
- **Three Timing Modes**: start timing, speed timing, and continuous timing cover protocols that count from different reference points
- **Microprocessor Control with Touch Panel**: setpoints and running parameters display on an LCD, with direct entry rather than knob adjustment

THEORY & METHOD

Theory and Method

Swing rotors carry more mass farther from the axis than angle rotors, which makes loading balance the governing operational discipline. Buckets must sit in opposing pairs of matched weight, counting bucket, adapter, tubes, and sample together. A mismatch of a few grams at 4,000 rpm produces a rotating force the drive bearing has to absorb. The instrument monitors for imbalance and stops the run rather than letting the condition persist.

A loaded 4 x 750 mL rotor represents substantial rotational inertia, so bringing it to speed and back demands controlled torque rather than raw power. An AC frequency-conversion motor varies its output frequency to deliver torque smoothly across the whole speed range, which matters more with heavy swing rotors than with light microtube rotors. Ten acceleration and eleven deceleration rates set how gradually that torque applies.

Bucket size sets both capacity and reach. The 750 mL buckets extend farther from the axis and generate 3,500 x g at 4,000 rpm, while the 500 mL buckets reach 3,345 x g at the same speed. Adapter choice then divides that volume: one 500 mL

bottle, four 100 mL tubes, or 56 microtubes per bucket, among other configurations. Force stays the same regardless of how the bucket is subdivided, so tube count is a throughput decision rather than a separation one.

TECHNICAL SPECIFICATIONS

Swing Rotor High Speed Refrigerated Centrifuge (4 x 750 mL) - ToronCent™ HSR SB Technical Specifications

Parameter	Specification
Order Number	0202119000
Maximum Speed	21,000 rpm
Maximum RCF	30,642 x g
Maximum Capacity	4 x 750 mL
Speed Accuracy	±10 rpm
Time Setting Range	1 min to 99 h 59 min
Timing Modes	Start timing, speed timing, continuous timing
Temperature Setting Range	-20°C to 40°C
Temperature Accuracy	±1°C
Refrigeration Unit	Non-CFC compressor, R404a refrigerant
Drive Motor	AC frequency-conversion

Parameter	Specification
Display	Touch panel with LCD
Program Storage	99 user-defined programs
Acceleration / Deceleration Rates	10 / 11
Rotor Identification	Automatic
Noise Level	≤65 dB(A)
Voltage	AC 220 V ±22 V, 50 Hz (110V is also available)
Power Consumption	1.5 kW
Dimensions (W x D x H)	710 x 560 x 450 mm (28.0 x 22.0 x 17.7 in)
Packing Dimensions (W x D x H)	1,022 x 712 x 630 mm (40.2 x 28.0 x 24.8 in)
Net Weight	95 kg (209 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 1.5/2.2 mL	21,000 rpm	30,642 x g	0.2 mL, 0.5 mL
No. 2	0301806110	Fixed angle	12 x 5 mL	16,500 rpm	19,175 x g	0.5 mL, 1.5 mL
No. 3	0301805310	Fixed angle	12 x 10 mL	15,000 rpm	23,120 x g	1.5 mL, 5 mL
No. 4	0301805930	Fixed angle	6 x 50 mL (conical)	13,000 rpm	17,940 x g	15 mL conical; 50 mL round-bottom adapter included
No. 4A	0301805420	Fixed angle	6 x 50 mL	13,000 rpm	17,940 x g	1.5, 5, 10, 15, 20, 25, 30 mL

Rotor	Order Number	Type	Capacity	Max Speed	Max RCF	Adapters
No. 5	0302891036	Swing	4 x 750 mL	4,000 rpm	3,500 x g	See bucket tables (buckets sold separately)
No. 6	0302850110	Swing	4 x 500 mL	4,000 rpm	3,345 x g	See bucket tables (buckets sold separately)
No. 7	0301805520	Fixed angle	24 x 1.5/2.2 mL	16,500 rpm	26,050 x g	0.2 mL, 0.5 mL
No. 8	0301891097	Fixed angle	6 x 85 mL	12,000 rpm	15,805 x g	5, 10, 25 mL; 15 mL and 50 mL (conical/round)
No. 9	0301891099	Fixed angle	6 x 100 mL	10,000 rpm	11,960 x g	5, 10, 25 mL; 15 mL and 50 mL (conical/round)
No. 10	0301806220	Fixed angle	8 x 15 mL (conical)	15,000 rpm	24,036 x g	5 mL
No. 11	0301891095	Fixed angle	6 x 30 mL	15,000 rpm	20,438 x g	5 mL, 10 mL

Buckets and Adapters: Rotor No. 5 (4 x 750 mL Swing)

Bucket	Order Number
Round bucket	0303891025
Aerosol-tight round bucket	0303891006

Adapter Configuration	Order Number
4 x 1 x 500 mL conical	0304891035
4 x 1 x 500 mL flat	0304891036
4 x 1 x 250 mL conical	0304891562
4 x 1 x 250 mL flat	0304891039
4 x 4 x 100 mL	0304891006
4 x 5 x 50 mL (self-standing tube)	0304891024

Adapter Configuration	Order Number
4 x 7 x 50 mL conical	0304891003
4 x 7 x 50 mL round	0304891004
4 x 10 x 20 mL	0304891163
4 x 15 x 15 mL conical	0304891005
4 x 19 x 10 mL (self-standing tube)	0304891732
4 x 21 x 10 mL	0304891730
4 x 27 x 5/7 mL vacuum blood collection tube	0304891728
4 x 37 x 5 mL (RIA tube)	0304891166
4 x 56 x 1.5 mL	0304891025

Custom adapter configurations are available on request.

Buckets and Adapters: Rotor No. 6 (4 x 500 mL Swing)

Bucket	Order Number
Round bucket	0303891022
Aerosol-tight round bucket	0303891077
Rectangular bucket	0303851421
Rectangular bucket with sealing cover	0303891016
Microplate bucket	0303891110

Bucket Type	Adapter Configuration	Order Number

Round	4 x 1 x 250 mL	0304891142
Round	4 x 2 x 100 mL	0304891009
Round	4 x 4 x 50 mL (conical/round)	0304891008
Round	4 x 7 x 20 mL	0304851485
Round	4 x 9 x 15 mL (conical/round)	0304891083
Round	4 x 11 x 15 mL conical (cap ≤21.5 mm)	0304891508
Round	4 x 14 x 10 mL	0304891705
Round	4 x 19 x 5/7 mL vacuum blood collection tube	0304851450
Round	4 x 36 x 1.5 mL	0304891677
Rectangular	4 x 1 x 250 mL	0304891041
Rectangular	4 x 3 x 100 mL	0304891744
Rectangular	4 x 6 x 50 mL (conical/round)	0304891014
Rectangular	4 x 12 x 15 mL conical	0304891582
Rectangular	4 x 12 x 15 mL round	0304891779
Rectangular	4 x 20 x 10 mL	0304891077
Rectangular	4 x 31 x 5/7 mL vacuum blood collection tube	0304891782
Rectangular	4 x 56 x 1.5 mL	0304891603
Microplate	4 x 1 x 96 deep-well plate	Contact Torontech
Microplate	4 x 2 x 96 microplate	Contact Torontech

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