



Benchtop Ultra-Low Temperature Freezers

Installation and Operation

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

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

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1 Introduction

Ultra-low temperature Benchtop freezers are designed for personal or clinical trial applications. They have a compact footprint of 30.75"(78 cm)W x 24.25"(62 cm)D without handle and 25.5"(65 cm) with handle x 20"H with a 1 cu. ft. (28L) capacity.

Standard features include:

- Hermetically sealed industrial-grade compressors
- Foamed-in-place CFC-free urethane insulation
- All-steel cabinet with high-impact epoxy finish for easy cleaning
- Thermal insulated interior sublid
- Heavy-duty counterbalanced lid with key lock
- Solid-state temperature control system with adjustable setpoints
- Integrated preset over temperature safety alarm with battery backup
- Digital temperature display with 1°C resolution
- Key-operated main power switch

6-inch temperature recorders are available as optional accessory.

2 Safety Precautions

In this manual and on labels attached to this product, the words DANGER, WARNING and CAUTION mean the following:



DANGER: An immediately hazardous situation, which if not avoided, will result in death or serious injury.



WARNING: A potentially hazardous situation, which if not avoided, could result in serious injury or death.



CAUTION: A potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to the equipment.

CAUTION (without Safety Alert Symbol) indicates a situation that may result in property damage.



This symbol indicates the potential for electrical shock or death by electrocution if safety precautions are not followed.



Cold Surfaces (-86C) Bodily contact with samples or metal racks pose a serious and immediate frost bite risk. Use appropriate Personal Protection Equipment. In case of accidental contact, seek medical evaluation.



Handling samples stored at -86 C poses an immediate frost bite risk upon body contact. Use appropriate insulated gloves for handling samples and racks.



DANGER: This unit is not intended for use in classified hazardous locations, nor to be used for the storage of flammable inventory.



Before installing, using or maintaining this product, please be sure to read this manual and product warning labels carefully. If the equipment is used in a manner not specified by the manufacturer, protection provided by the unit may be impaired.

Below are important safety precautions that apply to this product:

- Use this product only in the way described in the product literature and in this manual. Before using it, verify that this product is suitable for its intended use.
- Do not modify system components, especially the controller. Use OEM exact replacement equipment or parts. Before use, confirm that the product has not been altered in any way.
- Your unit must be properly grounded in conformity with national and local electrical codes. Never connect the unit to overloaded power sources.
- Disconnect the unit from all power sources before cleaning, trouble shooting, or performing other maintenance on the product or its controls.

3 General Recommendations

The refrigeration system is designed to maintain ultra-low temperatures with safety in an ambient environment up to +32°C (90°F), only when the freezer is used for storage.



Note *This unit is not a “rapid-freeze” device. Freezing large quantities of liquid, or high-water content items, will temporarily increase the chamber temperature and will cause the compressors to operate for a prolonged time period. Attempting to utilize this freezer improperly may jeopardize safety or cause undue stress or damage to the refrigeration compressors.*

Avoid opening the lid for extended time periods since chamber temperature air will escape rapidly. Room air, which is higher in humidity, replacing chamber air may cause frost to develop in the chamber more rapidly.

After reading and completing the Safety Considerations, Pre-Installation, Installation, and Operation sections of this manual, turn the Key Switch to the POWER ON position.

3.1 Initial Loading

When loading the unit with “pre-frozen” materials, the operating temperature set point of the freezer should be set no lower than the temperature of the “pre-frozen” material. Allow the unit to operate at the set point for eight hours. The set point may then be lowered in increments no greater than 10°C. Allow a stabilizing period of eight hours for each ten degree adjustment, until the desired set point is achieved.



Note *Failure to follow these procedures or overloading the unit may cause undue stress on the compressors or jeopardize user product safety.*

4 Pre-Installation

4.1 Unpacking

At delivery, examine the exterior for physical damage while the carrier's representative is present. If exterior damage is present, carefully unpack and inspect the unit and all accessories for damage.

If there is no exterior damage, unpack and inspect the equipment within five days of delivery. If you find any damage, keep the packing materials and immediately report the damage to the carrier. Do not return goods without written authorization. When submitting a claim for shipping damage, request that the carrier inspect the shipping container and equipment.



Note *Do not discard the sublid. The sublid is necessary to maintain correct temperature, moisture control, and economy of operation.*

5 Installation



WARNING: Do not exceed the electrical and temperature ratings printed on the data plate located on the lower left side of the unit.



CAUTION: Improper operation of the equipment could result in dangerous conditions. To preclude hazard and minimize risk, follow all instructions and operate within the design limits noted on the dataplate.

5.1 Location

Install the unit in a level area free from vibration with a minimum of six inches of space on the sides, rear, and top. Allow enough clearance so that the lid can swing open at least 90°.

Do not position the equipment in direct sunlight or near heating diffusers, radiators, or other sources of heat. The ambient temperature range at the location must be 59 to 90°F (15 to 32°C).



CAUTION: To allow for proper air flow, a minimum of six inches of clearance space is required behind the freezer.

5.2 Wiring



CAUTION: Connect the equipment to the correct power source. Incorrect voltage can result in severe damage to the equipment.



WARNING: For personal safety and trouble-free operation, this unit must be properly grounded before it is used. Failure to ground the equipment may cause personal injury or damage to the equipment. Always conform to the National Electrical Code and local codes. Do not connect the unit to overloaded power lines.

5.3 Electrical Specifications

The models and voltage types are as specified in the following table:

Table 1. Electrical Specifications

Model	Voltage	Frequency	Current
ULT185-5-A	115V	60Hz	16A, 1Phase
ULT185-5-V	230V	50Hz	12A, 1Phase

Your freezer is equipped with NEMA plug or continental EU plug (refer to Figure 1).

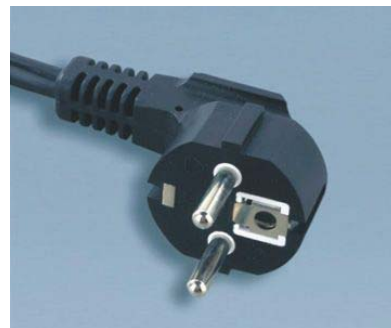
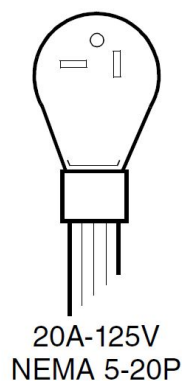


Figure 1

Always connect the freezer to a dedicated (separate) circuit. Each freezer is equipped with a service cord and plug designed to connect it to a power outlet which delivers the correct voltage. The supply voltage must be within $\pm 10\%$ of the nominal voltage.

5.4 Intended Use

The -80°C freezer described in this manual are high performance units for professional use. These products are intended for use as cold storage in research use and as a general purpose laboratory freezer, storing samples or inventory at operating temperatures between -50°C and -80°C .

It is not considered a medical device and has therefore not been registered with a medical device regulatory body (e.g. FDA): that is, it has not been evaluated for the storage of samples for diagnostic use or for samples to be re-introduced to the body.



Samples stored in this unit are extremely cold as are internal surfaces. Contact with bare skin may cause frost bite. Always use proper insulated gloves for handling samples

6 Operation (Benchtop Freezer)

6.1 Control Panel Features

Before the initial start up, take some time to become familiar with the controls on your freezer. Figure 2 illustrates the control panel for the -80°C Benchtop Freezer (refer to Figure 2).

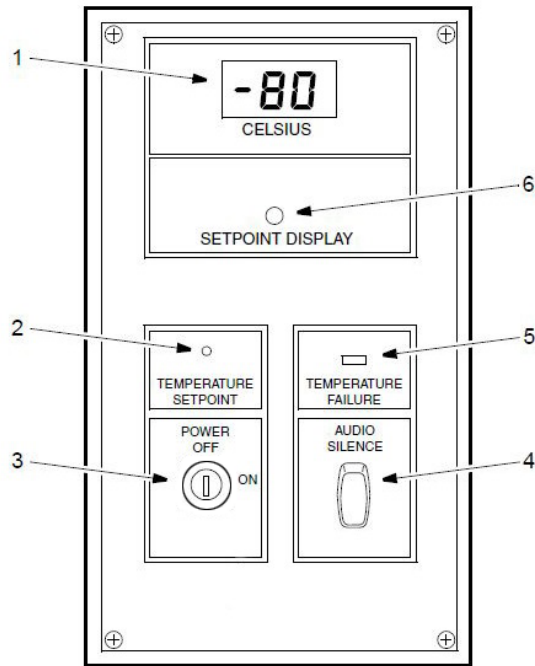


Figure 2. Benchtop Freezer Control Panel

1. LED digital temperature display.
2. Recessed temperature control setpoint adjustment.
3. Power On/Alarm On switch.
4. Audio Silence switch.
5. Temperature Failure LED indicator.
6. Setpoint Display button.

6.2 Start Up

Refer to Figure 2 as you complete the following procedures.

6.2.1 Turning the Power On

To start up the Benchtop Freezer, complete the following steps:

1. Plug the freezer into the power outlet (refer to Section 5.2).
2. Turn the key switch to the POWER ON position. The digital temperature display shows the cabinet temperature, the temperature failure light illuminates and the audio alarm sounds.
3. To silence the audio alarm, press the Audio Silence switch to ON position.

6.2.2 Setting the Cabinet Temperature

To set the cabinet temperature, complete the following steps:

1. Insert a small screwdriver into the slotted screw labeled Temperature Setpoint and simultaneously press and hold the Setpoint Display button. The temperature display changes to read the existing setpoint value.
2. Turn the setpoint screw (clockwise for a colder setting and counterclockwise for a warmer setting) until the desired setpoint shows in the digital temperature display.
3. Release the Setpoint Display button. The digital temperature display returns to the cabinet temperature.

6.2.3 Warm Alarm

The alarm is preset at the factory: For units designed to operate at -80°C , the alarm setpoint is 90% of the freezer temperature setpoint.

To activate the audio alarm, wait until the freezer reaches operating temperature and turn the Audio Silence switch to OFF position.

If the cabinet temperature rises above the alarm setpoint, the temperature failure light illuminates and the audio alarm sounds.

To silence the audio alarm, press the Audio Silence switch to ON position.

7 Maintenance and Troubleshooting Contents



Note *Unauthorized repair of your freezer will invalidate your warranty. Contact Unity Lab Service at 1-800-438-4851 for additional information.*



CAUTION: Maintenance should only be performed by trained personnel.

7.1 Condenser Maintenance

Clean the condenser at least every six months; more often if the laboratory area is extremely dust prone.

To clean the condenser, complete the following steps:

1. Pull the grill open.
2. Check the fans. If a fan is not operating, contact an Authorized Service Company immediately.
3. Vacuum the condenser.
4. Close the grill.

7.2 Gasket Maintenance

Periodically check the gaskets around the lid for punctures or tears. Leaks are indicated by a streak of frost which forms at the point of gasket failure. Make sure that the cabinet is level.

Keep the lid gaskets clean and frost free by wiping gently with a soft cloth.

7.3 Defrost Procedures

To defrost the equipment, complete the following steps:

1. Remove all products and place in another cabinet.
2. Turn off the unit and allow the interior to warm to room temperature.
3. Dispose of the ice and wipe out any water standing in the bottom of the cabinet.

If there is freezer odor, wash the interior with a solution of baking soda and warm water. Clean the exterior with any common household cleaning wax.

7.4 Alarm Battery Maintenance

Have a technician check the condition of the alarm battery at least once a year.

To replace the alarm battery, complete the following steps:

1. Remove the panel on the left side of the freezer. The alarm battery is located directly behind the grill. The terminals are the “push on” type.
2. Grasp the terminal with pliers and work it gently back and forth while pulling it off. The fittings are tight.
3. Remove the battery and put the new battery in place.



Note *You may have to cut a strip of silicone rubber in order to remove the battery.*

4. Connect the battery terminals and replace the front grill.

8 Chart Recorders (Optional)

Panel-mounted six-inch seven-day recorders are available as optional accessories.

8.1 Set Up and Operation

To prepare the recorder to function properly, complete the following steps:

1. Open the recorder door to access the recorder.
2. Connect the nine volt DC battery located at the recorder's upper right corner. This battery provides backup power.
3. Install clean chart paper (refer to Section 8.3).
4. Remove the plastic cap from the pen stylus and close the recorder door.

Recorder operation begins when the system is powered on. The recorder may not respond until the system reaches temperature within the recorder's range.

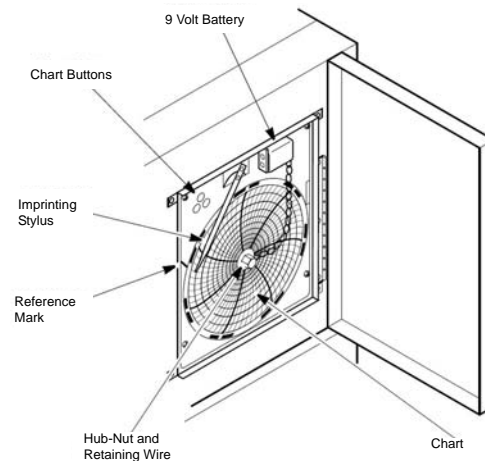


Figure 3. Chart Recorder

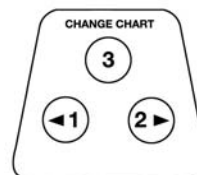


Figure 4. Chart Buttons



IMPORTANT: Do not use sharp or pointed objects to depress the chart buttons. This may cause permanent damage to the recorder.

8.2 Power Supply

The recorder normally uses AC power when the system is operating. If AC power fails, the LED indicator flashes to alert you to a power failure. The recorder continues sensing cabinet temperature and the chart continues turning for approximately 24 hours with back-up power provided by the nine-volt battery.

The LED indicator glows continuously when main power is functioning and the battery is charged.

When the battery is low, the LED flashes to indicate that the battery needs to be charged.

8.3 Changing Chart Paper

To change the chart paper, complete the following steps:

1. Locate the pressure sensitive buttons at the front, upper left of the recorder panel.
2. Press and hold the Change Chart button (#3) for one second. The pen will move off the scale.
3. Unscrew the center nut, remove the old chart paper, and install new chart paper. Carefully align the day and time with the reference mark (a small groove on the left side of the recorder panel).
4. Replace the center nut and make sure it is hand tightened. Press the Change Chart button again to resume temperature recording.

8.4 Calibration Adjustment

This recorder has been accurately calibrated at the factory and retains calibration even during power interruptions. If required however, adjustments can be made as follows:

1. Run the unit continuously at the control setpoint temperature. Continue steady operation for at least two hours to provide adequate time for recorder response.
2. Measure cabinet center temperature with a calibrated temperature monitor.
3. Compare the recorder temperature to the measured cabinet temperature. If necessary, adjust recorder by pressing the left (#1) and right (#2) chart buttons.



Note *The stylus does not begin to move until the button is held for five seconds.*

9 Warranty **Be sure to register your warranty online:**

www.thermoscientific.com/labwarranty

THERMO FISHER SCIENTIFIC USA FREEZER WARRANTY

The Warranty Period starts two weeks from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the warranty period.

During the first two years of the warranty period, component parts proven to be non-conforming in materials or workmanship will be repaired or replaced at Thermo's expense, labor included. Installation and calibration is not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to any work being performed. Expendable items, i.e., glass, filters, pilot lights, light bulbs and door gaskets are excluded from this warranty.

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If equipment service is required, please call your Technical Services Department at 1-800-438-4851 (USA and Canada). We're ready to answer your questions on equipment warranty, operation, maintenance, service, and special applications. Outside the USA, contact your local Thermo Scientific office or distributor for warranty information.

10 Warranty (International)

THERMO FISHER SCIENTIFIC FREEZER INTERNATIONAL WARRANTY

The Warranty Period starts two months from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the warranty period. Dealers who stock our equipment are allowed an additional four months for delivery and installation, providing the warranty card is completed and returned to the Technical Services Department.

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Replacement or repair of component parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original two year warranty period. The Technical Services Department must give prior approval for the return of any components or equipment.

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Great Britain



Deutschland



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Important

For your future reference and when contacting the factory, please have the following information readily available:

Model Number: _____

Serial Number: _____

Date Purchased: _____

The above information can be found on the dataplate attached to the equipment. If available, please provide the date purchased, the source of purchase (manufacturer or specific agent/rep organization), and purchase order number.

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