

## How to Keep Your Portable Chiller Working Effectively



Portable chillers are often used to provide heat removal and temperature control for lasers, metalworking equipment, machines, and other temperature-sensitive equipment and processes. Yet if not properly maintained, chiller performance can gradually degrade, resulting in temperature variations that adversely affect productivity and/or product quality.

Fortunately, most portable chillers don't require a great deal of attention. By periodically performing just a few simple and straightforward preventative maintenance tasks, you can help ensure that your chillers provide years of dependable performance.

### Inspect and Clean the Air Filter

Air-cooled chillers rely on a steady flow of air over the evaporator coils to maintain proper cooling performance. An air filter is used to cleanse this incoming air and prevent dust, dirt, and other airborne debris from clogging (and thus insulating) cooling coil fins and other sensitive components.

A dirty air filter restricts the flow of air your chiller needs to perform properly. It should be inspected weekly and cleaned as required. Most filters are removable and can be cleaned with a mild detergent and warm water or blown out using a clean, dry air. Any dust or dirt that has gotten inside the chiller or on the evaporator coils should be removed using compressed air. Never use a brush or other mechanical device, as it may bend or damage the fins.

### Check Heat Transfer Fluid Levels

The heat transfer fluid in your chiller is the lifeblood of the cooling system; without it, no cooling can occur. Keeping the cooling system full helps ensure optimum heat removal.

Even in the most tightly closed system however, some gradual fluid loss can be expected. Most chillers are equipped with a sight glass, liquid level gauge, or other mechanism that allows you to quickly check the coolant fluid level. You should do so weekly and added coolant as needed. Even if your chiller is equipped with an automatic fluid makeup system, it's still a good idea to visually check the fluid level periodically to verify that the fluid makeup system is operating correctly.

### Check Heat Transfer Fluid Cleanliness and Properties

In many processes, dirt and other particulate can make its way into the circulating heat transfer fluid. These particles can damage the pump, clog valves and filters, and otherwise impair chiller operation. The cooling and/or antifreeze properties of water/glycol mixtures and other heat transfer fluids may also deteriorate over time.

The heat transfer fluid should be drained and filtered on a monthly basis to remove particulate. If large amounts of debris are present, the chiller should also be flushed out with clean fluid to remove any residual deposits. This is also a good time to inspect and clean/replace any fluid filters.

Once last point. Before refilling your chiller with the cleaned/filtered heat transfer fluid, check that the fluid hasn't lost any of its cooling and/or antifreeze properties.

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*Regularly inspecting and cleaning the chiller's air filters helps ensure optimum cooling performance.*



*Cooling fluid levels and cleanliness can be determined with simple visual inspections. Instruments such as refractometers should be used to verify that the antifreeze properties of the cooling fluid are still adequate.*

## How to Keep Your Portable Chiller Working Effectively continued

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*Missing, damaged, or deteriorated insulation on coolant lines can impact a chiller's heat removal ability. Checking the process lines and connections for leaks and wear should be part of your regular site inspection.*

### **Inspect the Physical Location and Condition**

The environment in which a chiller is installed is always subject to change — sometimes even quite rapidly. Conditions which no longer meet the manufacturer's specifications can adversely affect performance.

The physical location and condition of the chiller should be checked every six months and the appropriate corrective actions taken. Make sure that there's adequate space around the chiller to provide proper air flow and that the ambient air temperature isn't too high. Check external hoses and connections for leaks, inspect external insulation for wear or damage. If maintaining a particular pressure is critical to your process and your chiller has a fluid bypass or diverter valve, check that it's properly adjusted. Lastly, check that the electrical power and amperage is correct and that electrical wires have not become frayed or damaged.

Naturally, your best source for information on proper chiller maintenance will be the procedures and guidelines provided by the manufacturer. Performing these tasks usually won't take long — yet will result in years of efficient, effective, and dependable chiller performance.

### **Routine Maintenance Frequency**

Air filter	Check weekly; clean as required.
Fluid level	Check weekly; add fluid as required.
Fluid cleanliness	Check monthly; clean/replace as required.
Site inspection	Every six months