Instruction Manual

GP110
GelPump™

100-3000-00 Rev. D

Analyze • Detect • Measure • Control™

Thermo
ELECTRON CORPORATION

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1.0 INTRODUCTION

The Thermo Electron GP110 GelPump™ is a low maintenance, oil-free vacuum pump specifically designed for use with gel drying apparatus and a variety of other applications requiring vacuum.

Vacuum is provided by an oil-free, modified diaphragm pump. A patented liquid/vapor separator prevents liquids from entering the pump. Liquids are collected and vaporized allowing non-damaging vapors to pass through the pump. A large, 1L recovery vessel at the pump's exhaust port collects the condensed vapors. The oil-free design and Teflon® coated vapor path of the GP110 deliver maximum reliability and reduced maintenance.

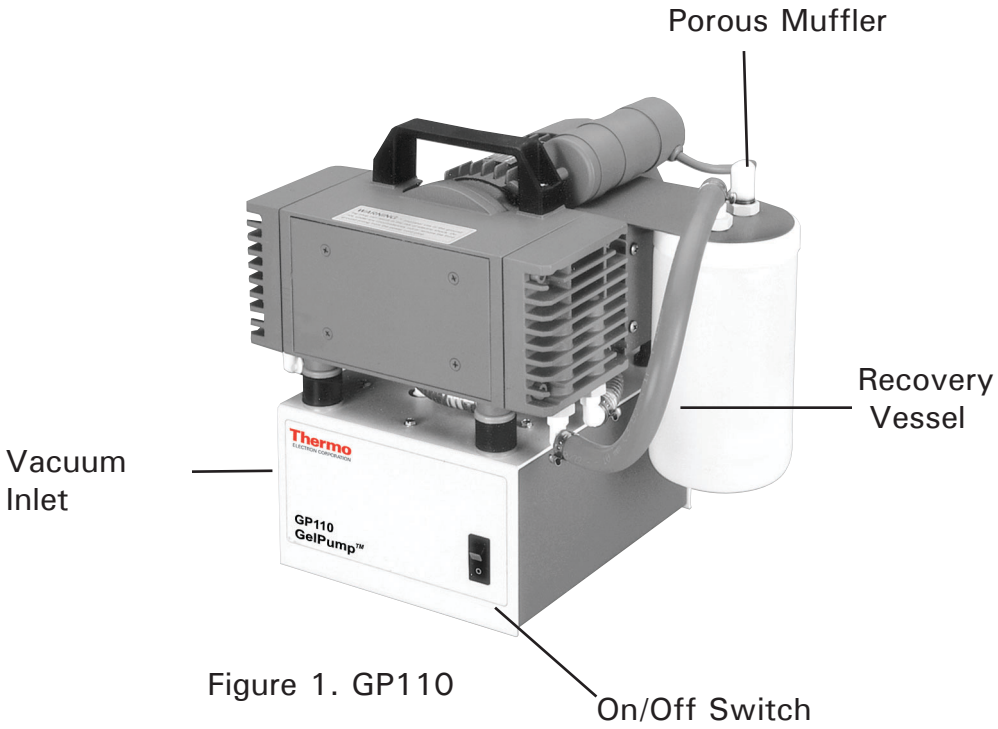

Figure 1. GP110

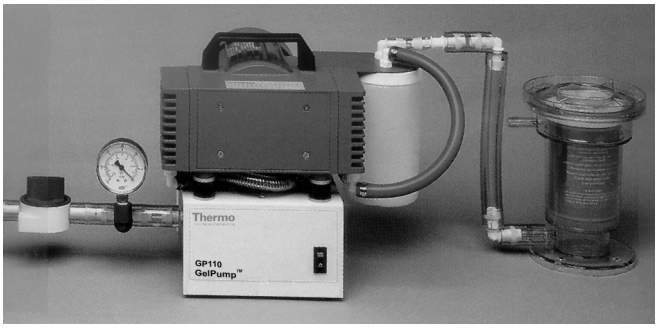

Figure 2. GP110 with DTK120R attached

2.0 INSTALLATION

Contact Thermo Electron with any shipment problems.

Receiving. Call Thermo Electron if shipping carton shows any visible sign of damage.

Unpacking. Carefully remove the instrument, loose accessories and paperwork from the shipping carton. Lift and carry holding securely underneath with both hands. Use proper lifting technique (lift with the legs, not the back) to avoid personal injury. Compare the contents with the packing list and call Thermo Electron if there is a discrepancy.

Inspection. Inspect the unit for any damage that may have occurred during shipment. Should there be any damage, report it to the carrier and contact Thermo Electron immediately. Make sure the carrier inspects the damage and leaves an inspection report. Register any claims for shipping damage against the carrier or its agent. Save the shipping carton in the event a return is necessary.

Set-up. The GP110 arrives fully assembled. The user need only attach the sub-assemblies according to the following procedure (see fig 1; page 2).

Connect a piece of vacuum tubing to the pump vacuum inlet located on the left side of the pump. For ease, of connection, apply a small amount of vacuum grease to the barbed fitting. It is not necessary to use hose clamps. Read **Reconfiguration (section 5.0)** before removing or modifying this tubing.

Route the vacuum tubing to the apparatus requiring vacuum. If the GP110 is a component of the GDS100, GDS101 or the GDS300 Gel Drying System, the GDS Instruction Manual describes where to locate the GP110 and how to attach the vacuum tubing.

If the GP110 is part of the GDS300 Gel Drying System, the pump should be connected to the outlet on the rear of the GDS300.

CAUTION: Before connecting the GP110 to an outlet, check voltage, frequency, and amperage to be sure they match the power requirements indicated on the label on the instrument (120V / 60Hz, 6A or 230V / 50Hz, 3A). If unsure, please consult an electrician.

Vacuum Pump Exhaust. All liquid solvent and solvent vapors that enter the vacuum pump from the gel dryer must be exhausted from the pump. The exhaust port is located on the right side of the pump and is connected, with blue tubing, to the large, 1L, exhaust recovery vessel. The recovery vessel collects the condensate and allows for the safe disposal of recovered solvents. Acid-neutralizing chemical (ANC100) can be used to neutralize the acid and reduce the strong odor of acetic acid. Use 3 teaspoons or 7 mm of ANC100, dispensed evenly on the bottom of the recovery vessel. The recovery vessel must be vented to prevent pressure build-up and a potentially dangerous condition. The recovery vessel is opened to atmosphere through a porous muffler.

• **Other exhaust recovery methods.** The blue tubing can be disconnected from the inlet port on the recovery vessel and connected to a larger vented recovery vessel positioned below the exhaust port on the vacuum pump.

• **Drying gels containing radiolabeled biomolecules.** If the GP110 is used for drying gels containing radiolabeled biomolecules, test the liquid collected in the recovery vessel for radioactivity. If radioactivity is detected, attach an optional DTK120R Chemical Trap to the vent port (remove porous muffler) on the exhaust recovery vessel (See Fig. 2, page 2)Any volatile radioactivity coming through the pump and venting from the recovery vessel will pass through the chemical trap and be adsorbed by the activated carbon. It will be necessary to periodically swab test the exhaust port on the chemical trap and change the disposable cartridge when break through radioactivity is detected.

3.0 OPERATION

To begin operation, activate the GP110 using the power switch on the front of the unit. When used in the GDS300 Gel Drying System, leave the GP110 switched ON so that the external switch on the GDS300 can control the pump's operation.

4.0 MAINTENANCE

It is important to keep the white porous muffler clean and open to atmosphere to ensure that the pump can exhaust air and to prevent back pressure and a potentially dangerous condition.

EMPTY THE EXHAUST RECOVERY VESSEL

Periodically empty the condensate from the recovery vessel. Unscrew and remove the vessel and dispose of its contents in an environmentally safe manner. Add 1 teaspoon of fresh acid-neutralizing chemical, as required, and screw the receptacle back onto the lid. The recovery vessel can be emptied during gel drying since it does not effect the vacuum.
**NOTE: It is the responsibility of the user to dispose of ALL materials in a manner in accordance with all federal, state and local regulations.

It is recommended to run the GP110 an additional 10 minutes prior to and after each run to remove any residual condensation from the pump head.

5.0 RECONFIGURATION

To disconnect tubing, pull straight off of fitting.

• **DO NOT twist the tubing to remove it as** this may damage or loosen the fitting causing a vacuum leak.
• If the tubing does not come off when pulled, carefully slit the existing tubing at the plastic fitting (avoid scoring the fitting). Remove the tubing and discard it.

6.0 SPECIFICATIONS (Subject to change without notice)

Displacement:	36 L/min (60 Hz), 30 L/min (50 Hz)
Maximum Vacuum:	7 torr (9 mbar)
Weight:	31 lbs. (14 kg)
Dimensions:	13 in. x 11 in. x 12 in.
(W x D x H):	(33 cm x 27 cm x 29 cm)
Power Requirements:	120VAC/60 Hz, 6A 230VAC/50 Hz, 3A
Registration:	ISO 9001-1994. Registered by QMI (Quality Management Institute). Certificate number 001080.

Accessories:

RV1000	Large volume (1000 ml) recovery vessel
GTP100	Gel Tubing Package consisting of inert, wide bore tubing (0.5" I.D.) with polypropylene fittings, bleeder valve and vacuum gauge for connecting the GP110 GelPump to a Thermo Gel Dryer.
ANC100	Acid Neutralizing Chemical (1 cup)
DTK120R	Chemical Trap kit for adsorbing volatile radioactivity.

7.0 WARRANTY AND LIABILITY

All Thermo Electron products mentioned in this manual (except glassware) are warranted against defects in material and workmanship for one year after the date of delivery to the original purchaser. Thermo's warranty is limited to defective materials and workmanship. Warranty work is subject to our inspection of the unit. No instruments, equipment, or accessories will be accepted without a Return Material Authorization (RMA) number issued by Thermo. The warranty obliges you to follow the precautions in this manual. Under no circumstances shall Thermo be liable for damages due to the improper handling or use of its products. Thermo assumes no liability, express or implied, for your use of this equipment.

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