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VWR INTERNATIONAL

Laboratory Refrigerators and Freezers

General Purpose
Flammable Storage
Explosion-Proof

Installation and Operation Manual

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1 Introduction

This manual provides installation and operation instructions for VWR general and special purpose laboratory refrigerators and freezers.

1.1 General Purpose Units

Standard units have conventional construction for small laboratory refrigerators and freezers.

Condensers are the static type: air circulation is by natural convection, not forced by an electrically driven fan. In some models, condensers are built into the sidewalls of the unit; in others, they are fully visible coils mounted on the back of the unit.

Condensate pans are made of copper or galvanized steel and located in the machine compartment, where compressor heat evaporates the water that collects naturally on the cooling coil surfaces. Water drains to the pan on the off or defrost cycle.

Cold controls (thermostats) for general purpose units are mounted inside the cabinet and accessible from an open cabinet door.

1.2 Flammable Storage Units

Flammable storage units are UL approved for storage of flammable chemicals only. Flammable storage units cannot be placed in a room containing explosive vapors but chemicals that exude explosive vapors can be safely stored inside them.

If you have a flammable storage unit, be sure to read Section 8 on page 4.

1.3 Explosion Proof Units

Units rated UL explosion proof are similar in design to the flammable storage units but also have all operating components sealed against entrance of explosive vapors. Electrical junction boxes are also sealed after connections are made.

If you have an explosion proof unit, be sure to read Section 9 on page 4.

2 Safety Considerations

WARNING! Do not modify or change system components. Replacement parts must be O.E.M. exact replacement equipment. Modification or use of the equipment in a manner other than expressly intended may cause death or serious injury. This includes use of user-supplied components and materials not specifically designed for the equipment. Reconfiguring the controller may cause death or serious injury.

VWR shall not be liable for any damages, including incidental and/or consequential damages, regardless of the legal theory asserted, including negligence and/or strict liability.

Before using, user shall determine the suitability and integrity of the product for the intended use and that the unit has not been altered in any way. User assumes all risk and liability whatsoever therewith.

DANGER! 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 unit to already overloaded power lines.

WARNING! Disconnect unit from main power before attempting any maintenance to equipment or controls.

3 Unpacking and Inspection

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 to VWR without written authorization.*** When submitting a claim for shipping damage, request that the carrier inspect the shipping container and equipment.

Model and serial numbers are important when requesting service parts from your dealer or the Technical Services Group. These numbers are found on the outside of the cabinet, bottom left front corner or inside the cabinet on the left wall at about eye level. You can record the identification numbers on the back page of this manual.

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4 Installation

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

4.1 Location

Install the unit in a level area free from vibration with a minimum of 1.5 inches of space on all sides.

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 between 60 and 90°F (16 to 32°C).

4.2 Wiring

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

DANGER! 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 unit to already overloaded power lines.

General purpose units use 15 or 20 amp power cords. They are rated for 115 volts, AC, 60 Hz. Do not use extension cords, and always use a three prong grounded wall outlet. Figure 1 shows standard NEMA service cord plugs and wall outlets used for VWR refrigerators and freezers.

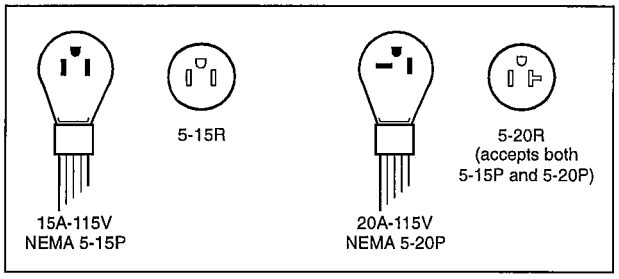


Figure 1. NEMA Plugs and Receptacles

4.3 Leveling

The unit must be level. Rotate the leveling screws, located under the front corners of the unit, until the unit is level. If the floor is seriously out of level, you may need to shim the corners with thin sheets of metal.

Note: *Use thin sheets of metal to level units equipped with casters.*

4.4 Door Seal

To check the door seal, complete the following steps:

1. Open the door.
2. Insert a strip of paper (a couple of inches wide) between the door gasket and the cabinet flange and close the door.
3. Slowly pull the paper strip from the outside. You should feel some resistance.
4. Repeat this test at 4 inch intervals around the door. If the door does not seal properly, replace the gasket.

CAUTION! Door seal integrity is critical for refrigerators and freezers. A loose fitting gasket allows moist air to be drawn into the cabinet, resulting in quicker frost buildup on the evaporator coil, longer running time, poor temperature maintenance, and increased operation cost.

5 Operation

5.1 Temperature Control

Standard units have cold controls mounted inside the cabinet, except for some compact units that have the controls mounted in back of the cabinet.Flammable storage and explosion-proof units have cold controls mounted in back of the cabinet with the junction box (see Sections 8 and 9).

Start by setting the control one quarter turn clockwise from the Off position. (The Off position is as far as you can turn the knob counterclockwise.) Wait 24 hours before adjusting the setting again. The farther you turn the knob clockwise, the colder the setting.

5.2 Combination Refrigerator/Freezers

If your unit has separate refrigerator and freezer compartments, it is important to remember that the temperature sensor is located in the refrigerator compartment. If you find that your freezer is not cold enough, you should open the refrigerator door more frequently to initiate cooling cycles.

5.3 Defrosting

When frost in the freezer compartment exceeds ¼", turn the unit off and allow the ice to melt. Do not use an ice pick or other sharp object to dislodge the ice. You can speed defrosting by placing a pan of warm water in the freezer compartment after turning the unit off.

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6 Cleaning

Wash the inside of the cabinet with a solution of one quart of warm water and two tablespoons of baking soda.

Wash the outside with a mild detergent such as dishwashing liquid. Do not use harsh or abrasive cleaners.

When the condenser tubing on the back is dusty, vacuum it clean.



CAUTION! Condensers should be cleaned at least every six months. In heavy traffic areas, condensers load with dirt more quickly. Failure to keep the condenser clean can result in equipment warm-up or erratic temperatures.

7 Troubleshooting

Table 1. Troubleshooting Procedures

Problem	Cause	Solution
Unit does not operate	Power supply	1. Check that the cord is securely plugged-in. 2. Plug another appliance into the outlet to see if it is live. 3. If the outlet is dead, check the circuit breaker or fuses.
Temperature fluctuates.	Cold control	Make sure that the cold control is set correctly.
	Condenser	Make sure the condenser is clean.
Unit warms up.	Door is open	Make sure the door is completely closed.
	Door seal	Check the door seal (see Section 4.4).
	Warm product recently loaded in unit	Allow ample time to recover from loading warm product.
	Power supply	Check for proper voltage to the unit. If there is no voltage to the unit, call an electrician.
	Compressor	If the compressor is not running, have an electrician check for proper voltage to the unit. If the compressor is running, contact an authorized service provider or call the technical support hot line for assistance.

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8 Flammable Storage Units

Units rated for flammable storage have no electrical sparking devices, relays, switches, thermostats, etc. inside the cabinet that could ignite flammable vapors. They cannot be placed in a room containing explosive vapors, but chemicals that exude explosive vapors can be safely stored inside the cabinets.

Cold controls for flammable storage units are located on the left side of the junction box in back of the cabinet.

8.1 Safety and Usage Standards

Flammable storage units are designed to meet requirements for Class I, Division 2 storage of flammable liquids in accordance with the following standards:

- UL 471 (Commercial Refrigeration)
- NFPA 70, Sections 500 and 501 (National Electrical Code)
- NFPA 99, Section 10 (Health Care Facilities)
- NFPA 45, Section 9 (Laboratory Fire Protection)
- NFPA 497A (Defines Class I locations)

It is the user's responsibility to follow the guidelines set forth in the codes listed above. Class I, Division 1, Groups C and D combustible material may be stored inside the cabinet but the cabinet itself is not approved for Class I, Division 1 locations.

Some important guidelines:

- Do not place the unit near Bunsen burners, hot plates, ovens or any other sources of ignition.
- Be sure to store flammable liquids in appropriate containers according to the standard NFPA 30.
- Do not exceed the maximum storage quantity, 60 gallons per 5000 sq. ft. of floor space.



WARNING! Refrigeration components are very susceptible to damage due to the introduction of caustic and acidic materials. The manufacturer will not be liable for damage to or loss of contents, or for damage to the following construction materials:

Copper, aluminum, steel, ABS, polystyrene, polystyrol, zinc, lacquer coating, silicone sealants, epoxy, polyurethane, vinyl, and PVC.

See written manufacturer's warranty for details and further limitations.

Be sure that your unit is level and that the floor can properly support the weight of the unit and contents fully loaded.

8.2 Electrical Requirements

A properly grounded electrical receptacle must be installed to service this unit. The minimum wire size is 12 AWG. A circuit breaker or time delay fuse may be sized in accordance with the full load current stated on the unit nameplate, but in no instance, more than 15 amps.

9 Explosion-Proof Units

Units rated UL explosion-proof have hermetically sealed compressors with all operating components sealed against entrance of explosive vapors. Electrical junction boxes are also sealed after connections are made.

Cold controls for explosion-proof units are located in back of the cabinet behind the junction box cover (see Figure 2 on page 5).

9.1 Safety and Usage Standards

Explosion-proof units are approved for use in Class I, Division 1 locations, defined in the standard NFPA 497A.

These units are similar in design to flammable storage units and may be used for storage of flammable liquids.

If you are using your unit to store flammable liquids, be sure to read Section 8.1 carefully and review the appropriate standards.

9.2 Electrical Requirements

Explosion-proof units must be installed electrically using rigid metal conduit having threaded fittings with at least five full threads engagement and internal sealing within 18" of any enclosure containing sparking devices. The user must supply and install a disconnect switch or circuit breaker suitable for hazardous locations within sight of the unit.

When installing power supply, use 14 gauge wire with 1/16" insulation, and three conductors, one of which is a ground.

Mix all of the sealing compound and packing fiber supplied with the unit. Mix the compound in proportion by volume, 1 part water to 3 parts powder.

Figure 2 on page 5 shows field wiring connections. Using an additional junction box, while not required by national and local codes, provides the best method in case the unit will be moved at any time in the future. Using this method, field connections will be made up in a reusable enclosure and all wires and sealing fitting will be retained intact. If desired, the second junction box can be eliminated and wire connections made up within the sealing fitting and then filled with the sealing compound.

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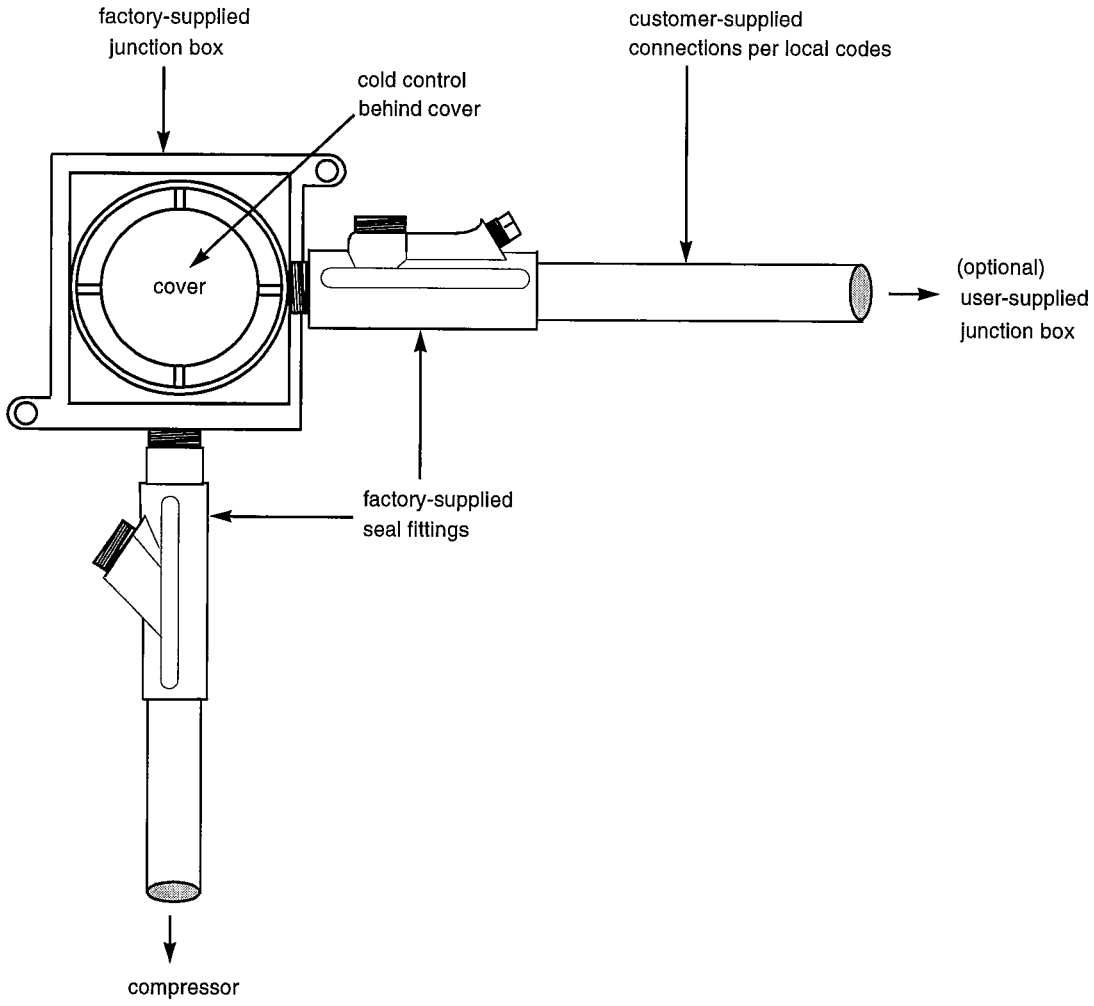


Figure 2. Field Wiring for Explosion-Proof Units

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10 Warranty

10.1 Domestic Warranty
Two Years Full Warranty, Parts and Labor
United States of America and Canada

VWR warrants this product to the owner for a period of two (2) years from date of shipment by VWR, Inc. Under this warranty, VWR, through its authorized service organizations, will repair, or at its option, replace any part found to contain a manufacturing defect in material or workmanship without charge to the owner for parts, service labor, or any shipping or cartage costs. Replacement or repaired parts will be warranted for only the unexpired portion of the original warranty. This warranty is limited to products purchased and installed in the United States of America and Canada. It does not apply to damage caused by accident, misuse, fire, flood, or acts of God. It does not apply to damage caused from failure to properly install, operate, or maintain the product in accordance with the printed instructions provided.

To obtain prompt warranty service, simply contact the nearest authorized service center or dealer listed in the directory enclosed with each product. VWR's own shipping records showing date of shipment shall be conclusive in establishing the warranty period.

This warranty is in lieu of any other warranties, expressed or implied, including merchantability or fitness for a particular purpose. The owner agrees that VWR's sole liability with respect to defective parts shall be as set forth in this warranty, and any claims for incidental or consequential damages are expressly excluded.

10.2 International Warranty
16 Month Parts Warranty

VWR, Inc., warrants this product to the owner for a period of sixteen (16) months from the date of shipment by VWR. If any part is found to contain a manufacturing defect in material or workmanship, VWR assumes no responsibility for any labor expenses for service, removal, or reinstallation required to replace part, or for incidental repairs, and such costs are the responsibility of the Owner unless a service labor agreement exists between the Owner and his Dealer.

The warranty does not apply to damage caused by accident, misuse, fire, flood, or acts of God, or to defects resulting from failure to properly install, operate, or maintain the product in accordance with the printed instructions provided.

To obtain prompt warranty service. simply contact the Dealer from whom you purchased the product or the nearest Dealer handling VWR products. VWR's own shipping records showing date of shipment shall be conclusive in establishing the warranty period.

This warranty is in lieu of any other warranties, expressed or implied, including merchantability or fitness for a particular purpose. The owner agrees that VWR's sole liability with respect to defective parts shall be as set forth in this warranty, and any claims for incidental or consequential damages are expressly excluded.

Extended Warranty Options

Note: In addition to VWR' standard two-year full warranty on the complete product (USA and Canada), VWR can supply an additional four year protection on compressor and compressor parts. This additional coverage must be purchased at the time of original product purchase. Under this contract, VWR agrees to furnish a compressor FOB our factory to replace one which has been determined to be defective by VWR or a factory authorized VWR Service Agency.

Description	Catalog No.
Extended Four-Year Compressor Parts Contract, all refrigerators.	6069
Extended 12-Month Comprehensive Coverage, for all models, provides additional 12-month warranty coverage, parts and labor. Contact VWR for details.	6613

11 Wiring Schematic

For all laboratory refrigerators and freezers, the wiring schematic is attached to the back of the cabinet.

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Great Britain



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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 (VWR or specific agent/rep organization), and purchase order number.

IF YOU NEED ASSISTANCE:

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FAX:	828/645-3368

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