

Series III Lab Refrigeration

Installation, Use And Care Manual

Please read this manual completely before attempting to install or operate this equipment! Notify carrier of damage! Inspect all components immediately. See page 2.





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Important Warning And Safety Information



Read This Manual Thoroughly Before Operating, Installing, Or Performing Maintenance On The Equipment.



WARNING

Failure To Follow Instructions In This Manual Can Cause Property Damage, Injury Or Death.

Do Not Store Or Use Gasoline Or Other Flammable Vapors Or Liquids In The Vicinity Of This Or Any Other Appliance.



Unless All Cover And Access Panels Are In Place And Properly Secured, Do Not Operate This Equipment.

WARNING

This Appliance Is Not Intended For Use By Persons Who Lack Experience Or Knowledge, Unless They Have Been Given Supervision Or Instruction Concerning Use Of The Appliance By A Person Responsible For Their Safety.



This Appliance Is Not To Be Played With.



Do Not Clean With Water Jet.

WARNING Do Not Use Electrical Appliances Inside The Food Storage Compartment Of This Appliance.



Observe the following:

- Minimum clearances must be maintained from all walls and combustible materials.
- Keep the equipment area free and clear of combustible material.
- Allow adequate clearance for air openings.
- Operate equipment only on the type of electricity indicated on the specification plate.
- Unplug the unit before making any repairs.
- Retain this manual for future reference.

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Serial Number Location

The serial number tag on Series III Lab refrigerators is located on the interior wall of the cabinet.

Always have the serial number of your unit available when calling for parts or service.

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Sample Serial Number Tag

Receiving and Inspecting the Equipment

Even though most equipment is shipped crated, care should be taken during unloading so the equipment is not damaged while being moved into the building.

- 1. Visually inspect the exterior of the package and skid or container. Any damage should be noted and reported to the delivering carrier immediately.
- 2. If damaged, open and inspect the contents with the carrier.
- 3. In the event that the exterior is not damaged, yet upon opening, there is concealed damage to the equipment notify the carrier. Notification should be made verbally as well as in written form.
- Request an inspection of the concealed equipment. This should be done within 10 days from receipt of the equipment.
- 5. Check the lower portion of the unit to be sure legs or casters are not bent.
- 6. Also open the compressor compartment housing and

visually inspect the refrigeration package. Be sure lines are secure and base is still intact.

- 7. Freight carriers can supply the necessary forms upon request.
- 8. Retain all crating material until an inspection has been made or waived.

Uncrating the Equipment

First cut and remove the banding from around the crate. Remove the front of the crate material, use of some tools will be required. If the unit is on legs remove the top of the crate as well and lift the unit off the skid. If the unit is on casters it can be "rolled" off the skid.

Installation

Location

The cabinet is intended for indoor use only. Be sure the location chosen has a floor strong enough to support the total weight of the cabinet and contents. A fully loaded model may weigh as much as 1,000 pounds! Reinforce the floor as necessary to provide for maximum loading.

It is very important to allow for proper air flow, both inside and outside. Allow space for air circulation in the refrigeration condensing unit compartment.

Avoid hot corners and locations near stoves, ovens and other pieces of cooking equipment. Ambient temperature must be between 59°F (15°C) and 86°F (30°C). Low ambient temperatures below 50° F (10°C) are as harmful as high ambient temperatures.

Cabinets should never be placed in front of windows or glass doors where sunlight will be in direct contact with the units. If a cabinet is located near a window or glass door, provide an adequate shade to block the sun's rays.



It is recommended that the unit be installed no closer than 1" from side walls and 8" from the back wall. Do not install the unit near any combustible material or object affected by heat or moisture.

Leg and Caster Installation



Some cabinets may weigh 1000 lbs (450 kg). Use a lifting device capable of supporting the unit when removing skid or installing legs or casters.

To install the legs, or casters:

- 1. Remove unit from skid.
- 2. Raise unit to access leg/caster mounting holes on bottom of unit.
- 3. Attach the casters or legs with the four hex head bolts.

Glycol Filled Bottle

A bottle is provided for accurate cabinet temperature readings and needs to be filled. Ensure the bottle contains the correct mixture before installing probe and bottle in cabinet.

• Fill refrigerator bottles with a mix of 10% glycol/90% water.

Leveling

A level cabinet looks better and will perform better because the drain pan will drain properly, the doors will line up with the frames properly, and the cabinet will not be subject to undue strain.

A unit on legs will have an adjustable bullet foot on each leg, adjust each for a level unit. A unit on casters will not be adjustable. Be sure the unit is on a level floor, make necessary changes to the floor for proper level.

Lock all front casters to ensure the stability of the unit.

Plumbing

Models are standard with a condensate evaporator. If, for some reason a unit does not have a condensate evaporator, or if the evaporator fails, the unit's drain must have an outlet to an appropriate drainage area or container.



Moisture collecting from improper drainage can create a slippery surface on the floor and a hazard to employees. It is the owner's responsibility to provide a container or outlet for drainage.

Electrical connection

Refer to the amperage data on the serial tag, your local code or the National Electrical Code to be sure the unit is connected to the proper power source. A protected circuit of the correct voltage and amperage must be run for connection of the line cord, or permanent connection of the unit.



Units with two power cords must be plugged into individual branch circuits.



The unit must be disconnected from the power source whenever performing service or maintenance functions.

Chromatography models employ two power cords. During movement, cleaning or repair it is necessary to unplug both power cords.

Never operate the unit without the louvered panel in place!

Operation

After the unit is plugged in, the unit's compressor will begin operating. If the condensing unit does not run check to see that the temperature control is not in the "OFF" position. Before loading the cabinet, allow the cabinet to operate for at least two hours to ensure the cabinet has achieved the desired temperature.



Do not throw items into the storage area. Failure to heed this recommendation could result in damage to the interior of the cabinet or to the blower coil.

NOTE:

Overloading the storage area, blocking the cold air as it exits the evaporator, and continuous opening and closing of the doors and drawers will hamper the units ability to maintain operational temperature.

Continuous opening and closing of the door will hamper the cabinet's ability to maintain optimum refrigeration temperature.

Defrosting

Refrigerators defrost automatically with every cycle of the compressor. The water generated is routed to a pan on the rear of the cabinet and is evaporated by the heat given off by the compressor.

Electronic Temperature Control Operation

LED

Light emmiting diode = refrigeration = defrost = fan running

Flashes fast at alarm

The electronic temperature control constantly monitors box temperature as well as evaporator coil temperature to maintain consistent product temperatures. The control also sends temperature readings to the digital temperature display. The control circuits continually self-check and if an error occurs, the digital display will switch from temperature read-out to error read-out, i.e. E1. Even when an error is displayed, the refrigeration and controls system should continue to function, however not at optimal performance. Whenever the display has an error read-out, Aegis Service should be contacted.

At initial start-up or anytime power is disconnected, then reconnected to the unit, the control will delay all operations for a short time (up to 2 minutes). While in this delay period, the control initializes the control parameters and confirms that the temperature sensors and circuits are operational. The digital temperature display will not display temperature OR errors until the self-check is complete and the control has switched on the evaporator fan motor, compressor and condenser fan motor.

The control is located in the front shroud at the top of the unit. It is factory set at mid-range to maintain approximately 39°F (4°C) return air temperature.

To adjust the temperature, push the middle button until the temperature value is shown. Push the upper or the lower button to increase or decrease the value. Push the middle button to select the new value. Never increase nor decrease the value by more than 2°F (1°C) and always allow 8 hours for temperature stabilization before making any additional adjustments.

Whenever the refrigerator is plugged in, and the control has completed initializing, the evaporator fans will run continuously and the digital temperature will display return air temperature in degrees C. The temperature control will cycle the compressor and condenser fan motor to maintain box temperature at the control setting.

Refrigerator Defrost

The temperature control also monitors the evaporator temperature and will turn off the compressor and condenser fan motor when needed to allow accumulated frost on the evaporator to clear. During this defrost cycle, the digital temperature display will read –d-. After the defrost cycle is complete, the temperature control will return to a normal cooling cycle, but the display will continue to read –d- until the evaporator returns to normal cooling temperatures (up to 15 minutes).



If at any time the wrong selection is made stop pressing buttons and wait approximately 30 seconds. The display will time out. Restart from the first step.

To Adjust Set point (Desired Temperature)

- 1. Press and release the center button one time and the display will show the cabinet set point.
- Use the top and bottom buttons to adjust the temp higher or lower to the desired temperature. If the desired temperature range is between 38°F and 42°F set the temperature set point at 40°F as the temp will fluctuate above and below the set point.
- 3. Once the desired set point is reached on the display, press and release the center button one time to accept that temperature.



The set point regulates air temperature. The display is a measure of the bottle temperature. Initially there could be up to 3°F (1.6°C) difference between these two temperatures. It may take up to two hours for the bottle temperature (display) to reach the set point.

To Change From Celsius to Fahrenheit:

- 1. Press and hold the top button of the control until the display shows r01, then release the button.
- 2. Press the bottom button approximately 4 times until the display reads r05.
- 3. Press and release the center button on time and the display will show °F or °C
- 4. To change use the top or bottom button to scroll and select the temp format required.
- 5. Once the chosen format is visible in the display press and release the center button one time.
- 6. The display will return and say r05.
- 7. Do not press any buttons at this point. The display will time out in approximately 30 seconds and display the chosen format.

Temperature Control Settings For Model 3-CR-6

The refrigeration temperature controls are factory-set to maintain a temperature range or 35°F to 41°F (2°C to 5°C), with an average temperature of 38°F (3°C). For a different cabinet temperature setting, turn the temperature control knob or screw, located on the evaporator coil/blower housing.

Turn the control knob clockwise to lower the temperature and counterclockwise to raise it. Adjust the control knob in increments of 1/4 turn and allow the unit to operate for several hours before making any further adjustment. Once it is set there should be no need to change it.



Setting the temperature control to the coldest setting may cause the coil and/or air ducts to freeze and ice up. This will eventually result in a warmer cabinet temperature. If ice accumulation occurs and the temperature is lower than the guidelines, turn the control knob to a warmer setting.



Temperature Control Settings For Model 3-CR-3

The 3-CR-3 electronic thermostat is located at the upper right corner, above the sign of the unit. The thermostat has a digital thermometer that constantly shows the temperature of the refrigerator.

The electronic thermostat controls the temperature in ranges from 32°F to 44°F (0°C to 7°C). This electronic thermostat allows you to select three temperature ranges by means of a switch located in the upper front part of the interior refrigerator cabinet.

Select position 1 to set the range: 37°F to 44°F (3°C to 7°C) Select position 2 to set the range: 35°F to 43°F (2°C to 6°C) Select position 3 to set the range: 32°F to 39°F (0°C to 4°C)









3-CR-3 with digital thermometer display

Top And Bottom Hinged Door With Header Sign Adjustments

Removing the Header Sign, Front Grill, Door and Hinges

- 1. Remove the header sign as follows:
 - a. Unscrew the sign top on both sides to remove it.
 - b. Lift and remove the header sign along the guiding channels.
 - c. Unscrew the two screws on each side to remove the sign frame.
- 2. Unscrew and remove front grill.
- 3. Unscrew the bottom hinge from the cabinet (bottom hinge remains attached to the door).
- 4. Pull the door downward to disassemble the door from the top hinge.
- 5. Unscrew and remove top hinge if necessary.

To Re-install The Door

- 1. Screw the top hinge to the top of the cabinet (if necessary).
- 2. Insert the pin of the top hinge by pushing the door upward.
- 3. Screw the bottom hinge to the cabinet.
- 4. Reinstall front grill.
- 5. Reinstall header sign.



Top And Bottom Hinged Door Without Header Sign Adjustments

Remove The Door

- 1. Unscrew and remove front grill.
- 2. Unscrew the top hinge from the cabinet (top hinge remains attached to the door).
- 3. Lift the door off the bottom hinge.
- 4. Unscrew and remove bottom hinge if necessary.

To Re-install The Door

- 1. Screw the bottom hinge to the bottom of the cabinet (if it was removed).
- 2. Insert the pin of the bottom hinge by pushing the door downward.
- 3. Screw the top hinge to the cabinet.
- 4. Reinstall front grill.

Sliding Door Adjustments

Sliding Doors

Sliding doors need to be removed periodically to clean the rollers and track. Oil the rollers with a light grade oil. Never use any type of grease as it will accumulate foreign matter and restrict door movement.

Each door has its own closing spring located at the top and is positioned for the proper tension. Adjustment may be required. Either adjust the spring by shortening it or replace it altogether.

Remove The Doors

- 1. Align the edge of the door with the labels on the aluminum track, indicating the location of the grooves.
- 2. Lift the door firmly, pulling the door outward from the bottom.





Edge Hinged Door Adjustments

Remove Door And Hinges

- 1. Open the door 90 degrees. Then lift the door off the cabinet hinge.
- 2. Remove the hinges using a phillips head screwdriver.

Re-Install Door And Hinges

- 1. Tighten the cabinet hinge screws slightly and hang the door.
- 2. Make sure the door is properly aligned.
- 3. Tighten the hinge screws firmly.
- 4. Check the door seal by inserting a dollar bill between the gasket and the cabinet flange. Some resistance should be felt while withdrawing the bill. Repeat this test at 4" intervals around the door.



Achieve Proper Seal

- 1. Close the door and pop off the door hinge covers with a flat screwdriver. This exposes the mounting screws for the door.
- 2. Loosen the screws, move the door side of the hinge to decrease the gasket-to-cabinet clearance and retighten the screws.
- 3. Snap the hinge covers into place.

Wall Hanging Instructions



1. Drill two holes in the wall 3/8" in diameter at a distance of 18 5/8" between the two and a depth of 2 1/2".



2. Insert the #10 pins in the drilled holes by tapping them gently with a hammer.



3. Screw the black bar, which will be used to hang the unit with the hexagonal head screws. Use a 7/16" hexagon key to adjust the screws correctly.



4. Hang the refrigeration unit by making sure the hooks on the back of the unit fall upon the black bar placed on the wall.



5. This is the appearance of the refrigeration unit after hung on the wall.

Maintenance

Door Gasket Maintenance

Door gaskets require regular cleaning to prevent mold and mildew build up and also to retain the elasticity of the gasket. Gasket cleaning can be done with the use of warm soapy water. Avoid full strength cleaning products on gaskets as this can cause them to become brittle and crack. Never use sharp tools or knives to scrape or clean the gasket. Gaskets can be easily replaced and do not require the use of tools or an authorized service person. The gaskets are "Dart" style and can be pulled out of the groove in the door and new gaskets can be "pressed" back into place.

Drain Maintenance - Base

Each unit has a drain located inside the unit that removes the condensation from the evaporator coil and routes it to an external condensate evaporator pan. Each drain can become loose or disconnected during normal use. If you notice water accumulation on the inside of the unit be sure the drain tube is connected to the evaporator drain pan. If water is collecting underneath the unit make sure the end of the drain tube is in the condensate evaporator in the machine compartment. The leveling of the unit is important as the units are designed to drain properly when level. Be sure all drain lines are free of obstructions.

Caster Maintenance

Wipe casters with a damp cloth monthly to prevent corrosion.



The unit must be disconnected from the power source whenever performing service, maintenance functions or cleaning the refrigerated area.

Refrigerators

The interior and exterior can be cleaned using soap and warm water. If this isn't sufficient, try ammonia and water or a nonabrasive liquid cleaner. When cleaning stainless steel, always rub with the "grain" of the stainless steel to avoid marring the finish. Do not use an abrasive cleaner because it will scratch the stainless steel and can damage the breaker strips and gaskets.

Stainless Steel Care and Cleaning

To prevent discoloration or rust on stainless steel several important steps need to be taken. First, we need to understand the properties of stainless steel. Stainless steel contains 70-80% iron, which will rust. It also contains 12-30% chromium, which forms an invisible passive film over the steel's surface, which acts as a shield against corrosion. As long as the protective layer is intact, the metal is still stainless. If the film is broken or contaminated, outside elements can begin to breakdown the steel and begin to form discoloration or rust. Proper cleaning of stainless steel requires soft cloths or plastic scouring pads.

NEVER USE STEEL PADS, WIRE BRUSHES OR SCRAPERS!

Cleaning solutions need to be alkaline based or non-chloride cleaners. Any cleaner containing chlorides will damage the protective film of the stainless steel. Chlorides are also commonly found in hard water, salts, and household and industrial cleaners. If cleaners containing chlorides are used be sure to rinse repeatedly and dry thoroughly. Routine cleaning of stainless steel can be done with soap and water. Extreme stains or grease should be cleaned with a non-abrasive cleaner and plastic scrub pad. Always rub with the grain of the steel. There are stainless steel cleaners available which can restore and preserve the finish of the steels protective layer. Early signs of stainless steel breakdown are small pits and cracks. If this has begun, clean thoroughly and start to apply stainless steel cleaners in attempt to restore the passivity of the steel.



Never use an acid based cleaning solution! Many food products have an acidic content, which can deteriorate the finish. Be sure to clean the stainless steel surfaces of ALL food products. Common items include, tomatoes, peppers and other vegetables.

Cleaning the Condenser Coil

In order to maintain proper refrigeration performance, the condenser fins must be cleaned of dust, dirt and grease regularly. It is recommended that this be done at least every three months. If conditions are such that the condenser is totally blocked in three months, the frequency of cleaning should be increased. Clean the condenser with a vacuum cleaner or stiff brush. If extremely dirty, a commercially available condenser cleaner may be required.

Failure to maintain a clean condenser coil can initially cause high temperatures and excessive run times. Continuous operation with a dirty or clogged condenser coil can result in compressor failure. Neglecting the condenser coil cleaning procedures will void any warranties associated with the compressor and cost to replace the compressor.



Never use a high-pressure water wash for this cleaning procedure as water can damage the electrical components located near or at the condenser coil.

Doors/Hinges

For sliding door cabinets, remove the doors and clean both the rollers and the track. Oil the rollers with a light grade oil. Never use any type of grease as it will accumulate foreign matter and restrict door movement.

Maintenance, continued

Over time and with heavy use doors the hinges may become loose. If this happens tighten the screws that mount the hinge brackets to the frame of the unit. Loose or sagging doors can cause the hinges to pull out of the frame, which may damage both the doors and the hinges. In some cases this may require qualified service agents or maintenance personnel to perform repairs.



Do not throw items into the storage area. Failure to follow this recommendation could result in damage to the interior of the cabinet or to the blower coil. Overloading the storage area, restricting the airflow, and continuous opening and closing of the doors will

hamper the units ability to maintain operational temperature. Preventing blower coil corrosion

To help prevent corrosion of the blower coil, store all acidic items, such as pickles and tomatoes, in sealable containers. Immediately wipe up all spills.

Continuous opening and closing of the doors will hamper the unit's ability to maintain optimum refrigeration temperature.

Troubleshooting

If a problem arises during operation of your refrigerator, follow the checklist below before calling service. Routine adjustments and maintenance procedures are not covered by the warranty.



Disconnect electric power before performing any service. Failure to follow this warning could result in injury or death.

Chromatography models employ two power cords. During movement, cleaning or repair it is necessary to unplug both power cords.

Problem	Possible Cause	To Correct
Compressor will not start, no noise	Power disconnected	Check service cord for proper connection
	Blown fuse or breaker	Replace fuse or reset breaker
	Defective or broken wiring	Repair or replace
	Defective overload	Replace
	Defective relay	Replace
	Thermostat dial OFF	Turn thermostat dial to 4
Warm storage temperatures	Temperature control not set properly	Reset control
	Not enough refrigerant	Leak check Change drier, evacuate and recharge
	Cabinet location too warm	Relocate cabinet
	Too much refrigerant	Change drier, evacuate and recharge
	Low voltage, compressor cycling on overload	Check voltage supply
Compressor runs continuously, product too cold	Defective control	Replace
	Control feeler tube not installed in well	Push control feeler tube into well
	Not enough refrigerant	Leak check Change drier, evacuate and recharge
Compressor runs continuously, product too warm	Not enough refrigerant	Leak check Change drier, evacuate and recharge
	Inefficient compressor	Replace

Wiring Diagram, All Models Excluding 3-CR-3 & 3-CR-6



Wiring Diagram, Model 3-CR-3



Wiring Diagram, Model 3-CR-6





Standard Labor Guidelines To Repair Or Replace Parts

Advice and recommendations given by Aegis Service Technicians do not constitute or guarantee any special coverage.

- A maximum of 1-hour is allowed to diagnose a defective component.
- A maximum of 1-hour is allowed for retrieval of parts not in stock.
- A maximum travel distance of 100 miles round trip and 2-hours will be reimbursed.
- Overtime, installation/start-up, normal control adjustments, general maintenance, glass breakage, freight damage, and/or correcting and end-user installation error will not be reimbursed under warranty unless pre-approved with a Service Work Authorization from Aegis. You must submit the number with the service claim.

Labor Of 1 Hour Is Allowed To Replace:

- Compressor Start Components and Overload Protector
- Door Hinges, Locks, and Gaskets
- Evaporator/Condenser Fan Motor and Blade
- Solenoid Coil
- Thermostat

Labor Of 2 Hours To Replace:

- Locate/Repair Leak
- Pressure Control
- Solenoid Valve

Labor Of 3 Hours To Replace:

- Condenser or Evaporator Coil
- Expansion Valve

Labor Of 4 Hours To Replace:

• Compressor

This includes recovery of refrigerant and leak check.

\$55.00 maximum reimbursement for refrigerant recovery (includes recovery machine, pump, torch, oil, flux, minor fittings, solder, brazing rod, nitrogen, or similar fees.)

Refrigerants:

• R134A A maximum of \$15.00/lb. or \$1.00/oz. will be reimbursed.

Aegis Scientific PO Box 16378 Philadelphia PA 19114 Phone (215) 281-9180 Fax (215) 281-9189

One Year Parts And Labor Warranty

Aegis warrants to the original purchaser of every new Aegis unit, the cabinet and all parts thereof to be free from defects in material workmanship, under normal and proper use and maintenance as specified by Aegis, and upon proper installation and start up in accordance with the instruction packet supplied with each Aegis unit. Aegis's obligation under this warranty is limited to a period of one (1) year from date of shipment.

Any parts that are covered under this warranty that are determined by Aegis to have been defective within one (1) year from the date or original receipt is limited to the repair or replacement, including labor charges, of defective parts or assemblies. The labor warranty shall include standard straight time labor charges only and reasonable travel time as determined by Aegis.

Additional Four Year Compressor Warranty

In addition to the one (1) year warranty stated above, Aegis warrants its sealed compressor to be free from defects in both material and workmanship under normal and proper use and maintenance service for a period of four (4) additional years from the date of receipt.

The four (4) year extended compressor warranty only applies to hermetically sealed parts of the compressor and does not apply to any other parts or components including but not limited to the cabinet paint finish, temperature control, refrigerant, metering device, driers, motor starting equipment, fan assembly or any other electrical component.

Please Note: All warranty repairs must be authorized by Aegis prior to being performed. Aegis must receive notification from the customer requesting repair and provide the model number, and the serial number of the cabinet.



Thank you for choosing Aegis!

Help is a phone call away. Help our team of professional, courteous customer service reps by having your model number and serial number available at the time of your call (800) 796-2344.		
Model:	S/N:	
Installation Date:		



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