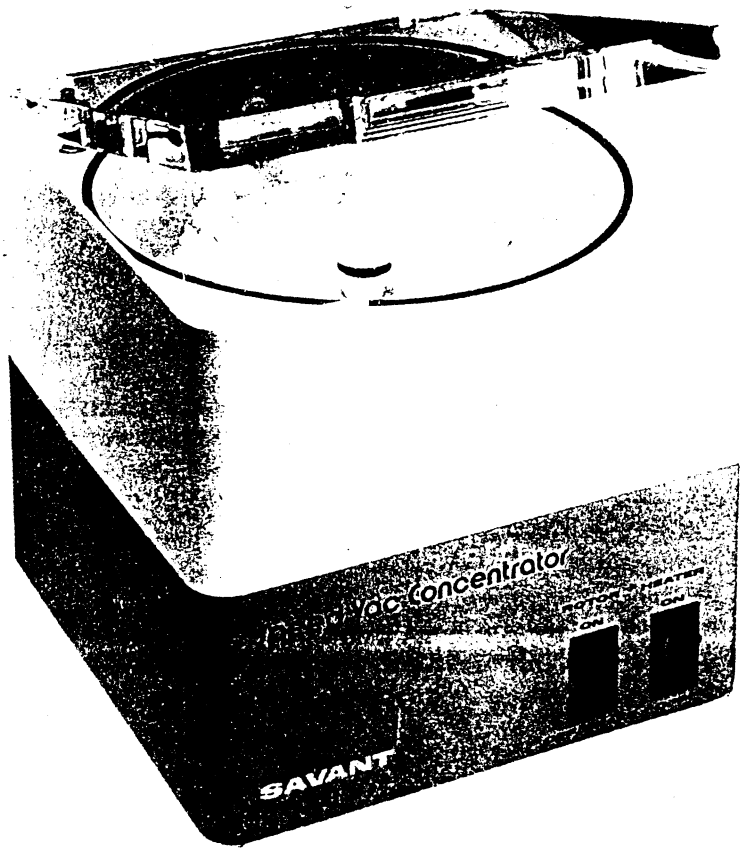
Savant
INSTRUCTION MANUAL
Speed Vac Concentrator
Model SVC-100H 3 SVC200H
With Built-In Heater



UNPACKING

Carefully remove the equipment from the shipping crate. Check each item against the packing slip. In case of damage, notify the carrier immediately and make sure that the carrier inspects and leaves an inspection report. Register any claims for shipping damage against the carrier or his agent. It is always advisable to hold the shipping carton until equipment has been inspected and checked, as on rare occasions it has been necessary to return equipment for repair.

DESCRIPTION

The Speed Vac Concentrator Model SVC-100H was designed for rapid evaporation and solidification of biological solutions in microtubes by centrifugal force in vacuum. The combined action concentrates the biochemical solute in minimum volume and in minimum time. The sample material does not settle on the sides of the tube so that the smallest amount of diluent is required to recover the sample. This instrument contains an internal chamber thermostatically controlled at 45°C.

Up to 100 sample tubes capacity for preparing dry extracts of tissue cells. (H_2O, TCA, NH40H, Organic Solvents.) Volume reduction and sample concentration without loss of solute for amino acid, gas chromatography, mass spectrometry, sensitive analytical, clinical and screening procedures. Use with special bottom tapered tubes, regular test tubes, minivials, and silylation vials.

EVAPORATION TIMES FOR TYPICAL SOLVENTS

The table below should be used as a guide only. Each system is different depending on the type of vacuum pump, trap temperatures, firmness of fittings and connections, degree of system contamination, and other factors. The type and quantity of solutes in solution also effects the drying time. One can check the soundness of the system by running one of the following solvents.

A typical setup using a 25L/Min pump and a −60 °C refrigerated condensation trap connected to a Speed Vac with a RH20-12 Rotor will give these evaporation times at approximately 150 micron vacuum, with vacuum gauge placed between pump and trap.

SOLVENT	NUMBER OF GLASS TUBES	VOLUME/TUBE	*(See Note 1)* TIME TO ABSOLUTE DRYNESS NO HEAT	WITH HEAT
WATER	2	1 ml	100 min.	40 min.
ETHANOL	2	1 ml	35 min.	20 min.
METHANOL	2	1 ml	25 min.	15 min.

Notes to the above table:

1) Heat refers to using the internal heater and black tube holders with glass test tubes. THE BTH-20 or BTH-40 holders are aluminum with a black hardcoat anodize finish. This finish will lighten if washed with methanol, use caution to retain black finish. The BTH holders are recommended for maximum efficiency with the RH20-12 Rotor and come in sets of 20. The BTH-40 holders are used in the RH-40-6 Rotor and come in sets of 40.
2) The number of tubes run at one time has some but very little effect on the total drying time, i.e. 10 tubes will evaporate to dryness in about the same time as 4 tubes with the same volume per tube.
3) Solvents with greater volatility than methanol evaporate more rapidly and in general require no heat. Savant manufactures for this application a Water Jet Unit. Since organic volatile solvents evaporate quickly and need less vacuum, the Savant Water Jet supplies this vacuum down to 5 or 10 torr. This vacuum, plus the mixing of the evaporated solvents with water, keeps vapors to a minimum. Highly diluted solvents are then disposed of in sink drains. *See Savant literature for more specific information.*

CAUTION: NEVER APPLY HEAT THROUGH THE PLEXIGLASS COVER. IT ABSORBS THIS HEAT AND WILL DEFORM. PARTICULARLY UNDER VACUUM. ALWAYS KEEP COVER FREE AND CLEAR OF ANY CHEMICALS OR CONTAINERS.

SERVICE AND MAINTENANCE

The Upper Magnetic Assembly is located in the vacuum chamber and is comprised of the rotor drive shaft, mounting plate, bearings, and a driven magnet assembly. This assembly can be serviced as follows:

1) Remove the hold down knob and rotor.
2) Remove the three Phillips head screws on the mounting plate.
3) Replace the hold down knob and lift straight up to break the magnetic attraction.
4) Rotate mounting plate by holding magnet rigid. If rotation is not smooth, then bearing needs replacement or it is possible to obtain from Savant a complete replacement or spare "upper magnet assembly", Model # UMA-100.

The Lower Magnetic Assembly drive for the rotor is located outside the vacuum chamber. A ring magnet with 4 poles on its face, is bonded to an iron pole piece and mounted on the motor shaft of the lower magnetic assembly. The stainless steel closure plate that separates the two magnets and seals the chamber has very little effect on the magnetic field. The attraction between the two magnets establishes the coupling which has a gap of about 9/32". The drive magnet is 1/16" from the closure plate and is secured to the drive motor by two #8-32 set screws. Occasionally these screws may loosen during shipment and cause the magnet to slip on the shaft of the motor. This will produce either a rubbing sound or no drive. To repair, remove the bottom plate and the four screws that secure the motor mounting bracket. This allows the lower magnetic assembly to be removed for inspection and repair. Normal repair consists of setting gap and tightening the set screws.

SPECIFICATION

INPUT POWER:	115 Volt 50/60Hz (220 Volt Optional)
INPUT FUSED:	1 AMP. (115 Volt) Slo-Blo 3 AG Type
VACUUM LINE:	1/2" Hose Fitting allows connection to any commercial Hi-Vac pump and −60°C trap.
VACUUM CHAMBER:	Chemical resistant coated aluminum casting.
CABINET:	Chemical resistant coated steel construction. Two switches on front panel. Rotor. Off/Brake/On. Heater, On/Off.
COVER:	Transparent 3/4 inch plexiglass (with safety interlock). CAUTION: NEVER APPLY HEAT TO THIS COVER OR SERIOUS DEFORMATION WILL RESULT.
DRIVE:	Permanent Split capacitor AC Motor — 1725 RPM, with magnetic coupling to rotor drive shaft.
ROTORS:	See catalogue for variety of rotors available. Consult factory for custom rotors.
HEATER:	Thermostatically controlled at 45°C with over temperature safety shutoff.
WEIGHT:	40 lbs. (18 KG) Approximately
DIMENSIONS:	11"W × 11"D × 10¾"H (28.5cm W × 28.5cm D × 27.5cm H)

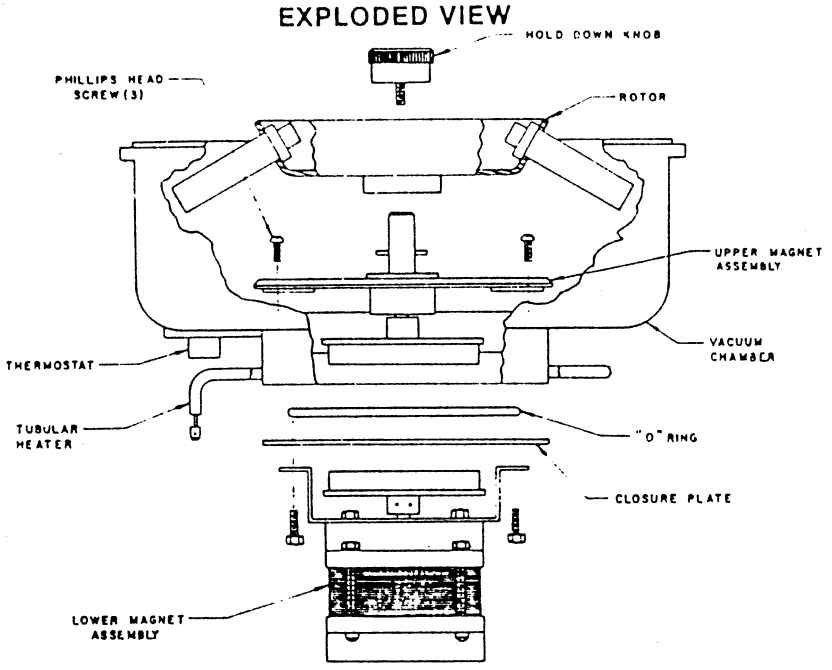
OPERATION

Place Speed Vac in a convenient location with access to a vacuum source. Lift lid and check the interior of the chamber for packing material, dirt, or any foreign items that may have accumulated due to shipping. Clean out the chamber and follow the setup procedure outlined below. NOTE: Prior to setup and periodically thereafter, lightly coat drive shaft and aluminum rotor center hole with vacuum grease. This will prevent corrosive vapors from attacking surfaces and allow easy removal of rotors. CAUTION: Do not lubricate seal at top of chamber. If it is damaged, replace it.

1) To install rotor in chamber, visually align the drive shaft pin and mating recess on rotor bottom. Then carefully lower rotor onto the drive shaft and firmly press into place.
2) Secure this assembly with the retaining knob bolt by screwing it into the drive shaft which is threaded to accept this assembly. Tighten firmly but not excessively.
3) When using the RH20-12 or the RH40-6 Rotor, insert the aluminum test tube holders into all the positions. NOTE: When placing test tubes into rotors, care must be taken to load uniformly with consideration given to balancing rotor. An unbalanced load will not only cause vibration, but this vibration will seriously reduce the life of the bearing assembly. Care must be taken when placing tubes or vials into plastic rotors. Tubes must fit snugly.
4) Check the 1/2" I.D. Hose vacuum fitting on the rear of the chamber to insure that it is tight. This fitting connects to your condensation trap/vacuum pump.
5) Plug linecord into a properly rated electrical receptacle. If heat is required for evaporation of sample, turn "heater" switch to the "on" position at least 15 minutes prior to running sample. This will allow the chamber to reach its operating temperature of approximately 45°C. The BTH tube holders transfer heat directly to glass sample tubes. If no heat is required, leave the "heater" switch in the "off" position.
6) Load samples in rotor and close lid. Switch "on" power by turning the front panel switch to the "on" position. The centrifuge will start rotating and within 10 to 20 seconds will be up to the rated speed. **When the rotor is up to speed, then and only then, do you turn on your vacuum source.** This allows the solution to gravitate to the bottom of the tube before the vacuum starts evaporation of the solvents. There is no specific rule for the time required for processing. It usually is easily determined by the investigator with a little experience.
7) When the samples are effectively evaporated, turn the vacuum source off and SLOWLY bleed air back into the system. If vacuum is allowed to dissipate too quickly, condensation will form in the dried tubes. Then, turn the front panel switch to the "off/brake" position. This position dynamically brakes the rotor so that it will coast to a stop in approximately 10 seconds. The brake circuit will actuate for approximately 20 seconds then turn off. This happens in the "on" position as well as when the cover if lifted.
8) Make sure the rotor has stopped, then lift the lid. CAUTION: Never lift cover until instrument is turned off, and rotor has stopped rotating.
9) Maintaining a clean instrument is most important. Spills must be cleaned out immediately, since dried solvents can build up and impair rotation of the rotor. Periodic cleaning of the chamber will prevent operating problems. A detergent solution on sponge or gauze should be used to clean and then make certain the chamber is thoroughly wiped dry.
10) In some applications, particularly with the plastic RH40-11 rotors, braking occurs too rapidly. For those users who would like to eliminate the brake when the rotor switch is turned to the "Off/Brake" position, the following modification can be accomplished in the lab:

    Unplug the line cord and turn upside down. Remove the six screws used to mount the bottom plate, and remove it. On the "rotor" switch, there is a red wire. Remove this connection by pulling straight out from the switch. For safety purposes, electrical tape this disconnected wire securely. Replace bottom plate and screws, and reconnect to system. Rotor will still brake quickly when cover is lifted, but it will coast to a stop when turned to "Off/Brake."

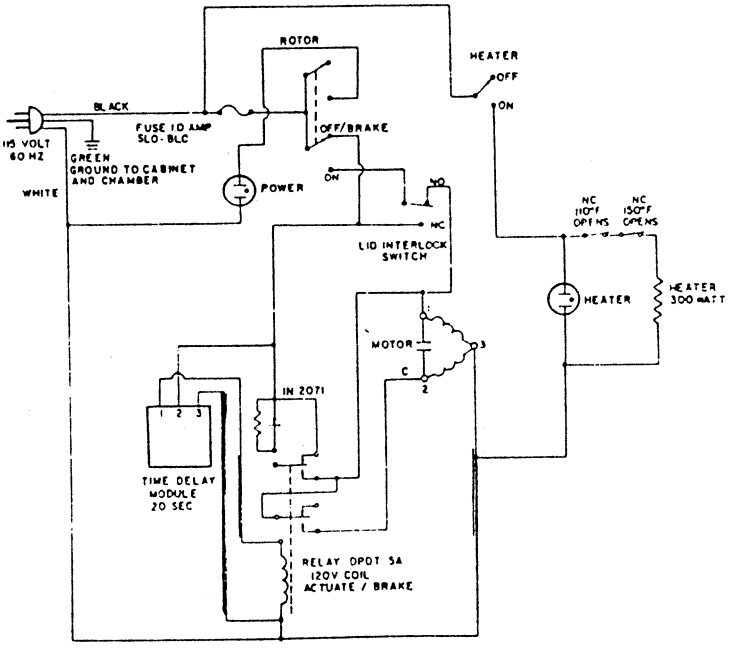
SVC-100H
EXPLODED VIEW



The Heater Assembly for the vacuum chamber is located in the casting exterior surface under the chamber floor. This heater is an 8" diameter tubular heater with two thermostats in series with it to sense and control the temperature of the chamber. One thermostat senses and controls the chamber temperature at 45 °C. The other thermostat is a thermal fuse for overtemperature safety protection should the control thermostat fail. In that event, the safety thermal fuse will shut off the heater at 65 °C. If chamber should reach that temperature, it is an indication that the control thermostat should be replaced immediately. Both must be replaced, the thermal fuse is not reset-table once actuated.

There is no special maintenance required for the motor or electrical circuitry. If the fuse should blow for any reason, replace it with the same type 3 AG 1 Amp Slo-Blo. The schematic diagram is shown for service personnel.

SCHEMATIC



Liability

Savant Instruments, Inc. assumes no liability, express or implied, in connection with the use of this equipment.

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