

Preventive Maintenance for your Ultra-Low Temperature Freezer

Technical
Bulletin

Ultra-Low Temperature Review



What is preventive maintenance?

Depending on your required protocols, preventive maintenance is scheduled on an annual, semi-annual, or quarterly basis. It typically involves inspection of equipment and detection and correction of potential problems to ensure continued uptime. Preventive maintenance includes routine servicing by the ultra-low temperature freezer manufacturer and regular maintenance performed by you.

Why do my ultra-low temperature freezers need preventive maintenance?

Regular equipment maintenance helps identify and correct issues before they jeopardize freezer performance or risk your stored samples. Scheduled, preventive maintenance is one of the best ways to ensure ideal freezer performance, optimize energy consumption, improve uptime and extend freezer lifespan. Completing preventive maintenance also helps you meet manufacturer warranty and compliance requirements.



MDF-DU702VH-PA



MDF-DC700VXC-PA

Scheduled Preventive Maintenance Services

Manufacturers often require at least bi-annual preventive maintenance on ultra-low temperature freezers as a warranty condition. To meet warranty terms, scheduled maintenance and any needed repairs must typically be completed by an authorized service group.

Preventive maintenance of PHCbi brand freezers can be scheduled through the distributor of purchase, through your sales representative or by contacting PHC Corporation of North America directly at 800-858-8442 or service@us.phchd.com.

Advanced maintenance or calibration of your ultra-low temperature freezer should be completed by a service technician who is factory trained.

Preventive Maintenance You Can Perform

There are several things you can do to ensure your freezer provides the highest return on investment. User level maintenance is straightforward, simple and helps maintain ideal equipment performance. Proper use, maintenance and freezer care are also usually conditions of your warranty. For a full list of required operator maintenance, see your user manual.

Cleaning

Condenser Filter

The condenser filter should be cleaned every two to three months in standard situations. However, laboratories with heavy foot traffic near the unit or high concentrations of dust will typically require more frequent cleaning. Not all freezers include a condenser filter. Manufacturers typically place filter cleaning instructions under the maintenance section in your manual.

Failing to clean the condenser filter leads to compressor stress and increased energy consumption. A clogged filter inhibits the condenser from transferring heat from the refrigerant to the ambient environment. This causes it to pump at a higher pressure. Increased pressure causes the refrigerant temperature to rise and compounds the issues. Eventually, if the liquid does not sub-cool to design specifications there is a loss in effective latent heat.

Door Gaskets

Door gaskets should be cleaned at least once a month. While cleaning, check for any tears or any signs of frost buildup. A streak of frost along the gasket indicates air infiltration. While this can be cleaned using a cloth (to prevent damage to the gasket) it should be monitored and remediated. Air infiltration allows warm air into the freezer chamber and puts strain on the compressor. This increases energy costs as the compressor works harder to remove warm air and can affect your samples.

Ice Buildup

More frequent door openings lead to increased frost and ice buildup which should be removed as needed. Ice buildup that is not removed can affect freezer performance by damaging the outer door latch and gasket.

Frost buildup can prevent outer doors from closing completely. This can impact your freezer's insulation performance and alter temperature uniformity. Large amounts of frost buildup reduce temperature recovery following door openings.

Our freezers include vacuum relief ports on all upright ultra-low temperature freezer models. The port relieves the vacuum created during door openings and closings and can be a site of ice buildup. When cleaning, remove ice or frost from the latch hole using the special tool included with your freezer.

Tips to Minimize Ice Buildup

- Position the freezer away from vents blowing air into the room, or on the freezer.
- Keep total door openings, and door opening length, to a minimum.
- Ensure door latches are secure after closing.



4 Tips for Better Sample Storage

- 1. Capacity** A full freezer has significantly better temperature uniformity than an empty one.
- 2. Cleaning** Frost acts as an insulator. Remove frost from samples to ensure even ultra-low storage temperatures across all of your stored materials. Performing routine ice removal as part of your user maintenance procedures helps ensure ideal freezer performance.
- 3. Access** Know where your samples are before you attempt to retrieve them. This reduces cold air loss following door openings and minimizes exposure to higher ambient temperatures. Limiting door openings helps reduce heat exchange and optimizes sample viability by maintaining the state of slowed metabolic activity created at ultra-low temperatures.
- 4. Alarms** Alarms get your attention and let you know when something needs addressed. Use your data monitoring system to get the most out of your alarms. Program your preventive maintenance schedule into your ultra-low temperature freezer's monitoring system to keep up with necessary maintenance and ensure continued uptime.



PHC Corporation of North America
1300 Michael Drive, Suite A, Wood Dale, IL 60191
Toll Free USA (800) 858-8442, Fax (630) 238-0074
www.phchd.com/us/biomedical