



SpeedVac™ SPD300DDA

Vacuum Concentrator

Installation and Operation

80302120 • Revision A • June 2018

IMPORTANT: Read this instruction manual. Failure to follow the instructions in this manual can result in damage to the unit, injury to operating personnel, and poor equipment performance.

CAUTION: All internal adjustments and maintenance must be performed by qualified service personnel.

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Introduction

The Thermo Scientific Savant SpeedVac™ SPD300DDA 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 unit features an advanced front panel with a dual timer for automatic or manual control of run conditions, it also features preset and user defined programs which enable the user to retrieve and store application protocols for future use.

The compact, industrial strength SPD300DDA 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
 - Components made of 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 the 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 allows continuous monitoring of process
- 4 preset programs pre-loaded with default application-based run parameters
- 8 user-defined programs for custom application-based run parameters that enables the user to retrieve and store protocols for future use.

Safety Precautions

In this manual, the following symbols and conventions are used:



This symbol when used alone indicates important operating instructions which reduce the risk of injury or poor performance of the unit.



CAUTION: This symbol, in the context of a CAUTION, indicates a potentially hazardous situation which if not avoided could result in minor to moderate injury or damage to the equipment.



WARNING: This symbol, in the context of a WARNING, indicates potentially hazardous situations which, if not avoided, could result in serious injury or death.



This symbol indicates situations where dangerous voltages exist and potential for electrical shock is present.



The snowflake symbol indicates extreme low temperatures and high risk of frostbite. Do not touch bare metal or samples with unprotected body parts.



This symbol indicates possible pinch points which may cause personal injury.



This symbol indicates a need to use gloves during the indicated procedures. If performing decontamination procedures, use chemically resistant gloves.



Before installing, using or maintaining this product, please be sure to read the manual and product warning labels carefully. Failure to follow these instructions may cause the product to malfunction, which could result in injury or damage.

Below are important safety precautions that apply to this product:



WARNING: Disconnect the unit from all power sources before cleaning, troubleshooting, or performing other maintenance on the product or its controls.



WARNING: Do not use this device in radioactive, highly reactive or explosive atmosphere.

Do not use this device to process any explosive, radioactive, highly reactive or explosive atmosphere creating substances.

Operating Standards

Product Specifications

Operative Power*	115 VAC; 60 Hz; 10 amps 230 VAC; 50 Hz; 6 amps
Vacuum Chamber	TEFLON [®] coated, chemical resistant aluminum casting, includes four built-in radiant lamps
Cover	Heated cover - includes a safety interlock
Induction Motor	Maintenance free
Bearings	Acid resistant TEFLON [®] bearings
Chamber temperature	35°C to 80°C, 5°C increments
Vacuum Level Control	20 to 0.1 Torr in 0.1 increments
Vacuum Ramp Setting	1 to 5
Weight	117 lbs 53 kg
Dimensions (W x D x H)	19 in x 26 in x 18 in 48 cm x 66 cm x 46 cm
Fuse	10 A, 250 VAC, Time-lag 6 A, 250 VAC, Time-lag

*Dependent upon ambient temperature, line voltage fluctuation, and load capacity.

Environmental Conditions

Indoor use only, in the absence of hoarfrost, dew, percolating water, rain and solar radiation.

Maximum altitude	2000 meters above mean sea level
Ambient temperature range	17°C to 32°C
Humidity	20% to 80% non-condensing
Pollution degree	2

Main supply voltage fluctuations not to exceed $\pm 10\%$ of the nominal voltage.

Transient overvoltages per Installation Categories II.

Installation

Contents

Table 1. Contents

Qty.	Description
1	Thermo Scientific Savant SpeedVac™ SPD300DDA 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 liter Glass Flask with screw threads
1	Insulation cover
1	FPR-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

Unpacking. Open the shipping cartons. Carefully remove the instrument and accessories. **Lift and carry with two people, holding securely underneath with both hands. Use proper lifting technique (lift with the legs, not the back) to avoid personal injury.** Compare the contents with the packing list. If there is a discrepancy, call Thermo Scientific technical service.

Inspection. Inspect the unit and accessories for damage that may have occurred during shipment. Should there be any damage, report it to the carrier and contact Thermo Scientific immediately. Make sure the carrier inspects the damage and leaves an inspection report. Register any claims for shipping

damage against the carrier or his agent. Save the shipping carton in the event a return is necessary. Call Thermo Scientific technical service for further assistance.

Site preparation. The SPD300DDA requires a stable surface that is clean, dry, level, and within 4 feet (1.2 meters) of a compatible electrical outlet. Place the unit in a convenient location with access to a vacuum source and a vapor trap¹.

The SPD300DDA units configured for 115 VAC, 60 Hz, should be plugged into a circuit rated for at least 10 amps. The SPD300 DDA units configured for 230 VAC, 50 Hz, should be plugged into a circuit rated for at least 6 amps.



CAUTION: Be sure to leave at least 4 inch clearance on all sides of the unit. Overhead clearance, equal to 18 inch (46cm), is required for raising the cover. Verify that the unit is on a leveled and stable platform. If necessary, move the unit to a more suitable location.



WARNING: Before connecting the unit to an electrical outlet, make certain that voltage, frequency, and amperage match the requirements indicated on the product label, name plate of the instrument. Use sockets with a protective earth conductor and correct mains cable.

Note: Do not use any detachable power cord that is not adequately rated for the unit.

For combinatorial chemistry application, refer **Table 2** for recommended DDA components. Call Thermo Scientific for the complete line of vacuum pumps and refrigerated vapor traps

Table 2. Recommended DDA components

Vacuum System	Solvents To Be Evaporated
UVS850DDA Universal Vacuum System	Volatile, low boiling solvents (MeCl ₂), corrosive solvents (TFA) and mixtures, Small amounts of high boiling solvents (DMSO, DMF)

1. 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 inline between the SpeedVac™ concentrator and vacuum pump. We offer integrated universal vacuum systems (integrated vapor trap with the vacuum pump) or component vacuum system (vapor trap plus vacuum pump).

Table 2. Recommended DDA components

Vacuum System	Solvents To Be Evaporated
RVT450 Refrigerated Vapor Trap + VLP80DDA High Vacuum Pump	Large volumes of high boiling solvents (DMSO, DMF)
RVT5105 Ultra-Low Temperature Refrigerated Vapor Trap+ VLP80DDA High Vacuum Pump	Large volumes of low boiling solvents (MeCl ₂)
RVT450 Refrigerated Vapor Trap + RVT5105 Ultra-Low Temperature Refrigerated Vapor Trap+ VLP80DDA High Vacuum Pump	All types of solvents

Operation

Connect the power cord to the power inlet on the right side of the unit and plug it into the appropriate outlet. Turn on the main power switch located on the front of the unit in the lower right to energize the unit. The safety lid locking mechanism on the SPD300DDA will automatically disengage. Do not attempt to open the lid unless the unit is plugged in.



CAUTION: Use appropriate Thermo Fisher Scientific designed rotors recommended for the Product.

Note: The SPD300DDA 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.

Rotor installation. Open the lid of the rotor chamber. Lower the Universal Rotor² (FPR-4A) onto the assembly (SUMAX400) by visually aligning the pin on the drive shaft with the groove on the bottom of the rotor. Rotate the rotor by hand to ensure alignment of the pin with the groove. Secure the assembly by screwing the retaining knob into the drive shaft above the rotor. Tighten it firmly but not excessively.



CAUTION: Load the rotor and close the lid. Always balance rotor loads. An imbalanced rotor causes vibration that will damage the system's bearings and equipment. Load the rotor symmetrically. There need not be a tube in each holder, but the load must be evenly distributed. When using a rotor with aluminum tube holders, insert all the tube holders.



CAUTION: Only FPR-4A Universal Rotor or other Thermo Scientific rotors should be used in SPD300DDA. Do not use other rotors even if they seem to fit the instrument.

Connection To Vapor Trap And Vacuum Source

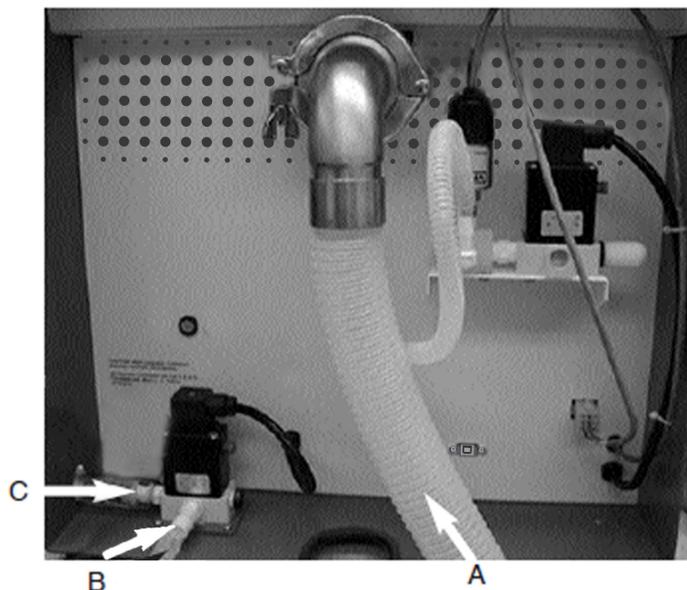


Figure 1. Connection to Vapor Trap and Vacuum Source

- (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.

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

Sample Loading

1. Evenly distribute vials or tubes (if not completely filled) in the appropriate Rotor Blocks³. 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**.

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

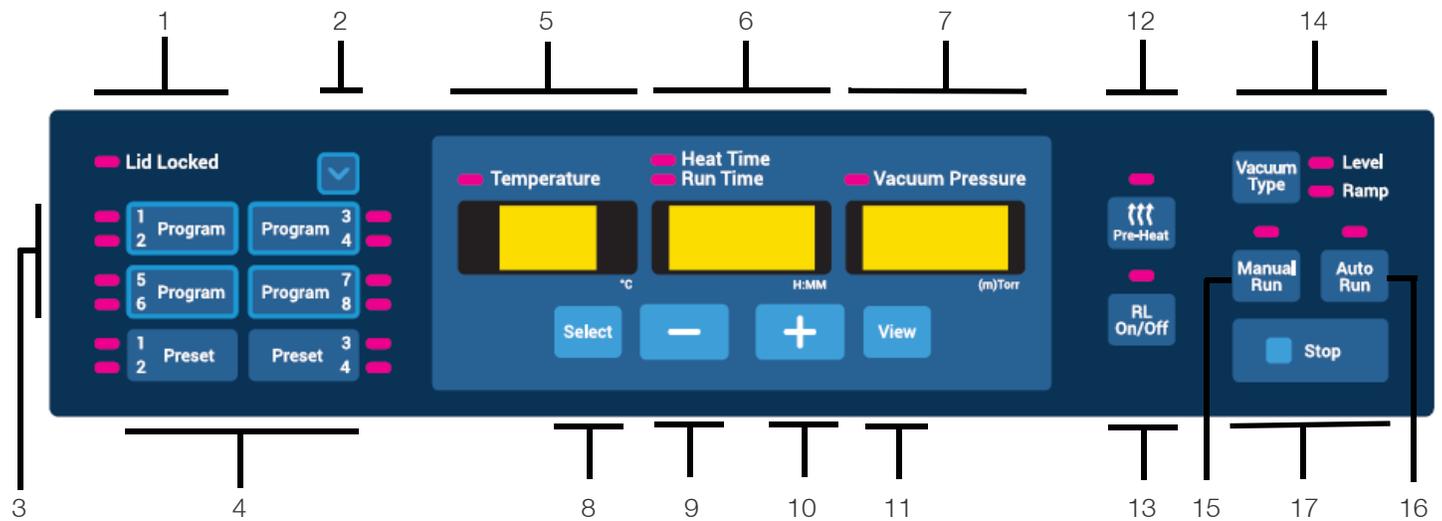
When placing Rotor Blocks in the carriers, make sure the side of the Rotor Block is flushed with the raised “lips” of the carrier. This ensures that the Blocks do not slip out when the rotor is in motion.

- 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 wellplates 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.

Description Of Control Panel



1. **Lid locked** - Indicates whether or not the lid of the concentrator is locked, the indicator will be illuminated when locked.
2. **Program navigator** - Selects a program in a cyclical way to prepare the next action that will be applied to it. Typically, the next action will be a program saving action but it can also be a program loading action (see next point).

Pressing this button will only highlight the indicator associated with the selected program. It will not load its parameters to the user interface.

This button is only associated with the Program buttons and not with the Preset buttons.

3. **Program buttons** - 4 buttons that allow access to 8 user-defined programs that are modifiable (2 programs per button).

Loading a user-defined program is achieved by pressing the corresponding “Program” button once or twice. The first button press will load the first program associated with the button (i.e. program 1, 3, 5 or 7). Pressing the button a second time will load the second program associated with the button (i.e. program 2, 4, 6 or 8).

The following parameters are automatically loaded into the user interface:

- Temperature set point
- Heat time
- Run time

3. A wide variety of rotor blocks for holding tubes and vials are available from Thermo. Refer to the Section **Rotors and Rotor Blocks** for available Rotor Blocks. Always select a rotor or Rotor Block for which the sample tubes fit snugly. Contact Thermo Fisher Scientific Technical Service for help on Rotor Block selection and custom Rotor Block needs.

- Vacuum pressure
- Vacuum ramp

Saving a user defined program is achieved by pressing and holding down the corresponding **Program** button for 3 seconds. Note that to save the even programs (i.e. program 2, 4, 6 or 8), The user must first select the program using the “Program navigator” button (see point 2). The parameters displayed in the screen are stored into the program and can be loaded for use later.

4. **Preset Buttons** - 2 buttons that allow access to 4 preset programs that are not modifiable (2 programs per button).

Loading a preset program is achieved by pressing the corresponding **Preset** button once or twice. The first button press will load the first preset program associated with the button (i.e. preset 1 or 3). Pressing the button a second time will load the second preset program associated with the button (i.e. preset 2 or 4).

The following parameters are automatically loaded on to the user screen:

- Temperature set point
- Heat time
- Run time
- Vacuum pressure
- Vacuum ramp

5. **Temperature display** - Indicates the set temperature or the actual temperature during a run in °C. The temperature set point can be set from 35°C to 80°C at a 5°C interval. In addition, it is possible to set the temperature to “no”, which means that heating will not be applied during the run. The temperature setting of “no” can be reached under 35°C or over 80°C.

6. **Time display** - Indicates the heat timer or the run timer set points. During a run, it indicates the elapsed or remaining run time or the remaining heat time left. The range for these timers is from 0.01 [1 min.] to 9.59 [9 hours, 59 minutes] at a 1-minute interval. In addition, it is possible to set the heat time to “CCC”, which represents a continuous heating throughout the execution of a run. The setting of “CCC” can be reached under 0.01 [1 min.] or over 9.59 [9 hours, 59 minutes].

7. **Vacuum display** - Indicates either the vacuum pressure set point (in Torr or millitorrs) or the selected vacuum ramp based on the vacuum type setting (see **point 14**). During a run, it indicates either the actual vacuum pressure or the selected vacuum ramp.

Note:

- The atmospheric pressure is represented by the “HPi”
- A decimal point indicates a vacuum pressure in Torr

- No decimal point indicates a vacuum pressure in mTorr

8. **Select** - Press this button to select the parameters to be modified. The selection is from left to right, in a cyclic manner. The selected parameters are shown by the corresponding indicator that is illuminated.

9. **Minus (“-”)** - Decrements the value of the selected parameter.

10. **Plus (“+”)** - Increments the value of the selected parameter.

11. **View** - During a run, pressing view shows the set run parameters. When no run is ongoing, pressing view displays the actual live parameters. The time display shows either “0.00” or the end status of the last executed run (e.g. “End”, “Err.”).

12. **Pre-heat** - Use to pre-heat the chamber to 45°C prior to beginning a run or between runs. Once a run is initiated, the pre-heat automatically stops.

Note that the pre-heat function is only enabled if the temperature set point is different than “no”.

13. **RL (Radiant Lamp) On/Off** - Adds radiant heat to chamber by activating the radiant lamp of the concentrator. The radiant lamp can be activated and deactivated manually by pressing the button at any point during a run. If enabled, the radiant lamp will remain powered as long as the heat timer has not expired. Note that this feature is disabled if the temperature set point is set to “no”.



CAUTION: Do not use radiant heat with microplates. Improper use may result in melting or deformation.

14. **Vacuum Type** - Selects either “Level” or “Ramp” in the vacuum display.

Level: Allows users to select a preset vacuum level. During a run, the vacuum level will be automatically regulated and maintained at the selected preset value.

Ramp: The rate at which vacuum is achieved can be set for preventing bumping. There are 5 adjustable levels that 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

15. **Manual run** - Starts a “Manual” run based on the parameters loaded in the screen, use the manual run function if you do not want to set a fixed run time.
16. **Auto run** - Starts an ‘Automated’ run based on the parameters loaded in the screen, use auto run function if you want to set a fixed run time
17. **Stop** - Terminates a “Manual” or “Auto” run.

- Default values:
 - Temperature 45°C
 - Run Time 2.00 hours
 - Vacuum Pressure 1 Torr

3. Select a run configuration using one of the following method:
 - Load a present program
 - Load a user defined program
 - Directly modify values that are loaded on the screen, using the **Select** button and the “+”/ “-” buttons.
4. Set the temperature set point between 35°C and 80°C, or “no”, for no heat.
5. Using the **Select** button and the “+”/ “-” buttons select and modify “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 set point reads (except if “CCC”).
6. Select Run Time: Since this is a manual run no time adjustment is needed.
7. To select a VACUUM LEVEL, press **Vacuum Type** to illuminate “Level” and “+”/“-” buttons to set the vacuum to desired level. To select a vacuum ramp rate, press **Vacuum Type** to illuminate “Ramp” and use the “+”/“-” buttons to set a ramp rate (5 = highest, 1 = lowest).
8. Place sample tubes in rotor so load is balanced. Secure rotor with the supplied knob (hand tight). Close cover.
9. Pre-heat may be selected at this time, to apply a 45°C heat to the chamber.
10. Press the **“Manual Run”** button. The cover locks and the lid locked indicator is illuminated. The rotor starts spinning. The “Run Time” display counts up. The temperature rises to the set temperature. The “Heat Time” will count down if set point is not set to “CCC” and if the temperature set point is not “no” The vacuum will be applied to the chamber and the level begins falling.

Note: If the cover is not closed, the display will show “Lid” and the run will not start.
11. Press **RL On/Off** for radiant chamber heat. Press at any time to turn OFF and ON. (As long as there is time left in the heat timer and if the temperature set point is not set to “no”).
12. To end the manual run, press **Stop** button. The unit will sound three audible beeps. The display will show “End”, the valves will click, isolating the chamber from the vacuum pump and allowing air to bleed into the chamber.
13. After the rotor stops spinning, the cover lock disengages and the lid locked indicator is turned off. The display reverts to last set parameters.

Audible Notification

The concentrator will play tones depending on the user actions. Below is a description of these tones.

Table 3. Audible Notifications

Event	Sound Description
Start-up	5 beeps
Starting a run (manual or automatic)	1 single beep
Manually stopping a manual or automatic run	3 beeps
Automatically stopping an automatic run	1 beep that is repeated until the user pushes the Stop button or opens the cover of the concentrator
Program saved	3 beeps
User input error	1 long beep that lasts for 1 second
System error	1 long beep that lasts for 1 second and that is repeated until the user pushes the Stop button or opens the cover of the concentrator

Manual Run

1. Connect the unit to its required voltage.
2. Turn the power switch located on the front of the UNIT, to the **ON** position, (light on switch indicates ON). The cover lock disengages, allowing the top cover to be opened.

The display lights up and shows the following in sequence:

- Name of the concentrator
- Software revision number

- 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 for approximately 5 seconds.

Auto Run

- Refer to the **Manual Run** section for start-up.
- To execute an AUTOMATIC RUN, execute the following steps:
 - Use the **Select** button and the “+”/ “-” buttons to select and modify the Temperature, “Heat Time and “Run Time” parameters. The Run and Heat Time can be set from 0.01 to 9.59 hours (Heat Time also has “CCC” for continuous use).
 - To select a vacuum level, press **Vacuum Type** to illuminate “Level”. Use the “+”/ “-” buttons to set the vacuum to the desired level. To select a vacuum ramp rate, press **Vacuum Type** to illuminate “Ramp” and use the “+”/ “-” buttons to set a ramp rate (5=highest, 1=lowest).
- Place the sample tubes in the rotor so that the load is balanced. Secure the rotor with the supplied knob (hand tight). Close the cover.
 - Press the **Auto Run** button to start the run. The cover locks and the lid locked indicator is illuminated. The rotor starts spinning. The run time display is counting down in 1 minute intervals. The heat time is counting down if the set point is not set to “CCC” and if the temperature set point is not “no” (use the **Select** button to view “Heat Time”). The temperature rises in 1°C increments to set temperature. The vacuum pressure begins counting down from “HPr” (atmospheric pressure), after both SAV valves actuate, applying vacuum to the chamber.
 - 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.
 - Press the **RL On/Off** for radiant chamber heat. Press at any time to turn OFF and ON. (As long as there is time left in the heat timer and if the temperature set point is not set to “no”).
 - Once the time expires, the run will automatically stop, the display will show “End”, the SAV valves will click, also allowing air to bleed into the chamber. The unit will sound 1 beep that will be repeated until the user acts on it.

- After the rotor stops spinning, the cover unlocks and the lid locked indicator is turned off. The display reverts to last set parameters.
- Open the cover and remove samples.

GENERAL: During the run, display shows actual parameters. To check set parameters, press **View** button and **Select** button. The display will revert temporarily to set points for approximately 5 seconds.

Drying Rate

Thermal energy can be applied to the concentrator chamber to counteract the cooling effect of evaporation, maintain the samples in the liquid state, and accelerate the concentration run. Select 80°C if you desire accelerated drying. To ensure against over drying of samples, and possible denaturing, it is recommended that the heat timer be set for only a portion of the total run time (e.g., 50%–75% of total run time).

Preset Program Settings

The table below shows the values attributed to the preset programs parameters.

Table 4. Preset Program Settings

Preset	Application	Settings
Preset 1	Water	Temperature: 45°C Heat time: 2.00 Run time: 2.00 Vacuum level: 14 Torr Vacuum ramp: 5
Preset 2	“Low Boiling” ACN/MEOH	Temperature: 45°C Heat time: 2.00 Run time: 2.00 Vacuum level: 100 mTorr Vacuum ramp: 5
Preset 3	HPLC H ₂ O + Low Boil solvent +.1% acid	Temperature: “no” Heat time: 0.01* Run time: 2.00 Vacuum level: 10 Torr Vacuum ramp: 5

Table 4. Preset Program Settings

	“High Boiling point solvents”	Temperature: 65°C
		Heat time: 2.00
Preset 4	Acetic acids, isopropyl alcohol, toluene, DMSO, TFA	Run time: 2.00
		Vacuum level: 100 mTorr
		Vacuum ramp: 5

*When the temperature is set to “no”, the heat time is defaulted to “0.00” while executing the run.



Note: The preset programs should be regarded as a starting point when doing any solvent removal application since many factors can influence evaporation rates. We highly recommend that a risk assessment should be done by the end-user to review and modify the programs selected to fit their own particular needs and conditions.

Exporting Live Run Data

The unit is equipped with a USB port to enable communication with an external computer. The USB port is located on the rear panel of the unit and is connected to a computer via a standard USB type A to B cable.



CAUTION: USB lead length less than 3 meters shall be used to connect to the computer.

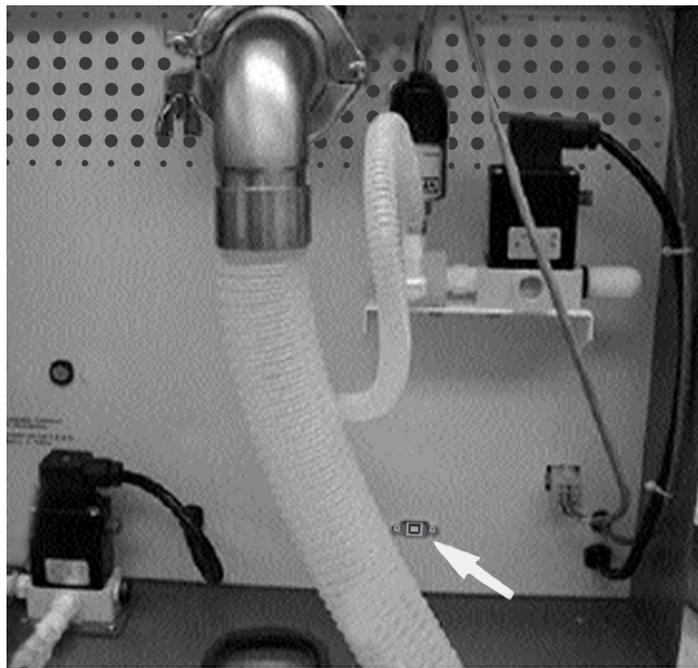


Figure 2. USB Port location

When a run is ongoing, the unit exports the following information via the USB port every minute.

- The live temperature applied to the samples chamber
- The remaining heat time for the run (“CCC” indicates continuous heating)
- The remaining or elapsed run time, depending on the run type (manual or automatic)
- The vacuum pressure in the samples chamber

The data are sent at a fixed baud rate of 115200 and are comma-separated as shown in the format: **<temperature>**, **<heat time>**, **<run time>**, **<vacuum pressure>**

- The temperature is represented as a 2-digit integer in °C
- The heat time is expressed as a 3-digit integer in minutes (or “CCC” for continuous heating)
- The runtime is expressed as a 3-digit integer in minutes
- The vacuum pressure is represented as a floating-point number in Torr (or as “HPr” to represent a high pressure).



In case of a communication failure between the monitoring program of the computer and the product, user can re-establish the connection by disconnecting and reconnecting the USB cable.

Note: The following section details the step-by-step procedures for configuring Microsoft® HyperTerminal running on a host computer using Windows® XP. These instructions may need to be modified to be used with a different terminal emulator program and/or operating system. Contact Technical Services if further assistance is required.

HyperTerminal Configuration

1. Power up the host computer and close any running applications.
2. Open the HyperTerminal application by clicking on **Start** \ “Programs” \ “Accessories” \ “Communications” \ “HyperTerminal.”
3. In the “Connection Description” box, enter the name “SPD300DDA” and choose an icon and click **OK**.
4. Connect to the virtual COM port that is linked with the SpeedVac™ concentrator attached to the computer (USB virtual com port).
5. In the “COM Port Properties” box \ “Port Settings” folder select the following options:

Bits per second: _ 115200

Data bits: _ 8

Parity: _ None

Stop bits: _ 1

Flow control _ None

After verifying the above settings, click **OK**.

6. In the main dialog box click on **File \ Save**.
7. Exit the program by clicking on **File \ Exit \ Yes**.
8. Verify the program was saved by going to **Start \ "Programs" \ "Accessories" \ "Communications" \ "HyperTerminal" \ "SPD300DDA"**.
9. This completes the configuration of HyperTerminal.
10. Turn on SpeedVac™ system and connect to the virtual COM port that is linked with the SpeedVac™ attached to the computer.
11. Start HyperTerminal by clicking on **SPD300DDA**.
12. Initiate the run and SpeedVac™ will screen print **<temperature>**, **<heat time>**, **<run time>**, **<vacuum pressure>**

Lid Stay Mechanism

The unit is equipped with a lid-stay mechanism that will assist the user in opening and closing the cover of the unit. It will secure the lid and maintain it open, allowing the user to operate the unit with both hands.

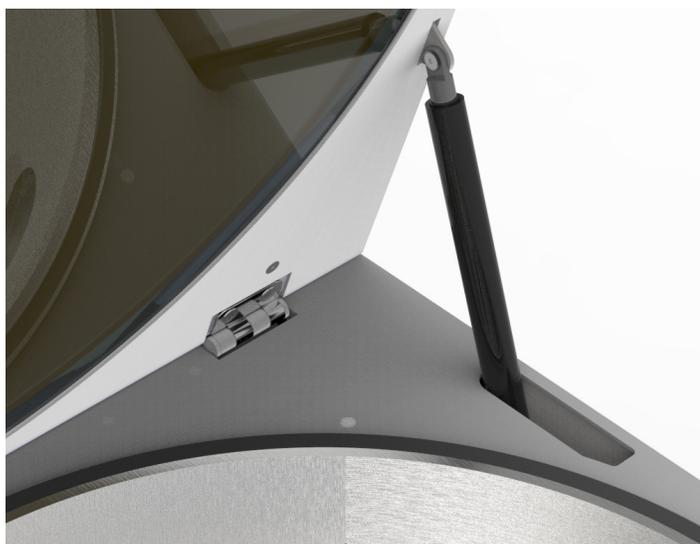


Figure 3. Lid stay mechanism view



WARNING: Device lid can crush your fingers.

Keep away: Do not reach between the device and lid when opening or closing the device lid.

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. The run will start immediately after closing the cover.

If a user tries to open the lid at the start of the run, when the lid has already been locked, the unit will automatically abort the run and signal the user with the "Lid" message on the display and an error tone. Otherwise, during a run the user cannot open the cover due to vacuum in the concentration 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 cover lock emergency release tool into the slot provided on the right side of the unit. Press the object gently into the slot until the lock releases. The cover can then be opened.

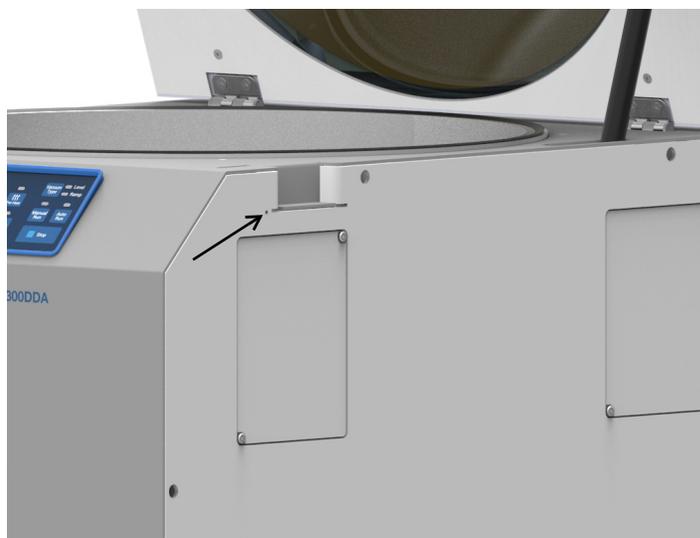


Figure 4. Opening chamber cover in emergency



CAUTION:

List of Solvent and Solvent Combinations:

Solvent & Solvent Combination

Water+ACN+MeOH+low concentration of formic acid(1%)

Water+ACN+MeOH+low concentration of formic acid(1%)0.1% Trifluoroacetic acid

Acetonitrile

Acetone
Acetic Acid
0.1% Acetic Acid
Ammonium hydroxide
Benzene
Butanol
n-butyl alcohol
Chloroform
Cyclohexan
DCM
DMF
DMSO
Ethyl acetate
Etnanol
Ethyl ether
HCl
n-Hexane
n-Heptane
Isopropyl alcohol
Isobutyl alcohol
Methanol
Methylene chloride
Nitrobenzene
Pentane
Petroleum ether
n-propyl alcohol
Propanol-1
Pyridine
Tetrahydrofuran
Trifluoroacetic acid
0.1% Trifluoroacetic acid
Toluene



WARNING: Do not use this device in radioactive, highly reactive or explosive atmosphere.

Do not use this device to process any explosive, radioactive, highly reactive or explosive atmosphere creating substances.



CAUTION: Product Maintenance:

Maintenance of product only permitted to be performed by trained service staff using suitable measuring and auxiliary equipment as well as detailed service instruction.



CAUTION: Wear gloves, eye protection, masks and lab coats while working on the system.

Routine checks:

1. Check all the hoses to ensure that they are secure.
2. Ensure all glass condensation flask in emptied, cleaned and checked for crack before every run.
3. Clean the cover, cover seal and chamber with a soft lint free cloth with one of the following
 - Mild detergent solution
 - Diluted Methanol (50%)
 - Diluted Ethanol (50%)



WARNING: Burns due to hot device parts:

When the concentrator is set to a temperature of 60°C and above the rotor and the sample tubes will be hot, do not touch the wall of the rotor chamber, use suitable auxiliary to remove the sample tubes

In the event that your choice of solvents and applications are unique and not listed above, please contact Thermo Scientific Customer Support for advice.

Rotors and Rotor Blocks

Traditional Rotors for SPD300DDA Vacuum Concentrator*

Type	Description	No. of Tubes	Working Volumes (ml)	Rotor Part No
Microcentrifuge Tubes	1.5 - 2.0 ml	200	1.2 - 1.6	RH200-12
	17x60 mm (5 ml)	10	3.5	RH10-15
Glass and Plastic Tubes	12x75 mm	200	4	RH200-12
	13x100 mm	32	8	RH32-13
	16x25 mm, 18x125 mm	48	12	RH48-18-125
	18x150 mm, 16x125 mm	32	24	RH32-18-150
	16x125 mm	88	24	RH88-16-125
Centrifuge Tubes	50 ml conical (28x115 mm)	48	40	RH48-50U
Flasks	100 ml pear-shaped flask	8	80	RH8-200
Vials	1-Dram vial (15x45 mm), 4 ml	192	3	RH192-15
	20x60 mm, 20 ml scintillation vial	50	16	RH50-28-60
Microwell Plates	Shallow well	12	-	MPTR12-210
	Deep well (Shallow well)	4	-	MPTR8-210

*Requires purchase of adapter cat. no. RAD200

Rotor Block: For Use With Four-Position Rotor (FPR-4A)

All blocks come as a set of two.

Type	Description	No. of Tubes	Working Volumes (ml)	Rotor Block Part No
Microcentrifuge Tubes	1.5 ml	25	1.2 - 1.6	RH10-15
	13x100 mm	35	8	RH60-17-100
	16x100 mm	24	10	RH52-15
	16x125 mm	15	12	RH6-50
	17x60 mm	24	5	RH48-50U
Centrifuge Tubes	50 ml conical (30x115 mm)	6	40	RBA6-30-115
	15 ml conical (17x120 mm)	24	12	RBA24-16-100

Type	Description	No. of Tubes	Working Volumes (ml)	Rotor Block Part No
Vials	28x60 mm, 20 ml scintillation vial	12	4	RBA12-28-58
	19x65 flat bottom	24	4	RBA24-19-65
	12x32 mm	54	2	RBA54-12-32
	15x45 mm, 1-dram	24	3	RBA24-15-45
Round or Flat Bottom Flask*	-	8	50 ml each flask	RBA2-FLSK-100
	-	4	175 ml each flask	RBA1-FLSK-250

*Must be special ordered

Accessories

Part No.	Description
GF4000	Glass condensation flask (4 liter)
121-6162-00	White Foam Insulating ring for coverglass trap
SCC1*	CryoCool [®] heat transfer fluid (1 liter)
RAD200	Rotor Adapter for the SUMAX400 Upper Magnet assembly
ANT100	Post-trap assembly for Oligo Preps -Used on UVS850DDA only
ANS121	Ammonia neutralizing solution for Oligo Preps - UVS850DDA only
SCT120	Chemical trap (order cartridges separately)
DTK120R	Chemical trap kit for radioactivity
DC120A	Disposable cartridge for neutralizing acid
DC120R	Disposable cartridge for trapping volatile radioactivity
CC120/DX	Deluxe convenience cart for SpeedVac [™] systems

*Hazardous Materials - These items require special shipping / handling when shipped by air

SUMAX 400 Maintenance

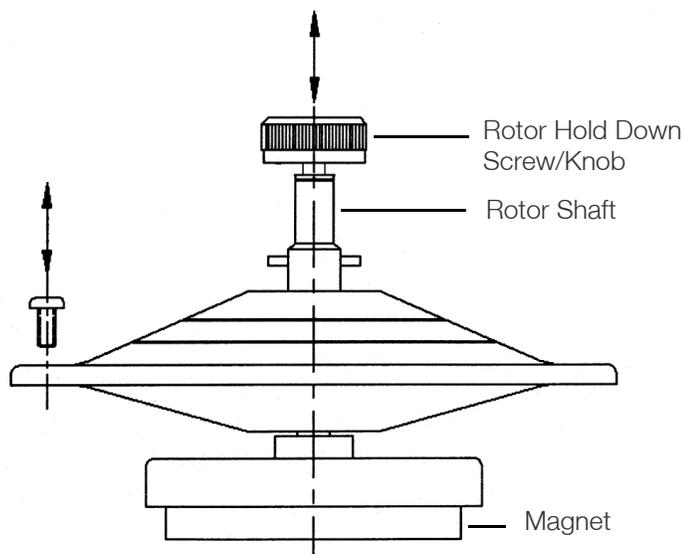


Figure 5. Sumax400 Upper Magnetic Assembly Drawing

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

- Obtain Phillips head screwdriver
- Ensure 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 Scientific technical service.

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All Thermo Fisher Scientific products mentioned in this manual (excluding glassware) are warranted against defects in workmanship for one year after the date of delivery to the original purchaser. This warranty is limited to defective materials and workmanship and does not cover incidental or consequential damages.

Thermo Fisher Scientific will repair free of charge any apparatus covered by this warranty. If a new component fails to work, Thermo Fisher Scientific will replace it, absorb all charges, and continue the one-year warranty period. 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. Costs of shipping the unit are not covered under warranty. The warranty obliges you to follow the precautions in this manual.

When returning apparatus that may contain hazardous material, 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 (free of radioactivity, biological, or chemical contamination).**

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Visit us online to register your warranty:
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