Instruction Manual

Savant® SC250 Express SpeedVac® Concentrator

121-3006-00 Rev. B

Analyze • Detect • Measure • Control™

Thermo ELECTRON CORPORATION

Contents

1.0 INTRODUCTION

The Savant SC250 Express centrifugal vacuum concentrator, offers fast, reliable batch processing of samples. It effectively removes a broad range of aggressive and volatile solvents to concentrate or dry solutes, analytes and residues while providing complete sample recovery. The heavy-duty Universal Rotor is optimized for efficient large sample processing while accommodating various sample handling formats.

The combination of vacuum, applied to the sample chamber from an external source, and centrifugal action promotes solvent evaporation without sample loss due to foaming or bumping. The evaporation process is accelerated with the addition of chamber heat to counteract the extreme evaporative cooling of the samples. The concentration process is completed with the addition of a vapor condensation trap available separately for virtually 100% solvent recovery. This results in a thorough evaporation process in a safe environment for both the sample and the user.

The compact, industrial strength SC250 Express features:

- heavy-duty Universal Rotor for high sample throughput and flexible sample handling formats; carriers capable of holding interchangeable rotor blocks for vials and tubes as well as multiple microplates

- ultimate chemical resistance to aggressive solvents with the following provisions:
  - rugged stainless steel magnetic drive lubricated with acid-resistant grease
  - Teflon® and Teflon® coated materials used exclusively in the vapor path
  - dual valve manifold positioned to reduce solvent vapor exposure
  - dedicated bleed port added to assure unidirectional vapor flow and to purge bearings with fresh air

- faster evaporation rate with the following enhancements:
  - enlarged vacuum port increases cross-section of vapor path
  - built-in chamber radiant lamps positioned for optimal evaporation temperature of samples in the Universal Rotor
  - heated glass cover adds radiant heat to samples and prevents condensation of DMSO on cover

- microprocessor control of run and heat times offer fully unattended, automatic operation

- built-in digital vacuum gauge and added sight glass allow continuous monitoring of process and system status as well as the visual inspection of the rotor movement

1.1 CONTENTS

(1) Savant SC250 Express SpeedVac® Concentrator with attached SUMAX400
(1) Teflon® hose assembly 1.5" I.D
(1) Teflon® tubing 1/2" I.D. x 4' long
(1) Flask cap assembly
(2) Clamp, NW50 aluminum
(2) NW50 centering ring with O-ring
(1) GF4000 - Four (4) liter Glass Flask with screw threads
(1) Insulation cover
(1) UPR-4A Aluminum Universal Plate Rotor, 4-Place
(1) Choice of Universal Plate Carrier, Set of 4
UPC-1 Single-shelf for Blocks
or UPC-2 Double-shelf for Deepwell Plates
or UPC-5 Five-shelf for Shallow-well Plates
(1) Cover Lock Emergency Release Tool
(1) Line Cord

2.0 INSTALLATION

Contact Thermo with any shipment problems.

Receiving. Call Thermo if the shipping carton shows any visible sign of damage.

Unpacking. Carefully remove the instrument, loose accessories and paperwork from the shipping carton. Compare the contents with the packing list and call Thermo if there is a discrepancy.

Inspection. Inspect the unit for any damage that may have occurred during shipment. Should there be any damage, report it to the carrier and contact Thermo immediately. Make sure the carrier inspects the damage and leaves an inspection report. Register any claims for shipping damage against the carrier or its agent. Save the shipping carton in the event a return is necessary.

Set-up. To assure safe operation and best results, read this manual in its entirety before operating the SC250 Express concentrator.

2.1 SITE PREPARATION

- Install the SC250 Express on a clean, dry, stable, level surface within 4 ft. (1.3 m) of a compatible electrical outlet.
- Place the unit in a convenient location with access to a vacuum source and a vapor trap*.
- Overhead clearance, equal to 18" (46cm), is required for raising the cover.

WARNING: Before connecting the concentrator to an outlet, make certain that the voltage, frequency and amperage match the requirements indicated on the label on the rear of the instrument (120 VAC / 60 Hz, 10 A, 220 VAC / 60 Hz, 5 A; or 230 VAC / 50 Hz, 5A).

*To prevent damage to pump due to vapor exposures from sample solvent and to extend pump life, a vapor trap that condenses and traps vapors must be placed in-line between the SpeedVac® concentrator and vacuum pump. We offer integrated universal vacuum systems (integrated vapor trap with vacuum pump) or component vacuum system (vapor trap plus vacuum pump). See table 1 for recommended DDA components. Call Thermo for the complete line of vacuum pumps and refrigerated vapor traps.

TABLE 1: For combinatorial chemistry application, we recommend the following:

VACUUM SYSTEM	SOLVENTS TO BE EVAPORATED
UVS800DDA Universal Vacuum System	volatile, low boiling solvents ($MeCl_2$), corrosive solvents (TFA) and mixtures, small amounts of high boiling solvents (DMSO, DMF)
RVT405DDA Refrigerated Vapor Trap + VLP80DDA High Vacuum Pump	large volumes of high boiling solvents (DMSO, DMF)
RVT4104 Ultra-Low Temperature Refrigerated Vapor Trap + VLP80DDA High Vacuum Pump	large volumes of low boiling solvents ($MeCl_2$)
RVT405DDA Refrigerated Vapor Trap + RVT4104 Ultra-Low Temperature Refrigerated Vapor Trap + VN100DDA VaporNet® Controller + VLP80DDA High Vacuum Pump	all types of solvents

2.2 PREPARING THE CONCENTRATOR FOR USE

1. Connect power cord to instrument and plug into appropriate outlet. The safety lid locking mechanism on SC250 Express will automatically disengage.
2. Lift the lid and clean the concentrator chamber of any packing material or foreign items that may be present from shipping.

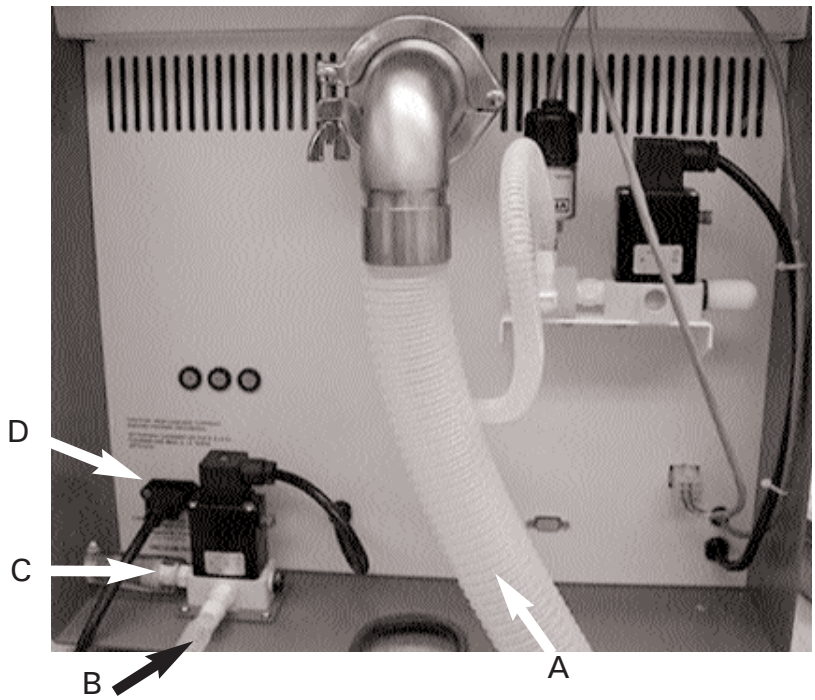
2.3 ROTOR INSTALLATION

1. Lower the Universal Rotor* (UPR-4A) onto the assembly (SUMAX400) by visually aligning the pin on the drive shaft of the assembly with the groove on the bottom of the rotor.
2. Rotate the rotor by hand to ensure alignment of the pin with the groove.
3. Secure the rotor assembly by screwing the retaining knob into the drive shaft above the rotor.
4. Tighten it firmly but not excessively.

* When using a Thermo standard disk rotor (see section 3.7 for selection of fixed-angle rotors) instead of the Universal Rotor (UPR-4A), a Rotor Adapter Attachment (RAD200) is required. Attach the adapter to the upper magnetic assembly (SUMAX400) before using the standard disk rotor.

CAUTION: Only UPR-4A Universal Rotor or other Thermo rotors should be used in the SC250 Express. Do not use other rotors even if they seem to fit the instrument.

2.4 CONNECTION TO VAPOR TRAP AND VACUUM SOURCE



(A) Concentrator Vacuum/Vapor Port: Connect this 1.5″ I.D. Teflon® hose to the polypropylene screw cap of the vapor trap. Use clamp and centering ring to secure the tubing to the concentrator.

(B) Automatic Valve Port: Connect this 1/2″ I.D. Teflon® tubing to vapor trap and to the solenoid.

(C) Vacuum Line: Coat fitting with a thin film of vacuum grease.
Connect 1/2″ I.D. vacuum tubing(not included, recommended: M30-0007-03 Tygon vacuum tubing) to this fitting and the other open end to the vacuum pump.

(D) Power Cord Main Outlet.

3.0 OPERATION

The SC250 Express Concentrator is an important component in a complete concentration system that should also include a refrigerated vapor trap and a vacuum pump along with other applicable accessories. Please refer to operating instructions of each component for details on usage.

3.1 SAMPLE LOADING

1. Evenly distribute vials or tubes (if not completely filled) in the appropriate Rotor Blocks**. Not every holder needs to be filled, but the load must be evenly distributed.

   If using a Thermo standard disk rotor, place vials or tubes uniformly spaced and symmetrically in the rotor, then proceed to step 3.

** A wide variety of rotor blocks for holding tubes and vials are available from Thermo. See Section 3.7 for available Rotor Blocks. Always select a rotor or Rotor Block for which the sample tubes fit snugly. Contact Thermo Technical Services for help on Rotor Block selection and custom Rotor Block needs.

2. Load and balance all 4 carriers:
   - UPC-1 or UPC-2 with filled or empty Rotor Blocks

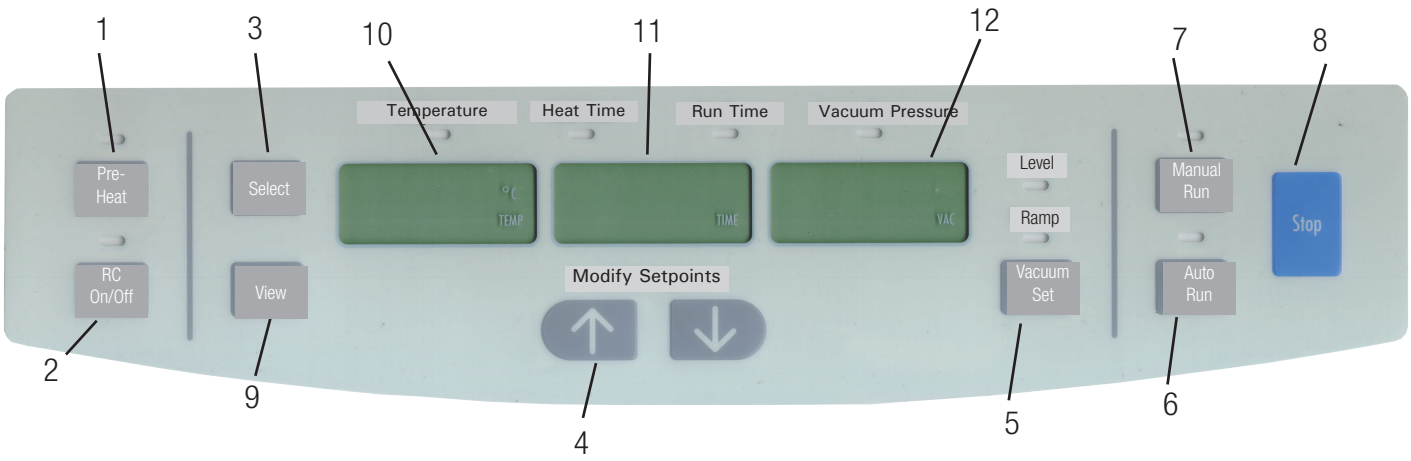
When placing Rotor Blocks in the carriers, make sure the side of the Rotor Block is flushed with the raised "lips" of the carrier. This ensures that the Blocks do not slip out when the rotor is in motion.

- UPC-1 or UPC-2 with deepwell plates
- UPC-1, UPC-2 or UPC-5 with microplates

Note: If all shelves of multi-shelf carriers (UPC-2 or UPC-5) are NOT utilized, always place and balance the Rotor Blocks or 96 well plates on the lower shelf or shelves of each individual carrier. This will prevent the rotor from spinning improperly.

3. Close lid after proper loading of samples.

3.2 CONTROL PANEL



Description of Control Panel

1. **PRE-HEAT** - use to pre-heat chamber to 45 °C prior to beginning or between runs. Once run is initiated the pre-heat stops.

2. **RC ON/OFF** - Use to add radiant heat to chamber. Manually activate by pressing ON/OFF at any point during run. Will activate as long as there is time left on the heat timer. Will turn off when heat timer = 0.00

3. **SELECT** - Press this button to select the parameters to be modified. Selection is from left to right. GREEN light indicates the parameter to be modified.

4. **MODIFY SET POINTS UP/DOWN** - Modifies selected parameter.

5. **VACUUM SET - (VACUUM CONTROLLER)** - Selects either "Level" or "Ramp" in the VAC display.
   Level: Allows users to select a pre-set vacuum level. Once this level is obtained, the microprocessor will regulate and maintain this vacuum level. The vacuum level can be set from 20 torr to 100 mtorr.
   Ramp: The rate at which vacuum is achieved can be set for preventing bumping. 5 adjustable levels can be set as required depending upon your solvent.

Setting	Vacuum Rate (approximate)
5	70 torr/min (Maximum setting)
4	50 torr/min
3	40 torr/min
2	30 torr/min
1	5 torr/min

6. **AUTO RUN** - Starts an 'Automated' run.

7. **MANUAL RUN** - Starts a "Manual" run.

8. **STOP** - Terminates "Manual" or "Auto" run.

9. **VIEW** - Press to view. Displays preset parameters when pressed during a run.

10. **TEMPERATURE DISPLAY** - Indicates set temperature or actual temperature during a run in °C.

11. **TIME DISPLAYS** - Indicates heat timer or run timer set-points. In the process of a run it indicates elapsed time or time left. Set from 0.01 [1 min.] to 9.59 [9 hours, 59 minutes] or "CCC" [continuous].

12. **VACUUM PRESSURE DISPLAY** - Displays vacuum level or ramp. Chamber vacuum is displayed in torrs or millitorrs by shifting a decimal point. "Hpr." represents atmospheric pressure. No decimal point indicates microns. Ramp can be set to five (5) adjustable levels.

NOTE - The unit will sound an audible beep, every time a button is pressed.

3.3 EXAMPLE OF A MANUAL RUN

1. Connect the unit to its required voltage.

2. The cover lock disengages, allowing the top cover to be opened.

   The display lights up, showing the following default values:

Temperature:	45 °C in RED
Run Time:	2.00 HRS. in GREEN
Vacuum Pressure:	01.0 in AMBER

3. Using the "SELECT" button and the up/down keys, set TEMPERATURE between 45 °C and 80 °C, or "no", for no heat.

4. Using the "SELECT" button and the up/down keys select and modif "HEAT TIME" to between 0.01 and 9.59 hours or CCC (for continual heating). When the heat timer expires, the heater will shut off, no matter what the temperature setpoint reads (except if CCC).

5. Select Run Time: Since this a manual run no time adjustment is needed"

6. To select a VACUUM LEVEL, press "VACUUM SET" to illuminate LEVEL and use th up/down keys to set vacuum to desired level. To select a vacuum ramp rate, press "Vacuum Set" to illuminate RAMP and use the up/down keys to set a ramp rate (5 = highest, 1 = lowest).

7. Place the sample tubes in the rotor and ensure that the load is balanced. Secure rotor with the supplied knob. Close cover.

8. Pre-heat may be selected at this time, to warm chamber to 45 °C.

9. Press the "MANUAL RUN" button. The cover locks and rotor starts turning. The decimal point blinks and the "RUN TIME" display counts up. The temperature rises to the set temperature. The "HEAT TIME" will count down and vacuum will be applied to the chamber. The vacuum level begins falling.
   NOTE: If the cover is not closed, the display will show "Lid" and the run will not start.

10. Press R/C for radiant chamber heat. Press at any time to turn OFF and ON. (As long as there is time left in the heat timer).

11. To end the manual run, press "STOP" button. The display will show "End", the valves will click, isolating the chamber from the vacuum pump and also allowing air to bleed into the chamber.

12. After the rotor stops spinning, the cover lock disengages and the display reverts to last set parameters, and the unit will sound several audible beeps.

13. Open the cover and remove samples.

GENERAL: During the run, display shows actual parameters. To check set parameters press "VIEW" button and "SELECT". The display will revert temporarily to set points.

3.4 EXAMPLE OF AN AUTO RUN

1. Refer to the "MANUAL RUN" section for start up.

2. To execute an AUTO "TIMED" RUN:

   a) Use "SELECT" button and the up/down keys to select and modify "TEMPERATURE, "HEAT TIME, "RUN TIME" parameters. RUN and HEAT TIME can be set from 0.01 to 9.59 hours (HEAT TIME also has "CCC" for continuous use).

   b) To set a VACUUM LEVEL, press "VACUUM SET" to illuminate LEVEL up/down keys to set vacuum to desired level.
   To select a vacuum ramp rate, press "Vacuum Set" to illuminate RAMP and use the up/down keys to set a ramp rate (5 = highest, 1 = lowest).

3. Place the sample tubes in rotor so load is balanced. Secure rotor with supplied knob. Close cover.

   a) Press "AUTO RUN" button to start the run. The cover locks and the rotor starts spinning. The time display is counting down in 1 minute Intervals and the decimal point blinks. The heat time is counting down (use select button to view "HEAT TIME"). The temperature rises in 1 °C increments to set temperature. The vacuum pressure begins decrementing down from "HPr" (atmospheric pressure), after both SAV valves actuate, applying vacuum to the chamber.

   b) The vacuum display will indicate vacuum pressure in the chamber.

   NOTE: If the cover is not closed, the display will show "Lid" and the run will not start.

c) Press R/C for radiant chamber heat. Press at any time to turn OFF and ON. (As long as there is time left in the heat timer).

d) Once the time decrements to 0.00 HRS. the run will automatically stop, the display will show “End”,the SAV valves will click, also allowing air to bleed into the chamber.

e) After the rotor stops spinning, the cover unlocks and the display reverts to last set parameters, and the UNIT will sound several audible beeps.

f) Open the cover and remove samples.

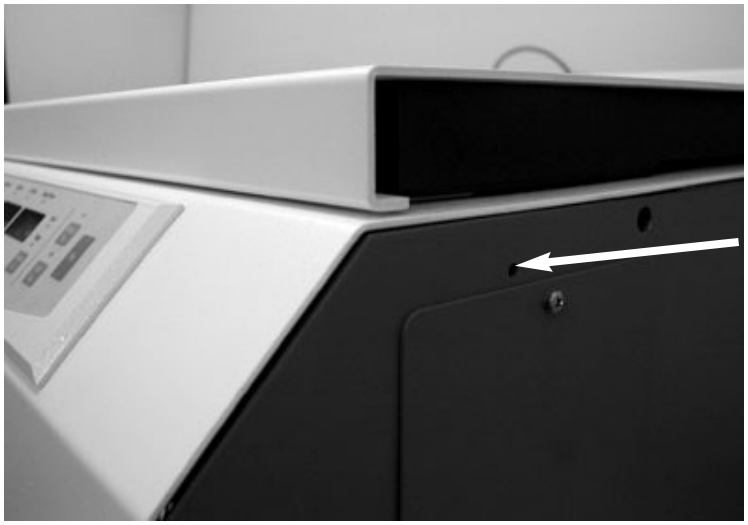
GENERAL: During the run, display shows actual parameters. To check set parameters press “VIEW” button and “SELECT”. The display will revert temporarily to set points.

3.5 OTHER TOPICS

Chamber cover. The cover must be closed before beginning a run. If you press “Manual Run” or “Auto Run” and the cover is open, the display shows “lid” to remind you to close the cover.

A user cannot open the cover during a run due to vacuum in the concentrator chamber. The cover is locked down at all times during a run and whenever power to the unit is interrupted.

The cover lock is an additional safety feature that reduces the risk of injury or damage from the spinning rotor. DO NOT bypass the cover lock to conduct a run with the cover open. If removal of samples from the concentrator chamber during a power failure is required, insert a firm, thin object into the hole on the side of the unit. Press the object gently into the hole until the cover hook is released. The cover can then be opened.

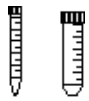


In order to release the cover, insert a firm, thin object into this hole and press the object gently.

3.6 SPECIFICATIONS

Dimensions (W x H x D):	18 in x 26 in x 18 in (46 cm x 66 cm x 46 cm)
Weight:	86 lbs (39 kgs)
Electrical Requirements:	120 VAC / 60 Hz, 10 A 220 VAC / 60 Hz, 5 A 230 VAC / 50 Hz, 5 A
Vacuum Chamber:	Teflon® coated, chemical-resistant aluminum casting. Includes four built-in radiant lamps.
Cover:	Heated Glass, chemical-resistant.
Drive:	Stainless steel magnetic coupling drive with acid-resistant Teflon® bearings.
Vacuum Level Control:	20 to 0.1 torr
Vacuum Ramp Setting:	1 to 5 (5 = maximum vacuum)
RUN and HEAT Timer:	1 minute to 9 hours and 59 minutes, (continuous)
Temperature Set Range:	45 to 80 °C, in 5 °C increments

3.7 ROTORS, ROTOR BLOCKS, CARRIERS and ACCESSORIES

	Working Volume (ml)	Number of Tubes	Description	Models SC110/SC110A SPD-Series ISS110, AES1010, SPD1010	Models SC210A, AES2010, SPD2010, SC250 Express	Rotor Model	Page
MICROCENTRIFUGE TUBES 	1.2 - 1.6	40	1.5 - 2.0 ml	■		RH40-11	46
	1.2 - 1.6	64	1.5 - 2.0 ml	■		RH64-11	45
	1.2 - 1.6	120	1.5 - 2.0 ml	■		RH120-11	n/a
	1.2 - 1.6	200	1.5 - 2.0 ml		■	RH200-12*	49
GLASS AND PLASTIC TUBES 	0.3	100	0.5 ml (8 x 29 mm)	■		RH100-8	44
	0.3	40	0.4 ml (6 x 50 mm)	■		RH40-6	n/a
	0.3	100	0.4 ml (6 x 50 mm)	■		RH100-6	44
	0.3	20	12 x 75 mm	■		RH20-12	46
	0.3	40	1.5 - 2.0 (12 x 75 mm)	■		RH40-12	47
	0.3	72	12 x 75 mm	■		RH72-12	45
	4	200	12 x 75 mm		■	RH200-12*	49
	4	10	13 x 100 mm	■		RH20-12	46
	4	32	13 x 100 mm	■		RH32-13	46
	4	118	13 x 100 mm		■	RH200-12*	49
	8	48	16 x 125 mm		■	RH48-18-125*	48
	8	60	17 x 100 mm, 16 x 100 mm		■	RH60-17-100*	48
	8	8	17.5 x 102 mm, 15 ml Corex® tubes	■		RH8-17.5	45
	12	8	18 x 100 mm, 17 x 95, 16 x 100	■		RH8-18	46
	10	48	18 x 125 mm		■	RH48-18-125*	48
	15	4	18 x 150 mm	■		RH4-18-150	n/a
	10	32	18 x 150 mm, 16 x 125 mm		■	RH32-18-150*	48
	15	6	25 x 105mm, 30 ml Corex® tubes	■		RH6-25	47
	24	12	28 x 150 mm		■	RH12-29	48
CENTRIFUGE TUBES 	30	10	15 ml conical (16 x 120 mm)	■		RH10-15	44
	40	30	15 ml conical (17 x 120 mm)		■	RH60-17-100*	48
	12	52	15 ml conical (16 x 120 mm)		■	RH52-15*	49
	12	6	50 ml conical (28 x 115 mm)	■		RH6-50	45
	12	12	50 ml conical (28 x 115 mm)		■	RH12-29	48
	40	26	50 ml conical (28 x 115 mm)		■	RH26-50*	49
	40	48	50 ml conical (28 x 115 mm)		■	RH48-50*	49
FLASKS 	40	8	50 ml pear-shaped flask	■		RH8-50	45
	40	4	100 ml pear-shaped flask	■		RH4-100	46
	35	8	100 ml pear-shaped flask		■	RH8-200	n/a
	80	6	250 ml pear-shaped flask		■	RH6-400	48
	80	4	500 ml pear-shaped flask		■	RH4-500*	41
	200	8	100 ml recovery flask		■	RH8-100	48
	400						
VIALS 	80	60	12 x 32 mm	■		RH60-12-40	45
	2	192	1 dram vial (4 ml)		■	RH192-15*	49
	3.0	60	12 x 40 mm vials	■		RH60-12-40	45
	2.0	12	20 x 47 mm v-vials	■		RH12-20	44
	2.4	24	1 dram vials (15 x 45 mm), 4 ml	■		RH24-15	44
	3	12	20 x 60 mm v-vials	■		RH12-20	44
	4	24	18 x 52 mm mini-scintillation vials	■		RH24-18	46
	5.6	12	28 x 60 mm scintillation vials	■		RH12-28	47
	16	50	28 x 60 mm scintillation vials		■	RH50-28-60*	49
	16						
BOTTLES	250	8	250 ml centrifuge bottles		■	RH8-200	n/a
MICROPLATE 	0.3	2	Multiwell Plates (shallow)	■		RH2MP	50
	0.3	12	Multiwell Plates (shallow)		■	MPTR12-210	50
	1 - 2	8	Multiwell Plates (Beckman deepwell)		■	MPTR8-210	50

For SPD-Series concentrators ONLY

GLASS AND PLASTIC TUBES 	24	6	18 x 150 mm tubes	RH6-18-150	47
MICROPLATE 	0.3	6	Multiwell Plates (shallow)	RHSW6MP	50
	1 - 2	2	Multiwell Plates (deepwell)	RHDW2MP	50

*For use in SC250DDA and SC250 Express SpeedVacs with RAD200 adapter.

3.7 ROTORS, ROTOR BLOCKS, CARRIERS and ACCESSORIES (con't)

Rotors	Tube type	Number of Tubes	Description
RH200-12	Microcentrifuge	200	1.5 - 2.0 ml
RH200-12	Glass & plastic	200	12 x 75 mm
RH200-12	Glass & plastic	118	13 x 100 mm
RH88-16-125S	Glass & plastic	88	16 x 125 mm
RH60-17-100	Glass & plastic	60	17 x 100 mm, 16 x 100 mm
RH48-18-125S	Glass & plastic	48	18 x 125 mm
RH32-18-150	Glass & plastic	32	18 x 150 mm, 16 x 125 mm
RH12-29	Glass & plastic	12	28 x 150 mm
RH60-17-100	Centrifuge	30	15 ml conical (17 x 120 mm)
RH52-15	Centrifuge	52	15 ml conical (16 x 120 mm)
RH12-29	Centrifuge	12	50 ml conical (28 x 115 mm)
RH26-50	Centrifuge	26	50 ml conical (28 x 115 mm)
RH48-50	Centrifuge	48	50 ml conical (28 x 115 mm)
RH192-15	Vial	192	1 dram vial (4 ml)
RH50-28-60	Vial	50	28 x 60 mm scintillation vials

UPR-4A Swing-out, horizontal rotor for holding carriers

Carriers:

UPC-1 Single-shelf carriers for Rotor Blocks, set of 4
UPC-2 Double-shelf carriers for deepwell plates, set of 4
UPC-5 Five-shelf carriers for microplates, set of 4

Rotor Blocks:

Polypropylene Rotors Blocks

Order Number Description

RB12-25-52 (12) 2 dram vials, 25 x 52 mm, (set of 2)
RB12-27-60 (12) 5 dram vials, 27 x 60 mm, (set of 2)
RB12-28-58 (12) 20 ml scintillation vials, 28 x 58 mm, (set of 2)
RB15-16-125 (15) tubes, 16 x 125 mm, (set of 2)
RB24-15-45 (24) 1 dram vials, 15 x 45 mm, (set of 2)
RB24-16-100 (24) tubes, 16 x 100 mm, (set of 2)
RB24-17-31 (24) 3 ml beakers, 17 x 31 mm, (set of 2)
RB35-13-100 (35) tubes, 13 x 100 mm, (set of 2)
RB126-6-32 (126) tubes, 6 x 32 mm, (set of 2)
RB24-17-60 (24) vials, 17 x 60 mm, (set of 2)
RB25-11-39 (25) tubes, 1.5 ml microcentrifuge tubes, (set of 2)
RB30-8-30 (30) tubes, 0.5 ml microcentrifuge tubes, (set of 2)
RB6-28-110 (6) vials, 28 x 110 mm, (set of 2)

3.7 ROTORS, ROTOR BLOCKS, CARRIERS and ACCESSORIES (cont'd)

Aluminum Rotor Blocks

Order Number	Description
RBA12-25-52	(12) 2 dram vials, 25 x 52 mm, (set of 2)
RBA12-27-60	(12) 5 dram vials, 27 x 60 mm, (set of 2)
RBA12-28-58	(12) 20 ml scintillation vials, 28 x 58 mm, (set of 2)
RBA15-16-125	(15) tubes, 16 x 125 mm, (set of 2)
RBA24-15-45	(24) 1 dram vials, 15 x 45 mm, (set of 2)
RBA24-16-100	(24) tubes, 16 x 100 mm, (set of 2)
RBA24-17-31	(24) 3 ml beakers, 17 x 31 mm, (set of 2)
RBA35-13-100	(35) tubes, 13 x 100 mm, (set of 2)
RBA12-22-120	(12) tubes, 22 x 120 mm, (set of 2)
RBA24-17-60	(24) vials, 17 x 60 mm, (set of 2)
RBA35-13-100	(35) tubes, 13 x 100 mm, (set of 2)
RBA54-12-32	(54) vials, 12 x 32 mm, (set of 2)

Accessories:

RAD200	Rotor Adapter Attachment

4.0 WARRANTY & LIABILITY

All Thermo products mentioned in this manual (except glassware) are warranted against defects in material and workmanship for one year after the date of delivery to the original purchaser. Thermo's warranty is limited to defective materials and workmanship. Warranty work is subject to our inspection of the unit. No instruments, equipment, or accessories will be accepted without a Return Material Authorization (RMA) number issued by Thermo. The warranty obliges you to follow the precautions in this manual.

When returning apparatus that may contain hazardous materials, you must pack and label them following U.S. Department of Transportation (DOT) regulations applying to transportation of hazardous materials.Your shipping documents must also meet DOT regulations. All returned units must be decontaminated and free of radioactivity.

Under no circumstances shall Thermo be liable for damages due to the improper handling or use of its products. Thermo assumes no liability, express or implied, for your use of this equipment.

It is the responsibility of the user to dispose of ALL materials in a manner in accordance with all federal, state and local regulations.

APPENDIX 1 MAINTENANCE & SERVICE

Maintaining a clean instrument is crucial for dependable results. Clean spills immediately. Build-up of dried solvents can impair rotor from rotation. Periodic cleaning of chamber is recommended. Use a detergent solution on a sponge or gauze to thoroughly wipe the chamber dry. Do not lubricate the O-ring. Make sure the chamber seal (cover O-ring) is clean.

SUMAX400 MAINTENANCE:

Every two weeks or dependent upon usage, please execute the following steps

- Obtain Phillips head screwdriver
- Insure that gloves and safety glasses are being worn
- Using Phillips head screwdriver remove the three screws that secure the SUMAX400 (place screws in a safe place)
- Remove the SUMAX400 by lifting it straight up, using the rotor hold down knob
- Place the SUMAX400 in a plastic container
- Rinse the SUMAX400 thoroughly under running tap water to rid of all debris and residue
- Wipe the inside of the SpeedVac® Concentrator with a damp paper towel
- Wipe the SUMAX400 dry with a paper towel
- Properly dispose of the collected water and paper towels into specially designated containers
- Return the SUMAX400 to its original position inside the concentrator chamber, align holes of SUMAX400 with threaded holes in chamber
- Reinstall the 3 screws into the thread holes
- Tighten the 3 screws securely
- Tighten the rotor hold down knob firmly

If you encounter difficulties with this procedure, please contact Thermo.

Thermo Electron Corporation

Bioscience Technologies

450 Fortune Boulevard
Milford, MA 01757
866.9.THERMO (866.984.3766) • Fax: 508.634.2199
www.thermo.com

Laboratory Pipetting and Consumables
info.pipettes@thermo.com

Molecular Biology
info.molbio@thermo.com

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info.microplateinstruments@thermo.com

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info.sampleprep@thermo.com

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newlabs@thermo.com

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info.controlenv@thermo.com

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services.biosciencetech@thermo.com

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Technologies

International Sales Office Locations

Belgium
Brussels
+32 2 482 30 30
Fax: +32 2 482 30 31

France
Cergy Pontoise Cedex
+33 1 34 32 51 51
Fax: +33 1 34 32 51 59

Germany
Dreieich
+49 6103 408 0
Fax: +49 6103 408 1222

Netherlands
Breda
+31 76 571 4440
Fax: +31 76 587 9757

Russia
Saint-Petersburg
+7 812 325 8045
Fax: +7 812 186 1194

Moscow
+7 095 755 9045
Fax: +7 095 755 9046

Spain
Barcelona
+34 93 2233154
Fax: +34 93 2230857

Sweden
Stockholm
+46 8 742 03 90
Fax: +46 8 742 09 47

Lund
+46 46 90 96 60
Fax: +46 46 32 87 70

United Kingdom
Basingstoke, Hampshire
+44 01256 81782
Fax: +44 01256 81792

China
Beijing
+8610 5850 3588
Fax: +8610 6621 0847

Shanghai
+8621 5465 7588
Fax: +8621 6445 7830

Hong Kong
Wanchai
+852 2885 4613
Fax: +852 2567 4447

India
Bangaalore
+91 22 2778 1101
Fax: +91 22 2778 1103

Japan
Yokohama-City
+81 45 453 9122
Fax: +81 45 453 9222

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