

CENTRIVAP®

CONCENTRATOR	COLD TRAP
78100-00 (115V)	78110-00 (115V)
78100-01 (230V)	78110-01 (230V)

INSTRUCTION MANUAL

Product designs are subject to change without notice

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Thank you for displaying confidence in us by selecting a Labconco CentriVap®. Our design engineers, assemblers and inspectors have utilized their skills and years of experience to ensure that the new Labconco CentriVap® Concentrator and Cold Trap meet our high standards of quality and performance.

IMPORTANT NOTICE

This manual should be read carefully by all the users in order to become familiar with the operation of the CentriVap® Concentrator and Cold Trap. Recommendations are made within the manual to help you obtain maximum performance and life from your product.

We have included sections on initial set up, operation, maintenance and trouble-shooting to provide you with all the tools necessary to achieve maximum performance.

If you have questions or concerns, do not hesitate to call us at 1-800-821-5525 for assistance.

Components Shipped

Carefully check the contents of the carton for damage that might have occurred in transit. Do not discard the carton or packaging material until all components have been checked against the following component list and the equipment has been installed and tested.

As shipped, the carton should contain the following:

Concentrator

Part Number	Description
78100-00 or 78100-01	CentriVap Benchtop Concentrator (115 V) CentriVap Benchtop Concentrator (230 V)
79773	Instruction Manual
13345 or 13341	Power Cord (115V) Power Cord (230V)
14888	Clamp
78286-06	Hose

Cold Trap

Part Number	Description
78110-00 or 78110-01	CentriVap Cold Trap (115 V) CentriVap Cold Trap (230 V)
79773	Instruction Manual
13345 or 13341	Power Cord (115V) Power Cord (230V)
14888	Clamp
78286-06	Hose

INTRODUCTION

General Description

Concentrator

The CentriVap Concentrator, when combined with the CentriVap Cold Trap, uses centrifugal force with vacuum to rapidly evaporate and condense solvents from biological or analytical samples. Centrifugation eliminates bumping and foaming as vacuum is applied and also 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 to speed evaporation by warming the chamber during processing to as high as 75° C. 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 bench top or other laboratory work surface. The 230V models comply with CE regulations. The CentriVap Concentrator is shown below.

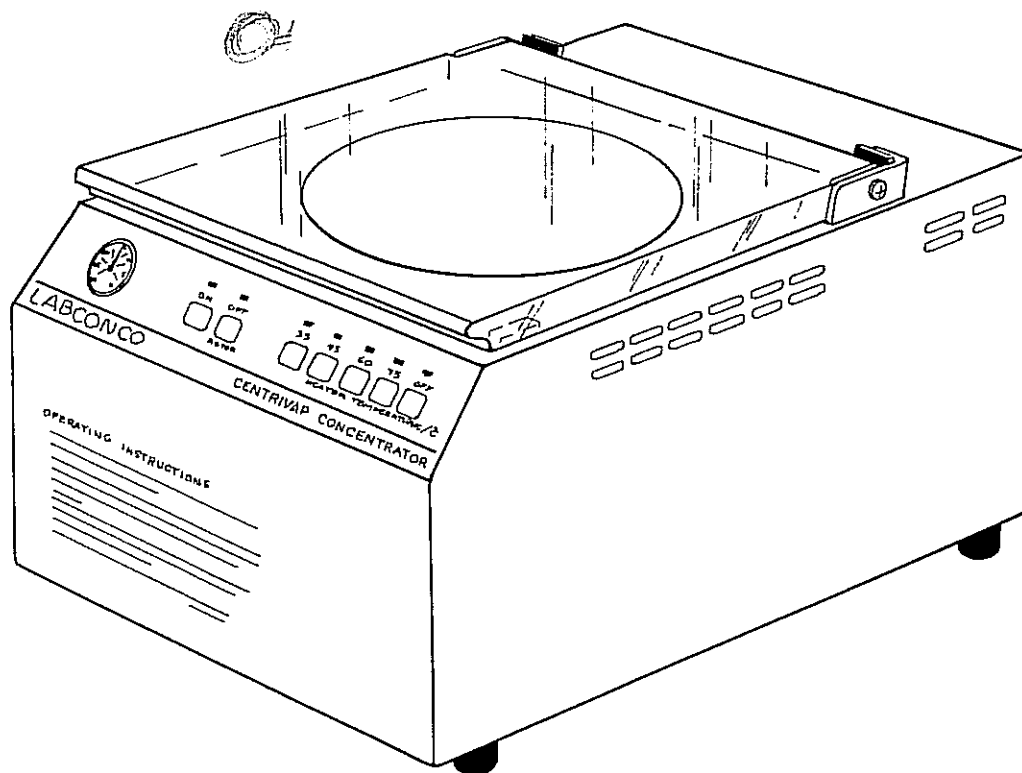


Figure 1

General Description

Cold Trap

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 CFC free refrigeration system reduces the temperature of the Cold Trap to -55°C . The stainless steel trap is used for aqueous and organic applications. For corrosive applications, the optional Glass Trap Insert should be used. The 230V models comply with CE regulations. The CentriVap Cold Trap is shown below.

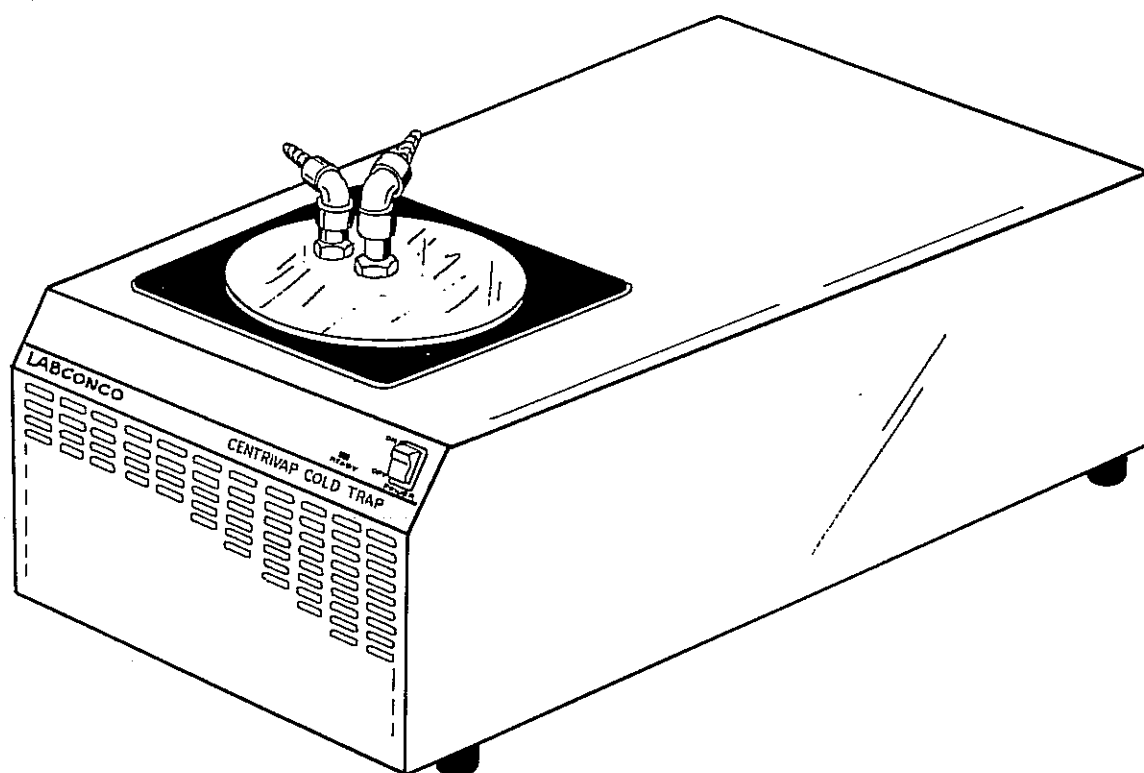


Figure 2

INTRODUCTION

Component Identification - Concentrator

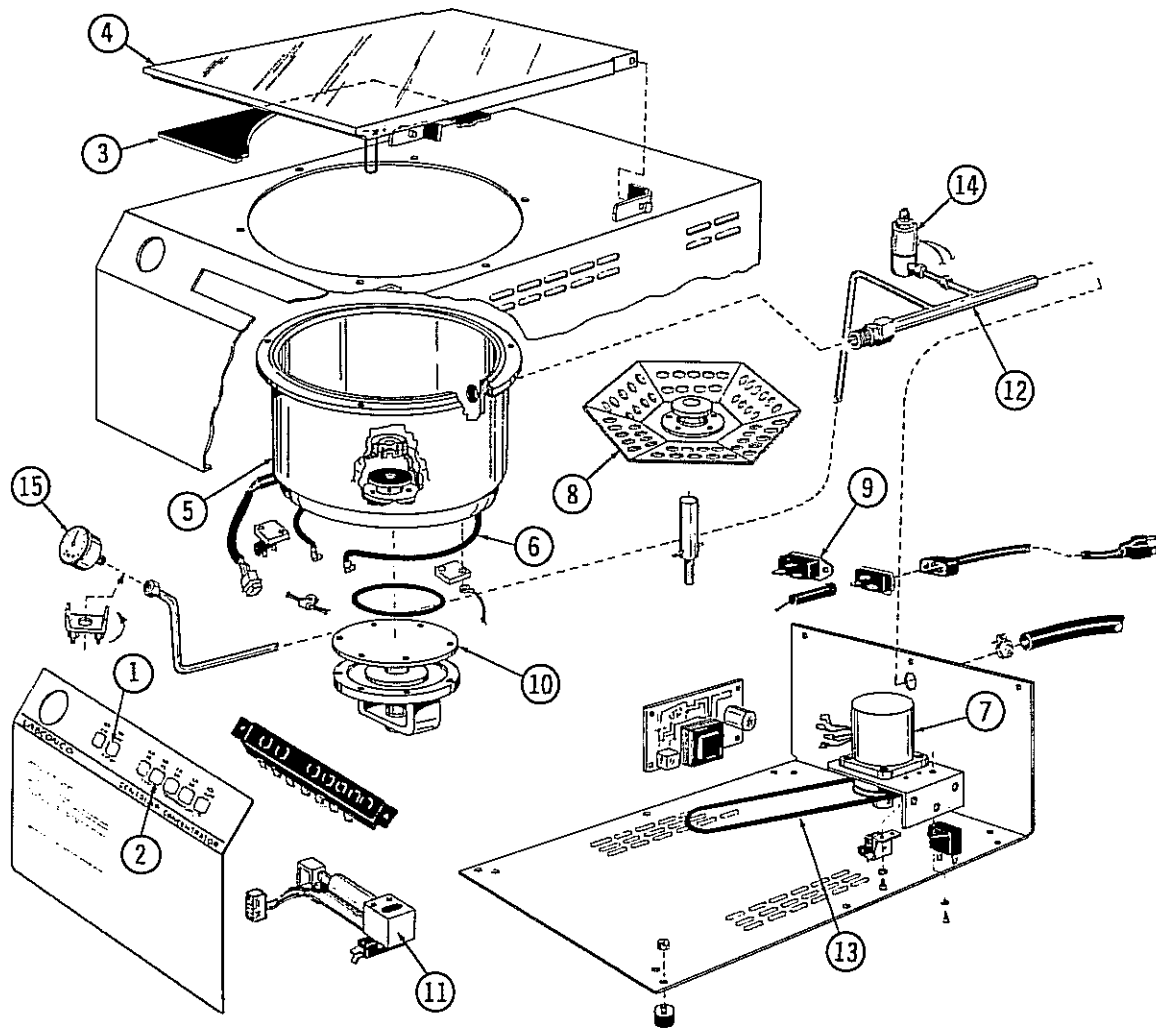


Figure 3

Component Identification

Concentrator

- (1) **Rotor Switch.** In the "On" position, the rotor turns at speeds up to 1800 RPM.
- (2) **Heater Switch.** Activates the 300 watt heater. Chamber temperature may be controlled at 35°, 45°, 60°, or 75° C.
- (3) **Gasket.** Provides a sealing surface between the chamber and the acrylic top.
- (4) **Clear Acrylic Top.** Clear top allows samples to be visually examined. An optional glass top is available, for use with solvents such as Methylene Chloride which attack acrylic. See Accessories for ordering information.
- (5) **Cast Aluminum Chamber.** Double impregnated for vacuum integrity and epoxy coated for easy cleaning of any spills.
- (6) **300 Watt Heater.** Provides heat to warm the chamber when activated.
- (7) **Thermally Protected Motor.** Provides protection from motor overheating.
- (8) **Rotors (not included).** The rotor supports the customer supplied sample tubes. Several rotors are available for various size tubes.
- (9) **Vacuum Pump Outlet.** Electrical outlet provided for the vacuum pump.
- (10) **Epoxy-Fiberglass Heat Shield.** Non-conducting plate minimizes heat generated by the magnets from reaching the sample chamber.
- (11) **Safety Switch/Latch.** Prevents start-up when lid is open. The latch prevents opening the lid while the rotor is turning.
- (12) **Stainless Steel Hose Fitting.** 1/2" outer diameter (OD) fitting provides port for vacuum tubing connection to accessory cold trap, Secondary Trap or vacuum pump.
- (13) **Belt-Driven System.** Rotates rotor up to 1800 RPM. Ensures smooth, quiet operation and consistent, even braking action.
- (14) **Vacuum Break Valve.** Electrically controlled solenoid valve opens to automatically break the vacuum when the vacuum pump and rotor are turned off.
- (15) **Vacuum Gauge.** Mechanical gauge indicates the operating vacuum within the system.

INTRODUCTION

Component Identification - Cold Trap

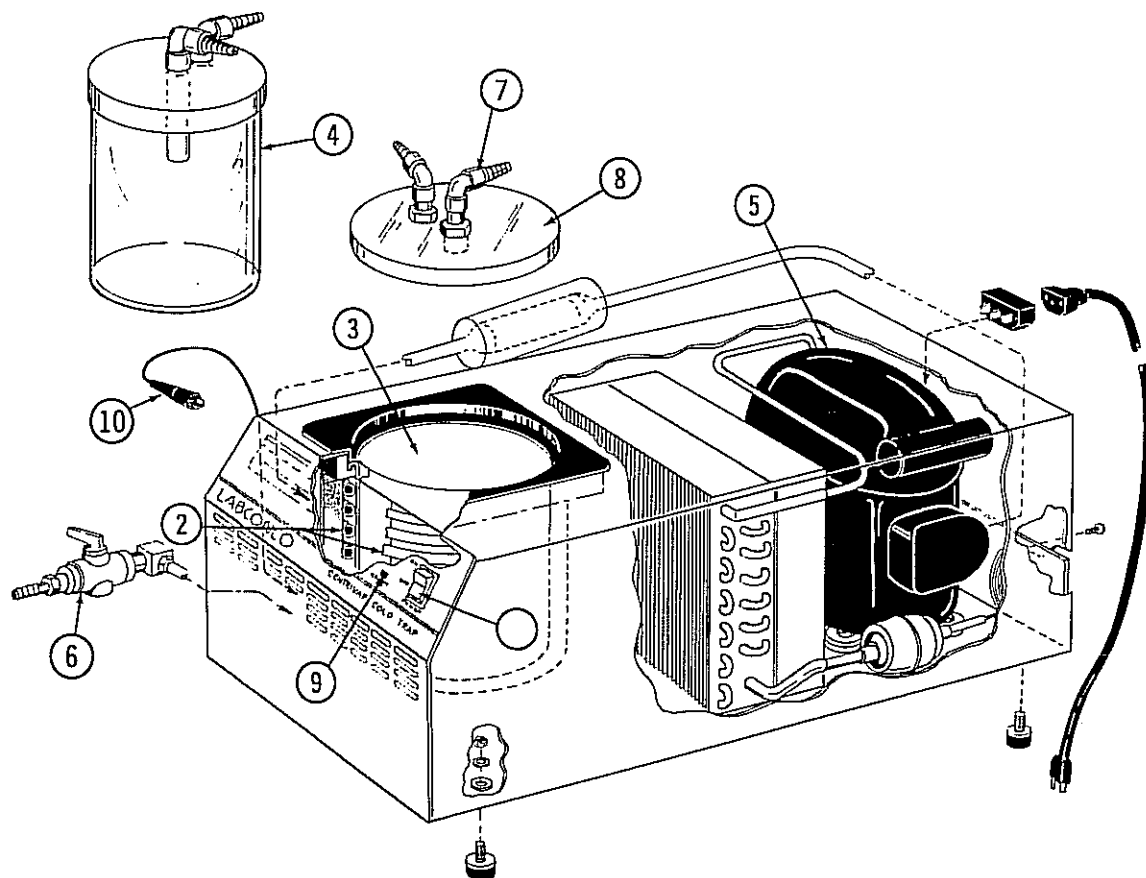


Figure 4

Component Identification

Cold Trap

- (1) **Power Switch.** In the "On" position, it activates the Cold Trap.
- (2) **Cooling Coil.** Cools the stainless steel trap to -55°C .
- (3) **Stainless Steel Trap.** This trap is used with aqueous and organic compounds.
- (4) **Optional Glass Trap Insert.** For corrosive compounds, this optional glass insert is used within the stainless steel trap.
- (5) **Refrigeration System.** 1/4 horsepower condensing unit reduces temperature of Cold Trap to -55°C (-67°F).
- (6) **Drain Valve.** The stainless steel trap can be emptied by opening the valve.
- (7) **Quick Disconnects.** Fittings are easily removed to clean the trap at the end of a run.
- (8) **Acrylic Lid.** Used specifically with the stainless steel trap. Fittings are supplied for 1/2" internal diameter (ID) tubing.
- (9) **Ready Indicator.** The light will illuminate when the stainless steel trap has reached operating temperature of -40°C (-40°F).
- (10) **Grounding Clip.** Connects to solvent catch pot when draining the collection chamber to eliminate the risk of electrostatic spark ignition.

A. Component Configuration

Figure 5 illustrates tubing connections between components. At the minimum, the Concentrator, Cold Trap and pump should be installed. The Secondary Trap may be installed for added protection. A vacuum pump with a flow rate of 113 liters per minute and $.2 \times 10^{-3}$ mbar blank off pressure is adequate for aqueous samples. More volatile samples can be satisfactorily processed using a diaphragm pump with a free airflow rate of 42 liters per minute and 200 mbar vacuum.

Caution: When selecting the vacuum pump, it is very important to consider the flammability of the solvents that will be used. If the solvents are flammable, an explosion-proof vacuum pump should be used.

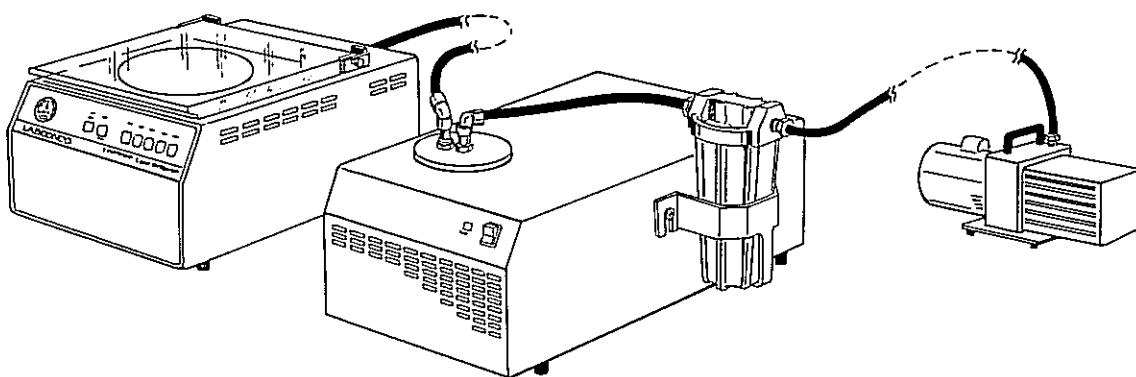


Figure 5

B. Electrical Connections

(1) Concentrator

Your Labconco CentriVap Concentrator is supplied with an electrical cord and plug to connect to a standard outlet. For Model 78110-00, a fused 115 V, 60 Hz, 1 phase, 15 amp supply is required. For 78100-01, a fused 230 V, 50 Hz, 1 phase, 7.5 amp supply is required.

(2) Cold Trap

Your CentriVap Cold Trap is supplied with an electrical cord and plug to connect to a standard outlet. For the Model 78110-00, a fused 115 V, 60 Hz, 1 phase, 15 amp supply is required. For Model 78110-01, a fused 220 V, 50 Hz, 1 phase, 7.5 amp supply is required.

C. Tubing Installation

The back of the Concentrator is equipped with a 1/2" O.D. (12.7mm) connector to connect 1/2" I.D. (12.7mm) vacuum tubing to the CentriVac Cold Trap. The Cold Trap is equipped with polypropylene quick disconnects and the corresponding mate can be inserted into the 1/2" I.D. vacuum hose for easy connection and release.

To connect the vacuum hose to the traps, insert the barbed (gray) end of the fitting into the hose. Clamp hoses to barbed fittings.

To empty the optional glass trap after a run, slowly pull the fitting from the glass. No force is required since the quick disconnects are designed for smooth, easy operation.

To reconnect the fitting to the glass trap, slowly and gently push the connector onto the glass fitting until it is seated (pushing too hard could break the glass fittings). Refer to Figure 5 for the correct orientation of the CentriVac components.

D. Rotor Installation

- (1) Place the rotor onto the shaft of the concentrator.
- (2) Rotate the rotor slightly to engage the drive pin in the shaft with the slots in the rotor. The top of the shaft should be in line with the top of the rotor hub.

E. Concentrator Installation

- (1) Plug the Concentrator into an appropriate electrical outlet.
- (2) Install the vacuum hose supplied with the Concentrator to the 1/2" O.D. (12.7mm) tube extending from the back of the unit and tightly clamp in place. Connect the other end of the vacuum tubing to the Cold Trap center port.
- (3) Plug the vacuum pump into the timed outlet on the back of the Concentrator and turn the vacuum pump switch "On" if it is so equipped.

F. Cold Trap Installation

- (1) The Cold Trap should be located in an area that provides an unobstructed flow of air around the cabinet. This air cools the refrigeration system. The refrigeration system draws air through the grill on the front of the cabinet and exhausts it out through the back. A minimum of 3" should be allowed between the back of the Cold Trap and the adjacent wall surface. Restriction of airflow into the cabinet during operation could adversely affect performance.
- (2) If your application involves corrosive chemicals proceed to Step 6. If your

INSTALLATION

application does not involve corrosive chemicals, connect the vacuum hose from the Concentrator to the quick disconnect fitting in the center of the acrylic cover.

- (3) Connect one end of the vacuum hose supplied with the Cold Trap to the other fitting on the acrylic cover and connect its other end to the intake port of the vacuum pump.
- (4) Place the acrylic cover over the stainless steel trap.
- (5) Plug the Cold Trap into an appropriate electrical outlet.
- (6) If using corrosive chemicals it is recommended that the optional Glass Trap Insert is used.
- (7) Install the vacuum hose from the Concentrator to the barb fitting on the center tube of the glass trap.
- (8) Install the vacuum hose supplied with the Cold Trap from the vacuum pump to the other barb fitting.
- (9) Place the glass trap inside the stainless steel trap. Add ethyl alcohol to the stainless steel trap until the glass trap is at least two-thirds immersed.
- (10) Fit the glass trap insulation tightly around the top opening of the stainless steel trap to hold the glass securely in place.
- (11) Plug the Cold Trap into an appropriate electrical outlet.

G. Secondary Trap (Optional Accessory)

Labconco offers a polypropylene Secondary Trap Cannister as well as disposable inserts for trapping excess organic, acid, water or radioactive vapors.

- (1) Attach trap support bracket to the right side of the Cold Trap.
- (2) Unscrew and remove the top of the trap.
- (3) Press the neck of the insert into the top of the trap until both O-rings are inserted.
- (4) Thread the bottom portion of the trap to the top.
- (5) Connect the hose supplied with the Secondary Trap to the fitting on the Secondary Trap on the side toward which the arrow is pointing. Connect the other end to the Cold Trap.

- (6) Connect the hose that was supplied with the Cold Trap to the other port of the Secondary Trap Cannister. Connect its other end to the intake port of the vacuum pump.
- (7) Place the Secondary Trap assembly into its support.

NORMAL OPERATION

Concentrator and Cold Trap

- (1) Recheck to see that all fittings are securely sealed before operating the CentriVap Concentrator.
- (2) Press the CentriVap Cold Trap ON switch. The READY indicator will illuminate when it reaches operating temperature.
- (3) If heat is desired, press the appropriate heat selection switch.
- (4) When the READY indicator illuminates, the rotor that has been loaded with samples may be placed in the CentriVap Concentrator. **CAUTION: Do not operate the Concentrator with an unbalanced rotor.**
- (5) Press the rotor ON switch. The rotor will start, the vacuum break valve will close and the vacuum pump will start after the rotor reaches operating speed.
- (6) As 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 READY indicator to turn off. As the sample reaches completion, the load on the Cold Trap will decrease and its temperature will decrease. The READY indicator will once again illuminate signaling the approaching completion of that sample run.
- (7) At the end of the run, press the rotor OFF switch. The vacuum pump will stop. The vacuum break valve will vent the vacuum and when the rotor stops the lid latch will disengage to permit the lid to be opened.

A. Hazardous Materials

Hazardous Solvents/Ammonium Hydroxide. Most of these will condense into the Cold Trap. Install a Secondary Trap Cannister with the Solvent Trap Insert (P/N 78152) to capture any vapors and protect the pump. Consider the accessory glass lid for use with solvents such as Methylene Chloride which attack acrylic. See Accessories for ordering information.

Hazardous Solutes. These stay completely in the centrifuge tubes. Handle these tubes with care.

B. Radioactive Substances

When evaporating radioactive substances, install a Radioisotope Trap Insert (P/N 78150) in the Secondary Trap Cannister and use in conjunction with the Cold Trap. The carbon insert is intended to protect the vacuum pump from traces of radioactive materials that may have passed through the Cold Trap. It does not meet NRC filter design recommendations. After operating, properly dispose of the insert as radioactive waste.

C. Volatile Organics

Organic solvents, such as acetone and chloroform, are very volatile. The Cold Trap operating at -55°C might not be sufficient to collect 100 percent of the vapor; therefore, use of a diaphragm pump, which will produce 29 inches of Hg vacuum to evaporate these solvents, is required. Be sure to vent the vacuum pump into a fume hood or other suitable ventilation device. Consider the accessory glass lid for use with solvents such as Methylene Chloride which attack acrylic. See Accessories for ordering information.

D. Corrosive Solvents

As a precaution, install an Acid Trap Insert (P/N 78148) in the Secondary Trap Cannister to minimize any acid vapors from entering the pump. Consider the accessory glass lid for use with solvents such as Methylene Chloride which attack acrylic. See Accessories for ordering information.

E. Pump Exhaust Filter

Install a Pump Exhaust Filter (P/N 14723) on the pump to eliminate any mists. This installs on Labconco pumps P/N 14721, 14677, 77394 and 77394-01.

F. Clean Room Applications

To ensure all exhaust from the pump is eliminated from the room, attach tubing to the oil mist eliminator and route to a vented hood.

G. Aqueous Applications

Install a Moisture Trap Insert for water vapor (P/N 78149) to protect the pump.

SAFETY PRECAUTIONS

The CentriVap 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."

Solvents used in the CentriVap may be flammable or hazardous. **Use extreme caution and keep sources of ignition away from the solvents.**

Utilization of acids requires immediate cleaning and neutralization after a run or physical damage to the collection chamber will result.

Hazardous materials such as strong acids or bases, radioactive substances and volatile organics, must be handled carefully.

WARNING: The disposal of substances used in connection with this equipment may be governed by various Federal, State or Local regulation. All users of this equipment are urged to become familiar with any regulations that apply in the users area concerning the dumping of waste materials in or upon water, land or air to comply with such regulations. Labconco is not responsible for illegal dumping of any chemicals or materials.

WARNING: When draining the CentriVap Cold Trap always attach the grounding clip to the solvent catch pot to eliminate the risk of electrostatic spark ignition.

WARNING: The Cold Trap weighs over 70 lbs. (33 Kgms.). The carton allows for lifting with a mechanical lift truck or hand truck. If you must lift manually, have at least 2 people to lift and follow safe lifting guidelines.

Concentrator And Cold Trap

Before any maintenance is performed, all power switches should be turned off and equipment unplugged from electrical outlets.

- (1) Do not store any material around or on top of the CentriVap Concentrator or Cold Trap. Proper air ventilation is essential.
- (2) Clean any spills immediately to prevent solvents from accumulating on rotors and inside the chamber.
- (3) Check oil level of the vacuum pump, if applicable. It should be between MIN and MAX. If the oil level is less than an inch (25.4mm) above MIN, add oil to proper level.
- (4) If oil shows cloudiness, particles or discoloration, drain the pump and replace with fresh oil.
- (5) Check the Cold Trap for condensed or frozen solvents and dispose of appropriately. Completely empty the trap before the next run. If solvents are frozen in the glass trap, run it under cold water immediately after operating.
- (6) 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.
- (7) If the media in the Secondary Trap Cannister has completely changed color, discard and replace with a new insert. For the Radioisotope 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.

NOTE: The user is solely responsible for any radioactive leak.

- (8) Recheck all connections for a secure fit to prevent leakage.
- (9) Every 12 months, or more often, if the Cold Trap is operated in a dusty environment, refrigeration system condenser of the Cold Trap should be cleaned. Using a vacuum cleaner with brush attachment, clean the condenser to ensure proper airflow for peak performance.

Note: If the ice has melted, the Glass Trap Insert must be emptied before the Cold Trap is started again.

SPECIFICATIONS

A. CONCENTRATOR

Heater:	300 watt, built-in tubular heater controlled at 35°, 45°, 60° or 75° C with over-temperature protection
Power Input:	115 VAC, 1 phase, 60 Hz, 3.1 amp (Model 78100-00) 230 VAC, 1 phase, 50 Hz, 1.6 amp (Model 78100-01) (Current ratings without vacuum pump)
Drive:	Belt drive coupled with magnetic drive
Motor Rotation:	Up to 1800 RPM
Lid:	Abrasion resistant acrylic
Chamber:	Double impregnated, epoxy coated aluminum casting
Cabinet:	Epoxy coated steel
Dimensions:	13" W x 18" D x 9 1/2" H (33.0 cm x 45.7 cm x 24.1 cm)
Shipping Weight:	40 lb. (18.1 kg)

B. PRIMARY COLD TRAP

Temperature:	-55° C $\pm$ 5° C at 24° C ambient (-67° F $\pm$ 9° F at 75° F ambient)
Refrigeration:	1/4 horsepower condensing unit
Stainless Steel Trap:	Fluid capacity 4000 ml, ice capacity up to 3650 ml
Power Input:	115 VAC, 60 Hz, 1 phase, 5 amp (Model 78110-00) 230 VAC, 50 Hz, 1 phase, 2.5 amp (Model 78110-01)
Control:	One (1) rocker switch to control power ON/OFF
Dimensions:	14 1/2" W x 26 3/4" D x 11 1/8" H (36.8 cm x 67.9 cm x 28.2 cm)
Shipping Weight:	74 lb. (33.5 kg)

C. ENVIRONMENTAL CONDITIONS

The CentriVap and Cold Trap is designed to operate under the following conditions:

- indoor use;
- altitude up to 2000 m;
- temperature 5°C to 40°C;
- maximum relative humidity 80% for temperatures up to 30°C decreasing linearly to 50% relative humidity at 40°C;
- mains supply voltage fluctuations not to exceed $\pm$ 10% of the nominal voltage;
- transient overvoltages according to Installation Category II (overvoltage categories per IEC 1010);
- pollution Degree 2 in accordance with IEC 464

CENTRIVAP

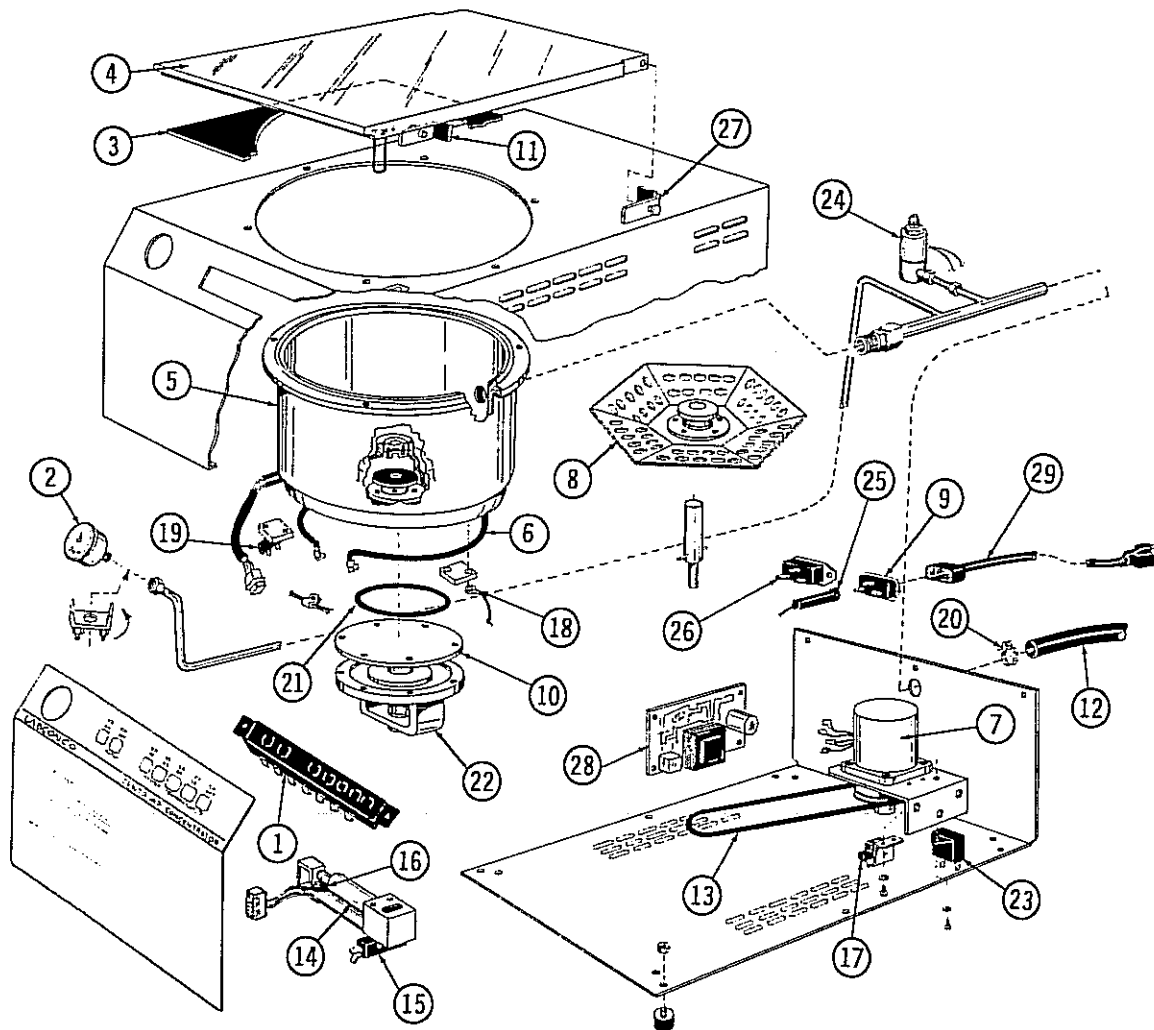


Figure 6

CENTRIVAP CONCENTRATOR

ITEM	QTY	MODEL 78100-00 PART NO.	MODEL 78100-01 PART NO.	DESCRIPTION
1	1	✓44820	44820	Switch, Power
2	1	✓79716	79716	Gauge
3	1	✓79757	79757	Gasket
4	1	✓79727	79727	Cover
5	1	79722	79722-01	Chamber
6	1	✓78230	✓78230-01	Heater
7	1	✓79739	79739	Motor Assembly
8	1	✓78164	78164	Rotor (90) 1.5 ml Microcentrifuge
	1	✓78141	78141	12 x 75 mm
	1	✓78142	78142	50 ml conical
	1	✓78377	78377	15 ml
9	1	✓13338	13338	Receptacle - Inlet
10	1	✓79220	79220	Plate, Magnet Cover
11	1	✓78258-01	78258-01	Hinge (LH)
12	1	✓78286-06	78286-06	Hose
13	1	✓78252	78252	Belt
14	1	✓79764	79764	Solenoid
15	1	✓78260	78260	Switch - Lid
16	1	79758	79758	Switch - Position Sensor
17	1	✓79730	79730	Speed Sensor
18	1	✓79729	79729	Thermistor
19	1	✓79759	79759	Fuse - High Temperature Limiter
20	2	14888	14888	Hose Clamp
21	1	✓16469	16469	O-Ring
22	1	✓78102	78102	Post Support Assembly
23	1	✓78295	78295	Capacitor - Motor
24	1	✓79712	79712	Valve
25	1	13444	N/A	Fuse 15A
	2	N/A	✓13493	Fuse 8A
26	1	✓79078-01	✓13339	Receptacle - Vacuum Pump
27	1	✓78258	78258	Hinge (RH)
28	1	✓79725	✓79725-02	Control Assembly P.C. Board
29	1	13345	13341	Power Cord

CENTRIVAP COLD TRAP

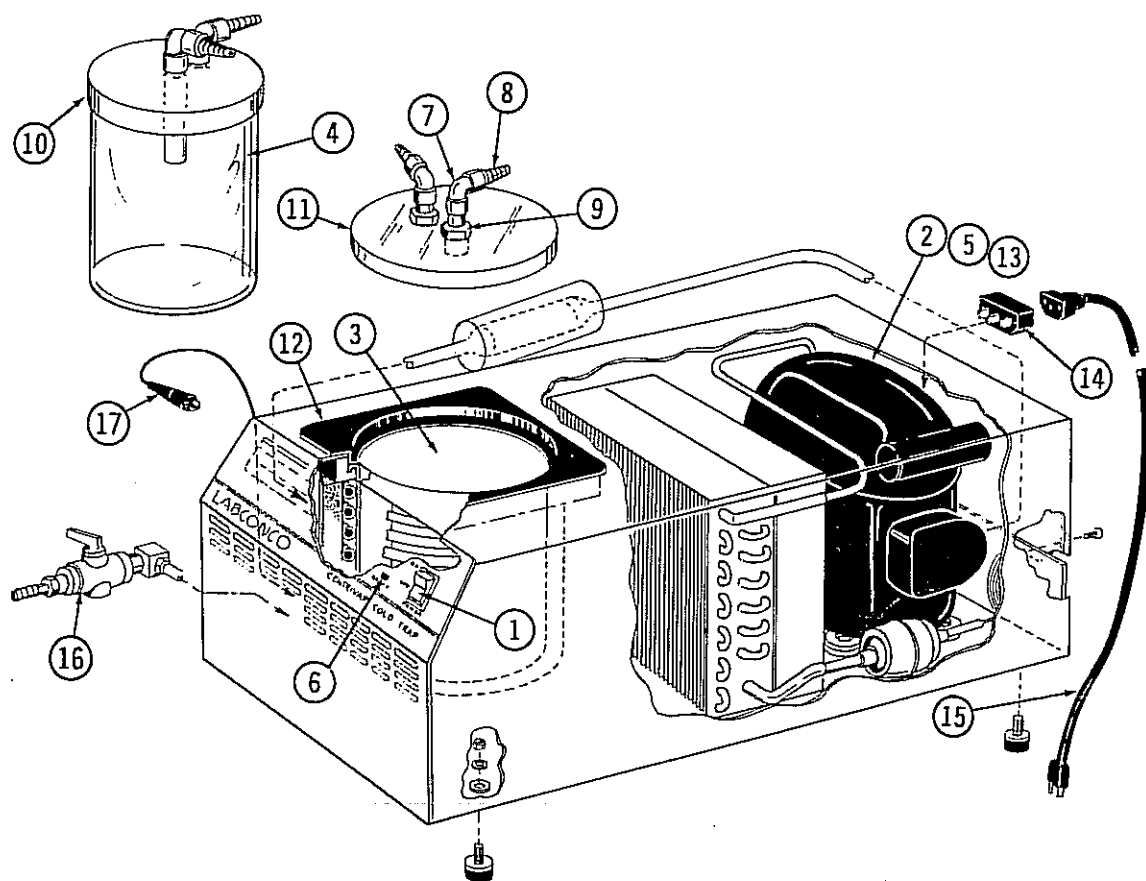


Figure 7

REPLACEMENT PARTS

CENTRIVAP COLD TRAP

ITEM	QTY	MODEL 78110-00 PART NO.	MODEL 78110-01 PART NO.	DESCRIPTION
1	1	✓ 13023	13023	Switch, Power
2	1	78730	78730-01	Condensing Module Assembly (Inc #5, 13)
3	1	78720	78720	Cold Trap - Stainless Steel
4	1	✓ 78715	78715	Cold Trap - Glass
5	1	77343	77344	Condensing Unit
6	1	✓ 78731	78731-01	"Ready" Indicator PC Board 7464405
7	2	✓ 15445-01	15445-01	Elbow - Union
8	2	✓ 15481-01	15481-01	Stem
9		✓ 15486-03	15486-03	Stem Adapter
10	1	✓ 78732	78732	Insulator
11	1	✓ 78707	78707	Lid 78735 - Lid Assy
12	1	✓ 78710	78710	Gasket
13	6.7 oz.	76222-02	76222-02	Refrigerant 403B (Isceon 69L)
14	1	- 13338	13338	Receptacle - Power Inlet
15	1	- 13345	- 13341	Power Cord
16	1	✓ 13605	13605	Valve - Drain
17	1	✓ 78809	78809	Ground Wire Assembly
				Main PC Board 7464400

7850600 4.75" 7405 Lid "old" 78112-00
Cold Trap

CENTRIVAP CONCENTRATOR

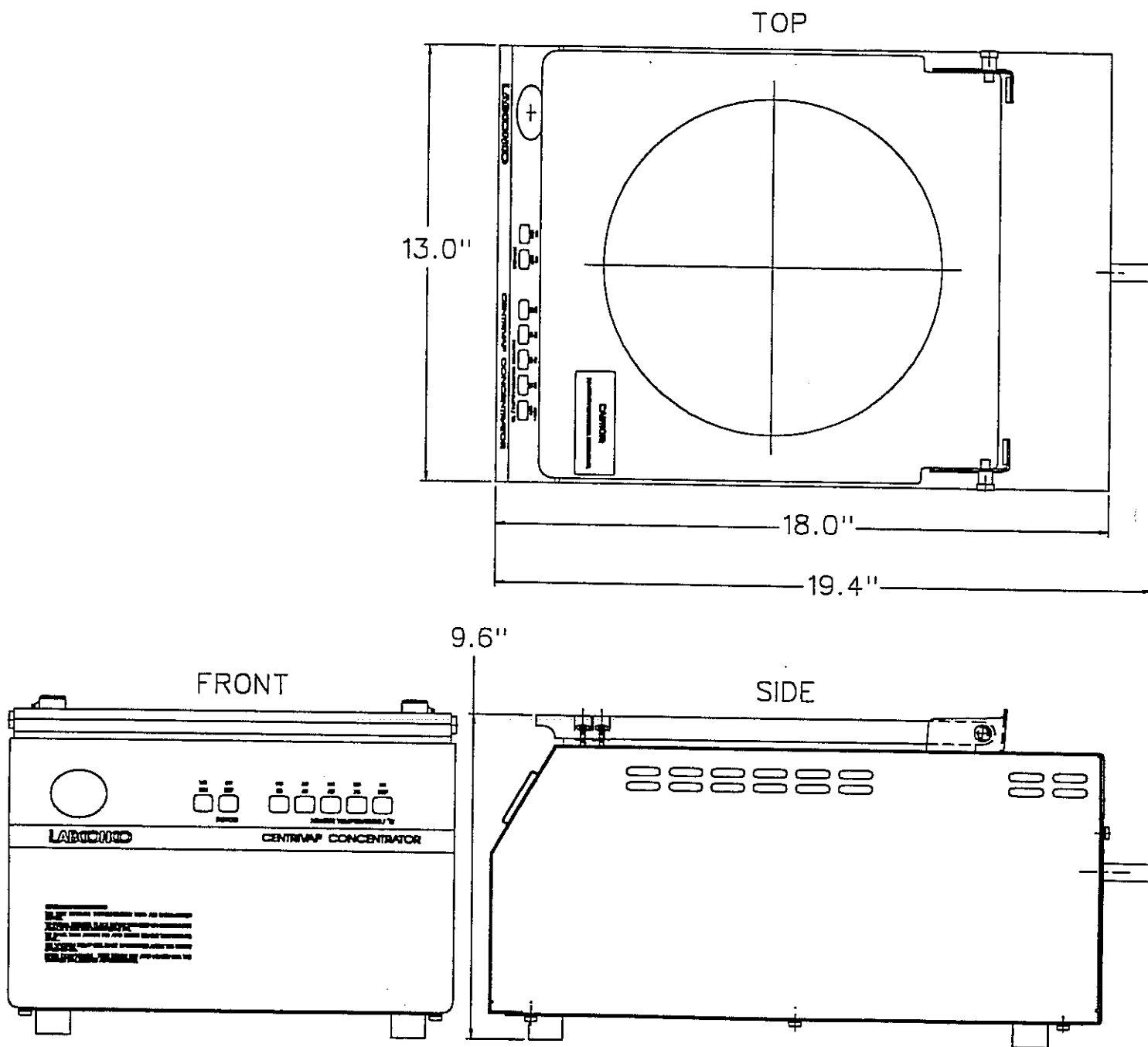


Figure 8

CENTRIVAP COLD TRAP

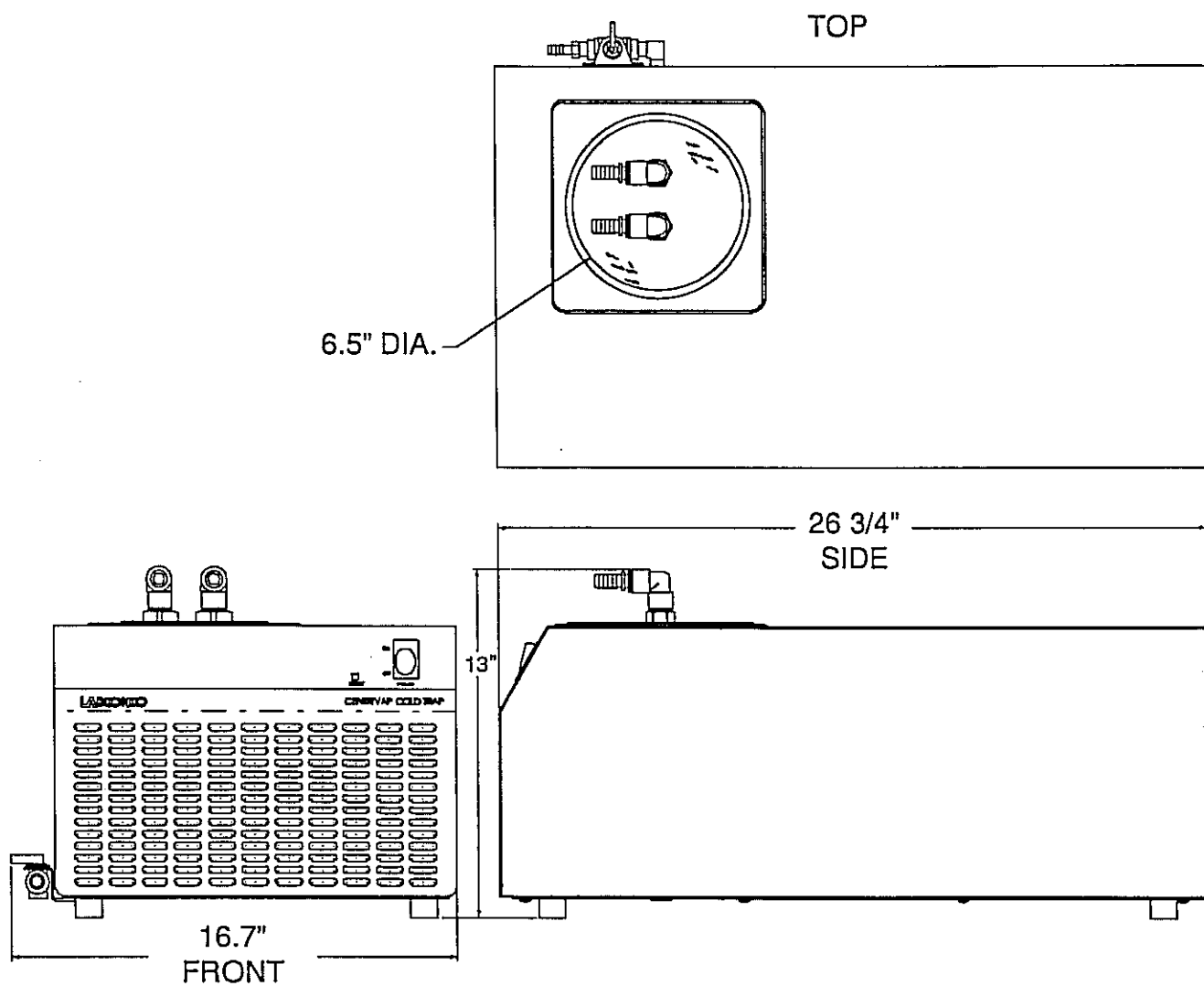
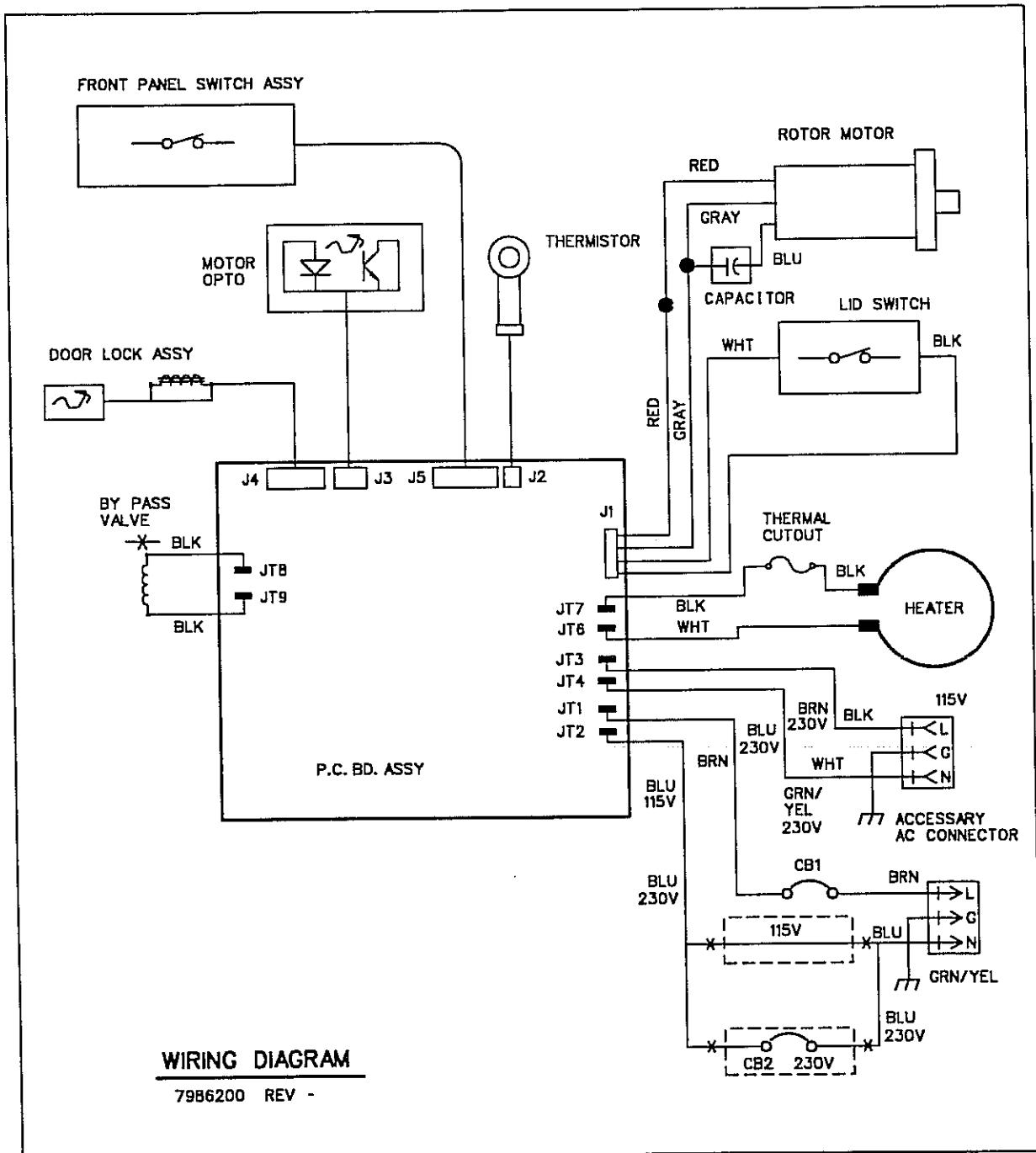


Figure 9

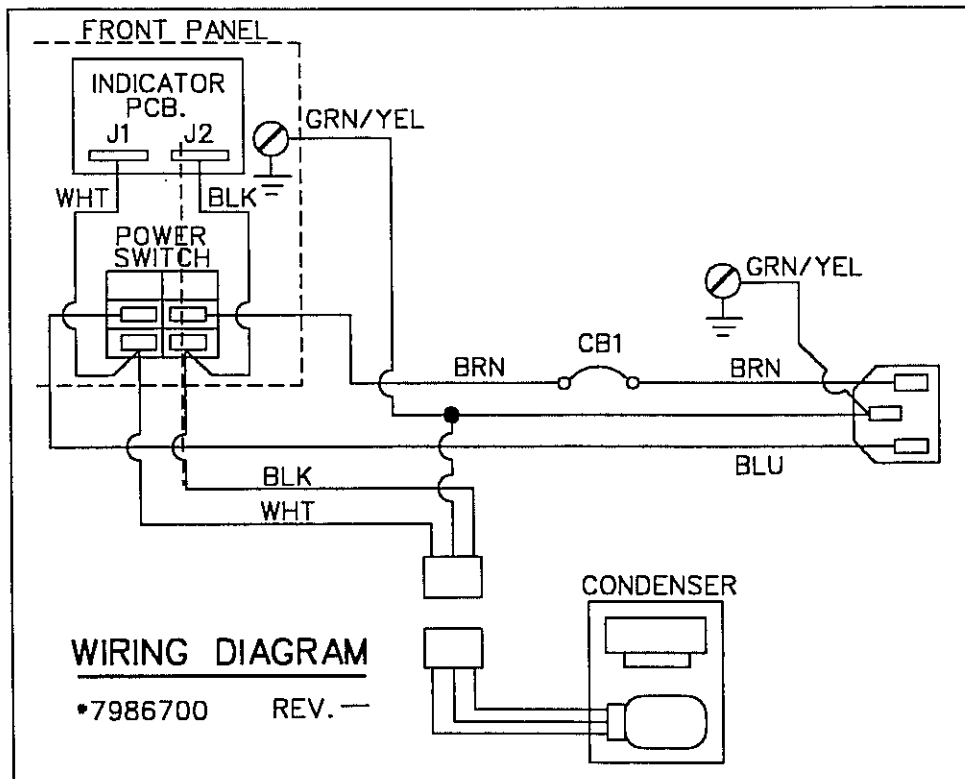
WIRING DIAGRAM

Model 78100-00 Concentrator (115V)

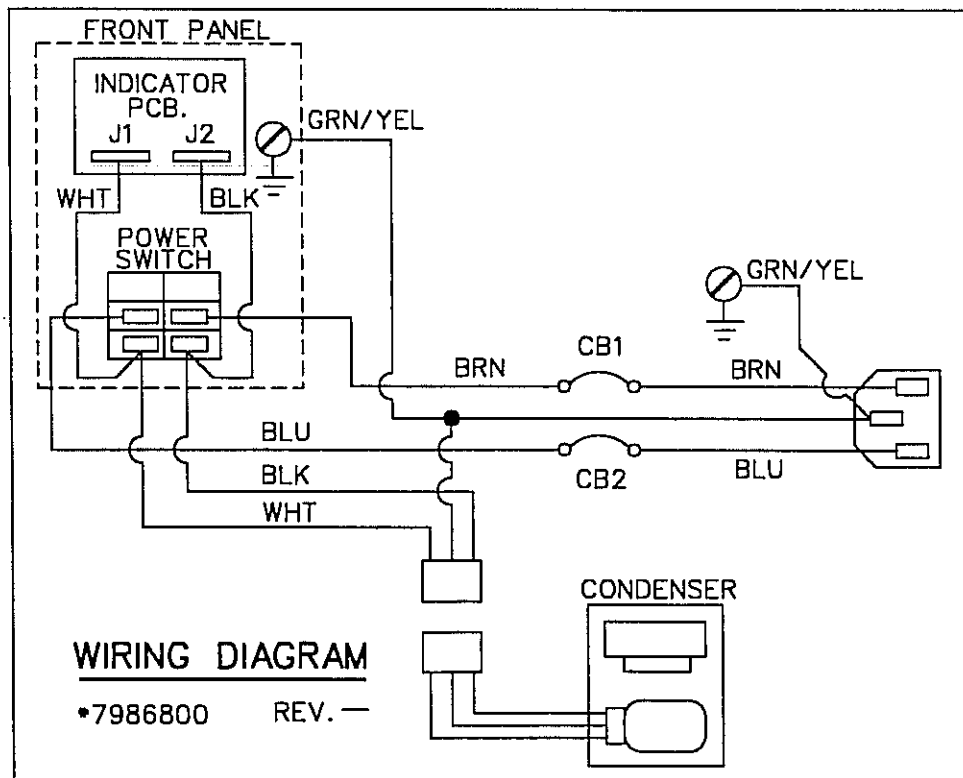
Model 78100-01 Concentrator (230V)



Model 78110-00 Cold Trap (115V)



Model 78110-01 Cold Trap (230V)



TROUBLESHOOTING

PROBLEM	CORRECTIVE CAUSES	ACTION
Lack of adequate vacuum	Air leak in the tubing or connections	Check tubing for wear and replace. Tighten all connections.
	Pump is not functioning properly	Check pump by locating vacuum gauge closer to pump and close off rest of system. Check pump oil for cloudiness or particles and change. If pump is faulty, seek authorized service or replace pump.
	Cold Trap or Concentrator gasket is not sealing properly	Check gasket for cleanliness. Adjust gasket as needed. Adjust acrylic top to ensure that it covers gasket.
	Secondary Trap Cannister not fitted properly	Tighten all connections to and from the Secondary Trap Cannister.
	Secondary Trap Insert is spent	Replace with new insert.
	New Secondary Trap has moisture in it	Run vacuum pump for 24 hours to remove moisture.
Samples take too long to evaporate	Collapsed tubing	Check for collapsed tubing and replace.
	Lack of adequate vacuum	Check per above.
	Heater not operating properly	Contact Labconco.

PROBLEM	CAUSES	CORRECTIVE ACTION
Samples take too long to evaporate (Con't)	Obstruction in line	Remove obstructed tubing and replace.
	Quick disconnects not properly seated	Push quick disconnects to seat.
Recovery of condensate in Cold Trap is less than normally expected	Cold Trap is not ON	Check to make sure switch is ON and condensing unit fan is moving air out of the rear of the cabinet.
	Cold Trap does not cool down	Turn vacuum pump OFF and allow Cold Trap to cool for at least 30 min. to reach temperature.
		-55° C temperature can be checked with a solvent thermometer or digital thermometer.
Frequent oil change needed in pump	Secondary Trap insert is spent	Change insert often.
	Cold Trap is not emptied after each run and dried	Empty the traps (glass or stainless steel) after each run and replace.
	Vacuum too strong for chemical	Use a Secondary Trap insert and diaphragm pump to pull 29" Hg.

WARRANTY

We are committed to providing our customers with quality equipment and service after the sale. Part of this objective involves keeping you informed of changes and new product additions. We therefore request that you take a moment to fill out the product registration card so we may know your location as well as some of the reasons that prompted you to purchase our products.

Labconco Corporation warrants products of its manufacture for one year, from receipt of the equipment by the purchaser, against defects in materials and workmanship. This limited warranty covers parts and labor but not transportation and insurance charges. In the event of a warranty claim contact the dealer who sold you the product. If the cause is determined to be a manufacturing fault, the dealer or Labconco Corporation will repair or replace all defective parts to restore the unit to operation. **Under no circumstances shall Labconco Corporation be liable for indirect, consequential or special damages of any kind.** This statement of warranty may be altered by a specific published amendment. No individual has authorization to alter the provisions of this warranty policy or its amendments. Lamps and expendable items such as filters are not covered by this warranty. Damage due to corrosion or accidental breakage is also not covered.

WARNING: 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 urged to become familiar with any regulations that apply in the users area concerning the dumping of waste materials in or upon water, land or air and to comply with such regulations.

If a shipment is received in visibly damaged condition, be certain to make a notation on the delivering carrier's receipt and have his agent confirm the damage on your receipt. Otherwise, the damage claim may be refused.

If concealed damage or pilferage is discovered, notify the carrier immediately and retain the entire shipment intact for inspection. Interstate Commerce Commission rules require that the claim be filed with the carrier within 15 days after delivery.

NOTE: Do not return goods. Goods returned without prior authorization will not be accepted. Labconco Corporation and its dealers are not responsible for shipping damage. Claims must be filed directly with the freight carrier by the recipient. If authorization has been received to return this product, by accepting this approval, the user assumes all responsibility and liability for biological and chemical decontamination and cleansing. Labconco reserves the right to refuse delivery of any products which do not appear to have been properly cleaned and/or decontaminated prior to return.

ACCESSORIES

Accessory Part #	Description
78164	Hexagonal Rotor Capacity for 90 each 1.5ml microcentrifuge tubes
78141	Rotor (12 x 75 mm) 72 - 1.5 ml tubes 2.0 ml, 1.5 ml, 0.5 ml 16 - 3 ml tubes 12 x 55 mm 32 - 5 ml tubes 12 x 75 mm Capacity for 72 tubes maximum
78142	Rotor (50 ml) 6 - 40 ml tubes 28 x 132 mm 6 - 50 ml tubes 28 x 140 mm 18 - 1.5 ml tubes 2.0 ml, 1.5 ml, 0.5 ml 18 - 3 ml tubes 12 x 55 mm 18 - 5 ml tubes 12 x 75 mm Capacity for 24 tubes maximum
78377	Universal Rotor (15 ml) 12 - 15 ml tubes 16x100, 17x100, 17x120 mm 12 - 10 ml tubes 13x100 mm must be inserted in 16x100 mm tube 16 - 3-5 ml tubes 12 x 55, 12 x 75 mm 48 - 1.5 ml tubes 20 ml, 1.5 ml, 0.5 ml Capacity for 60 tubes maximum
78734	Glass Trap Insert For Cold Trap
79743	Secondary Trap Cannister Accommodates inserts listed below
78148	Acid Trap Insert
78149	Moisture Trap Insert
78150	Radioisotope Trap Insert
78152	Solvent Trap Insert
79708	Glass Lid For Concentrator Direct replacement for standard equipment acrylic lid. For use with solvents such as Methylene Chloride that could craze the acrylic lid.

Accessory Part #	Description
14721	Direct Drive Vacuum Pump 113 liters/minute pumping capacity with gas ballast. Blank-off pressure 2×10^{-4} Torr (0.2 micron). 115 VAC, 60 Hz, single phase, 6.3 amp
14677	Direct Drive Vacuum Pump 190 liters/minute capacity with gas ballast. Blank-off pressure 2×10^{-4} Torr (0.2 micron). 115 VAC, 60 Hz, single phase, 6.3 amp
77394-02	Direct Drive Vacuum Pump 113 liters/minute. Same as 14721 except 220/208-230VAC, 50/60 Hz, single phase 3.4 amp operation
77394-03	Direct Drive Vacuum Pump 190 Liters/minute. Same as 14677 except 220/208-230 VAC, 50/60 Hz, single phase, 3.4 amp operation
79141	Diaphragm Vacuum Pump corrosion resistant, 115 V, 60 Hz, 3.3 amps, single phase 42 liters/minute, 23.8 in. Hg vacuum (For use with nonflammable solvents only)
79141-01	Diaphragm Vacuum Pump corrosion resistant, 220 V, 50 Hz, 1.5 amps, single phase 36 liters/minute, 23.8 in. Hg vacuum (For use with nonflammable solvents only)
79171	Diaphragm Vacuum Pump corrosion resistant, 115 V, 60 Hz, 10.8 amps, single phase 88 liters/minute, 29 in. Hg vacuum (For use with nonflammable solvents only)
79171-01	Diaphragm Vacuum Pump corrosion resistant, 230 V, 50 Hz, 4.5 amp, single phase 74 liters/minute, 29 in. Hg vacuum (For use with nonflammable solvents only)

ACCESSORIES

Accessory	Description
79248	Diaphragm Vacuum Pump Corrosion resistant, explosion proof, 23.8 in. Hg Vacuum, 115 V, 60 Hz, 5.8 amp, single phase, 42 liters/minute
79248-01	Diaphragm Vacuum Pump Corrosion resistant, explosion proof, 23.8 in. Hg Vacuum, 220 V, 50 Hz, 3.1 amp, single phase, 36 liters/minute
79249	Diaphragm Vacuum Pump Corrosion resistant, explosion proof, 29 in. Hg Vacuum, 115 V, 60 Hz, 5.8 amp, single phase, 88 liters/minute
79249-01	Diaphragm Vacuum Pump Corrosion resistant, explosion proof, 29 in. Hg vacuum, 220 V, 50 Hz, 3.1 amp, single phase, 74 liters/minute
14723	Vacuum Pump Exhaust Filter Installs on pumps PN 14721, 14677, 77394-02 and 77394-03 to eliminate oil mist from the exhaust.
75221	Two Place Freeze Dry Manifold Manifold has 1/2" neoprene valves and is used for freeze drying small volume samples.
79782	Auliliary Port Attaches to cold trap lid allowing connection of other laboratory equipment.

CONTACTING LABCONCO

If you have any questions that are not addressed in this manual, or if you need technical assistance, please contact Labconco's Sales Information Department at 800-821-5525 or Service Information at 800-522-7658 or (816) 333-8811 between the hours of 7:00 a.m. and 6:00 p.m. Central Standard Time.

Labconco's mailing address is:

Labconco Corporation
8811 Prospect Avenue
Kansas City, Missouri 64132

Visit Labconco through the Internet at:

<http://www.labconco.com>

or

email:labconco@labconco.com

Declaration of Conformity

Application Council Directive(s): 73/23/EEC, 89/336/EEC

Standard(s) to which conformity is declared: EN60950, EN55014, EN55104

Manufacturer's Name: Labconco Corporation

Manufacturer's Address: 8811 Prospect Avenue
Kansas City, MO 64132 USA

Importer's Name: See Shipping/Customs Documents*

Importer's Address: See Shipping/Customs Documents for your equipment

Type of Equipment: Laboratory Equipment - Sample Concentration

Model No.: Centrivap Benchtop Concentrator 78100-01
Centrivap Cold Trap 78110-01

Serial No.: Various - See Individual Declaration

Year of Manufacture: 1995 and Subsequent

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Place: See individual Declaration of Conformity which
will be signed by the importer for your country.

(Signature)

Date:

(Full Name)

(Position)

*An individual version of this declaration is included with your shipping/customs documentation.