thermoscientific

UVS850DDA

Universal Vacuum System with Vapornet

Installation and Operation

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ThermoFisher SCIENTIFIC

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

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

DISCLAIMER Thermo Fisher Scientific Inc. does not accept any responsibility for any damage caused to its products by unauthorized personnel

The contents of this document are subject to change without notice. All technical information in this document is for reference purposes only. System configurations and specifications in this document supersede all previous information received by the purchaser.

Contents

Introduction

Thermo Scientific UVS850DDA Universal Vacuum System is a multipurpose vacuum source and solvent recovery system. The system includes a refrigerated vapor trap, the patented Vapornet Controller and an oil-free vacuum pump integrated into a compact unit occupying less than 46 cm of bench space. Together, these elements form a low-maintenance vacuum system that offers improved reliability over rotary vane oil pumps, which typically require more frequent maintenance and can be easily damaged by aggressive solvent vapors.

The UVS850DDA is specifically engineered for efficient processing of volatile and aggressive solvents, such as methylene chloride and trifluoroacetic acid, typically used during the synthesis phase of combinatorial drug discovery. The high efficiency diaphragm pump creates optimum evaporation conditions while achieving complete solvent recovery with the combination of a single-stage refrigerated vapor trap and the Vapornet Controller. The pump has TEFLON® coated valves and vacuum manifold constructed of TEFLON® tubing to eliminate the need for routine maintenance. The refrigerated vapor trap utilizes a Glass Condensation Flask to collect condensed solvent vapors for safe handling and disposal

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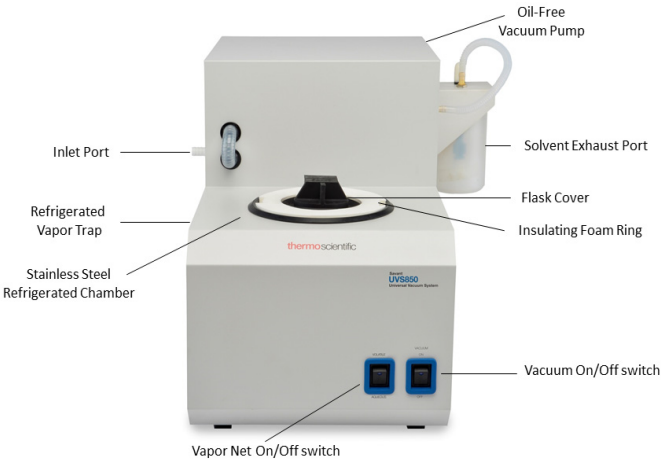

Figure 1. Universal Vacuum System with Vapornet

The compact, integrated UVS850DDA features:

- Vapornet Controller for greater than 95% recovery of methylene chloride and organic solvent mixtures.
- Post-trap to collect and neutralize acid vapors contained in the pump exhaust.
- TEFLON® tubing used exclusively in the vapor path to prevent corrosion.
- 3-stage, high efficiency, oil-free pump for reliable vacuum capable of inducing vacuum of < 0.6 torr (0.8 mbar) with a displacement of 36 l/min (at 60 Hz) and 30 l/min (at 50 Hz).
- 4-liter refrigerated vapor trap with -50°C operating temperature.

CAUTION: To assure safe operation and best results, read this manual in its entirety before operating this instrument. Improper operation can damage the trap or your vacuum pump.

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 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

Temperature	-50°C (approx.)
Capacity	4 liters
Refrigerant	CFC free
Vacuum Pump Displacement (50/60 Hz)	30/36 litres/min
Maximum vacuum	<0.6 torr (0.8 mbar, 0.08 kPa)
Dimensions (W x D x H)	14 in x 26 in x 19 in 36 cm x 66 cm x 48 cm
Weight	126 lbs 57 kg
Operative Power*	115 VAC; 60 Hz; 8 amps 230 VAC; 50 Hz; 6 amps
Fuse	8 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	2 000 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 ±10% of the nominal voltage.

Transient overvoltages according to Installation Categories II.

Installation

Contents

Qty	Description
1	UVS850DDA Universal Vacuum System
2	GCF400 Glass Condensation Flasks with Insulating Cover (white foam)
2	FC400 Flask Covers (black rubber)
1	ANT100 Post-trap Assembly

CryoCool™ Heat Transfer Fluid, SCC1 (1L) or SCC5 (5L), must be ordered separately.

Receiving: Immediately call manufacturer or your distributor if shipping carton shows any visible sign of damage.

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 UVS850DDA requires a stable surface at least 26 inches (66 cm) deep that is clean, dry, level, and within 4 feet (1.2 meters) of a compatible electrical outlet, 115 VAC & 60 Hz product should be plugged into a circuit rated for at least 8 amps, 230 VAC & 50 Hz product should be plugged into a circuit rated for at least 6 amps.
- The trap draws high current when first switched on, therefore, other high-powered equipment, or equipment that will be affected by a momentary drop in power, should not be placed on the same circuit as the vapor trap.
- The product can also be placed on a sturdy cart, such as the Convenience Cart (CC120/DX), When used with a SpeedVac™ Concentrator, we recommend placing the concentrator on the top shelf of the cart, and placing the UVS850DDA directly underneath on the lower shelf. This placement will aid in trapping solvents efficiently.

CAUTION: Be sure to leave at least 4 inch clearance on all sides of the unit. 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 sure 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.

Preparing The Vacuum Source For Use

Some accessories are sold separately and must be purchased prior to set-up.

You will need:

- CryoCool™ Heat Transfer Fluid, SCC1 or SCC5 (sold separately)
- Neutralizing solution for Acid (sold separately)

1. Switch the trap to **OFF**. Connect the power cord to the receptacle on the right side of the instrument. Plug the vapor trap into an appropriate wall outlet.
2. Pour 750 ml of CryoCool™ into the stainless-steel trap chamber up to the line scribed into the chamber wall. When replenishing CryoCool™, add fluid until the level reaches the scribed line. CryoCool™ is a non-toxic, non-flammable, long-lasting, odorless fluid that provides heat transfer between the flask and refrigerated chamber.
3. Carefully place a clean Glass Condensation Flask into the chamber. Press down. Verify that the final CryoCool™ level is 10–15 mm below the rubber seal. If the level is low, carefully pour more CryoCool™ into the chamber while holding the flask in place. Immediately wipe clean any CryoCool™ that spills onto the rubber seal.

4. Attach the post trap assembly onto the right hand side of the unit by sliding the connection bracket in a downward motion (Figure 2).

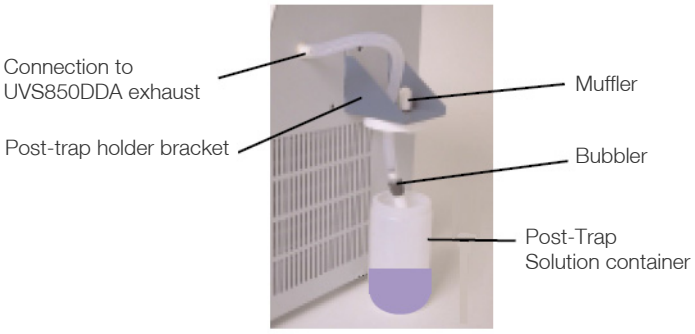

Figure 2. post trap assembly

Note: While connecting to SpeedVac™ Concentrator products like SPD120, SPD130DLX, SPD140DDA and SPD300DDA, refer instruction manual of respective products for proper connections.

Operation

After preparing the unit, switch it **ON** using a two position power switch located on the right side panel (light will illuminate once turned on).

CAUTION: Immediately verify by touch that the trap is drawing air through the vent on the right side. If you cannot feel the air suction, switch the trap **OFF** at once. Operating the trap without a working fan, or with the air flow blocked, will damage the refrigeration system.

The Universal Vacuum Source should be switched **ON** 20 to 30 minutes before use to ensure that it has reached its proper operating temperature. When samples are in place switch the **VACUUM** switch (located on the front panel) to **ON**.

It may take up to 30 minutes for the trap fluid to reach its operating temperature. When this occurs, you may begin drying operations as outlined in the instruction manual of your drying apparatus. It is suggested that the trap be left **ON** at all times

The UVS850DDA is designed to operate continuously and may be left on for extended periods. Be sure to regularly check the Glass Condensation Flask and empty it as required. For maximum efficiency, replace with clean trap when not more than half-full.

CAUTION: Do not switch **OFF** and **ON** with in a short period of time as this could cause pressure to build up within the system and lock the system that could trigger the fuse. After switching **OFF**, allow sufficient time (minimum 15 minutes) for the pressure to stabilize before switching the system **ON** again.

VAPORNET

Two-position SOLVENT switch (VOLATILE/AQUEOUS) is located left-most on the front panel. If volatile, low boiling solvents (bp<95°C) are being evapo-rated, activate Vapornet by switching to VOLATILE to maximize solvent recovery. If non-volatile, high boiling solvents (bp>95°C) are evaporated, select Aqueous (Vapornet off).

Note: With VOLATILE selected, occasional clicking will be heard from the system. This indicates that the Vapornet Controller is functioning properly.

When the concentration process is complete, switch the vacuum pump **OFF**. Shut off Vapornet when not in use by setting to AQUEOUS.

Emptying The Glass Flask

During system operation, solvent vapors from the SpeedVac™ will collect in the glass flask. This vessel must be regularly emptied to keep the entire system operating at peak efficiency. If the vessel is not maintained, it may become so full that sample drying rate is adversely affected. Another consequence of a full vessel is that solvent vapors are more likely to contaminate and possibly damage an oil-sealed vacuum pump that may be used with the SpeedVac™ system.

Empty the glass vessel before it is half-full. Often it is convenient and good practice to change the vessel at the end of the workday, no matter the depth of fill. For aggressive solvents, you may wish to remove the vessel at the end of each run for maximum protection of the system components.

CAUTION:

1. Use gloves while handling Glass condensation flask to avoid pain, local frostbites due to extreme low temperature.
2. Handle fully filled Glass condensation flask with care to avoid risk of injury.
3. Use face masks if required while cleaning the flask for protection against toxic chemicals and bio hazards.

To remove the GCF400 for cleaning, bleed the system back to atmospheric pressure. Remove rubber Flask Cover from flask, leaving tubing attached to cover. Withdraw the flask partially from the chamber and allow CryoCool™ to drain briefly. Fully remove flask and insulating foam ring. Avoid thermal shock by placing the flask on several thicknesses of absorbent paper toweling and allow to come to room temperature. Insert a spare GCF400, which is clean and dry, into the chamber. Cover with insulating foam ring, and seal with rubber Flask Cover. Make sure rubber cover is seated firmly for a good vacuum seal. This easy system maintenance can be done in a matter of minutes; the Refrigerated Vapor Trap need not be shut off during this process. When the used flask has defrosted, dispose of contents in an environmentally responsible manner per all applicable laws. Clean and dry flask for next use.

Note: If the Refrigerated Vapor Trap is not needed for several weeks, you may wish to shut it off between uses. Before switching on again, always remove the used glass vessel and replace with a clean, dry trap. Check the condition of the CryoCool™; if a layer of water (atmospheric condensation) is visible under the CryoCool™, remove with a pipette. Failure to

follow these precautions may cause the glass vessel to break when the trap returns to operating temperature.

Note: Collected solvents may be purified for reuse or disposed of safely according to applicable regulations. If working with radioactive samples, test condensate for presence of radioactivity.If found to be radioactive, dispose of as radioactive liquid according to all applicable regulations

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

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 panels with a soft lint free cloth with one of the following
    - Mild detergent solution
    - Diluted Methanol (50%)
    - Diluted Ethanol (50%)

Accessories

- ANT100 Post-Trap Assembly
- GCF400 Glass Condensation Flask, with Insulating Cover
- SCC1 CryoCool™ Heat Transfer Fluid, 1L
- SCC5 CryoCool™ Heat Transfer Fluid, 5L
- FC400 Flask Cover

Warranty

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 of 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).**

Use of this equipment in manners other than those specified in this manual may jeopardize personal safety. Under no circumstances shall Thermo Fisher Scientific be liable for damages due to the improper handling, abuse, or unauthorized repair of its products. Thermo Fisher Scientific assumes no liability, express or implied, for use of this equipment.

Visit us online to register your warranty:
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WEEE Compliance

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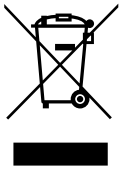

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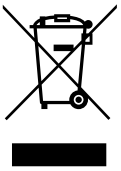

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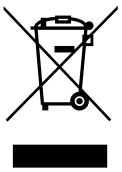

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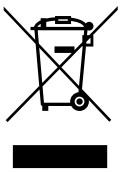

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