Please read user's manual before operating equipment

Original Instructions

LABCONCO CORPORATION

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User's Manual

CentriVap® Pro Centrifugal Concentrators

Register this product

CentiVap Pro Benchtop Vacuum Concentrators

2025—Present

85101xx 85102xx 85111xx

85112xx 85121xx 85122xx

CentiVap Pro Refrigerated Vacuum Concentrators

2025—Present

85201xx 85211xx 85221xx

CentiVap Pro DNA Vacuum Concentrators

2025—Present

85301xx 85311xx

WARRANTY

Labconco Corporation provides a warranty to the original buyer for the repair or replacement of parts and reasonable labor as a result of normal and proper use of the equipment with compatible chemicals. Broken glassware and maintenance items, such as filters, gaskets, light bulbs, finishes and lubrication are not warranted. Excluded from warranty are products with improper installation, erratic electrical or utility supply, unauthorized repair, use with incompatible chemicals, or non-factory modifications to the original product.

The warranty for CentriVap® Centrifugal Concentrators will expire one year from date of installation or two years from date of shipment from Labconco, whichever is sooner. Warranty is non-transferable and only applies to the owner (organization) of record.

Buyer is exclusively responsible for the set-up, installation, verification, decontamination, or calibration of equipment. This limited warranty covers parts and labor, but not transportation and insurance charges. If the failure is determined to be covered under this warranty, the dealer or Labconco Corporation will authorize repair or replacement of all defective parts to restore the unit to operation. Repairs may be completed by 3rd party service agents approved by Labconco Corporation. Labconco Corporation reserves the rights to limit this warranty based on a service agent's travel, working hours, the site's entry restrictions and unobstructed access to serviceable components of the product.

Under no circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This warranty is exclusive and in lieu of all other warranties whether oral, or implied.

RETURNED OR DAMAGED GOODS

Do not return goods without the prior authorization from Labconco. Unauthorized returns will not be accepted. If your shipment was damaged in transit, you must file a claim directly with the freight carrier. Labconco Corporation and its dealers are not responsible for shipping damages.

The United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within **fifteen (15) days** of delivery.

Limitation of Liability

The disposal and/or emission of substances used in connection with this equipment may be governed by various federal, state, or local regulations. All users of this equipment are required to become familiar with any regulations that apply in the user's area concerning the dumping of waste materials in or upon water, land, or air and to comply with such regulations. Labconco Corporation is held harmless with respect to user's compliance with such regulations.

For additional questions or support:

Labconco Customer Care +1 (816) 333-8811

Labconco Technical Support (800) 821-5525

Hours 7:30 a.m.-5:30 p.m. CST

Part #8509100 Rev. A

ECO Q001

Table of Contents

1: Introduction

Congratulations on your purchase of a Labconco CentriVap Pro Concentrator System. Models are available for operation on 115V or 230V.

This CentriVap Pro offers many unique features. To take full advantage of them, please acquaint yourself with this manual and keep it handy for future reference.

About This Manual

This manual is written for the installer and user of this product. For detailed service, certification, or technical information, please utilize the Technical Manual located on the website labconco.com.

This manual contains important operation and safety information. When you see a symbol, such as the INFO symbol to the left, pay close attention to the information provided. Before installing or operating this product, you must read Section 3: Safety Precautions.

Contents Included

The following items are packaged with the product.

- User's manual thumb drive
- Parts Kit
- Power cord

The location of these items and additional details are found in Section 4: Installation.

2: Before You Install

Before you install the product, the site should be planned for installation. Examine the location where you intend to install it. You must be certain that the area is level and of solid construction. In addition, a means to exhaust the vacuum pump must be provided. An electrical source must be located near the installation site.

Location Requirements

The CentriVap Pro Concentrator should be located on a surface that is stable, flat, and level.

Clearance Requirements

No person or any hazardous material should be within 12 inches of the CentriVap Pro Concentrator while it is operating.

See Appendix B: Dimensions for overall product dimensions.

Electrical Requirements

The product models have the following electrical requirements.

Serial tags to reflect the following information for the Standard CentriVap					
MODEL	**CATALOG NO.**	**VOLTS**	**PHASE**	**CYCLE**	**AMPS**
CentriVap Pro	8510100, 8511100, 8512100	115	1	60	12A (7.4A+4.6A MAX PUMP)
	8510110,-15,-30,-40,-50,-70,-80,-90 8511110,-15,-30,-40,-50,-70,-80,-90 8512110,-15,-30,-40,-50,-70,-80,-90	230	1	50/60	8A (4.6A+2.3A MAX PUMP)
CentriVap Pro w/ Heat Boost	8510200, 8511200, 8512200	115	1	60	12A (7.4A+4.6A MAX PUMP)
	8510210,-15,-30,-40,-50,-70,-80,-90 8511210,-15,-30,-40,-50,-70,-80,-90 8512210,-15,-30,-40,-50,-70,-80,-90	230	1	50/60	8A (4.6A+2.3A MAX PUMP)
Serial tags to reflect the following information for the DNA CentriVap					
MODEL	**CATALOG NO.**	**VOLTS**	**PHASE**	**CYCLE**	**AMPS**
CentriVap Pro, DNA	8530100, 8531100	115	1	60	12A (7.4A+4.6A MAX PUMP)
CentriVap Pro, DNA w/ Heat Boost	8530110,-15,-30,-40,-50,-70,-80,-90 8531110,-15,-30,-40,-50,-70,-80,-90	230	1	50/60	8A (4.6A+2.3A MAX PUMP)
Serial tags to reflect the following information for the Refrigerated CentriVap					
MODEL	**CATALOG NO.**	**VOLTS**	**PHASE**	**CYCLE**	**AMPS**
CentriVap Pro, Refrigerated	8520100, 8521100, 8522100	115	1	60	12A (7.4A+4.6A MAX PUMP)
	8520110, 8521110, 8522110	230	1	60	8A (4.6A+2.3A MAX PUMP)
	8520115,-30,-40,-50,-70,-80,-90 8521115,-30,-40,-50,-70,-80,-90 8522115,-30,-40,-50,-70,-80,-90	230	1	50	8A (4.6A+2.3A MAX PUMP)

A dedicated outlet with an appropriate circuit breaker should be located as close as possible to the product. Consult your local electrical codes for properly rated circuit breakers. For safe operation the dedicated outlet must provide a protective earthing ground connection to the product.

Exhaust Requirements

WARNING: The CentriVap Pro Vacuum Concentrator System should be located within a fume hood if hazardous or flammable solvents are used. Heating of materials could lead to the liberation of hazardous gases. In all cases, regardless of the solvent used, it is strongly recommended that the vacuum pump is vented in a fume hood. An accessory secondary trap is available to minimize the exhausting of solvents into the atmosphere. This does not, however, negate the need to exhaust the vacuum pump into a fume hood. Failure to properly vent the CentriVap Pro will expose personnel to potentially harmful chemicals.

The CentriVap Pro Vacuum Concentrator has not been evaluated by an approval agency for the use of biological, radio toxins or flammable liquids or materials. Solvents used in the CentriVap can cause skin, eye, respiratory, and digestive system disorders. Locate inside a fume hood!

Vacuum Pump Requirements

A vacuum pump must be provided by the user except for the DNA CentriVap Pro model. A vacuum pump with a free air flow rate of 82 liters per minute and < 2 mBar ultimate pressure is adequate for aqueous samples. More volatile samples can be satisfactorily processed using a diaphragm pump with a free airflow of 42 liters per minute and 200 mBar vacuum. The inlet fitting on the vacuum pump must be suitable for 0.50 ID hose.

Vacuum pumps used with 115V models should be equipped with a 115V, 15 Amp NEMA 5-15P plug. Vacuum pumps used with 230V models should be equipped with a “reverse” IEC 320 plug. This will allow the vacuum pump to be plugged into the receptacle on the back of the CentriVap.

The vacuum pump’s current draw must not exceed 8 Amps for 115VAC models and 4.5 Amps for 230VAC models.

IMPORTANT NOTE: To ensure that aggressive samples used in the CentriVap Pro do not damage the vacuum pump, it is recommended that all internal wetted parts are PTFE or PTFE coated.

When selecting the vacuum pump, it is very important to consider the solvent that will be used. The vacuum pump must be suitable for use with the solvents to be processed. See Chapter 3 Solvent Safety Precautions for solvents suitable for use in the CentriVap Pro.

Vacuum Line Traps

When using a mechanical pump that is not corrosion resistant, the CentriVap Cold Trap or equivalent trap must be used in the vacuum line to prevent damage from solvent vapors. When evaporating acids, it is advisable to include an acid neutralizing secondary trap in the vacuum line. This adds additional protection for the pump.

NOTE: Several components within the CentriVap Pro are made from stainless steel or aluminum and can be degraded if exposed to acids. Contact Labconco before evaporating acids.

A moisture trap, solvent trap and radioisotope trap are also available. Refer to Chapter 9: Accessories for Your CentriVap for ordering information.

3: Safety Precautions

Before unpacking, installing, operating, maintaining, or servicing this equipment, read the following safety warnings and precautions.

Avant le déballage, l'installation, le fonctionnement, l'entretien ou la maintenance de cet équipement, lire les avertissements de sécurité et les précautions d'emploi.

CAUTION – See Manual. When this symbol is on the equipment, it indicates a caution that is detailed in this manual.
MISE EN GARDE – Voir le manuel. Lorsque ce symbole est apposé sur l'équipement, il renvoie à une mise en garde détaillée dans ce manuel.

Typographical Conventions

DANGER – An imminently hazardous situation which, if not avoided, will result in death or serious injury.
DANGER – Situation dangereuse imminente qui, si elle n'est pas évitée, peut entraîner la mort ou des blessures graves.

CAUTION – Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to property.
MISE EN GARDE – Signale une situation potentiellement dangereuse qui, si elle n'est pas évitée, peut provoquer des blessures mineures à modérées ou des dommages matériels.

NOTE – Advice or suggestions to help the process.
REMARQUE – Conseils ou suggestions pour le déroulement du processus.

BURN RISK (HIGH TEMPERATURE) – Air or components that will be very hot. Take care not to touch these defined areas. Failure to avoid these areas may result in moderate to severe injury.
RISQUE DE BRÛLURE (TEMPÉRATURE ÉLEVÉE) – Air ambiant ou composant devenant très chaud. Veiller à ne pas toucher ces zones délimitées. L'absence de précaution pour éviter ces zones peut entraîner des blessures modérées, voire graves.

EXTREME COLD (LOW TEMPERATURE) – Air or components that will be very COLD. Take care not to touch these defined areas. Failure to avoid these areas may result in moderate to severe injury.
FROID INTENSE (TEMPÉRATURE BASSE) – Air ambiant ou composant devenant très froid. Veiller à ne pas toucher ces zones délimitées. L'absence de précaution pour éviter ces zones peut entraîner des blessures modérées voire graves.

PINCH POINT – Areas or components that can pinch or cut. Take care not to touch these defined areas.
POINT DE PINCEMENT – Zones ou composants présentant un risque de pincement ou de coupure. Veiller à ne pas toucher ces zones délimitées.

MOVING PARTS – Areas or components that contain moving parts. Take care not to touch these defined areas.
PIÈCES MOBILES – Zones ou composants contenant des pièces mobiles. Veiller à ne pas toucher ces zones délimitées.

RISK OF ELECTRICAL SHOCK – The specified procedure or area poses a risk of electrical shock. ALWAYS disconnect main power cord or electrical supply before proceeding.
RISQUE DE CHOC ÉLECTRIQUE – La procédure ou la zone spécifiée présente un risque de choc électrique. TOUJOURS débrancher le cordon d'alimentation secteur ou l'alimentation électrique avant toute intervention.

FLAMMABLE / NO SOLVENTS – Do not place flammable liquids or solvents in this product.
INFLAMMABLE / PAS DE SOLVANTS – Ne placez aucun liquid inflammable dans cette produit.

LIFTING HAZARD – Do not lift or move this equipment without assistance.
DANGER DE LEVAGE – Ne pas soulever ou déplacer cet équipement sans assistance.

MAGNETIC FIELD IN USE – Magnets or magnetic field present.
CHAMP MAGNETIQUE UTILISE – Présence d'aimants ou de champ magnétique.

DO NOT TOUCH – Components or areas indicated are sensitive and will suffer damage if touched. Take care not to touch these defined components or areas. Failure to avoid these areas will result in damage to the product.
NE PAS TOUCHER – Les composants ou les zones indiquées sont sensibles et subiront des dégâts s'ils sont touchés. Veiller à ne pas toucher ces composants ou zones délimité(e)s. L'absence de précaution pour éviter ces zones endommagera le produit.

TOOL REQUIRED – Tool required to access specified area.
OUTIL NÉCESSAIRE – Outil nécessaire pour accéder à la zone spécifiée.

General Safety Precautions

Follow all the safety precautions described in this section.

Before removing any panels, which require a tool for removal, ALWAYS disconnect the main power cord or electrical supply. Failure to remove all electrical power before proceeding will result in moderate to serious injury, death, or damage to property.
Avant le retrait d'un panneau nécessitant l'utilisation d'un outil, TOUJOURS débrancher le cordon d'alimentation secteur ou l'alimentation électrique. Le non-respect de la consigne consistant à couper complètement l'alimentation électrique avant toute intervention peut entraîner des blessures graves, la mort ou des dommages matériels.

Never contact moving parts with your person. Failure to avoid moving parts will result in moderate to serious injury, death, or damage to property.
Ne jamais toucher les parties mobiles. Le non-respect de la consigne consistant à éviter les pièces mobiles peut entraîner des blessures graves, la mort ou des dommages matériels.

Never misuse this product. Never disable, override, or otherwise bypass safety guards, panels, switches, sensors, or alarms. Doing so will result in moderate to serious injury, death, or damage to this product or property.
Ne jamais utiliser ce produit à mauvais escient. Ne jamais désactiver, annuler ou contourner les capots, panneaux, interrupteurs, capteurs, ou alarmes de sécurité. Ceci entraînerait des blessures graves, la mort ou des dommages matériels à ce produit ou à d'autres biens.

If the unit is not operated as specified in this manual it may impair the protection provided by the unit.
Si l'unité n'est pas utilisée comme spécifié dans ce manuel il peut diminuer la protection fournie par l'unité.

Do not position the unit so that it is difficult to operate the main disconnect device.
Ne placez pas l'appareil de sorte qu'il est difficile de faire fonctionner le dispositif principal de déconnexion.

Do not lift or move this equipment without assistance.
Ne pas soulever ou déplacer cet équipement sans assistance.

Safety Precautions for this Product

Do not use any detachable power cord that is not adequately rated for the unit.
Ne pas utliser un fil électrique amovible qui n'est pas du tension nominale de l'appareil.

When starting a method, always pull lightly upward on the lid to verify the lid is locked and will not open. If the lid opens, stop the method immediately, disconnect the product's power cord from all power, and contact Labconco Corporation for service. Failure to follow these instructions may result in moderate to serious injury, death, or damage to property.
Lorsque vous démarrez une méthode, tirez toujours légèrement vers le haut sur le couvercle pour vérifier qu'il est verrouillé et ne s'ouvrira pas. Si le couvercle s'ouvre, arrêtez immédiatement la méthode, débranchez le cordon d'alimentation du produit de toute alimentation et contactez Labconco Corporation pour le service. Le non-respect de ces instructions peut entraîner des blessures modérées à graves, la mort ou des dommages matériels.

Never place or pour liquids, solids, or any item directly inside the main chamber. Liquids must be contained in appropriate laboratory grade glassware or plasticware and placed into the correct, Labconco rotor before being placed inside the main chamber.
Ne placez ou ne versez jamais de liquides, de solides ou tout autre objet directement à l'intérieur de la chambre principale. Les liquides doivent être contenus dans de la verrerie ou des ustensiles en plastique appropriés de qualité laboratoire et placés dans le rotor Labconco approprié avant d'être placés à l'intérieur de la chambre principale.

Do not fill tubes, plates, or flasks more than 50% of the stated volume of the tube, plate or flask. Solution density must not exceed 1.5 g/cm3.
Ne pas remplir les tubes, plaques ou fioles à plus de 50 % du volume indiqué. La densité de la solution ne doit pas dépasser 1,5 g/cm3.

Models 852xxxx contain a refrigeration system charged with R-290 (Propane). Take caution when handling, moving, and using this product to avoid damaging the refrigerant tubing/components that may increase the risk of a refrigerant leak. Replace components for this product only with like components. Service should only be performed by the manufacturer's authorized representative to minimize risk of possible ignition due to improper service or parts.
Les modèles 852xxxx contiennent un système de réfrigération chargé au R-290 (propane). Soyez prudent lors de la manipulation, du déplacement et de l'utilisation de ce produit pour éviter d'endommager les tubes/composants du réfrigérant, ce qui pourrait augmenter le risque de fuite de réfrigérant. Remplacez les composants de ce produit uniquement par des composants similaires. L'entretien ne doit être effectué que par le représentant agréé du fabricant afin de minimiser le risque d'inflammation possible due à un entretien ou à des pièces inappropriées.

The appliance is to be installed in accordance with the Safety Standard for Refrigeration Systems, ANSI/ASHRAE 15. In addition, if the appliance has a refrigerant charge of more than 3 × LFL, the instructions shall indicate the appliance shall not be installed in public corridors or lobbies.

L'appareil doit être installé conformément à la norme de sécurité pour les systèmes de réfrigération, ANSI/ASHRAE 15. De plus, si l'appareil a une charge de réfrigérant supérieure à 3 × LFL, les instructions doivent indiquer que l'appareil ne doit pas être installé dans des couloirs publics ou des halls d'entrée.

For Hydrocarbon Refrigeration Only

- **DANGER** – Risk of fire or explosion. Flammable refrigerant used. Do not use mechanical devices to defrost refrigerator. Do not puncture refrigerant tubing.
  DANGER – Risque d'incendie ou d'explosion. Réfrigérant inflammable utilisé. N'utilisez pas d'appareils mécaniques pour dégivrer le réfrigérateur. Ne percez pas les tubes de refrigerant.
- **DANGER** – Risk of fire or explosion. Flammable refrigerant used. To be repaired only by trained service personnel.
  DANGER – Risque d'incendie ou d'explosion. Réfrigérant inflammable utilisé. À réparer uniquement par un personnel de service qualifié.
- **WARNING** – Ensure all ventilation openings are unobstructed.
  AVERTISSEMENT – Assurez-vous que toutes les ouvertures de ventilation ne sont pas obstruées.
  CAUTION – Risk of fire or explosion. Flammable refrigerant used. Consult repair manual/owner's guide before attempting to service this product. All safety precautions must be followed.
  ATTENTION – Risque d'incendie ou d'explosion. Réfrigérant inflammable utilisé. Consultez le manuel de réparation/guide du propriétaire avant d'essayer de réparer ce produit. Toutes les précautions de sécurité doivent être respectées.
- **CAUTIO**N – Risk of fire or explosion. Dispose of properly in accordance with federal or local regulations. Flammable refrigerant used.
  ATTENTION – Risque d'incendie ou d'explosion. Éliminer correctement conformément aux réglementations fédérales ou locales. Réfrigérant inflammable utilisé.
- **CAUTION** – Risk of fire or explosion due to puncture of refrigerant tubing. Follow handling instructions carefully. Flammable refrigerant used.
  ATTENTION – Risque d'incendie ou d'explosion dû à la perforation du tube de réfrigérant. Suivez attentivement les instructions de manipulation. Réfrigérant inflammable utilisé.

Replacement Components and Service Operations

- Component parts shall be replaced with like components.

  Les composants doivent être remplacés par des composants similaires.

- Servicing shall be performed by authorized service personnel to minimize the risk of possible ignition due to incorrect parts or improper service.

  L'entretien doit être effectué par un personnel d'entretien agréé afin de minimiser le risque d'inflammation possible dû à des pièces incorrectes ou à un entretien inapproprié.

4: Installation

With the installation site properly prepared, you are ready to unpack and install the equipment. This section covers how to:

- Unpack and move the equipment
- Install the equipment
- Connect electrical service

Unpacking

The following tools are required to unpack the equipment:

- Box Knife

The following safety precautions must be followed by all personnel unpacking the equipment.

- Wear close-toed shoes
- Follow safe-lifting practices

Step 1

Carefully remove the outer carton and inspect the product for damage that may have occurred in transit. If the product is damaged, take pictures of the product and the outer packaging, and notify the delivery carrier immediately. Retain the entire shipment, including outer packaging, intact for inspection by the carrier.

Note: United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within fifteen (15) days of delivery.

Do not return goods without the prior authorization of Labconco. Unauthorized returns will not be accepted.

If the product was damaged in transit, you must file a claim directly with the freight carrier. Labconco Corporation and its dealers are not responsible for shipping damages.

Do not discard the carton or packing material for the product until all the components have been checked, installed and tested.

CentriVap Pro Components

Locate the model of CentriVap Pro you received in the following tables. Verify that the components listed are present.

Concentrators															
Description			Power Cords							Accessories					
Catalog #	Voltage(V)	Frequency (Hz)	1334500 Connector: IEC C13 Plug: NEMA 5-15	1338000 Connector: IEC C13 Plug: NEMA 6-15	1336100 Connector: IEC C13 Plug: CEE 7/7	1332700 Connector: IEC C13 Plug: CH1-10P	1332600 Connector: IEC C13 Plug: BS 1363	1345700 Connector: IEC C13 Plug: SANS 164-1	1331800 Connector: IEC C13 Plug: AU1 10P	7828600 Tubing, 1/2 ID x 48"	1488800 Hose Clamps	7396206 Coupling Insert	1089029 User Manual Thumb drive	1559301 Stem Adapter	8509400 Emergency Access Instructions
85xxx00	115	60	X							X	X	X	X	X	X
85xxx10	230	60		X						X	X	X	X	X	X
85xxx15	230	50					X			X	X	X	X	X	X
85xxx30	230	50			X					X	X	X	X	X	X
85xxx40	230	50				X				X	X	X	X	X	X
85xxx50	230	50					X			X	X	X	X	X	X
85xxx70	230	50						X		X	X	X	X	X	X
85xxx80	230	50							X	X	X	X	X	X	X
85xxx90	230	50			X	X	X	X	X	X	X	X	X	X	X

Installation

Emergency Access into the Chamber

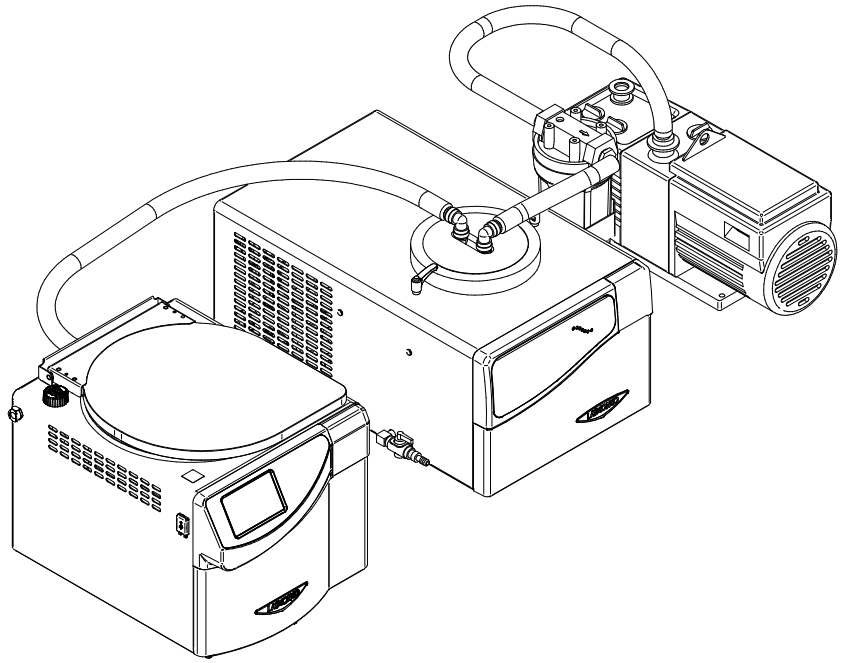
The CentriVap Pro is designed to prevent access to the chamber in the event of a power disruption. If it is necessary to open the lid when there is no electrical power connected to the CentriVap Pro, insert a small screwdriver or similar instrument into the small round hole on the right side of the wrapper near the top behind the control panel. This will unlock the lid latch mechanism. While holding the screwdriver in place and pushing in, raise the lid with the other

hand. If the chamber is still under vacuum, remove the vacuum pump hose on the rear before unlocking the lid.

CAUTION: Never attempt to defeat the latch or open the lid while the CentriVap is running. Personnel injury can result from moving parts and chemicals.:

Component Orientation & Hose Connections

The relative position of the CentriVap Pro Concentrator, Cold Trap and the vacuum pump may be as shown or may be reversed. The refrigeration system in the Cold Trap (and Refrigerated Centrivap Pro) draws air in through the right side of the cabinet and exhausts air through the left side of the cabinet. A minimum of 3" should be allowed between the sides of the Cold Trap (or Refrigerated Centrivap) and the adjacent wall surfaces. Restriction of the airflow through the cabinet during operation could adversely affect performance.



After positioning the components, it is necessary to join the system together using the hoses provided. Attach one hose to the tube that extends out the back of the Concentrator. Attach the other end of this hose to one of the barb fittings on the Cold Trap Cover Assembly. Secure the hoses with the clamps supplied. Attach another hose to the remaining barb fitting on the Cold Trap Cover and clamp securely. If the accessory Secondary Trap is not used, attach the other end of the hose to the inlet port on the vacuum pump. If the accessory Secondary Trap is used, install the Secondary Trap as explained in *Chapter 9: Accessories for Your CentriVap Pro*. Then attach the hose from the Cold Trap Cover to the “out” connector on the Secondary Trap and clamp securely. Attach another hose from the remaining connector on the Secondary Trap to the inlet port on the vacuum pump and clamp securely.

WARNING: It is recommended that the vacuum pump be located inside a fume hood or other laboratory ventilation device if hazardous solvents are used in the CentriVap Pro. If this is not possible, the vacuum pump should have a hose attached to the exhaust port and the other end of the hose should be positioned inside the fume hood or ventilation device.

Electrical Connection

Plug the power cord into the receptacle on the back of the CentriVap Pro Vacuum Concentrator and plug the other end into a suitable power receptacle. Plug the power cord into the receptacle on the back of the CentriVap Cold Trap and plug the other end into a suitable power receptacle. Plug the power cord from the vacuum pump into the receptacle on the back of the Concentrator. If the vacuum pump has an off/on switch, turn the switch ON. The vacuum pump will be controlled by the Concentrator.

Rotor Installation

Place the rotor onto the shaft of the Concentrator. Rotate the rotor slightly to engage the drive pin in the shaft with the slots in the rotor hub.

INPORTANT NOTE: Do not use a rotor if it shows any signs of damage. Failure of a spinning rotor could damage the CentriVap Pro or cause samples to be lost. Some previous generation CentriVap rotors can be used. Check that the rotor is flat and not conical on the bottom. The rotor should not touch the chamber when placed on the shaft.

Ground Wire

Attach one end of the included ground wire (supplied with the Cold Trap) to the stainless-steel elbow on the Cold Trap on the drain tubing on the right or left side (depending on model) of the Cold Trap.

CAUTION: Solvents may be flammable. When draining the CentriVap Cold Trap, always attach the other end of the grounding clip to the solvent catch pot to eliminate the risk of electrostatic spark ignition.

CentriVap Levelling

Once the product is in its final location, verify the product is level by checking level front-to-back, side-to-side, and corner-to-corner with a traditional level. If the product is not level, adjust the levelling feet underneath the product (up and/or down) as needed to achieve level. Note: ensure the middle levelling foot (in the very center of the product) is contacting the surface the product is sitting on after any re-levelling is performed).

Chemical Resistance of CentriVap Pro Components

Your CentriVap Pro Vacuum Concentrator is designed to be chemical resistant to most compounds that are commonly used in concentration processes. However, by necessity, the CentriVap Pro is comprised of several different materials, some of which may be attacked and degraded by corrosive chemicals. The degree of degradation is obviously dependent on the concentration and duration of exposure. Some major components of the CentriVap Pro that are susceptible to degradation are as follows:

Chemical Resistance of CentriVap Pro Components																											
		Acids									Bases		Solvents														
COMPONENT	MATERIAL	Acetic Acid 20%	Boric Acid	Formic Acid	Hydrobromic Acid 20%	Hydrochloric Acid 20%	Nitric Acid 20%	Sulfuric Acid 10%	Trifluoroacetic Acid (TFA)		Ammonium Hydroxide		Acetone	Acetonitrile	Chloroform	Dimethyl Formamide	Dimethyl Sulfoxide (DMSO)	Ethanol	Ethyl Acetate	Hexanes	Isopropanol	Methanol	Methylene Chloride	Methyl t-Butyl Ether (MTBE)	Toluene	Water
Benchtop																											
CentriVap Pro																											
Chamber	Epoxy coated Aluminum			C					D						C	D											
Bearings	High Carbon Steel	D	D	D	D	D	D	D			D					D									D	D
Lid Gasket	Silicone	A	A		D	D	D	D	B		A		D	D	D	B	B	B		D	A	A	D		D	A
Rotor Shaft	Stainless Steel				D	D		D																			
Valve	Stainless Steel				D	D		D																			
O Rings	Viton (Fluorocarbon)								C							C	C		D					C		
Fittings	Polypropylene	D																	C							
Rotor	Anodized Aluminum					D	D																			
Rotor Hub	Polypropylene	C			C	C	D	D	D		C					D									C	
Tubing	PVC	D		C			D		D				D	D	D	D	D	C	D	D			D		D	

Acid Resistant																									
CentriVap Pro																									
Chamber	PTFE coated Aluminum																								
Lid	Glass																								
Bearings	Stainless Steel				D	D		D																	
Lid Gasket	Silicone						D	D						D		D			D			C	C	D	
Rotor Shaft	Hastelloy																								
Valve	Stainless Steel																	D							
O Rings	Viton (Fluorocarbon)								C						C	C		D					C		
Fittings	Polypropylene	D																C							
Rotor	PTFE coated Aluminum																								
Rotor Hub	Polypropylene	D																C							
Tubing	PVC	D		C			D		D				D	D	D	D	D	C	D	D			D		D	

C- Moderate Degradation- Questionable use

D- Severe Degradation- Infrequent use recommended- immediate thorough cleaning required

- If a rotary vane vacuum pump is used, frequent oil changes are required. Most compounds used in the CentriVap Pro will degrade the oil if allowed to enter to pump.
- Diaphragm vacuum pumps sold by Labconco have wetted parts either made from PTFE or protected by PTFE coatings and are suitable for nearly all procedures.
- When using compounds in the CentriVap Pro that are hostile to the materials of construction, it is imperative that the equipment is appropriately maintained. After each run, clean up all residues, spills and materials that might have splashed in the chamber.
- When using a rotary vane vacuum pump, the oil in the pump should be checked often. It must be changed if it is cloudy, shows particles or is discolored. The useful life of vacuum pump oil can be extended if the vacuum pump is operated for an extended time after the Concentrator run is over. This allows contaminants to be purged from the hot oil. This must be done with the inlet to the pump blocked off to prevent air from free flowing through the pump. If the pump is operated at an elevated vacuum level, oil will be expelled from the pump and damage will occur.
- If optional secondary traps are used, monitor their condition often and replace them when they are saturated. A new acid trap is off-white and changes color to purple when used up. A new moisture trap is blue and changes color to pink when used up. The solvent trap molecular sieve does not change color when saturated so extra care must be taken to determine when a replacement cartridge should be installed.

Solvent Safety Precautions

CAUTION: The CentriVap Pro is not classified as "explosion proof." It has been designed with safety as a primary consideration and should be used in a prudent manner using "good laboratory practices." It has been designed for use with compounds as described in the United States National Electrical Code Class I, Group D. The heater may be programmed to run as hot as 100°C, however, the heater element may normally run at 110°C. A thermal fuse limits the heater to a maximum temperature of 141°C. If an over-temperature or "runaway" heater situation occurs, the thermal fuse will stop all power to the heating element, and you will see the temperature on the display reduce. The thermal fuse will automatically reset and restore power to the heating element once the temperature drops below 120ºC. It is important that the solvents used are compatible with these temperatures. Do not evaporate solvents that have an autoignition temperature below 180°C. Do not evaporate solvents that are classified as Group A, B, or C by the National Electrical Code. Evaporate only non-flammable or Group D solvents with autoignition temperatures 180°C or above. Use of other compounds could cause an explosion.

CAUTION: Solvents used in the CentriVap Pro may be flammable or hazardous. Use extreme caution and keep sources of ignition away from the solvents. When using flammable or hazardous solvents, both the CentriVap Pro and the vacuum pump should be operated inside a fume hood.

If a sample is spilled in the chamber, it must immediately be cleaned up. Hazardous materials, such as strong acids or bases, radioactive substances, and volatile organics, must be handled carefully and promptly cleaned up if spilled.

Do not store flammable or hazardous solvents within 12 inches (300 mm) of the CentriVap Pro.

IMPORTANT NOTE: The disposal of substances used in connection with this equipment may be governed by various Federal, State, or local regulations. All users of this equipment are urged to become familiar with any regulations that apply in the user's area concerning the dumping of waste materials in or upon water, land, or air and to comply with such regulations.

5: Performance Features

The CentriVap Pro Vacuum Concentrator, when combined with the CentriVap Cold Trap, uses centrifugal force with heat and vacuum to rapidly evaporate and condense solvents from biological and analytical samples. Centrifugation eliminates bumping and foaming as vacuum is applied and concentrates the solute in the bottom of the vial. This allows recovery of solutes from sample volumes as small as a few microliters. The concentrator is equipped with a 300-watt heater and optional 300-watt heat boost heater (Benchtop Concentrators only) to speed evaporation by warming the chamber during processing. A timed outlet for the vacuum pump connection delays the start of the pump until the rotor reaches operating speed. A safety switch prevents the concentrator from starting when the lid is in the open position and a latch prevents the lid from being opened while the rotor is turning. The compact, low-profile design allows the concentrator to be placed on a benchtop or other laboratory work surface.

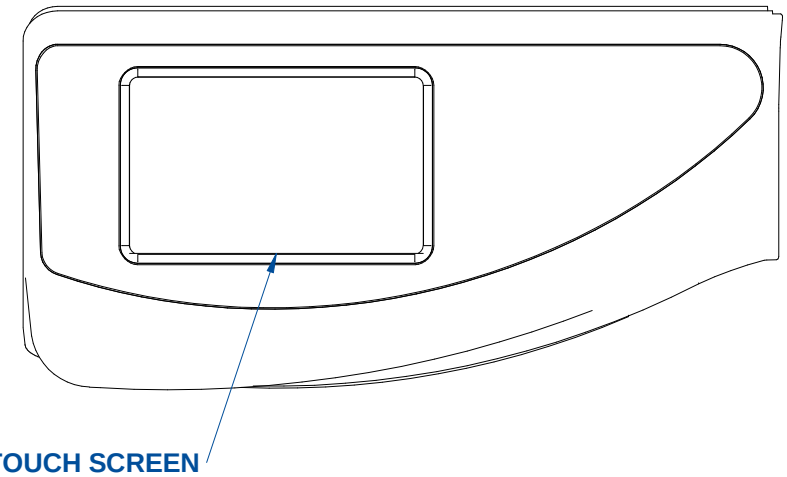
The microprocessor and touch screen control the vacuum level, temperature, rotor speed, and time during a method, providing excellent regulation and reproducibility of protocols. Multiple steps with unique time, temperature, vacuum pressure, and speed can be selected. Any number of unique methods can be stored in the device memory so exact parameters can be easily repeated. Data can be viewed and plotted on the display screen and exported.

As the companion to the Concentrator, the CentriVap Cold Trap protects the vacuum pump by trapping moisture, vapors, and corrosive fumes as they evaporate from the samples. The stainless-steel trap is used for aqueous and organic applications. For corrosive applications, the optional Glass Trap insert should be used. The 230V 50Hz models comply with CE regulations.

6: CentriVap Pro Operating System

The VaporWorks operating system provides clear status information on the touch screen and user control with the keypad. Read this section along with Section 7: Using Your CentriVap Pro to fully understand the features and controls of this product.

Control Panel



Touch Screen

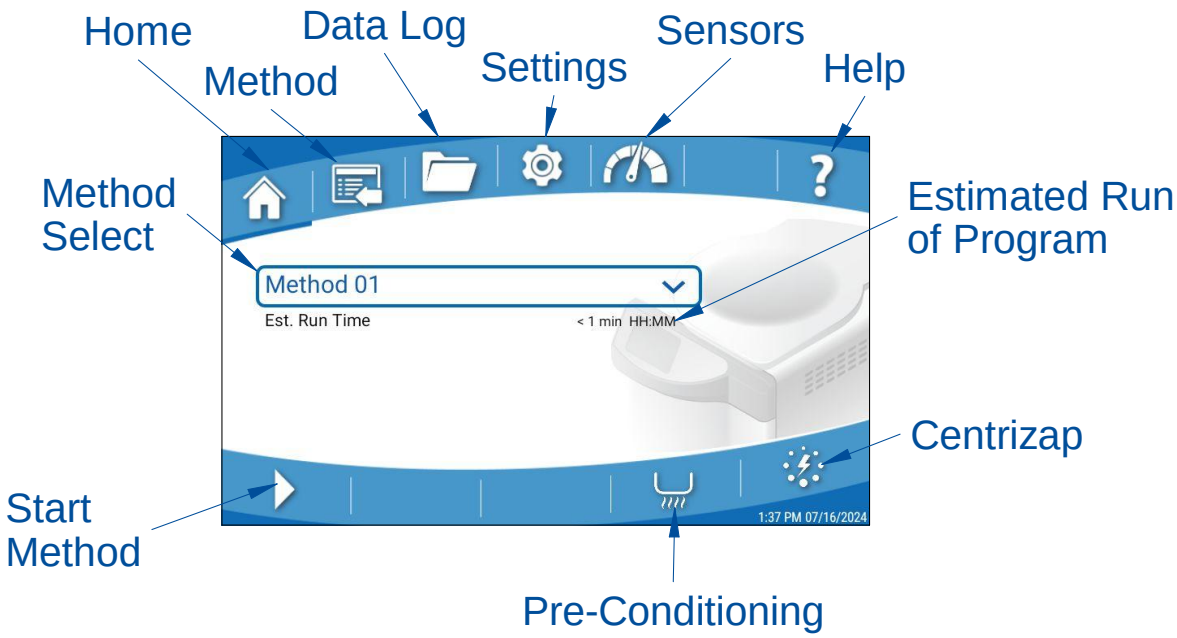
The touch screen displays system operating parameters, set-up parameters and alarm messages. All user-control will take place via the touch screen interface.

Initial Power Up

When the CentriVap is initially connected to a power source, the display will remain OFF for the first 10 to 15 seconds, then an animated start up screen will appear. It will take approximately 90 seconds for the operating system to fully load.

Home Screen

After initial power up, the Home screen will be displayed. If not, press the **[Home]** icon at the top of the panel and the Home screen will be displayed. Most general operations and system monitoring can be done from the Home Screen.



The menu screen tabs are displayed across the top of each screen as shown on the Home Screen.

You can move between menu screens by either touching the desired tab or swiping across the screen from left to right or right to left.

Menu Tabs

- Home
- Method
- Data Logging
- Settings
- Sensors
- (Empty)
- Help

Pre-Conditioning

Push the **[Pre-Condition]** button to start pre-conditioning. Select the desired temperature in the pop up. The temperature will be maintained until a method is started. Only the refrigerated CentriVap Pro has active cooling which can cool the chamber below ambient temperatures. The DNA CentriVap Pro and Benchtop CentriVap Pro rely on passive cooling and cannot go below the instrument's ambient temperature (approximately 30°C).

A thin blue indicator bar will appear under the Pre-Conditioning icon of the menu screen, showing the set point temperature and the estimated time.

CentriZap

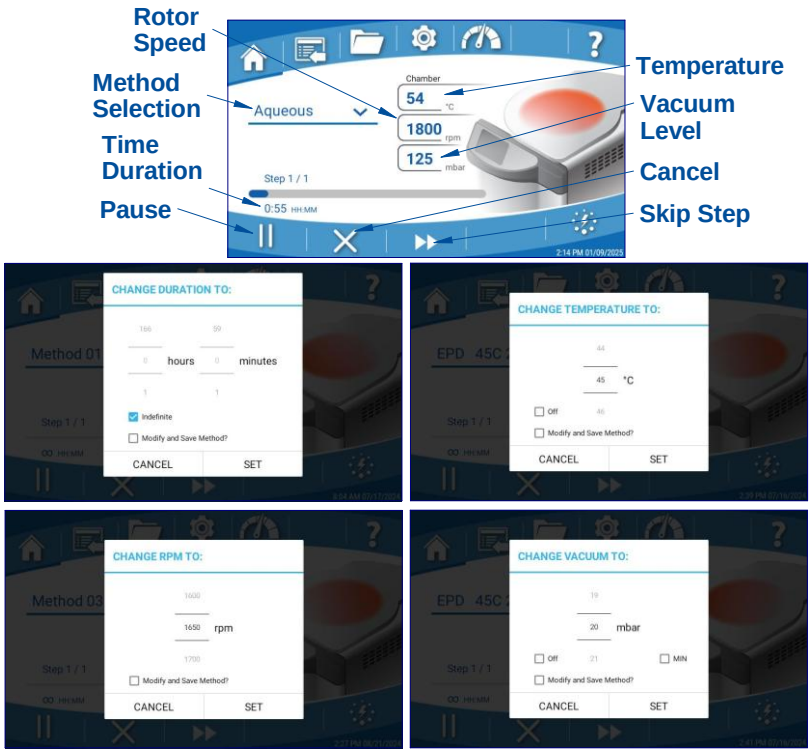
If the CentriVap Pro has the CentriZap strobe light option, the **[CentriZap]** icon will appear. This feature allows the samples to be viewed while the CentriVap Pro rotor is turning, allowing the user to check samples without stopping the unit.

Press the **[CentriZap]** icon to turn on the CentriZap Strobe Light. The rotor needs to be at its set speed to ensure a stable view of the samples. By pushing the adjustment arrows on the pop-up dialogue box, samples can be moved to a more convenient location in the chamber.

Method

Touch the **[Method]** Selection bar to display all programmed method cycles. If the list is long, swiping up/down will scroll through the list options. Touch the desired method to select it.

The temperature, rotor speed, and vacuum pressure of each step will be displayed next to the image of the CentriVap Pro unit. Estimated run time will be displayed just beneath the program name. Note: this value does not include the time needed for the system temperature to reach the setpoint. The step that the method is in, and the number of the steps will also be displayed.



Start

After ensuring the lid is closed, press the **[Start]** icon to start the desired method. The system will ask you to confirm that you want to start the method, select either **[Cancel]** or **[OK]**. Slight pressure on the lid maybe need to get the lid to seal.

The Home Page will then display the Method Progress Indicator for the selected method.

Pause

The method can be paused at any time by pressing the **[Pause]** icon. The rotor will stop, the vacuum will shut off, the chamber will vent, and the lid will unlock. The temperature of the chamber will be maintained. The time is also paused and will continue once start is pressed.

Skip

You can skip a step in a method by pushing the **[Skip Step]** icon. A pop up will ask you to confirm or cancel the step. If it is the last step, the method will be completed.

By touching the time, temperature, rotor speed, or vacuum pressure, values can be changed during a programmed run.

Set Time

Press the **[Time]** duration and the time can be changed in that method step. The time duration includes the time that has already passed.

Set Temperature

The temperature can be set between 30°C (-10°C for the Refrigerated model) and 100°C or off by pressing the **[Temperature]**.

Set Speed

By pressing the **[Rotor Speed]**, the rotor speed can be adjusted from 500 to 1800 rpm or off. For safe use of the device, adjust the speed depending on the weight of the rotor to minimize glassware breakage and run at the lowest speed that prevents the samples from boiling. Turning the rotor speed to **[Off]** is only allowed when setting up a method. With the rotor turned off, the CentriVap Pro can be used as a desiccator.

Set Vacuum

The vacuum level can be adjusted from 0 to 300 mBar by pressing **[Vacuum Level]**. *Note: The vacuum level can be set lower than what the vacuum pump can achieve. Also, depending on the capacity of the vacuum pump, higher vacuum levels may not be achievable.*

The vacuum can also be set to minimum or turned off.

You can also modify any current method step with this new vacuum pressure setting by selecting ‘Modify and Save Method’.

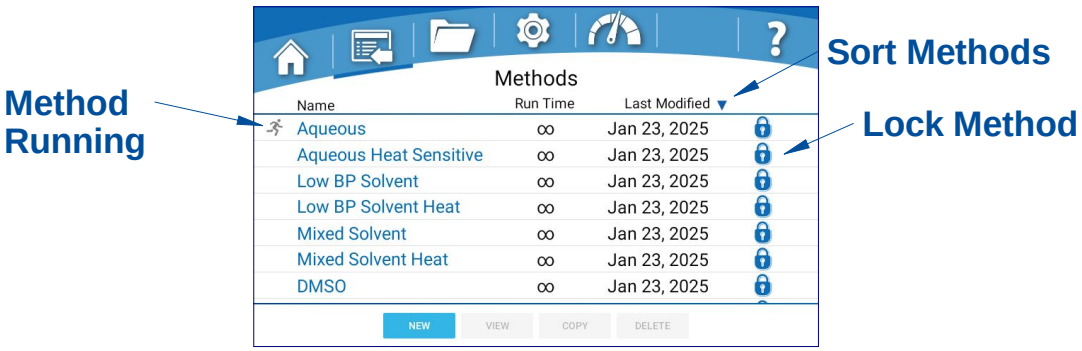
Method Screen

Press the **[Method]** icon at the top of the screen and the Method panel will be displayed.

A running man icon will appear next to the method that is currently running.

By pressing the date header, the methods can be sorted by name, last run date, and last modified date.

The lock on the right side indicates if that method is locked or not. This can be changed when the method is edited.



Creating a Method

At the bottom of the screen, you can select **[New]**, **[View]**, **[Edit]**, or **[Delete]** a method.

New Method

Push the **[New]** button and a pop up will appear for you to name your method. You can also edit the name in the next screen. Up to 30 characters can be used.

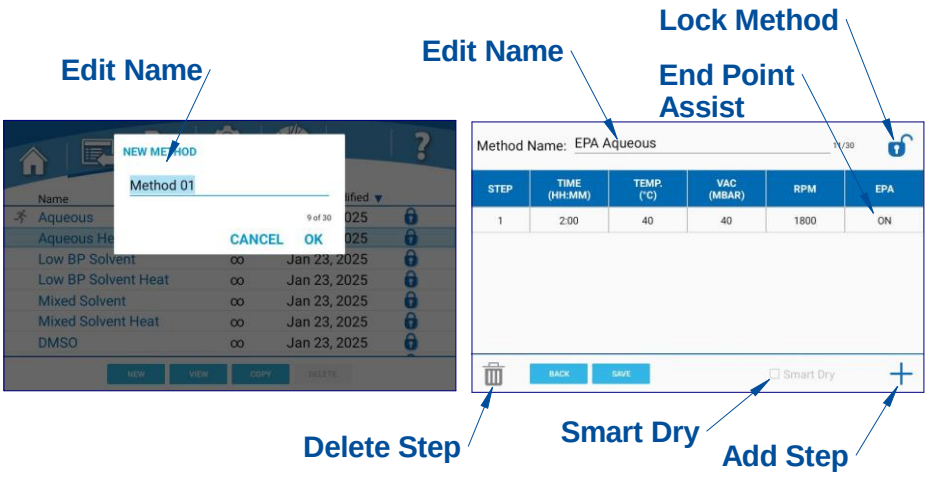
You can also copy an existing method, rename it, and make changes to it.

The CentriVap Pro, Acid Resistant CentriVap Pro, and Refrigerated CentriVap Pro can be used for small-scale lyophilization within the chamber when connected to a CentriVap Cold Trap. Samples must be pre-frozen before placement into the chamber and a vacuum pump capable of achieving negative pressure of 0.02 mBar must be connected to the instrument. A method can be created with the temperature, vacuum, and rotor speed set to the desired settings.

All CentriVaps can prepare samples by allowing the user to perform basic vacuum desiccation of samples when paired with a vacuum pump capable of achieving desired vacuum pressure. To do this, a method can be created so the rotor is off and the heat and vacuum set to the desired settings. This step must be the last step in the method.

Add Step

Push the **[Plus]** icon to add steps to the method.



Set Step Time

A pop up will have you set the time in one-minute increments up to 99 hours. By checking the indefinite box, the step will run until you stop the CentriVap.

Set Step Temperature

A pop up will have you set the temperature set point. The temperature can also be turned off.

Set Step Vacuum Set Point

A pop up will have you set the vacuum set point from 0 to 300 mBar. The set point can also be set to minimum or off.

Set Step Rotor Speed

A pop up will have you set the speed of the rotor. This can be controlled between 500 and 1800 rpm in 50 rpm increments. Adjust the speed depending on the weight of the rotor to minimize glassware breakage. Run at the lowest speed that prevents the samples from boiling. The rotor can be turned off to function as a desiccator. ***If there is liquid in your samples, and they are under negative vacuum pressure, the samples can potentially boil*!**

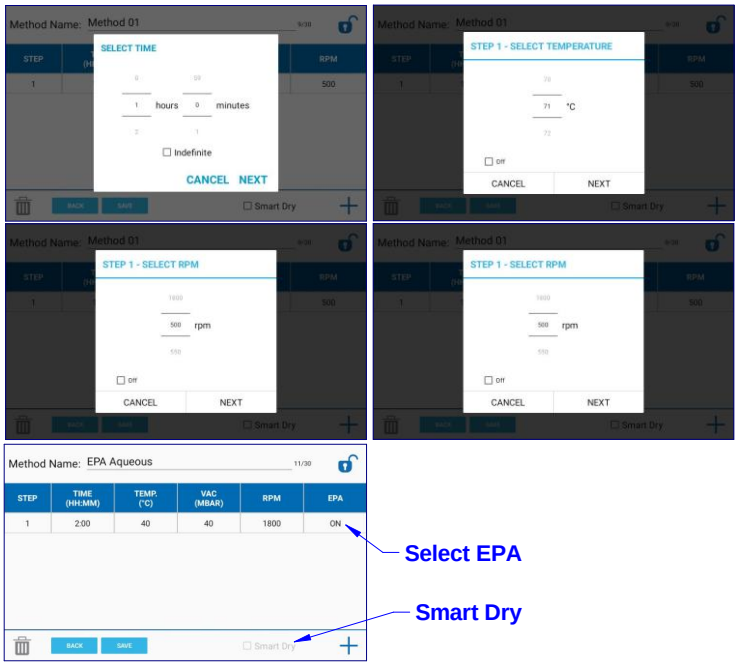
Set End Point Assist

End Point Assist can help determine when samples are approaching dryness. EPA can be selected if the CentriVap Pro is a Benchtop, Acid Resistant, or Refrigerated model. The following conditions must be meet for EPA to function properly.

1. A cold trap must be connected to the CentriVap Pro.
2. The total liquid volume of the samples must be at least 36 mL.
3. The temperature setting must be at least 40 °C.
4. The vacuum setting must be at or below 45 mBar.

Labconco testing was only conducted on the above ranges, but users can try EPA at lower temperatures, lower sample sizes, or higher vacuum levels if the other two variables are changed to compensate. For example, a smaller sample size (12 mL or so) may be detectable at temperatures closer to 100°C.

The EPA can be selected for only one step in a method.



Smart Dry

This feature helps to dry your samples by flushing filtered air across the samples after the last step in the method.

If the Smart Dry feature is checked, the vacuum valve pulses open to allow filtered air to flush across the chamber at the end of the last step. This feature is only engaged once the CentriVap Pro reaches the desired set point, and it will then return to the set point. This will continue until the method is stopped.

Either EPA or Smart Dry, not both can be used during a method.

Lock Method

You can lock the method by clicking on the **[Lock]** icon.

Delete Step

If you created a step that you no longer need, highlight the step by clicking on it, and then click the **[Delete]** icon. It will ask for you to either cancel or OK.

Continue adding steps or push **[Save]** to save the method to return to the Method Screen.

Data Log Screen

The data log will collect up to nine parameters for each method at a user-selected logging interval. The Data Log Screen allows the user to sort and view up to six sets of the collected data.

Although the Data Log Screen only allows viewing of up to six parameters, all parameters are permanently stored with the Data Log, and will be viewable when the log file is downloaded and viewed on a computer.

Each file will be named sequentially as follows "LOG_YYYY-MM-DD_XX", where YYYY = Year, MM = Month, DD = Day, and XX = 01 to 99 for the first through 99th log of that specific day. The data log default rate is 1 minute. The default data rate can be changed in the Settings Screen by selecting Data Log, and then changing the data collection rate from the drop-down menu.

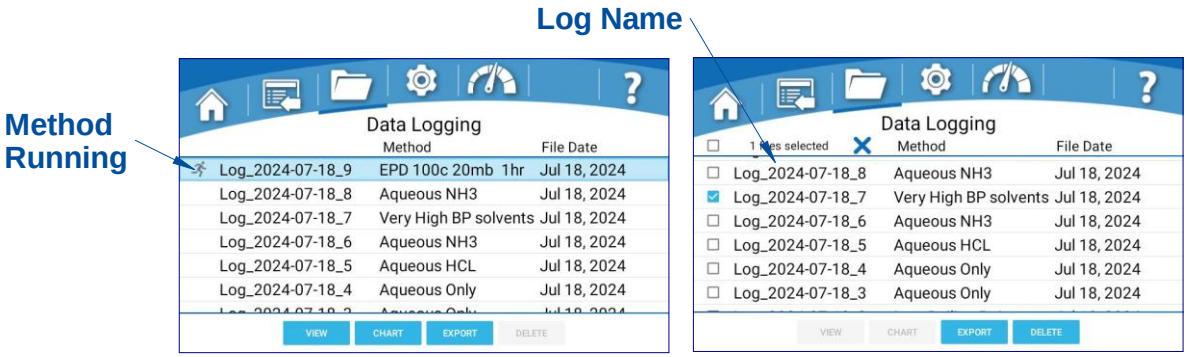
A data log can be selected from the list by touching the data log file name. When a data log has been selected, the row will be highlighted as shown. When selected, the buttons along the bottom of the screen will activate (**[View]**, **[Chart]**, **[Export]**, **[Delete]**). If a data log is currently running (collecting data), the Running Man icon will appear to the left of data log file name.

Delete Data File

From the Data Log Screen, highlight the Log to delete by touching the Log name.

1. Touching and holding a file name will allow you to select multiple files.
2. Touch **[Delete]**. After deletion a pop-up will confirm number of deleted files.
3. Touching and holding a file name for 3 seconds enables multiple file selection. Multiple data logs can then be selected and exported at the same time. During multiple selection mode, the option to *Select All* will be available at the top of the Data Log Screen.

Locked Log Files will not be deleted.



View Data File

1. From the Data Log Screen, highlight the Log to view by touching the Log name.
2. Touch **[View]**.
3. Six columns showing data from six user-defined data points can be displayed.
4. Swipe the screen up or down to scroll through the data.
5. Select **[Bottom]** to snap to the bottom of the log file.
6. Select **[Top]** to snap to the top of the log file.
7. Select *Most Recent First* to display the newest data at the top of the log file.
8. Select the *Customize* icon at the bottom right corner of the screen to change the data shown in the any of the six columns. See below. Less than six data columns can be displayed; however, six is the maximum number for display.
9. Select the *Information* Icon by the Alert code header to display a table showing the code definitions.
10. Data from the displayed field can be searched by pressing the *Search* icon as shown.

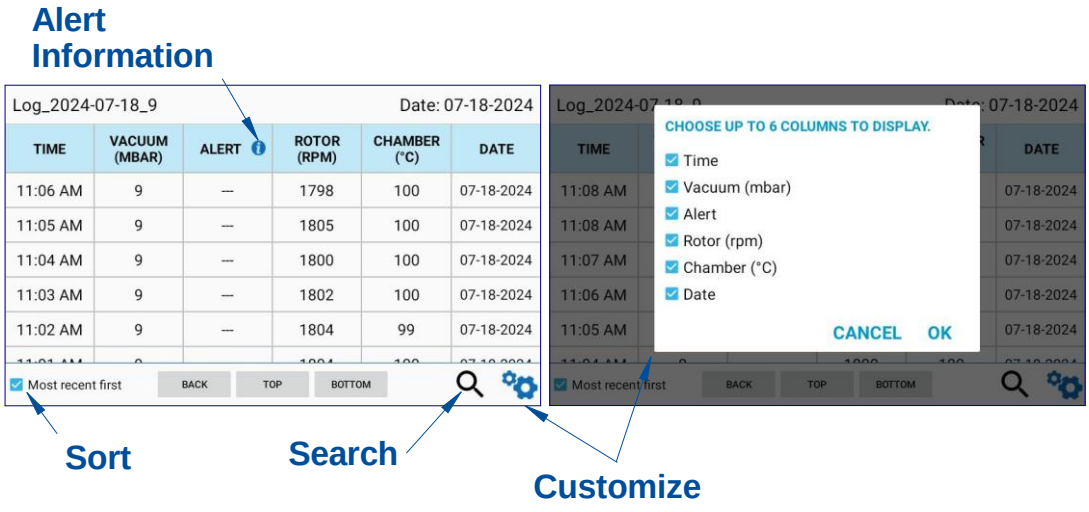
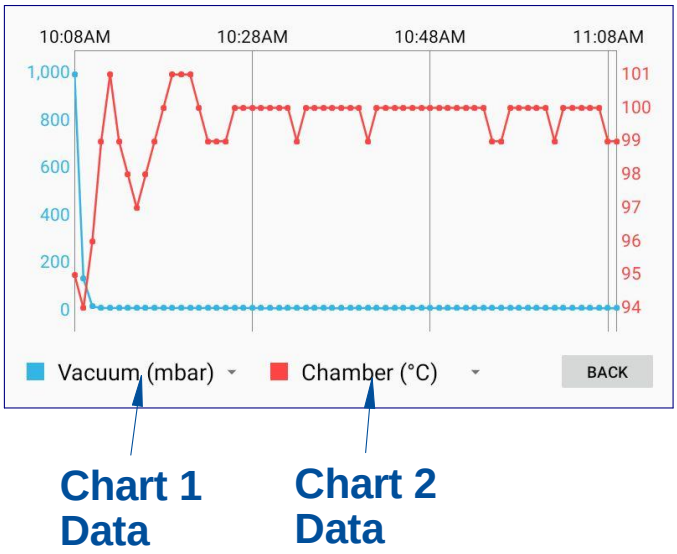


Chart Data File

1. From the Data Log Screen, highlight the Log to chart by touching the Log name.
2. Touch **[Chart].**
3. The chart will display the system temperature, rotor speed, and vacuum pressure versus time.
4. The chart can be manipulated by zooming in and out or swiping side to side.
5. To show or hide data on the chart, select the drop down at the bottom of the screen and select the data to display.



The chart view will display the value of individual data points, when zooming in to a specific set of data. The values will display next to each data point when zoomed to allow 10 data points on the chart. When more than 10 data points are visible, the individual values will automatically disappear.

Export Data File

Exported files will include all data as shown below.

1. Insert a flash drive into USB connection on the left side on the CentriVap Pro and wait for recognition. Upon recognition, a pop-up will display. Touch **[OK]**.
2. From the Data Log Screen, highlight the log to export by selecting the log name.
3. Touch **[Export]**.
4. Select the file format (.CSV or .PDF), then touch **[OK]**.
5. Once the export is complete, the USB can be removed.

Labconco Corporation

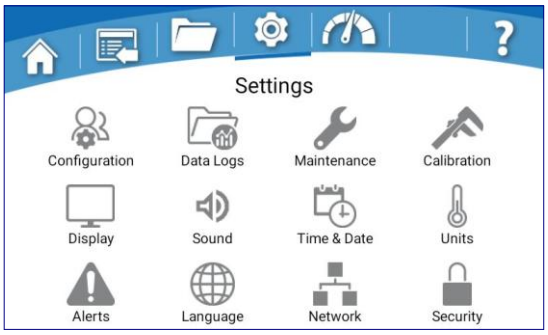
Labconco CentriVap™
Log_2025-01-22_9
Method 01
Serial Number: 888888883

Date	Time	Step Number	Rotor (rpm)	Vacuum (mbar)	Chamber (°C)	Time Remaining	Time Elapsed	Alert
01/22/2025	2:35 PM	1	0	998	94	2:00:00	0	
01/22/2025	2:36 PM	1	500	187	92	1:59:01	60	
01/22/2025	2:37 PM	1	500	17	90	1:58:01	120	
01/22/2025	2:38 PM	1	500	19	89	1:57:01	180	
01/22/2025	2:39 PM	1	500	19	87	1:56:01	240	
01/22/2025	2:40 PM	1	500	19	86	1:55:01	300	
01/22/2025	2:41 PM	1	500	19	85	1:54:01	360	
01/22/2025	2:42 PM	1	500	19	84	1:53:33	388	MC

Touching and holding a file name for 3 seconds enables multiple file selection. Multiple data logs can then be selected and exported at the same time. During Data Log Screen.

Settings

The Settings Screen allows the user to set or modify the systems settings.



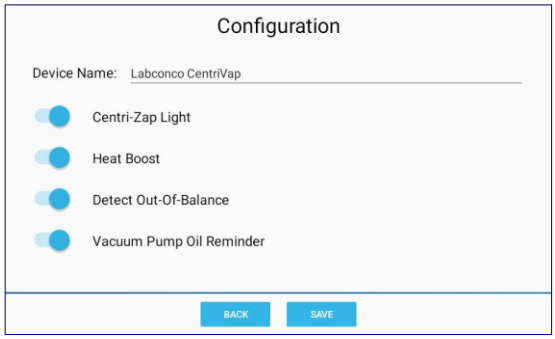
Configuration

This screen contains the list of all configurable options and accessories. The screen displays the state (Enabled/Disabled) of each option or accessory. The option can be switched ON or OFF to enable or disable the option. Accessories can also be turned off. For instance, the optional Heat Boost feature on the Benchtop CentriVap Pro and Acid Resistant CentriVap Pro can be switched on or off if you want to heat more quickly or more slowly.

The Out of Balance Detect option can also be turned on or off.

The following accessories may be displayed and enabled/disabled from the Accessories Screen:

- Heat boost (Benchtop and Acid Resistant CentriVap Pro only)
- CentriZap Strobe Light
- Out of Balance Detect
- Vacuum Pump Oil Reminder(Benchtop & Refrigerated CentriVap Pro only)

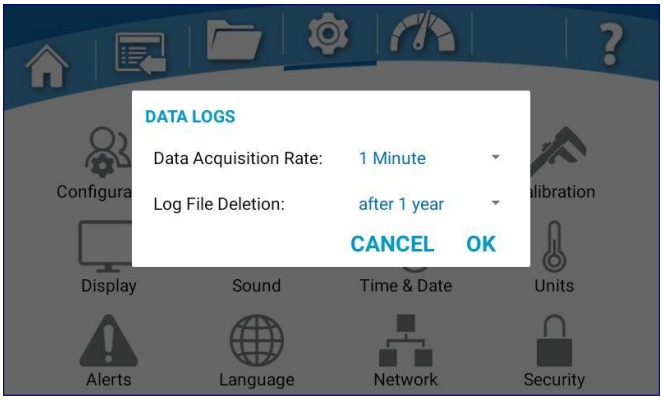


To enable/disable an accessory, touch the toggle to change between ON/OFF.

Data Logs

Modify the Data Acquisition Rate and the Log File Deletion settings.

- Touch the drop-down menu next to *Data Acquisition Rate* and modify the rate among the intervals available: 10sec, 30sec, 60sec, 5min or 10min. Touch **[OK]**.
- Touch the drop-down menu next to *Log File Deletion* and modify the deletion interval among the selections available: Never, 1 week, 1 month, 3 months, 6 months, 1 year. Touch **[OK]**.



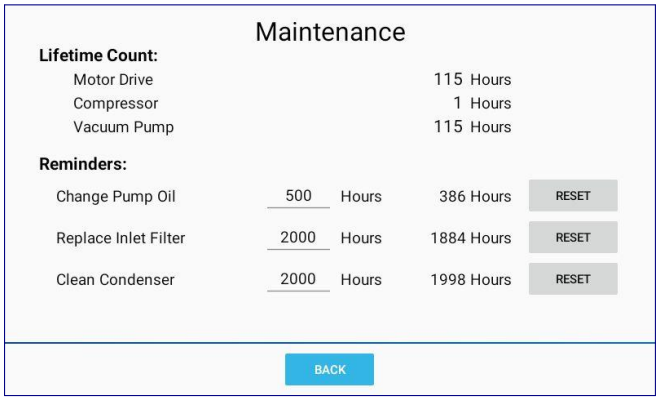
The system default for Log File Deletion is Never.

Maintenance

View the Lifetime hours for the motor, compressor and vacuum pump. Change the reminder frequency or reset.

- From the Settings Screen, touch the *Maintenance* Icon to view the Lifetime hours of the motor and vacuum pump.
- Touch the *Change Inlet Filter, Clean Condenser(Refrigerated only), or Vacuum Pump Oil(Standard or Refrigerated only)* hours to modify the time interval for maintenance notifications. The default is 2000 hours for the inlet filter and Condenser cleaning and 500 hours for the pump oil.

- Touch **[Reset]** to reset the Reminder to return clear the hours.



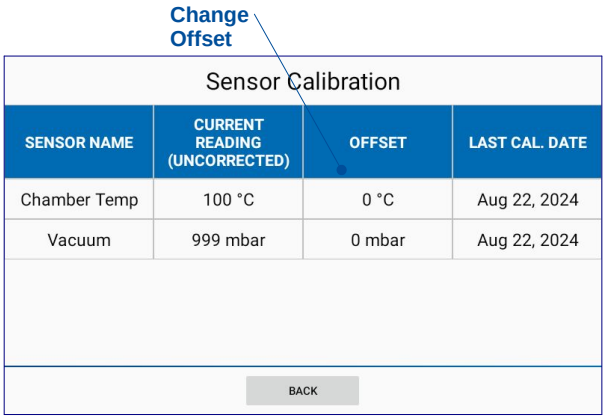
Calibration – Setpoints

Adjust the maximum method segment temperature to a known standard(s)

Current Reading (uncorrected) = raw sensor reading with no offset applied.

Offset = Value that will be added to the Current Reading (uncorrected). The adjusted reading (uncorrected + offset) is the value reported on all screens outside of the Sensor Calibration screen.

1. To adjust the Offset, touch *Offset* field of the desired value. A pop-up will display, which allows an offset value to be adjusted for the sensor. Touch **[OK]**.



2. Using a known standard as reference, change the offset to match the value reported by the standard. For example, if the *Chamber Temp* reports an uncorrected reading of 35°C, and the standard reference reports 36°C, change the offset to +1°C.

When the *Offset or Setpoint* value is changed, the current date will be saved as the *Last Cal. Date.*

Offset limits:

- Temperature = +/-3°C
- Vacuum = +/- 10mbar

Display

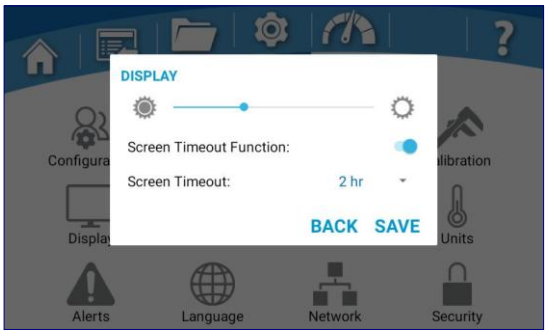
This screen provides settings for the display screen functionality.

Brightness Slider – Adjust the display brightness by dragging the bar left/right.

Touch Sounds – Touching the toggle between ON & OFF with enable or disable audible beeps when the screen is touched.

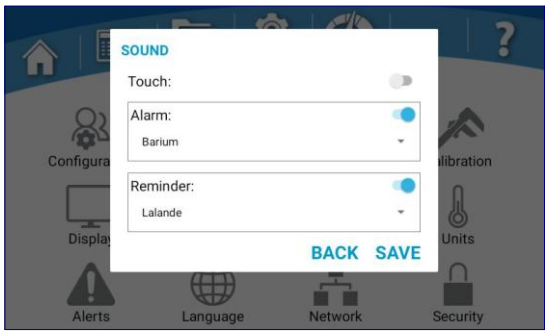
Screen Timeout Function – If enabled, the screen will go to sleep (low power mode) when no screen touches have been detected for the allotted time (defined in the Screen Timeout dropdown menu). If a method is running the display will dim and not go to sleep.Touching the Screen Timeout Function toggle will between ON & OFF.

Screen Timeout – This value can be set to 30, seconds, 5, 10, 15, 30 min, and 1, 2, or 3, 4, 8, 12, 18, and 24 hours.



Sound

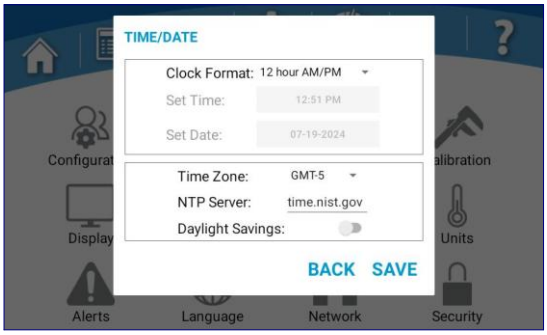
A different sound can be played for the reminders and alerts. The sound can also be turned off.



Time & Date

Use the Time and Date screen to choose Clock Format (12 or 24 hour), and then either manually Set the Time and Date, or enable Auto Update, which (if the CentriVap Pro is connected to a valid Ethernet port) will auto update the time and date. With Auto Update the following settings need to be entered:

- Time Zone – Enter the Greenwich Mean Time (GMT) offset value for your location (integer value between -12 & +12).



- NTP server – Enter the "web address" (URL) of the NTP server (of your choice) that will provide clock synchronization data to the CentriVap via the Ethernet connection. A common site is: time.nist.gov.
- Finally, Daylight Savings (ON/OFF) can be enabled/disabled for areas observing Daylight Savings Time (DST).

Units

This screen allows the user to change the units of measure for various sensors.

- Touch the desired drop-down field, and make selection:
  - *Temperature* – Select the desired units of measure: °C or °F
  - *Vacuum Pressure* – Select the desired units of measure: mbar, Pa, or Torr.
- Once the selection is made, touch **[OK]**.

Alerts

If a valid network connection has been established and Network settings have been properly configured, (via the Network screen) alerts can be emailed to selected users, by entering the appropriate email address(es) and selecting the type of alerts to be sent to each email address. To enable e-mail alerts, follow these instructions.

1. Before proceeding, set up an email address for each CentriVap Pro. The e-mail account can be any free service (i.e. gmail.com, hotmail.com, etc.) or a company's hosted domain (i.e. xyzlabs.com).

2. Enter the following information for SMTP host server:
    - SMTP Server
    - SMTP Username
    - SMTP Password
    - SMTP Port Number
    - Encrypted Connection

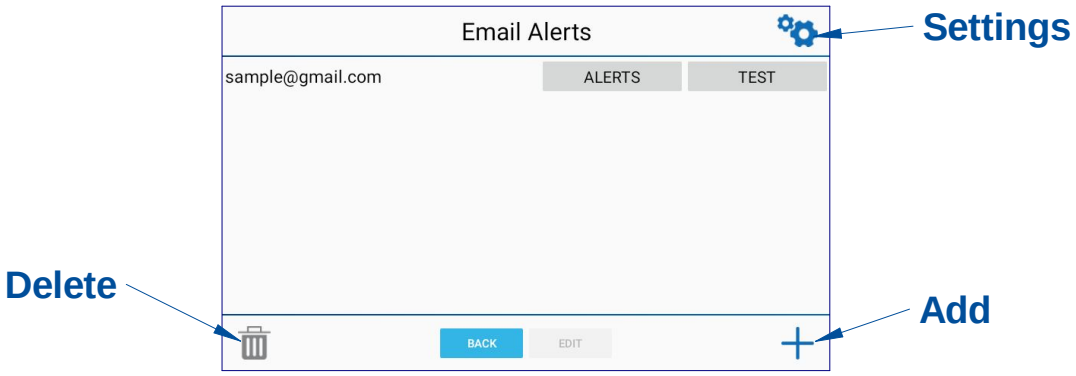
    Here is an example (this information will not be correct for your e-mail account) set-up for fake e-mail account: CentriVap123@gmail.com
    - smtp.gmail.com
    - CentriVap123
    - cat@ndmouse457
    - 587
    - Enable
3. From the Alerts Screen, touch the *Settings* icon. A pop-up will display. After entering the appropriate information in all fields, touch **[Save]**. The system will check valid formatting only. If one or more invalid entries are found the following message will appear*: Email Settings Error.* Correct the error and retry.
4. If all the SMTP fields entered are valid, but the network connection is not working (or Ethernet cable is not connected) the following message will appear *Email Settings Error – Network connection is not active*. Resolve the connectivity problem and retry.

- To add a user's email to receive e-mail alerts from the CentriVap Pro:
    - Press the *Add* icon at the lower right corner to add an email address.
    - Enter your e-mail address, touch **[Done]**.
- To test the user's email:
    - Touch **[Test]** next to the desired e-mail address.
    - If all information is correctly entered, a test email from the CentriVap Pro will be sent.

Once the SMTP Settings (for the CentriVap Pro's e-mail address) have been correctly entered, and the notification e-mail address (e-mail address for who is getting notified) has been correctly entered and tested, the final step is to select the alerts to send each e-mail address. Follow these instructions to select alerts.

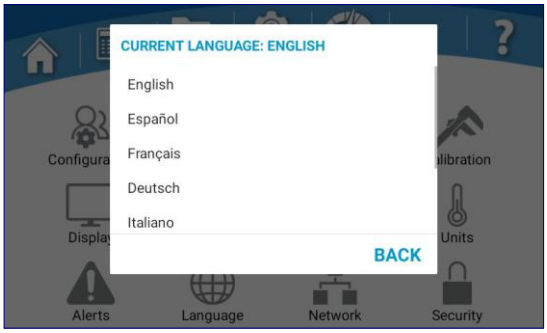
1. Touch **[Alerts]** next to the email address. A pop-up displays the alert options:
    - Program Complete
    - Status Every 15 min / 30 min / 1 hour / 2 hour
    - All Alerts
    - Power Fail
2. Select the desired alerts. Only one Status alert frequency selection can be made. For example, if *Status Every 15 min* is selected, the other three frequency status alerts are inactive.
3. Touch **[OK]**.
4. To delete a user's email:

- Touch the e-mail address to delete, it will highlight.
- Touch the *Delete* icon in the bottom left corner of the screen.



Language

Choose from eight languages: English, Spanish, French, German, Italian, Portuguese, Chinese and Japanese.

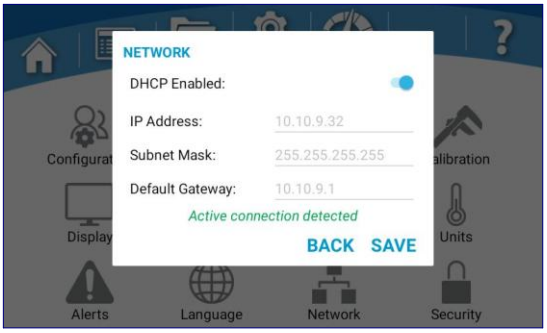


Network

Modify Network connection specifications, if an active ethernet connection has been established.

The most common setting for network connectivity via an Ethernet port is DHCP Enabled. This setting allows the facility's network to dynamically assign an IP address. Reference figure below. Touch the toggle next to *DHCP Enabled* to change between enable / disable. When enabled, the remaining fields will be grayed out, as these will be assigned by the facility's network. If the field next to *IP Address* is populated with four sets of numbers (each separated by a period), and a green "Active connection detected" is displayed the CentriVap Pro has successfully received an IP address from the network. A red "No active connection detected" will be displayed if no connection is found. Please consult your IT department for additional assistance.

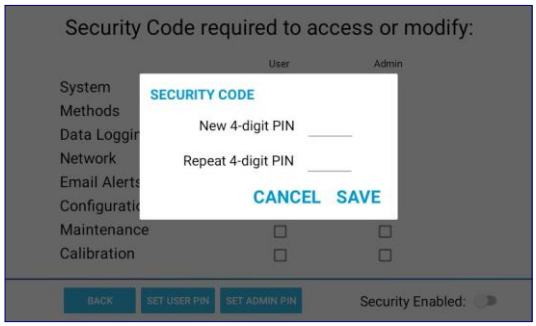
If a static IP address must be assigned by your facility's IT department, set the *DHCP Enabled* toggle to Disable. Contact your IT department for the appropriate information to enter the remaining fields.



Security

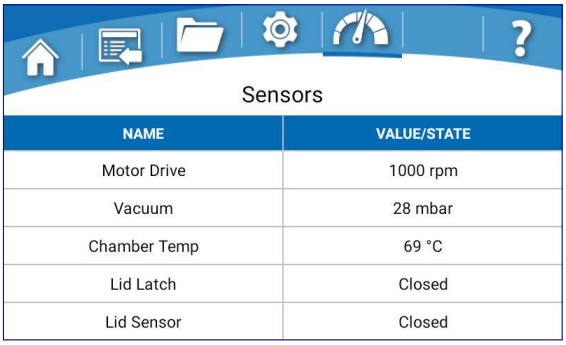
A four-digit security code can be set that requires entry of a PIN to gain access to user-defined areas. The PIN will always be required to enter the Security screen.

- From the Settings Screen, touch the *Security* Icon, then enter the PIN (default is 1234) to gain access.
- Select the areas to be secured. The 'System" is only activated with the display timeout feature. Once the screen timeout, a security code is required to awake the display.
- To change the PIN, touch **[Set Code]**, enter new PIN two times, then touch **[Save]**.
- Once all changes are complete, to enable security, the *Security Toggle* in the bottom, right corner of the Security Screen must be set to *Enable*.
- Touch **[Back]**.



Sensors Screen

This screen contains a list of all sensors currently installed on the CentriVap Pro. The Sensors Screen displays the current sensor reading (including offsets) in the selected unit of measure. This screen is for viewing only (there are no selectable fields).



Help Screen

The Help screen contains several useful sub-menu icons. The sub-menus are described briefly below.

About

Displays Operating System information such as the software version, the Catalog Number and Serial Number. System updates via USB or via the cloud can be performed from the About screen.

Software Update via USB Thumb Drive

To update the software via USB, you must first down-load the latest version, available at Labconco.com to a USB thumb drive.

- Insert the flash drive into the USB port located on the left side of the unit.
- Once the system recognizes the flash drive, touch **[OK]**.
- From the About screen, touch **[Update]**.
- Select the Bundle file (BND) with the latest revision of software.
- The software will automatically copy the software bundle, unpack it, and install the software update. The system will notify you when the upload is complete and successful.
- Select ‘Install’ and then ‘Open’ to complete the installation.
- Remove the thumb drive from the USB port.

Software Update via Ethernet

To update the software via the ethernet, you must first have an active connection.

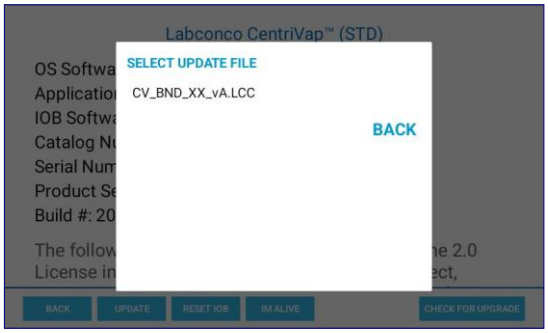
- From the About screen, touch **[Check for Updates]**.
- If available the Upgrade Available screen will display and allow you to ignore, postpone or update now.
- Pressing the **[Release Notes]** will allow you to review the changes.
- If available and you would like to update, select **[Update Now]**.

Automatic Update Notification

To program the CentriVap Pro to notify you if upgrades are available, the system must have a valid ethernet connection and the latest software installed.

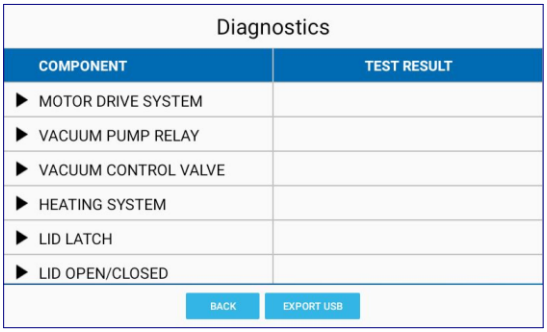
- From the About screen, touch **[Check for Updates]**.
- At the Upgrade screen touch **[Configure]** and select Automatically check for updates and **[OK].**

Once programmed, the Upgrade Available screen will pop up when new software becomes available.



Diagnostics

The Diagnostics Screen is used to test CentriVap Pro operation/components after installation or should a problem occur. Each electrical component can be turned on individually, or single operation can be tested.



- MOTOR DRIVE SYSTEM: Operates the motor, checks that it operates.
- VACUUM PUMP RELAY: Operates the Vacuum Pump Relay, monitors the vacuum level to check the operation.
- VACUUM CONTROL VALVE: Operates the Air Admittance Valve and Vacuum Pump. Monitors the vacuum level for to check the operation.
- HEATING SYSTEM: Operates the Heating system. Monitors the heat rise to check the operation.
- LID LATCH: Operates the Lid Latch. Monitors the Lid Latch internal switch for correct operation.

- LID OPEN/CLOSED: Has the operator open and close the lid. Monitor the Lid Open internal switch for correct operation.
- REFRIGERATION SYSTEM: Operates the refrigeration system and monitors for a temperature change.
- CENTRIZAP STROBE LIGHT: Operates the CentriZap and has the operator verify its operation.

Resources

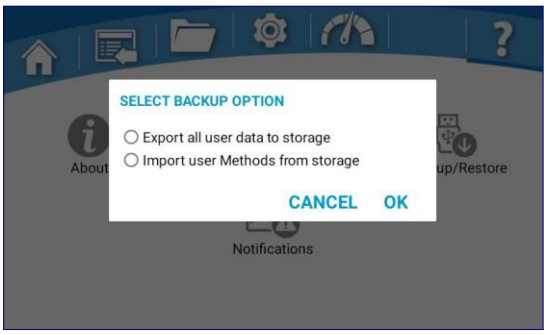
The Resources Screen provides QR codes for a direct link to the Labconco website for documentation and/or accessory and consumable information.

- From the Help Screen, touch *Resources*.
- Using a smartphone with camera, scan the desired QR code and you will be directed to the appropriate information on labconco.com.

Backup and Restore

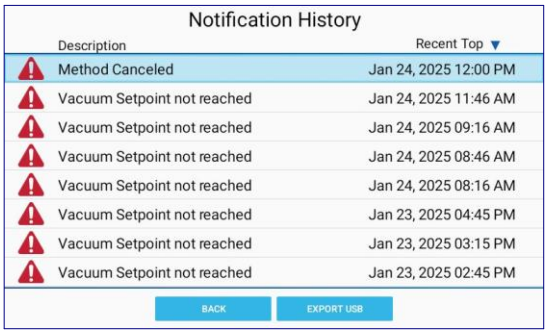
Allows for the import/export of custom programs and/or data logs via USB thumb drive. Either export user-created programs and/or data log files or import user-created programs from another CentriVap Pro.

- Insert a thumb drive in the USB port on the left side of the unit.
- Once system recognizes the USB thumb drive, touch **[OK]**.
- From the Help Screen, touch *Backup/Restore*.
- Select an action: *Export* or *Import*.
    - If Export is selected, choose to export either *Log Files* or *User Programs*, or both can be selected.
- Touch **[OK]**.
- If exporting, a progress pop-up will display, and a notification is provided when the export is complete.
- If importing, a progress pop-up will display, and a notification is provided when the import is complete.
    - If the thumb drive in the USB port does not contain a proper User Program backup file, an error message will be displayed.



Notification

The Notification Screen allows the user to see all alerts that were encountered.



7: Using Your CentriVap Pro

This section details the functional features and proper techniques for safely and efficiently using the CentriVap Pro Vacuum Concentrator.

Safety Precautions

CAUTION: To avoid personnel injury; Do not operate the CentriVap Pro if the lid is scratched or nicked or shows signs of damage. A damaged lid could fail under vacuum.

While the CentriVap Pro Vacuum Concentrator is operating, do not lean on the lid, do not stand near it longer than necessary and do not place hazardous materials within 12 inches.

Special precautions must be observed if the materials used in the CentriVap Pro Vacuum Concentrator are known to be hazardous, toxic, radioactive, or contaminated with pathogenic microorganisms. These actions should include but are not limited to the following:

- Refer to the World Health Organization Laboratory Biosafety Manual, paying special attention to information about centrifuges and the handling of hazardous materials.
- Operate or vent the CentriVap Pro Vacuum Concentrator inside a suitable fume hood or ventilation device. Load rotors in a ventilation device.
- Periodically inspect all parts of the CentriVap Pro Vacuum Concentrator including the lid, gasket, chamber, plumbing components, and rotors.

Planning

Thoroughly understand procedures and equipment operation prior to beginning work. The unique performance of the CentriVap Pro is dependent upon the proper balance of heat, vacuum, and centrifugal force. If the proper balance is not established, it is possible to damage or lose a portion of the sample. Therefore, if you are unfamiliar with the CentriVap Pro or are attempting a new protocol, it may be helpful to make a trial run that is void of the sample you are attempting to concentrate.

Glassware Selection

Normally, sample tubes should be filled no more than approximately half full. Select the size of the sample tube so it is compatible with the rotor and the desired sample size. Tubes should not be loose in the rotor. Rotors are available with holes for various size tubes. Some rotors from previous generation CentriVaps can be used. Refer to Chapter 9: Accessories for Your CentriVap Pro for available rotor sizes and which rotors fit your CentriVap Pro.

Loading Glassware into the CentriVap Pro

Smooth operation of the CentriVap Pro is dependent upon proper balance of the machine. Therefore, if less than a full load of samples is run, it is important to load samples into the CentriVap Pro in a symmetrical manner, distributing the weight of the samples evenly in the sample rotor. If the CentriVap Pro detects that the rotor is severely out of balance, it will warn you to re-balance the rotor.

Setting Guidelines

The evaporation rate achieved by the CentriVap Pro is dependent upon a variety of factors. These include the nature of the solvent, the temperature, the pressure in the vacuum system, and speed of the rotor.

Temperature

The CentriVap Pro temperature should be set as high as possible if the temperature will not damage the samples or cause the samples to bump.

Vacuum level

The CentriVap Pro vacuum level should be set as low as possible if there is no adverse effect on the samples.

Rotor Speed

The CentriVap Pro rotor speed should be set high as possible without excessive vibration or detriment to the samples.

Heat Boost Operation

Select Benchtop and Acid Resistant CentriVap Pro models are equipped with a secondary "Heat Boost" heater, which is positioned on the sidewall of the chamber near the top. It provides additional heat to the samples to speed evaporation. The "Heat Boost" heater is controlled by the microprocessor to maintain the set point temperature at the bottom of the chamber to prevent excessive overheating of the samples.

Operating the CentriVap Pro

1. If using a Cold Trap, press the Cold Trap "ON" switch. The top amber indicator will illuminate. Additional indicators will illuminate, as the Cold Trap gets colder. A green indicator will illuminate when the Cold Trap reaches operating temperature.
2. Press the "ON" switch located on the rear of the CentriVap Pro.
3. Select a method.
4. Precondition the chamber if desired.
5. Turn on Heat Boost if the CentriVap Pro is so equipped and additional heat is desired.
6. Place samples in vials no more than half full and place in rotor in a symmetrical fashion.
7. Load the rotor with samples into the chamber.
8. Close the lid. A safety switch prevents the concentrator from starting when lid is open.
9. Press Start icon. A pop up will ask for confirmation that you want to start this method. A latch will activate to lock the lid closed, the rotor will start, and the vacuum pump will start after the rotor reaches a minimum of 500rpm operating speed. Slight pressure on the lid may be needed to seal the lid. If the CentriVap Pro's Out of Balance option is turn on and the concentrator detects that the rotor is moderately out of balance, a pop up will ask you to either stop or ignore the alert.
10. The time, temperature, rotor speed, or vacuum pressure can be changed at any time by pushing the appropriate icon.
11. A step can be skipped by pressing the Skip icon.
12. Once the method is complete, an alert will sound and a pop up will display that the method is complete.
13. Press Stop icon to terminate the method if the method has not already stopped.
14. When the evaporation is complete, the rotor will stop, and the lid will unlock. The samples can be retrieved from the chamber.

Caution: The rotor, lid and chamber may be hot depending on the set point temperature.

Caution: If the rotor is severely out of balance, damage can occur to the CentriVap Pro.

Operational Notes

As the solvent is evaporated in the Concentrator and then condensed in the Cold Trap, it is normal for the Cold Trap temperature to rise as its load increases.

Depending on which solvent is used, the volume of the sample and the system operating parameters, the Cold Trap may warm up sufficiently to cause the “GREEN” indicator to turn off. As the sample reaches completion, the load on the Cold Trap will decrease and its temperature will decrease. The “GREEN” indicator will once again illuminate.

It is also normal for the Concentrator’s temperature and vacuum to not reach their setpoints due to the volume of the solvent being evaporated. The size and type of vacuum pump and whether a Cold Trap is being used, will also affect the Concentrator’s ability to reach their setpoints.

If the CentriVap Pro is turned off or the power fails, the instrument will remember where it was in the method and restart at that point which it is switched on or power is restored.

8: Maintaining Your CentriVap Pro

This section details the maintenance required for optimal operation of the CentriVap Pro.

Maintenance Safety Precautions

The following tools and supplies are required to maintain the equipment:

- Soft cloth, sponge or chamois
- Mild non-abrasive soap or detergent
- Vacuum Pump Oil
- Ethanol
- Vacuum Cleaner
- Brush

The following safety precautions must be followed by all personnel maintaining the equipment.

- Wear safety glasses, and/or additional eye and face protection as required by your Health & Safety Department.
- Wear gloves, and/or additional skin protection as required by safety instructions for cleaning/disinfecting chemicals used. Consult your Health & Safety Department for additional skin protection requirements.
- No loose-fitting clothes
- Wear close-toed shoes
- Although the service operations detailed in this section do not involve access to areas of the product with moving or electrical parts, should you remove any panels that expose moving or electrical parts, you must follow these instructions before doing so:
    - Disconnect main power cord or electrical service connection
    - Never touch moving parts such as fan blades or blower wheels.

Under normal operation, the CentriVap Pro requires little maintenance. The following maintenance schedule is recommended. Before servicing the CentriVap Pro, disconnect electrical power. Special precautions must be observed if materials used in the CentriVap Pro Vacuum Concentrator are known to be hazardous, toxic, radioactive or contaminated with pathogenic microorganisms. Before servicing, the CentriVap Pro Vacuum Concentrator must be suitably decontaminated. Wear appropriate eyewear, gloves, and other safety apparel.

As needed:

Before using any cleaning or decontamination method except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage equipment.

1. Clean up all spills; remove liquids from the chamber. Clean or decontaminate all surfaces using agents suitable for the substance spilled.
2. Clean lid and gasket using soft cloth, sponge or chamois and a mild, non-abrasive soap or detergent. The gasket is a consumable item, and can be replaced when damaged.
3. Check the oil level of the vacuum pump, if applicable. It should be between MIN and MAX. If the oil level is less than an inch (25.4 mm) above MIN, add oil to proper level.
4. If the oil shows cloudiness, particles, or discoloration, drain the pump and replace with fresh oil.
5. Utilization of acids requires immediate cleaning and neutralization after a run or physical damage to the collection chamber will result.
6. Check the Cold Trap for condensed or frozen solvents and dispose of appropriately. Completely empty the trap before the next run. The Cold Trap cover is removed by first lifting and rotating the two retainers that secure the lid in place. If solvents are frozen in the glass trap, run it under cold water immediately after operating.

NOTE: IF THE ICE HAS MELTED, THE GLASS TRAP INSERT MUST BE EMPTIED BEFORE THE COLD TRAP IS STARTED AGAIN.

7. If the Glass Trap is used, check to see that the ethanol in the stainless-steel trap is free of ice or water. Drain the ethanol and replace it with fresh ethanol.
8. If the media in the cartridge in the optional clear canister has changed color, discard and replace the insert with a new insert. For the radiochemical trap insert, no indicator exists; therefore, it should be discarded after each use. In radioactive applications, the system should be monitored with a Geiger counter.
9. On the DNA CentriVap Pro, remove and empty the glass traps.
10. Check rotors for loose or missing parts. Tighten or replace as required. Do not use defective rotors.
11. Inspect the chamber to ensure that there are no cracks or structural damage. Call Labconco if defects exist.
12. Check the continuity of the protective earth between the ground terminal on the power inlet and a bare metal housing panel. Contact Labconco if there is no continuity.

Monthly:

1. The rubber components on the CentriVap Pro may eventually deteriorate and require replacement. The effective life of rubber parts depends upon both their usage and the surrounding environment. Check all rubber hoses and gaskets and replace any that show signs of hardening, permanent set, or deterioration.
2. Using a soft cloth, sponge or chamois and a mild, non-abrasive soap or detergent, clean the glass lid.
3. Using a soft cloth, sponge, or chamois and a mild, non-abrasive soap or detergent, clean the exterior surfaces of the unit. Liquid spray cleaners and polishes may be used on the exterior surfaces. Do not use solvents to remove stains from the exterior surfaces as they may damage the finish.

Annually:

1. Every 12 months, or more often, if the Refrigerated CentriVap Pro and Cold Trap are operated in a dusty environment, the refrigeration system condenser of the CentriVap Pro and Cold Trap should be cleaned. Using a vacuum cleaner with brush attachment, clean the condenser to ensure proper airflow for peak performance. Disconnect power to the CentriVap Pro and Cold Trap prior to removing the covers. A servicer is better equipped to do this maintenance.

Recommended Maintenance Schedule

	Maintenance Frequency		
Activity	**Weekly**	**Monthly**	**Annually**
Clean or decontaminate all surfaces using agents suitable for the substance spilled	•	•	•
Clean lid and gasket using soft cloth, sponge or chamois and a mild, non-abrasive soap or detergent	•	•	•
Check the Cold Trap for condensed or frozen solvents and dispose of appropriately	•	•	•
Empty and clean Glass Traps	•	•	•
Check rotors for loose or missing parts	•	•	•
Check all rubber hoses and gaskets		•	•
Clean Refrigerated CentriVap and Cold Trap condenser coils			•

9: Accessories

This section details the available field-installable accessories and approved modifications for your CentriVap Pro Vacuum Concentrator and Cold Trap.

Rotors

Do not fill tubes, plates, or flasks more than 50% of the stated volume. Solution density must not exceed 1.5 g/cm3.

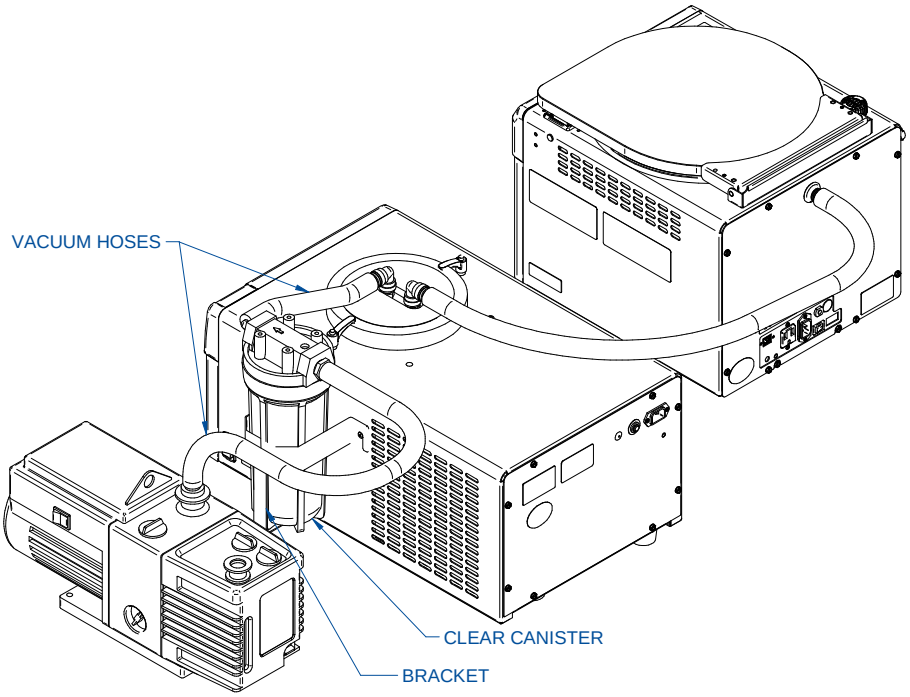
Part #	Description	# of Rotors
7555700 7555701*	Rotor (DNA) Holds (84) 0.5 ml microcentrifuge tubes and (72) 1.5 ml microcentrifuge tubes or (72) 2.0 ml microcentrifuge tubes	2 2
7555600 7555601*	Rotor (1.5 ml) Holds (156) 1.5 ml microcentrifuge tubes or (156) 2.0 ml microcentrifuge tubes	2 2
7555300 7555301*	Rotor (15 ml) Holds (44) 12 x 55 mm tubes (3ml) or (36) 12 x 75 mm (5ml) tubes or (36) 12 x 95 mm (6.3ml) tubes or (36) 13 x 75 mm (6.8ml) tubes or (36) 13 x 100 mm (9ml) tubes and (24) 16 x 100 mm (12.7ml) tubes or (18) 16 x 120 mm (13.3ml) conical tubes or (18) 17 x 95 mm (14.6ml) tubes or (18) 17 x 100 mm (15.3ml) centrifuge tubes or (18) 17 x 120 mm (18.4ml) tubes	1 1
7551500 7551501*	Rotor (12-13 mm) Holds (40) 1.5 ml microcentrifuge tubes or (40) 2.0 ml microcentrifuge tubes and (16) 12 x 55 mm (3ml) tubes or (100) 12 x 75 mm (5ml) tubes or (64) 12 x 95 mm (6.3ml) tubes or (100) 13 x 75 mm (6.8ml) tubes or (64) 13 x 100 mm (9ml) tubes	1 1
7555400 7555401*	Rotor (28 ml) Holds (12) 28 x 120 mm (42.8ml) tubes or (12) 28 x 140 mm (50ml) tubes	1 1
7555800 7555801*	Rotor (96 well plate) Holds (4) Standard 96 well plates (330 micro liters per plate) or (2) Deep well 96 well plates (2.2ml per plate)	1 1
7555900 7555901*	Rotor (96 well plate) Holds (6) Standard 96 well plates (330 micro liters per plate) or (2) Deep well 96 well plates (2.2ml per plate)	1 1
7556600 7556601*	Rotor (100ml) Holds (8) 100ml pear shape flask	1 1
7555500 7555501*	Rotor (12 x 32) Holds (148) 12 x 32mm (2ml) vials	2 2
7556500 7556501*	Rotor (15 x 45) Holds (72) 15 x 45mm (4ml) vials	2 2
*Acid Resistant		

Traps and Vacuum Pumps

Part #	Description
7460900	Clear Canister - Accommodates inserts listed below
7814800	Acid Trap Insert
7814900	Moisture Trap Insert
7995600	Ammonia Trap Insert
7815000	Radiochemical Trap Insert
7815200	Solvent Trap Insert
1472100	Direct Drive Vacuum Pump – 117 liters/minute pumping capacity with gas ballast. Ultimate pressure 1.3 x 10^{-4} mBar. 115 VAC, 60 Hz, single phase, 4.6 Amp.
1467700	Direct Drive Vacuum Pump – 195 liters/minute capacity with gas ballast. Ultimate pressure 1.3 x 10^{-4} mBar. 115 VAC, 60 Hz, single phase, 7.8 Amp.
7739402	Direct Drive Vacuum Pump – 117 liters/minute. Same as 1472100 except 220/208-230 VAC, 50/60 Hz, single phase, 2.4 Amp operation.
7739403	Direct Drive Vacuum Pump – 195 liters/minute. Same as 1467700 except 220/208-230 VAC, 50/60 Hz, single phase, 4.0 Amp operation.
7393000	Diaphragm Vacuum Pump – Corrosion resistant, 115V, 50/60 Hz, 3.5 Amps, single phase, 82 liters/minute, < 2 mBar vacuum.
7393001	Diaphragm Vacuum Pump – Corrosion resistant, 230V, 50/60 Hz, 2.0 Amps, single phase, 82 liters/minute at 60Hz, < 2 mBar vacuum.
1473400	Vacuum Pump Exhaust Filter – Installs on pumps PN 1472100, 1467700, 7739402 and 7739403 to eliminate oil mist from the exhaust.
7397700	Two Place Freeze Dry Manifold – Manifold has 1/2" neoprene valves and is used for freeze drying small volume samples.
7397605	Glass Trap for Cold Trap.
1988000	Vacuum Pump Oil, 1 Liter A molecularly distilled hydrocarbon oil with low vapor pressure. For vacuum pumps 1472100, 7422100, 7739402 and7739403.
1473400	Pump Exhaust Filter Disposable filter that removes visible oil mist and odor from vacuum pump exhaust. Fits vacuum pumps 1472100 and 7739402.
1473200	Replacement Element, Oil Mist, Pump Exhaust Filter Fits pump exhaust filter 1473400.
1473300	Replacement Element, Odor, and Pump Exhaust Filter (package of 5). Fits pump exhaust filter 1473400 or vacuum pumps 1472100 1467700, 7739402, and 7739403.

Installing a Secondary Chemical Trap

An accessory secondary chemical trap is available to minimize the exhausting of solvents into the atmosphere. It may be attached to either side of the Cold Trap. After selecting the side, remove the two small plastic hole plugs. Attach the bracket to the side of the Cold Trap housing using the screws provided. Attach the hose from the Cold Trap Lid Assembly to the “out” connector of the canister housing. Connect another hose from the remaining fitting on the Secondary Trap to the inlet port on the vacuum pump. Clamp hoses securely. Unscrew the clear bowl of the canister housing from the head. Remove both the upper and lower caps from the filter cartridge and insert the small end of the cartridge into the hole in the center of the head. Reinstall the clear bowl.



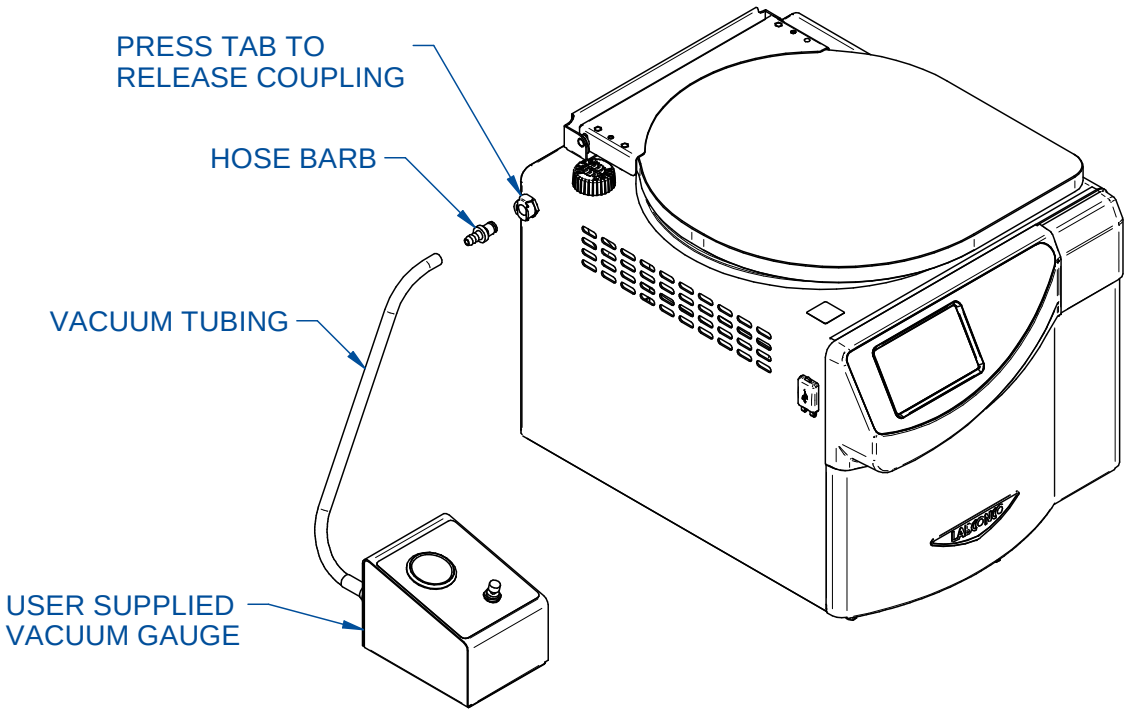
Be sure to use the proper cartridge for your application. The moisture cartridge is used to trap water vapor. The acid cartridge is used to trap acid vapors. The solvent cartridge is used to trap solvent vapors, and the radiochemical cartridge is used to trap radioactive waste.

When the media in the insert has changed color, discard the insert, and replace it with a new insert. For the radiochemical trap insert, no color indicator exists therefore it should be discarded after each use. Use a Geiger counter to monitor the pump exhaust.

NOTE: This radiochemical cartridge does not meet NRC filter design recommendations. After operating, properly dispose of all hazardous materials in compliance with all applicable codes. Labconco is not responsible for improper disposal of any materials.

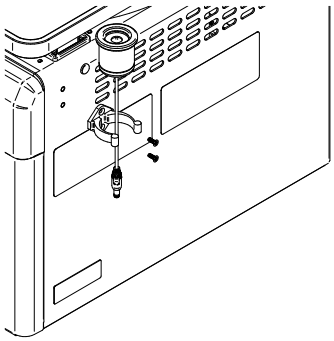
Installing a Vacuum Gauge

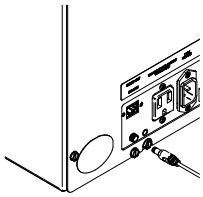
A user-supplied vacuum gauge may be attached to the CentriVap Pro to monitor the vacuum level. Attach the vacuum gauge to the barb end of the Quick Disconnect Coupling fitting that was supplied with the CentriVap Pro using a length of suitable rubber hose. The Quick Disconnect Coupling fitting can then be pushed into the mating connector on the left side of the CentriVap Pro located towards the rear. The Quick Disconnect Coupling fitting can be removed from the mating connector by pressing on the tab on the connector and then pulling out the Quick Disconnect Coupling fitting. Always remove the Quick Disconnect Coupling from the CentriVap Pro if a vacuum gauge is not attached to it.

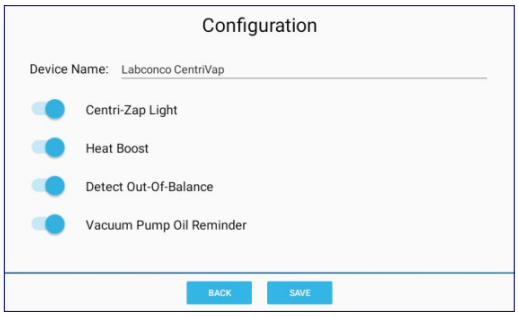


Installing a CentriZap™ Strobe Light

An accessory strobe light is available to enable you to see the samples as they are rotating in the rotor. Attach the holder to the right-hand side of the CentriVap Pro Vacuum Concentrator using the screws provided. Plug the connector on the strobe light harness into the receptacle on the back of the CentriVap Pro marked “STROBE.”





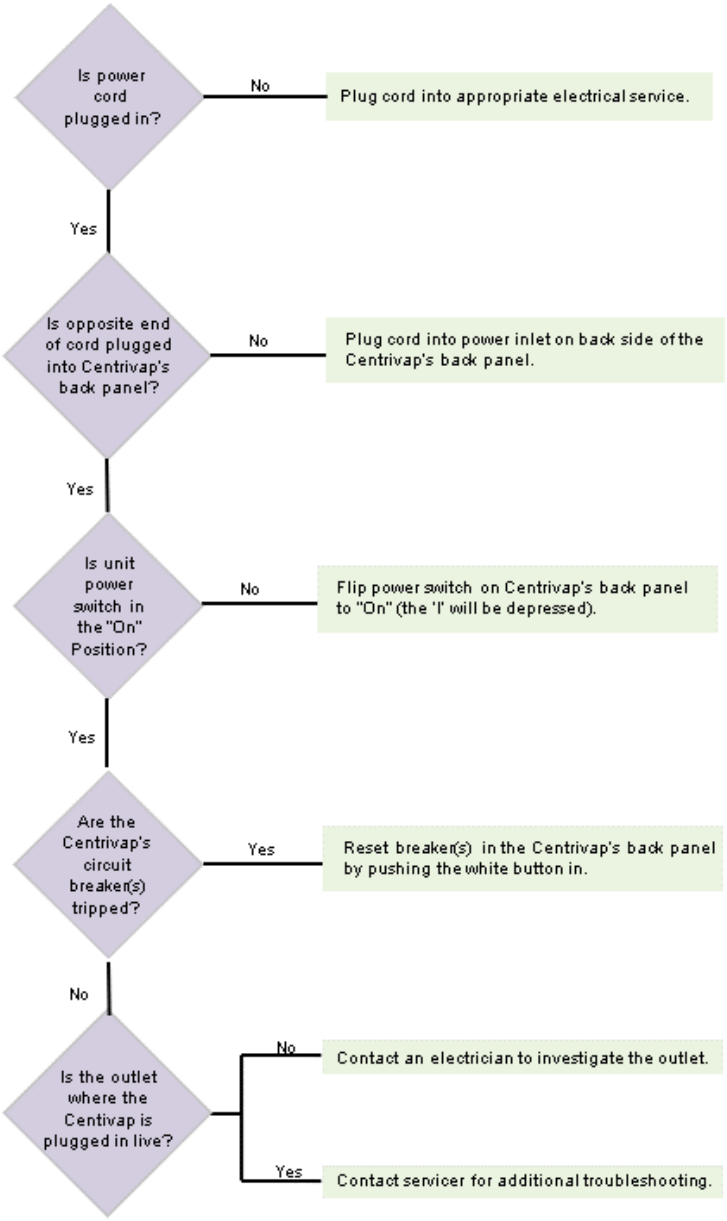


Go into [**Settings]** and **[Configurations]** and turn on the CentriZap option.

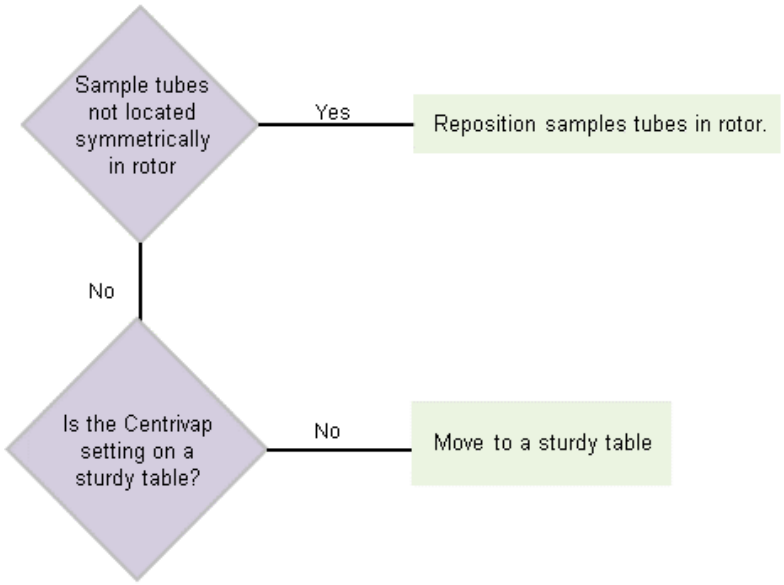
Press the icon to turn on the CentriZap. The CentriVap Pro needs to be at its set rotor speed to have a stable view of the samples. By pushing the arrows on the pop up, the samples can rotated right or left to a more convenient location in the chamber.

10: Troubleshooting

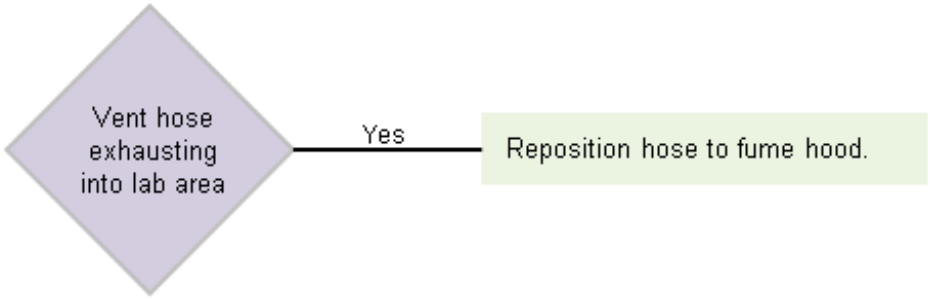
This section details common troubleshooting for your CentriVap Pro. Unit will not Operate.



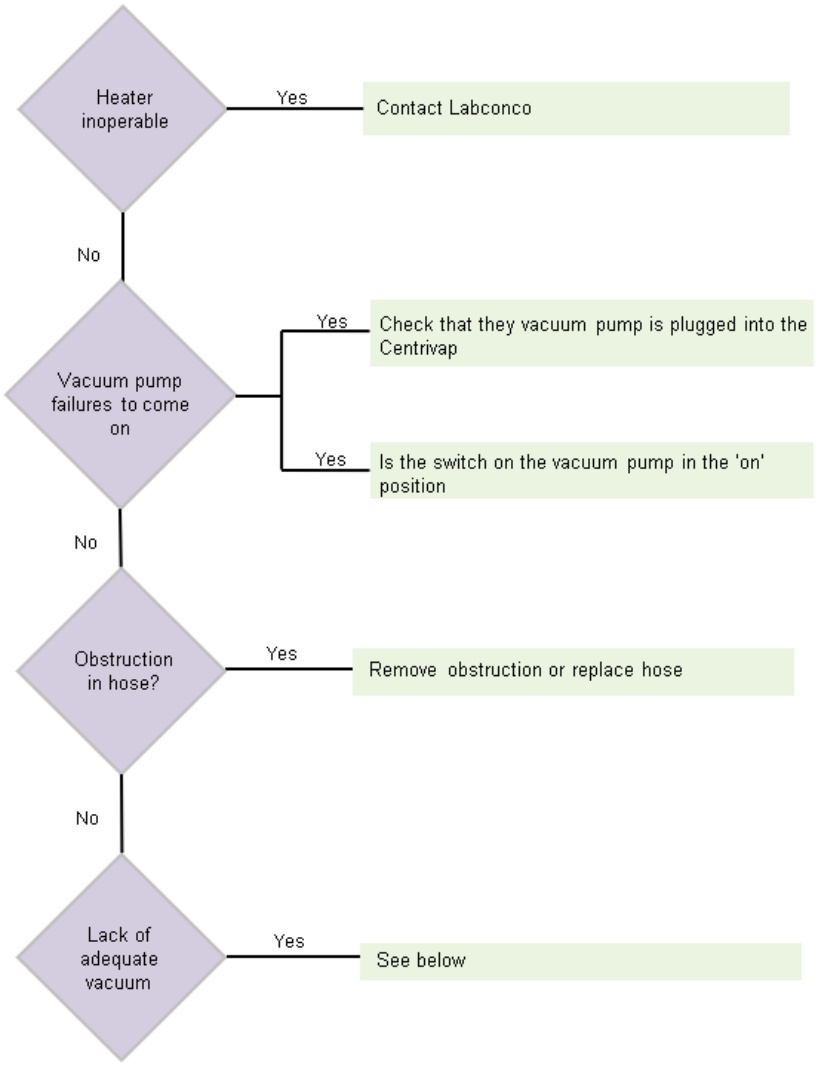
Excessive Vibration



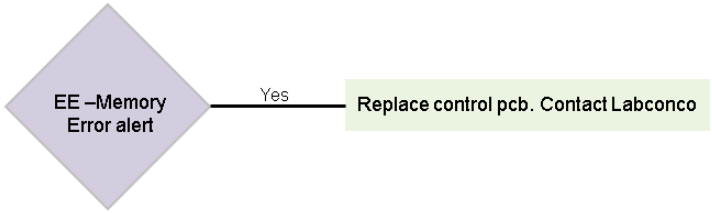
Sample Odor in Lab



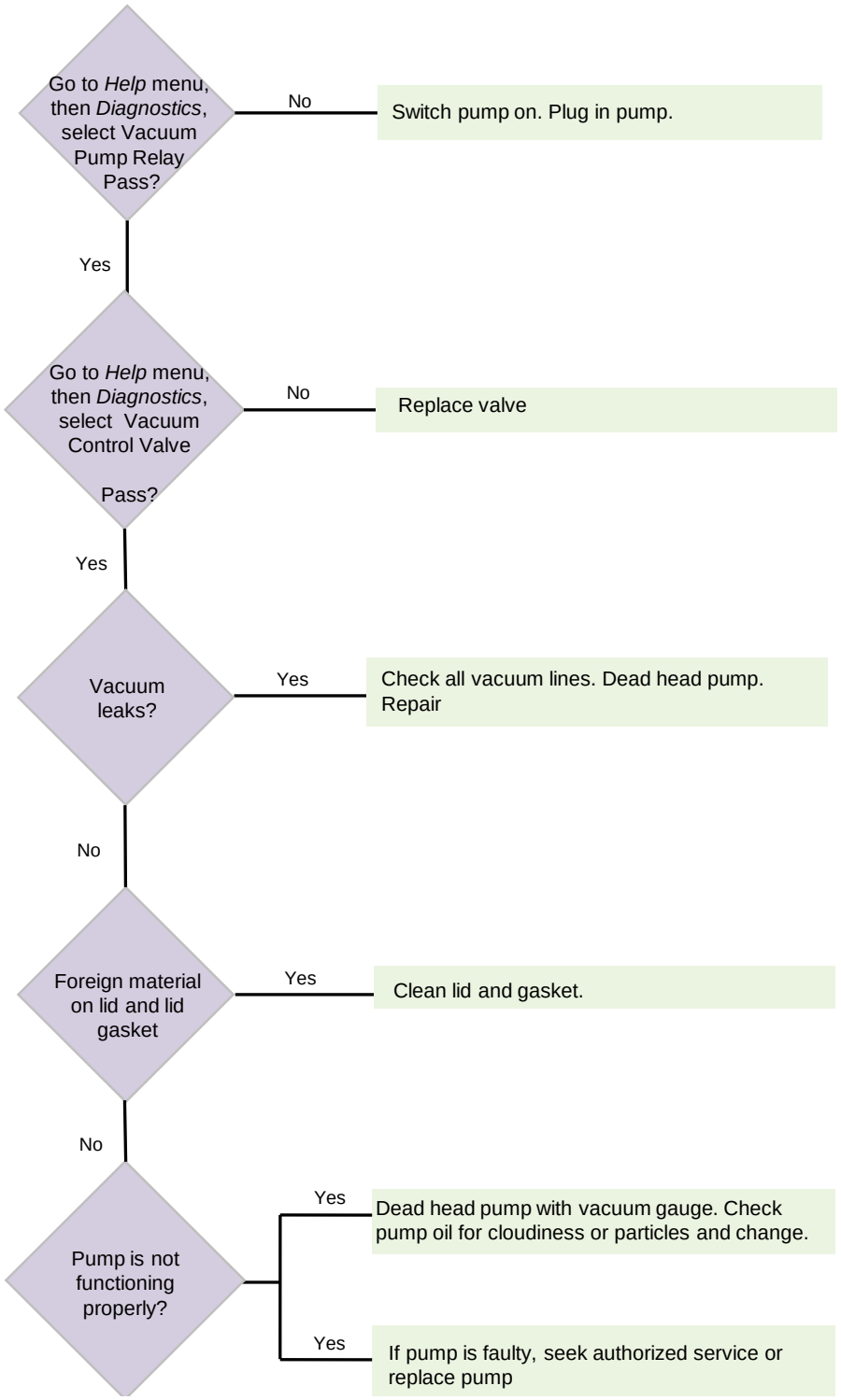
Evaporation Rate is Reduced



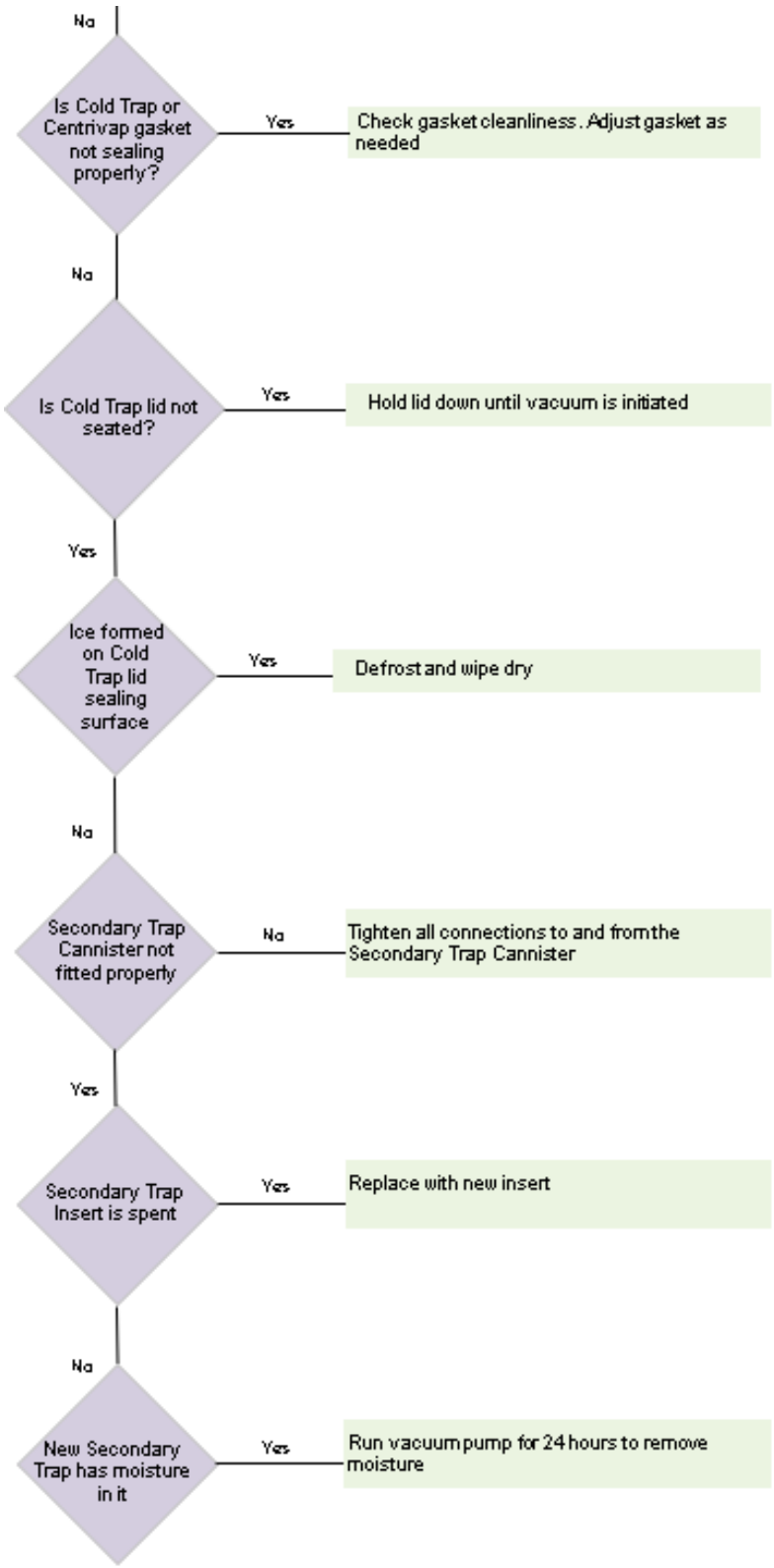
EE -Memory Error Alert



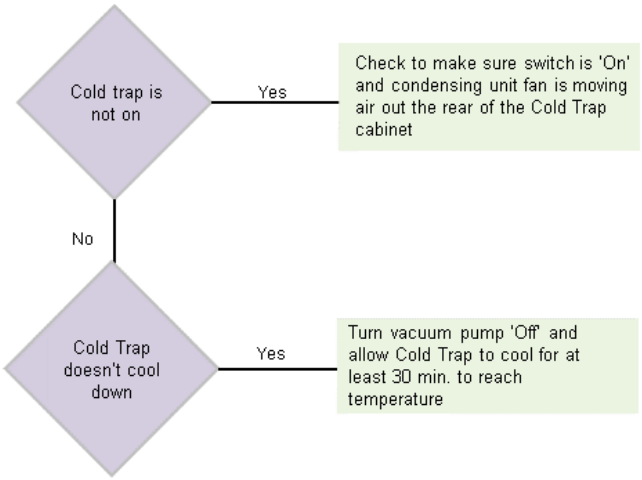
No Vacuum or Poor Vacuum



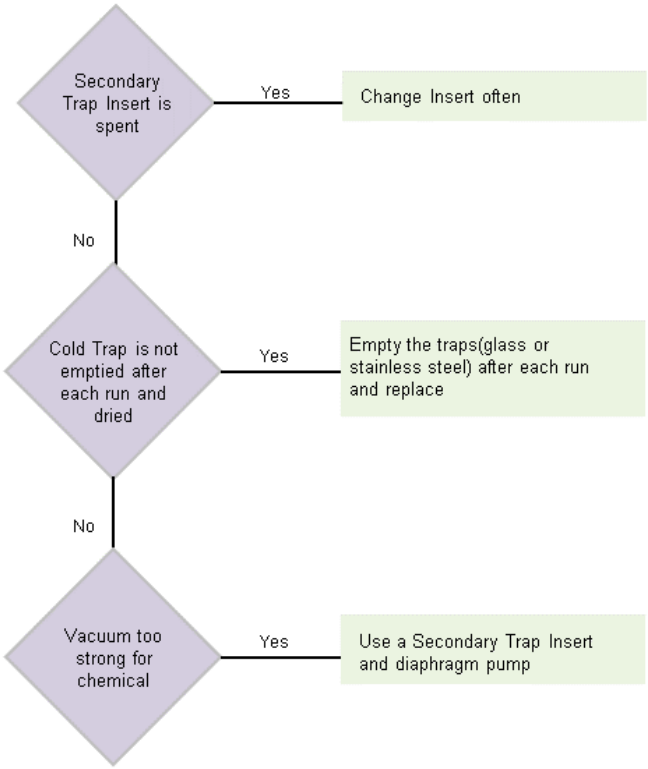
No Vacuum or Poor Vacuum(continue)



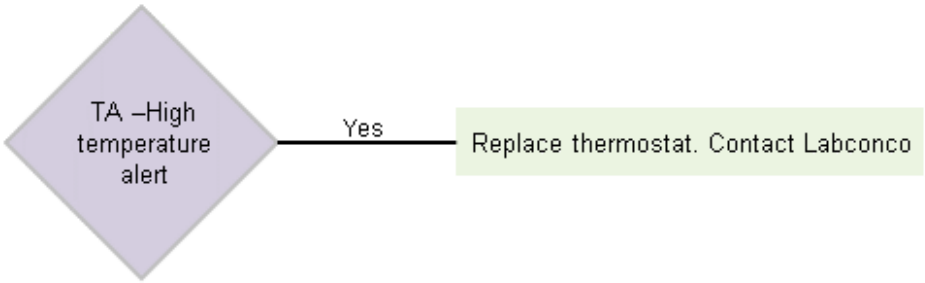
Cold Trap Condensate Recovery Less than Normal



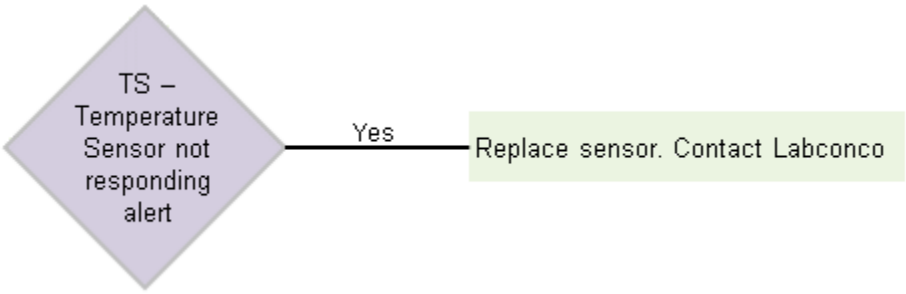
Frequent Vacuum Pump Oil Changes Needed



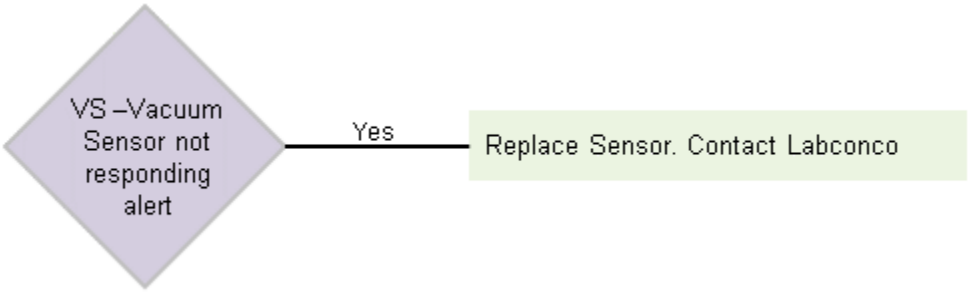
TA - High Temperature Alert



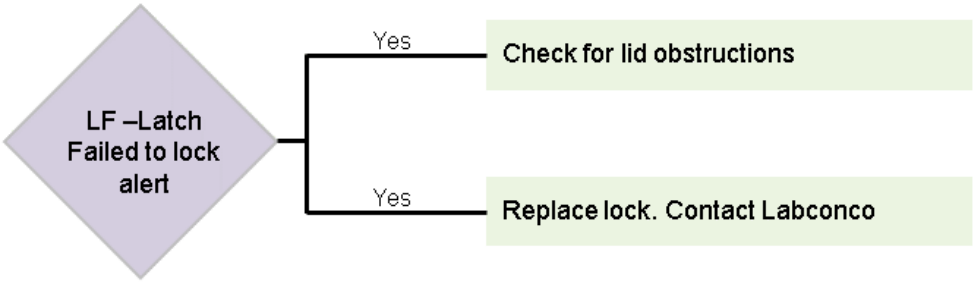
TS -Temperature Sensor Alert



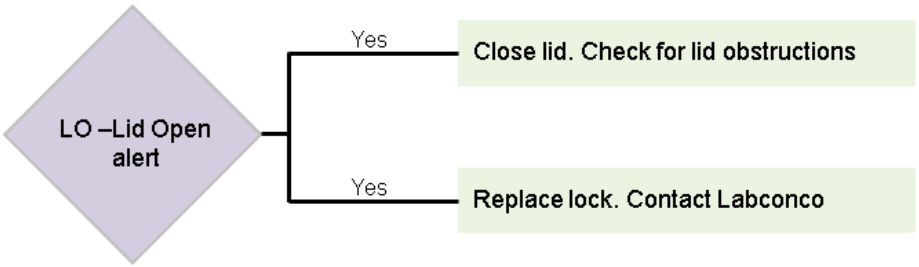
VS -Vacuum Sensor Alert



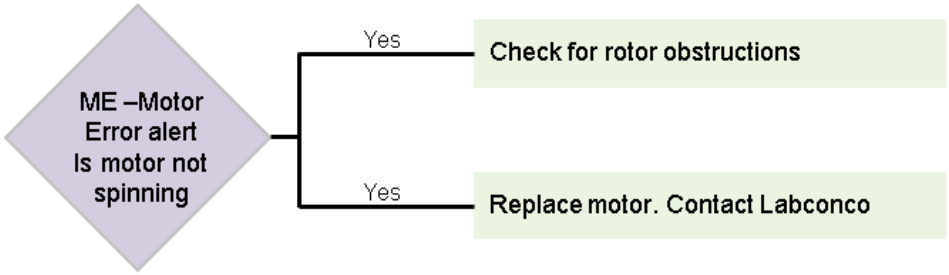
LF -LatchFail Alert



LO -Lid Open Alert



ME -Motor Error Alert



TC and TH -Temperature Not Reached Alerts

The Temperature Cooling(Refrigerated Centrivap only) and Temperature Heat alerts let the user know that the setpoint hasn't been reached. Evaporative cooling, ambient start temperature, and sample size can all affect the cooling or heating rate of the CentriVap Concentrator. If changing the method parameters or sample size doesn't eliminate the alert, contact your service provider.

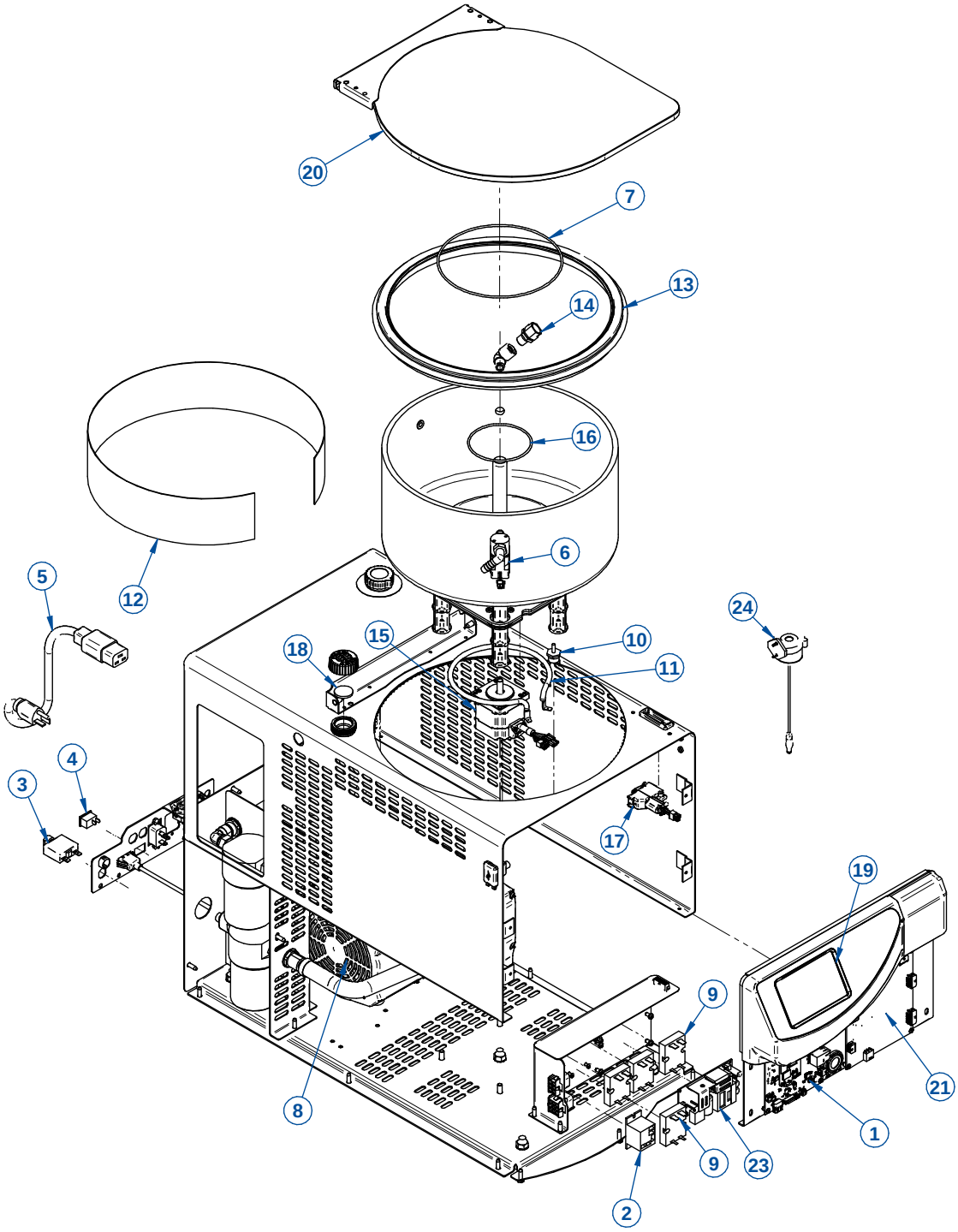
Appendix A: Parts List

Table A-1 and Figure A-1 indicate the location and catalog numbers for the following service, and replacement accessory components.

Table A-1

Item	Quantity Required	Catalog Number	Description
1	1	1175901	PCB, Universal Carrier
2	1	1289200	Relay, 12VDC (Heat Boost option only)
3	1	1289315	Circuit Breaker, 115V,15A
3	2	1289310	Circuit Breaker, 230V,10A
4	1	1307100	Switch, Power
5	1	1331800	Power Cord, 230V 10a, Australia
5	1	1332600	Power Cord, 230V, 10a, UK
5	1	1332700	Power Cord, 230V, 10a, China
5	1	1334500	Power Cord, 115V 15a US
5	1	1336100	Power Cord, 230V, 10a, Schuko
5	1	1336400	Power Cord, 115V 20a US
5	1	1338000	Power Cord, 230V, 10a, US
5	1	1345700	Power Cord, 230V, 10a, India
6	1	1647105	O-Ring, Inner
7	1	1647107	O-Ring, Outer
8	1	7312400	Vacuum Pump (DNA only)
9	1	4683900	Relay, 12VDC, solid state
10	1	7325101	Thermostat
11	1	7453500	Heater (115V)
11	1	7453501	Heater (230V)
12	1	7460600	Heater, Heat Boost, 115V (BT/AR only)
12	1	7460601	Heater, Heat Boost, 230V (BT/AR only)
13	1	8503300	Gasket
14	1	8503600	Sensor, Vacuum
15	1	8503700	Motor
16	1	8503800	Valve, Air Admittance
17	1	8506100	Latch, Lid
18	1	8506200	Filter, 100um
19	1	8506400	Display
20	1	8507100	Lid, Glass
21	1	8504300	PCB, CentriVap Pro
22	1	8543600	Harness, Chamber (not shown)
23	1	8543900	Power Supply
24	1	8547200	CentriZap

Figure A-1



Appendix B: Dimensions & Weights

Table B-1 and Figure B-1 indicate the product dimensions. All dimensions shown in inches.

Model	Width	Depth	Height	Weight
Bechtop/AR	15	19.0	13.9	52lbs (23.6 kg)
DNA	15	26.9	13.9	88lbs (40.0 kg)
Refrigerated	15	27.2	13.9	90lbs (40.9 kg)

Table B-1

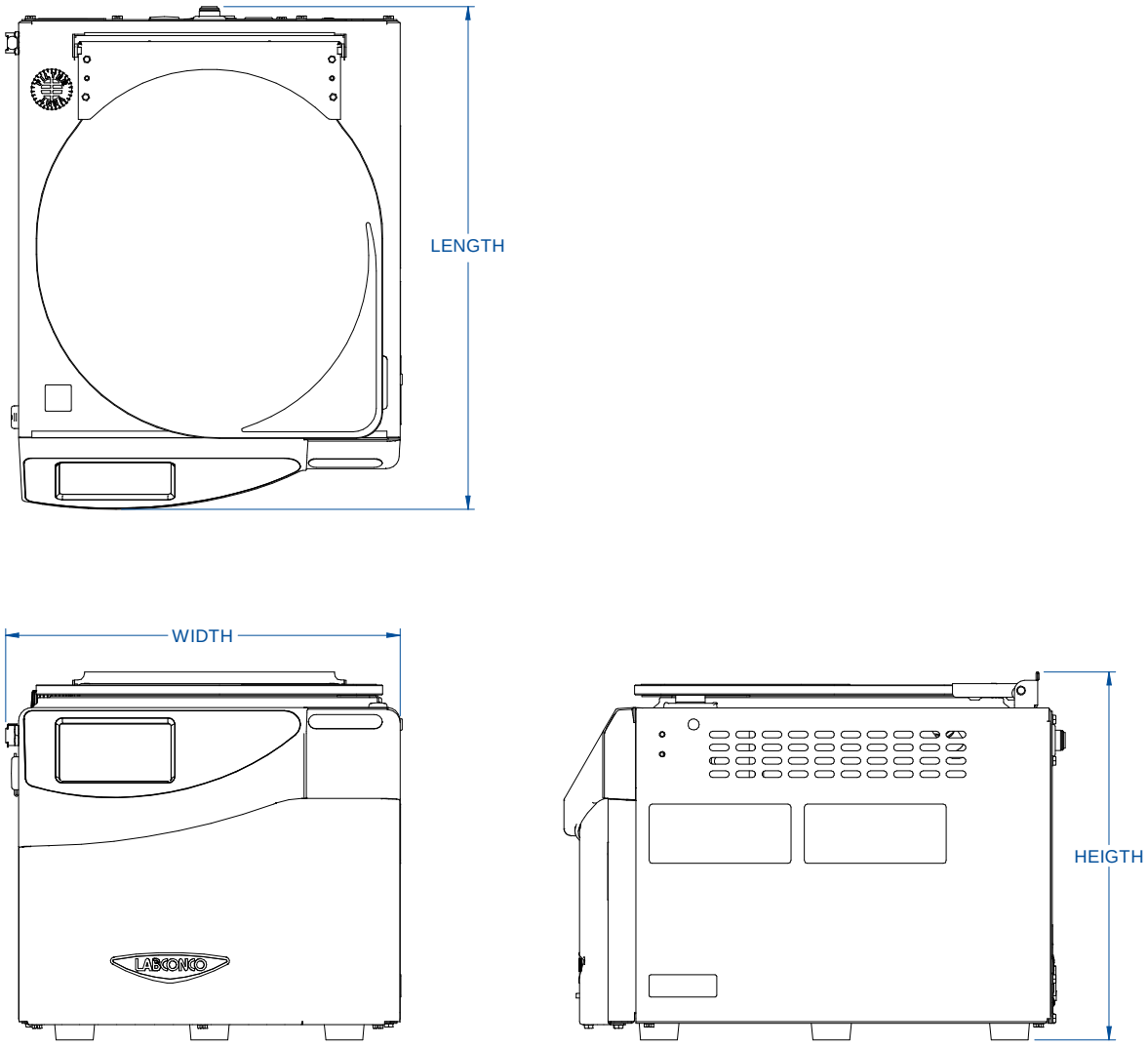


Figure B-1

Appendix C: Specifications

Power Data

Table C-1

BENCHTOP/AR CENTRIVAP PRO WITH AND WITHOUT HEAT BOOST					
CATALOG NO.	**VOLTS**	**PHASE**	**CYCLE**	**AMPS**	**POWER[1]**
8510100,8511100,8512100	115	1	60	12A (7.4A+4.6A MAX PUMP)	1440 WATTS
8510110,-15,-30,-40,-50,-70,-80,-90 8511110,-15,-30,-40,-50,-70,-80,-90 8512110,-15,-30,-40,-50,-70,-80,-90	230	1	50/60	8A (4.6A+2.3A MAX PUMP)	1920 WATTS
8510200,-15,-30,-40,-50,-70,-80,-90 8511200,-15,-30,-40,-50,-70,-80,-90 8512200,-15,-30,-40,-50,-70,-80,-90	115	1	60	12A (7.4A+4.6A MAX PUMP)	1440 WATTS
8510210,-15,-30,-40,-50,-70,-80,-90 8511210,-15,-30,-40,-50,-70,-80,-90 8512210,-15,-30,-40,-50,-70,-80,-90	230	1	50/60	8A (4.6A+2.3A MAX PUMP)	1920 WATTS
1 Values are for new product, may vary +/- 10%					

REFRIGERATED CENTRIVAP PRO					
CATALOG NO.	**VOLTS**	**PHASE**	**CYCLE**	**AMPS**	**POWER[1]**
8520100,8521100,8522100	115	1	60	12A (7.4A+4.6A MAX PUMP)	1440 WATTS
8520110, 8521110,8522110	230	1	60	8A (4.6A+2.3A MAX PUMP)	1920 WATTS
8520115,-30,-40,-50,-70,-80,-90 8521115,-30,-40,-50,-70,-80,-90 8522115,-30,-40,-50,-70,-80,-90	230	1	50	8A (4.6A+2.3A MAX PUMP)	1440 WATTS
1 Values are for new product, may vary +/- 10%					

DNA CENTRIVAP PRO					
CATALOG NO.	**VOLTS**	**PHASE**	**CYCLE**	**AMPS**	**POWER[1]**
8530100,8511100	115	1	60	12A (7.4A+4.6A MAX PUMP)	1440 WATTS
8530110,-15,-30,-40,-50,-70,-80,-90 8531110,-15,-30,-40,-50,-70,-80,-90	230	1	50/60	8A (4.6A+2.3A MAX PUMP)	1920 WATTS
1 Values are for new product, may vary +/- 10%					

Sound Pressure Data

Table C-2

CATALOG NO.	Sound Pressure (dbA)[1 2]
851xxxx	63
852xxxx	64
853xxxx	68
1 Sound Pressure taken centerline of product, 300 mm (12 in.) above top surface of lid, 1 meter (39 in.) from front of product. 2 Results may vary depending on customer-supplied vacuum pump.	

Environmental Conditions

- Indoor use only
- Ambient temperature range: 41° to 104°F (5° to 40°C)
- Maximum altitude: 6562 feet (2000 meters)
- Maximum relative humidity: 80% for temperatures up to 88°F (31°C), decreasing linearly to 50% relative humidity at 104°F (40°C)
- Main supply voltage fluctuations not to exceed ±10% of the nominal voltage
- Transient over voltages according to Installation Categories II (Overvoltage Categories per IEC 1010). Temporary voltage spikes on the AC input line that may be as high as 1500V for 115V models and 2500V for 230V models are allowed
- Used in an environment of Pollution degrees 2 (i.e., where normally only non-conductive atmospheres are present). Occasionally, however, a temporary conductivity caused by condensation must be expected, in accordance with IEC 664