



-86°C Ultra Low Freezer Manual

Models:

F-4.5-C-86 | F-9.9-U-86 | F-12.7-U-86 | F-20.8-U-86
(Previously: DW-86L128, DW-86L280, DW-86L360, DW-86L590)



Safety Precautions and Explanations

At USA Lab, safety is our number one priority. The following information provides guidelines for safety when using USA Lab equipment. Any piece of machinery can become dangerous to personnel when improperly operated or poorly maintained. ALL employees operating and maintaining USA Lab equipment should be familiar with its operation, thoroughly trained, and Instructed on the best safety practices.

Most industry accidents are preventable through safety awareness.

Training

It is the responsibility of the customer to ensure that all personnel who will be expected to operate or maintain the equipment. Participate in training and instruction sessions to become trained operators. All personnel operating, inspecting, servicing, or cleaning this equipment must be properly trained in the operation and machine safety. **BEFORE** operating this equipment, read the operating instructions in this equipment manual. Become thoroughly familiar with the machinery and its controls.

Safety

- Ensure that all power sources are turned off when the machine is not in use. This encompasses electrical and pneumatic power.
- Read the manual for any special operational instructions for each piece of equipment. All USA Lab authored manuals are typically included with each device as well as posted online.
- Know how the equipment functions and understand the operating and halting processes.
- Wear the appropriate personal protective equipment for the task.
- When working on or around all equipment, avoid wearing loose clothing, jewelry, unrestrained long hair, loose ties, belts, scarves, or articles that may be caught in moving parts. Keep all extremities away from moving parts. Entanglement can cause death or severe injury.
- For new equipment, check input voltage and compare with the equipment voltage rating. DO NOT supply the incorrect power to any equipment for any reason whatsoever. Electrical specifications for your machine are printed on the machine tag. A properly grounded receptacle is required for safe operation regardless of voltage requirements.
- Use this equipment only for its intended purpose.
- Keep the equipment operating zone free of obstacles that could cause a person to trip or fall toward an operating machine. Keep fingers, hands, or any part of the body out of the machine and away from moving parts when the machine is operating.
- Any machine with moving parts and/or electrical components can be potentially dangerous no matter how many safety features it contains. Stay alert and think clearly while operating or servicing the equipment. Be aware of operations and personnel in your surroundings. Be attentive to indicator lights, warning lights, and/or operator interface screens displayed on the machine and know how to respond.
- Do not operate machinery if you are fatigued, emotionally distressed, or under the influence of drugs or alcohol.
- Know where the FIRST AID SAFETY STATION is located.
- Know where the FIRE EXTINGUISHING EQUIPMENT is located.
- Never sit or stand on the machine or on anything that might cause you to fall against the machine.
- Rotating and moving parts are dangerous. Keep clear of the operating area. Never put any foreign object into the operating area.
- Use proper lifting and transporting devices for heavy equipment. Some types of equipment can be extremely heavy. An appropriate lifting device should be used.
- Use caution when moving portable equipment. In some cases, the machinery can be heavy and/or may be top heavy. Portable equipment can gain momentum during transporting and must always be controlled.

Symbols and Warnings

Below are examples of commonly used symbols and what they mean.

Understand them and their potential consequences.



High Voltage or Electrical Hazard



Explosive Hazard



Not User Serviceable



Flammable Hazard



Hot Surface or Steam Hazard

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Section 1 | Important Information

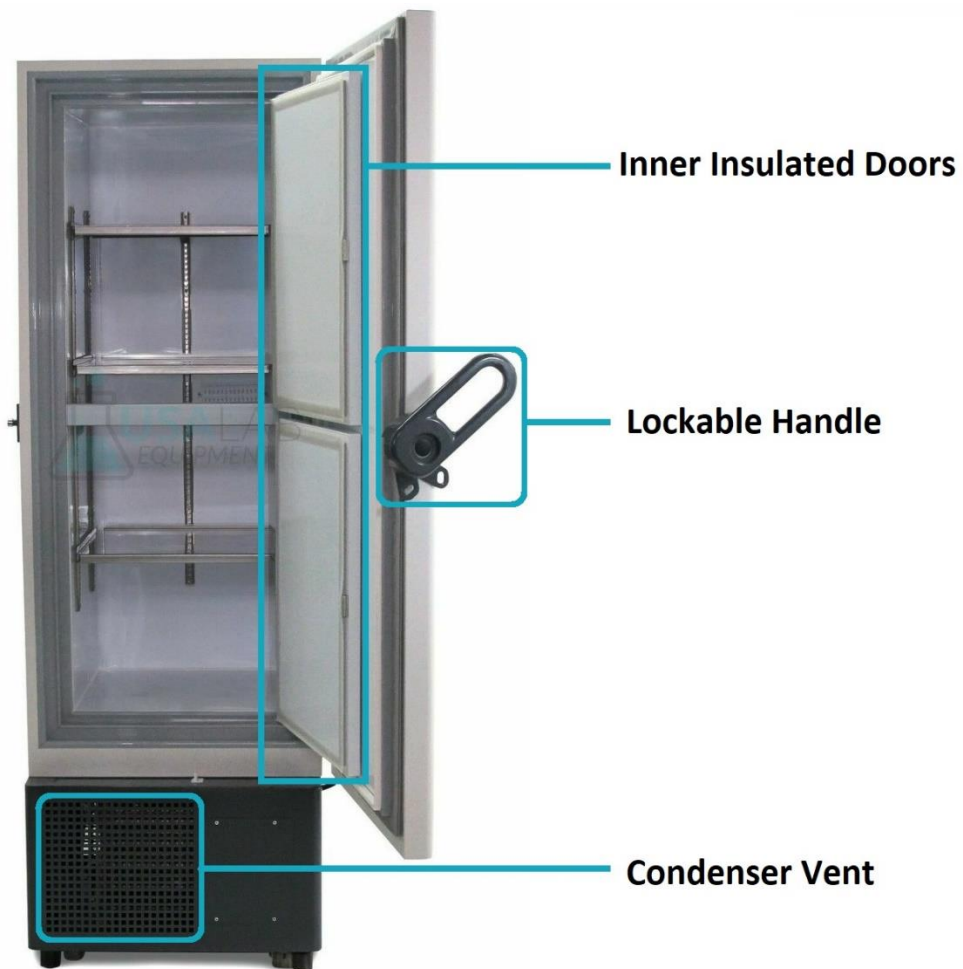
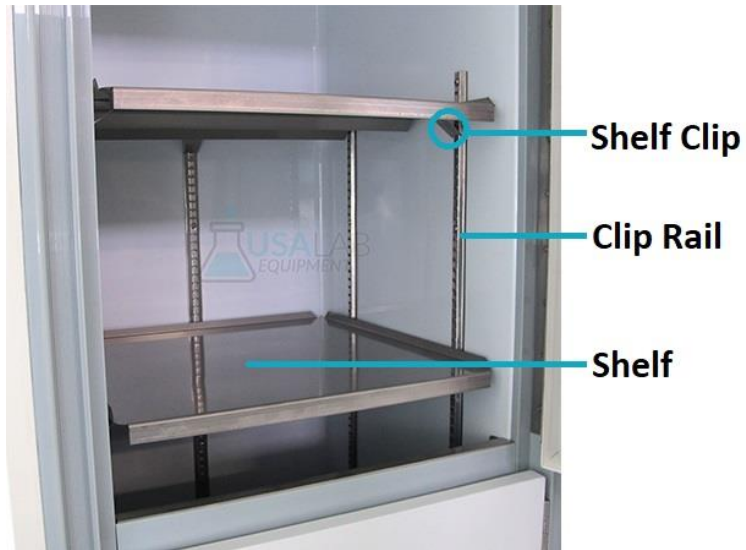
1.1 Safety Notices

- All electrical work must be executed by suitably qualified persons. When using any electrical appliance, safety precautions must always be observed.
- Do not use this appliance for other than its intended use. This product is intended for use as a Low Temperature Freezer for laboratory samples. Consult your supplier for alternatives.
- Do not cover the front grille or block the rear air entry by placing object up against the cabinet.
- Please close attention, when used by or near children
- Ensure adequate ventilation.
- Do not cut any openings into the cabinet.
- Do not touch any moving parts or hot surfaces.
- Regulations require that all electrical work be carried out by authorized persons. For your own safety and that of others please ensure this is followed.
- Do not overload the power supply.
- If have any problems, please contact us immediately.
- Caution: Never use extension cords, power strips, or plug adapters.
- If the mains supply cord is damaged, it must be replaced by the manufacturer, USA Lab, or a similarly qualified and skilled persons in order to avoid hazard or injury.
- Disconnect the mains power supply before attempting any cleaning, removal of any covers, or maintenance work.
- Do not use to store explosive substances, such as aerosol cans with flammable propellant.
- **Warning:** Do not use mechanical devices or other means to accelerate the defrosting process. Defrosting is performed automatically.
- **Warning:** Do not damage the refrigeration circuit.
- **Warning:** Do not use electrical appliances inside the storage compartment of this appliance.

1.2 Technical Parameters

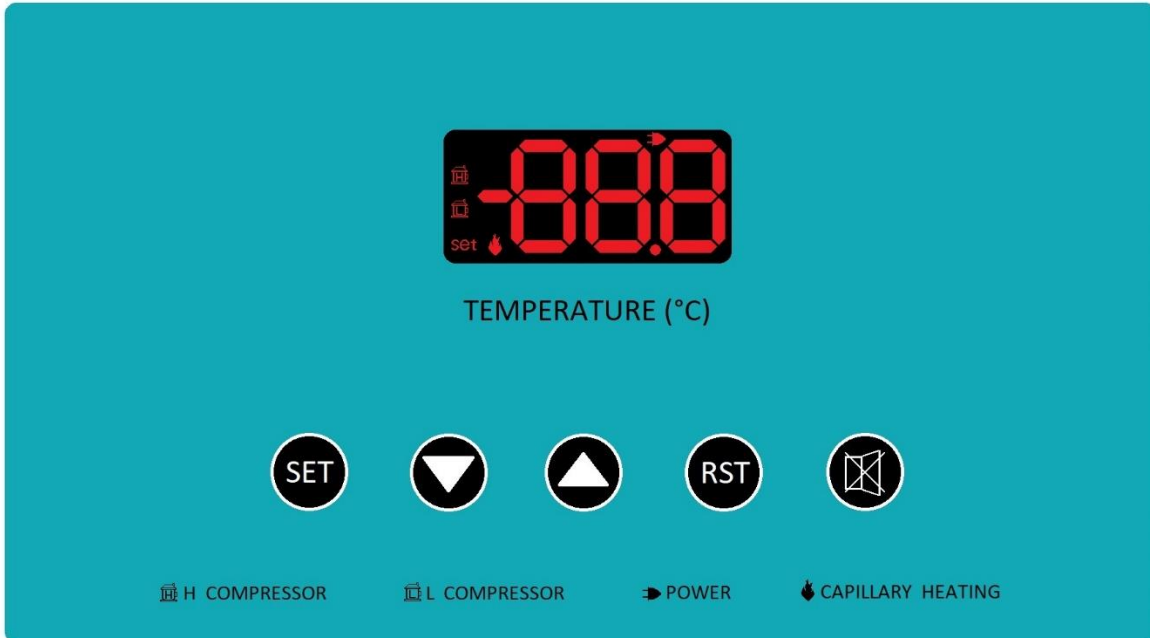
Model	F-4.5-C-86	F-9.9-C-86	F-12.7-C-86	F-20.8-C-86
Power Requirements	110-120V 50-60Hz	110-120V 50-60Hz	110-120V 50-60Hz	110-120V 50-60Hz
Volume	128L 4.5cuft	280L 9.9cuft	360L 12.7cuft	590L 20.8cuft
Effective Range	-40°C to -86°C	-40°C to -86°C	-40°C to -86°C	-40°C to -86°C
Exterior Dimensions	32.3" x 28.0" x 39.3"	24.4" x 25.6" x 75.6"	24.4" x 28.3" x 75.6"	33" x 40" x 78"
Interior Dimensions	25.0" x 17.5" x 18.0"	17.3" x 17.7" x 51.6"	17.3" x 22.8" x 51.6"	24" x 29" x 52"
Weight	197 lbs	434 lbs	570 lbs	676 lbs

Section 2 | Diagrams



Section 3 | Control Panel Operation

3.1 LCD Display Operation



H Compressor: High Stage Compressor Indicator (Flashing = Standby Delay)

L Compressor: Low Stage Compressor Indicator (Flashing = Standby Delay)

Power: Power Loss Indicator (Display Backup Battery Must Be ON, Right Side Switch)

Capillary Heating: Capillary Defrost Mode Indicator

Mute: Crossed Out Speaker Button

To Set Your Freezer:

Press and hold the SET button for 3 seconds.

“St” will be displayed.

Press SET again

Change the value on the display to the desired temperature.

To modify the parameters:

Press and hold the SET button for 3 seconds.

“St” will be displayed.

Press the UP button.

“A8” will be displayed.

The menu is advanced through by pressing UP or DOWN on the “A8” Pressing SET enters the parameter.

Parameters	Description	Min	Max	Unit	Default
St	Temperature set value	C13	C14	°C/°F	-80
A8	Over temperature alarm upper deviation	0.1	20	°C/°F	10
A9	Over temperature alarm lower deviation	0.1	20	°C/°F	10
C13	Set Minimum temperature	-95	C14	°C/°F	-90
C14	Set Maximum temperature	C13	85	°C/°F	-50
C1	Temperature difference	0.1	20	°C/°F	0.4

Po Code or PASSWORD: 53

When the A9 code is displayed, press the UP key, display the Po code, press the SET key to display 00, and then enter the control menu password through the UP or DOWN key. Once again, press SET to confirm the password entry, the controller automatically verifies the correctness of the password, and when the password is verified, it is entered into the management menu. At this time, the UP or DOWN key can be used to select other parameters including St, A8, A9 and Po, otherwise, the controller will only stay in the parameters of St, A8, A9 and Po, and cannot display other parameter items. After selecting the menu item, press the SET key to enter the current menu item parameter setting, adjust the parameter value according to the UP or DOWN key, and then press the SET key to return menu selection.

Other Functions:

To force capillary heating mode HOLD the RST button for 3 seconds.

To force manual cooling mode HOLD the MUTE button for 10 seconds.

Error Codes:

Alarm code	Fault Description
E1	Tank temperature sensor failure
E2	Condensing sensor fails
E3	Ring temperature sensor failure
E4	Evaporator sensor failure
E1H	Tank temperature super high temperature alarm
E1L	Tank temperature superLow temperature alarm
E3H	Ring temperature and ultra high temperature alarm
E3L	Ring temperature and ultra low temperature alarm
E2H	High temperature alarm of condenser
E2P	High temperature protection of condenser
Erd	Door open alarm

If you have any questions or need any help with using the control panel, please contact us.

Section 4 | Installation

Remove the appliance from the packaging and peel off any protective film from all surfaces.

Fit the shelf support clips onto the shelf support strips, making sure that the clips for each shelf are of the same height and that they are securely engaged on the support strip.

Unwrap each shelf carefully, to prevent damaging their protective coating or surface finish.

Position the shelves onto the clips.

4.1 Included Items

- Keys for lock
- Ice Scraper
- Manual
- Certificate
- Shelves
- Clips

4.2 Electrical Connection

Ensure that the outlet is well grounded and installed by a licensed electrician.

Receptacle: NEMA 5-15R

Plug: NEMA 5-15P

Voltage: 110-120VAC

Frequency: 50/60Hz

Maximum Nominal Amperage: 15A

4.3 Operating Area

- The power supply cord exits the product at the bottom right hand side (as viewed from the front). For ease of access; the cord should be retrieved prior to positioning the product in its final location.
- The maximum recommended ambient temperature for this product is 32°C
- Avoid positioning the appliance in direct sunlight or damp areas.
- Allow adequate space for the door(s) to fully open.
- Ensure that this product is positioned on a level surface, to allow the door(s) to shut and seal properly. Also, as to allow proper drainage from the evaporator tray, to prevent any overflow. (If necessary, adjust the screw feet of the appliance to make it level.)

All models must have clear and unobstructed ventilation from the entire surface area of the front grille. The 2 and 3 door models may be built into an enclosure without the need for ventilation other than at the front and rear. The single door Low Temperature Freezers must have a minimum ventilation space of 50mm at sides and rear.



WARNING: Failure to provide the minimum ventilation space will harm the performance of your Low Temperature Freezer could cause fire and will invalidate the warranty.



WARNING: Keep clear of obstruction all ventilation openings in the appliance enclosure or in the structure for building in.



WARNING: You must not store volatile, flammable, and/or explosive materials inside this freezer.

4.4 Operating Instructions and Notes

This product is designed to operate at a recommended ambient temperature of 32°C and as such, is categorized as a climate class 3 product.

How to operate the unit:

Plug in the freezer.

Turn on the backup display battery. (Lower right side of the unit.)

Close the door(s).

Set the desired temperature. (Section 3.1)

Allow the unit to cool for 24-48 hours.

Load the unit with samples.

Clear/silence the “E1H” alarm until the samples reach the set temperature.
E1H means that the temperature has deviated from the setpoint, this is normal.

Section 5 | Maintenance

5.1 Periodic Maintenance



WARNING: You must disconnect the plug before cleaning or maintenance.

Do not use abrasive cleaning agents or tools to clean the delicate coating of your cabinet.

Always wipe dry after cleaning.

USA Lab or a NLRA qualified technician must carry out any repair if required.

Using an air compressor, blow out the condenser and lower cabinet. Monthly if required.

5.2 Long Term Storage

Inspect the unit for damages or concerns.

Clean the condenser.

Clean the Inside of the unit.

Clean the outside of the unit.

Prop open the doors slightly or open the vent port on the side of the cabinet.

Coil the cord into a circle and zip tie it to the back vent.

Place the unit in a level, low humidity environment.

DISPOSAL

Contact your township or local authority to determine the best way to dispose of the unit. You may also contact us to help with disposal. It is not legal or recommended to cut any of the cooling system lines to remove the refrigerant. Please have a trained HVAC technician remove the refrigerant before attempting to dispose the unit.

Section 6 | Troubleshooting Table

Problem	Cause	Solution
The unit is not powering ON	<ul style="list-style-type: none"> A. The unit is not plugged in B. Plug is damaged C. Power supply D. Internal wiring fault 	<ul style="list-style-type: none"> A. Plug the unit in B. Repair the damaged plug C. Verify power at receptacle D. Contact us for help
The unit turns on, but the temperature is too high or too low	<ul style="list-style-type: none"> A. Condenser blocked or dirty B. Doors are not secured C. Heat source near unit or low air flow D. Ambient temperature is too high E. low or no rotation from fan F. Overloaded cabinet G. Parameters are incorrect 	<ul style="list-style-type: none"> A. Clean the condenser B. Check the seals for damage or close doors C. Move the unit to a more suitable location D. Increase air flow or move unit to a cooler location E. Remove blockage or replace fan motor F. Reduce the amount of stored items G. Contact us or restore default parameters
The LED display is not working properly	<ul style="list-style-type: none"> A. Display board is damaged 	<ul style="list-style-type: none"> A. Contact us for replacement
The unit is excessively loud	<ul style="list-style-type: none"> A. The unit is touching a nearby object B. Verify the unit is on a level surface 	<ul style="list-style-type: none"> A. Move the unit away from the object B. Move to a level location

Section 7 | Warranty Information and Coverages

7.1 Warranty

Continental United States

USA Lab products are warrantied to be free of workmanship, mechanical, and material defects for **one to two years** from date of purchase depending on product. Within this warranty period USA Lab will replace or repair components that fail due to manufacturer defect. For such repairs or parts, shipping charges will be covered in full or in part by USA Lab.

This warranty **does not cover any failures** due to alteration, repairs, misuse, accident, or abuse. This warranty also **does not cover wear items** such as glassware, heating elements, thermocouples, oil seal sets, switches, and sensors. The warranty does also not cover wrongful input voltage. The customer needs to be responsible in monitoring power rating and routine checking. If using water in a heater or chiller, the customer must only use **distilled water**. Other forms of water will **void the warranty**.

Non-continental United States

USA Lab products are warrantied to be free of workmanship, mechanical, and material defects for **one to two years** from date of purchase depending on product. Within this warranty period USA Lab will replace or repair components that fail during normal daily use. Such repairs or parts will be covered in full by USA Lab and **the customer will be responsible for shipping, labor, and custom duties**.

This warranty **does not cover any failures** due to alteration, repairs, misuse, accident, or abuse. This warranty also **does not cover wear items** such as glassware, heating elements, thermocouples, oil seal sets, switches, and sensors. The warranty does also not cover wrongful input voltage. The customer needs to be responsible in monitoring power rating and routine checking. If using water in a heater or chiller, the customer must only use **distilled water**. Other forms of water will **void the warranty**.

7.2 Return Policy

We offer a 30-day return policy from when your package is delivered to your shipping address. By placing an order with USA Lab, you express that you have read and agreed to the following return policies.

- **We do not accept returns for customized items.** When purchasing a customized item, you agree that there are no returns due to the nature of the item(s) being specific to your needs. **We do not accept returns on any solvents or consumables.**
- **Pre-orders:** There will be a **10% non-refundable fee** associated with pre-orders that are canceled. This covers the banking fees and the hold fee.
- By default, a **15% restocking fee** is applied on all items that are in original packaging and unused with no damage. This applies to all items returned within 30 days. **No exceptions.** You will be responsible for the return shipment unless deemed defective by USA Lab. In that case, we will pay for return shipment and replacement shipment costs.
- The item(s) must be returned in original packaging and in undamaged condition. The item(s) must have no signs of usage or wear including stickers, scratches, dents, resins, non-standard fluids, plant matter, or any other wear not representing a new, unused item.

Unused and undamaged products not in original packaging will be subject to a restocking fee equal to 25% of the purchase price.

Products deemed defective with any signs of usage or wear whatsoever of damage or usage (including but not limited to the presence of botanical material, resins, cleaning agents, stickers or decals, or any damage, wear, or tear) will not be accepted for return.

- Once the returned item is received, tested, inspected, and processed, a refund will be issued. If your item(s) are in original packaging and unused, **you will be refunded the initial purchase price with the 15% restocking fee deducted.**

If your item(s) are deemed damaged or used, **you will not be refunded.**

7.3 Notes

Keep all original packaging in the event you need to return the unit or to send it in for to us for repair.

We are not responsible for providing packaging material.

This manual and its contents are subject to change without notice.

USA Lab reserves the right of ultimate interpretation of the instruction manual. Additionally, USA Lab is not responsible for damages or injuries caused by improper use; knowingly or unknowingly.

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