Instruction Manual

Universal Vacuum System with VaporNet®

145-3011-00 Rev. C

Analyze • Detect • Measure • Control™

Thermo ELECTRON CORPORATION

Contents

1.0 DESCRIPTION

The Thermo Universal Vacuum System with VaporNet is a single, 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 Vacuum System 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.

The compact, integrated system features:

- Vapornet® Controller for greater than 95% recovery of methylene chloride and organic solvent mixtures.
- Post-trap with neutralizing solution 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 (0.75 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.

1.1 CONTENTS

(1) UVS800DDA	Universal Vacuum System
(2) GCF400	Glass Condensation Flasks with Insulating Cover (white foam)
(2) FC400	Flask Covers (black rubber)
(1) SCC1	CryoCool® Heat Transfer Fluid, 1L
(1) ANT100	Post-trap Assembly
(1) NSA300TF	Neutralizing Solution for Acid

2.0 INSTALLATION

Contact Thermo with any shipment problems.

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

Unpacking. Carefully remove the instrument, loose accessories and paperwork from the shipping carton. 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 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 UVS800DDA Universal Vacuum Source.

2.1 SITE PREPARATION

- Place the Vacuum System on a stable, level laboratory counter or heavy duty cart near a power outlet with proper voltage.

- The bench depth should be at least 26 in (66 cm).

- The outlet must have a rating of at least 8A for 120V or 4A for 230V operation. The system draws high current when first switched on, therefore, other high-power equipment, or equipment that will be affected by a momentary drop in power, should not be placed on the same circuit.

- The Vacuum System is air-cooled, requiring at least 4" (10 cm) clearance for ambient air circulation. The ambient temperature must not exceed 90 °F (32 °C) for optimum operation.

CAUTION: Before connecting the System to an outlet, check voltage, frequency, and amperage to be sure they match the power requirements indicated on the label on the right side of the instrument (120VAC / 60Hz, 8A or 230 VAC/50Hz, 4A). If unsure, please consult an electrician.

2.2 PREPARING THE VACUUM SOURCE FOR USE

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 800 ml of CryoCool® (SCC1 or SCC5) 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, long-lasting, odorless fluid that provides heat transfer between the flask and refrigerated chamber.

3. Carefully place a clean Glass Condensation Flask (GCF400) into the chamber. Verify that the final CryoCool level is 10-15mm 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. To secure the flask into the chamber, insert the white Insulating Cover (supplied with GCF400) with cutout for Flask Cover and finger notches facing out (Figure 1).

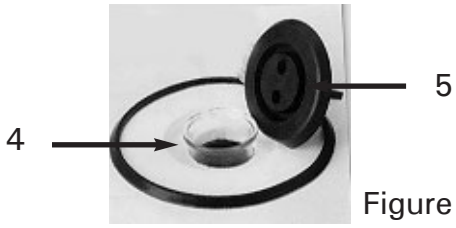

Figure 1.

5. Line up the cut-out circle of FC400 with the mouth of the Glass Condensation Flask, with spout inside flask, and press cover into place (Figure 1).

6. Attach the post trap assembly onto the right hand side of the unit by sliding the connection bracket in a downward motion.

2.2 PREPARING THE VACUUM SOURCE FOR USE (cont'd)

7. Pour the entire bottle (300ml) of Neutralizing Solution for Acid (NSA300TF) into the Post-trap Assembly (ANT100) container. This will absorb any residual solvent vapors not condensed in the vapor trap.
   NSA300TF contains a color indicator that is blue in nature and turns yellow when fully exhausted, signalling the neutralizing solution needs replacement.

8. Attach the container by screwing onto the container cap (as shown in Figure 1).

2.3 CONNECTION TO SC250DDA SPEEDVAC® CONCENTRATOR

The UVS800DDA is designed for use with a SC250DDA SpeedVac® concentrator but can be reconfigured for multifunctional operation with a standard concentrator, gel dryer, vacuum oven or rotary evaporator. This section provides information on how to properly connect the UVS800DDA to the SC250DDA or to standard SpeedVac Concentrators.

To connect to SC250DDA:

1. Insert both pieces of tubing which are attached to the back of the concentrator into the inlet ports of the black Flask Cover (FC400) on the UVS800DDA.

2. Thread one end of an appropriate length of vacuum tubing through the side hole of the concentrator and connect to the attached fitting (recommended: Thermo Vacuum Tubing Kit, VTK80)

3. Connect other opening of vacuum tubing to the vacuum port on the left side of the UVS800DDA.

To connect to a standard SpeedVac Concentrator:
Unlike the three connections on the SC250DDA, our standard concentrators have only ONE connection, therefore, extra tubings and fittings are necessary for the UVS800DDA conversion. Thermo recommends the CK800 conversion kit which includes all the necessary materials for this purpose. Call for details or instructions.

3.0 OPERATION

A two-position **POWER** switch **(ON/OFF)** is found on the right side panel. It is suggested that the trap be left on at all times. 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**.

IMPORTANT: Check the Glass Condensation Flask (GCF400) before each run and replace with a clean one if the volume of condensate exceeds 2 liters. To remove the condensation flask in use:

1. Remove the white Insulating Cover and Glass Condensation Flask and replace with an empty flask. Immediately wipe dry any CryoCool® heat transfer fluid that falls on the Flask Cover.

2. Replace the Insulating Cover and Flask Cover.

3. Collected solvents may be purified for reuse or disposed of safely according to applicable regulations.

Note: When the SC250DDA is in the OFF state, there is no vacuum on the Glass Condensation Flask.

4.0 SPECIFICATIONS

Vacuum Source:

Type:	Oil-free Teflon® coated diaphragm pump
Displacement:	36 L/min @ 60Hz 30 L/min @ 50 Hz
Maximum vacuum:	<0.6 Torr (0.75 mbar)

Refrigerated Vapor Trap:

Capacity:	4 Liters
Operating temperature:	-50 °C

Dimensions:	14″ wide x 24″ deep x 18″ height (36 cm wide x 61 cm deep x 46 cm height)
Weight:	90 lbs. (41 kg)
Power Requirements:	120 VAC / 60 Hz, 8A 230 VAC / 50 Hz, 4A

5.0 ACCESSORIES

ANT100	Post-Trap Assembly
NSA300TF	Neutralizing Solution for Acid, 300ml
GCF400	Glass Condensation Flask, 3L with Insulating Cover
SCC1	CryoCool® Heat Transfer Fluid, 1L
SCC5	CryoCool Heat Transfer Fluid, 5L
FC400	Flask Cover
CK800	Conversion Kit

6.0 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, and does not cover incidental or consequential damages. 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. It is the responsibility of the user to dispose of ALL materials in a manner in accordance with all federal, state and local 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.

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

Microplate Instrumentation
info.microplateinstruments@thermo.com

Sample Preparation
info.sampleprep@thermo.com

Laboratory Automation & Integration
info.labautomation@thermo.com

New Labs
newlabs@thermo.com

Controlled Environment
info.controlenv@thermo.com

Services
services.biosciencetech@thermo.com

Bioscience

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

Thermo
ELECTRON CORPORATION