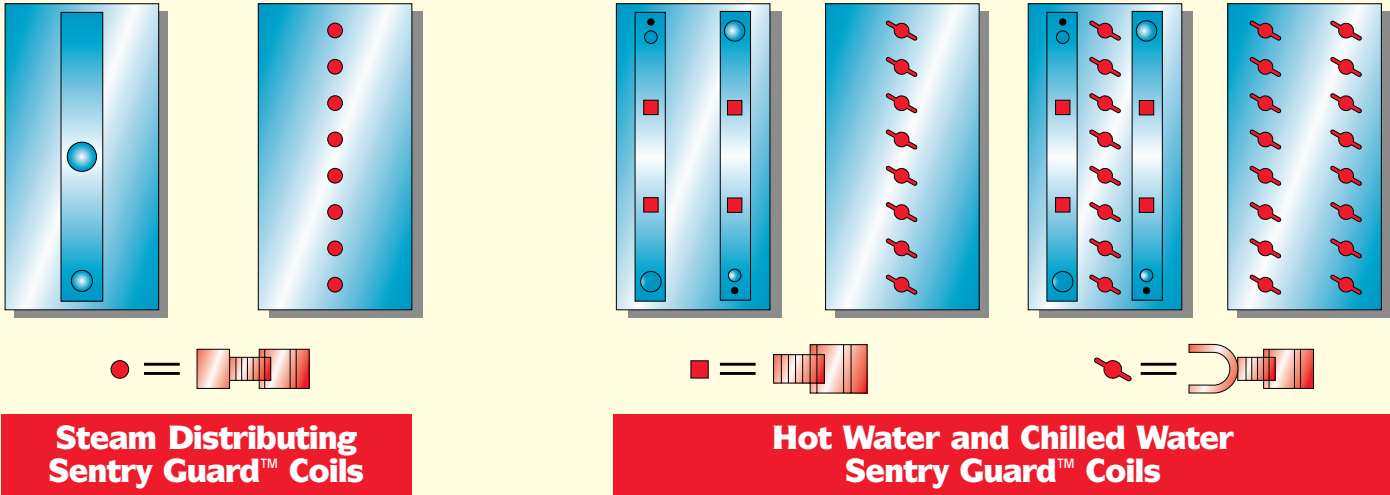




Sentry Guard™ Freeze Relief Caps Types and Typical Arrangements



Sentry Guard™ Burst Proof Coil Applications

1. Preheat Coils

Steam/Hot Water— 100% outside air, where air is 40 degrees F. or lower. The system may have built-in controls, freezstats, etc. to prevent freezing. But often these systems fail do to failure of these controls. Sentry-Guard™ becomes the “Last Line of Defense” against freeze damage.

2. Chilled Water Coils

Coils that are in operation during the winter and may experience freezing air temperatures. The coil may see 60 degree F. air one day and 25 degree F. air the next day. Chilled water coils can be 5 to 10 times as expensive to replace as heating coils due to increased rows, size, weight, etc.

3. Make-up Air Systems

Many applications such as kitchens, health facilities and industrial applications require 100% exhaust. These systems work 365 days a year and any mechanical malfunction can cause heating or cooling coils to freeze.

4. Idle Chilled Water Coils

During the winter, chilled water coils not in operation need to be totally drained or filled with a mixture of glycol/water, which is costly and corrosive. These are standard maintenance procedures, which often are ignored or not accomplished very well in most systems. Sentry-Guard™ requires partial draining (which is what is done most of the time anyway.) The worst case is that freezing occurs in small areas of the coil and that a few inserts rupture. Upon start-up in the spring, easy replacement of the inserts is all that is necessary to get the coils working. Complete coil replacement is not necessary.

Q&A

Sentry Guard™ Burst Resistant Coils Questions & Answers

Q. What is a "Sentry Guard"™ Coil?

A. It is a hot water, steam or chilled water coil that is guaranteed* to be burst resistant in any HVAC system or process heating or cooling system.

Q. What is the benefit to the end user?

A. There are numerous systems that have freezing environments that cause partial or full damage to a coil because of a "freeze". The cost in downtime, repairs and replacement make this coil a real bargain.

Q. What is the benefit to the service contractor?

A. Many service contracts require most systems to be as "freeze resistant" as possible. This is the guaranteed last line of defense against major coil damage.

Q. What are some hidden damages to the heat exchanger coil during a "freeze cycle"?

A. When a coil receives freeze damage, many times there are initial leaks found and repaired, which can cause performance reduction. At the same time, walls of tubes and return bends may be weakened that will cause major problems in the upcoming seasons.

Q. How do I know that the Sentry Guard™ coils work?

A. USA Coil & Air developed this patented product over a period of four years. We tested all of the coils in the laboratory as well as extensive tests in International Falls, Minnesota with ambient temperatures as low as minus thirty degrees F. Based on this testing, USA is offering a 30 month burst protection warranty. Simply, we wouldn't offer this extraordinary warranty if it didn't work.

Q. Explain to me, in a way I can understand, how Sentry Guard™ coil series works?

A. USA Coil installs patented "Freeze Relief Plugs" on all applicable return bends, headers and tube stubs. They become a designated pressure point. When the pressure rises to 650 PSIG, the pressure relief plug within the circuit will rupture. Tests have shown that coil damage (bloating of tubes or splits) won't happen until at least 1,000 PSIG or higher. HVAC coil operating pressure is never above 200 PSIG and quality control testing at the factory never exceeds 400 PSIG for copper tube coils. Therefore, designated relief pressure is above any lifetime pressure except a "freeze cycle".

Q. I thought that the formation of ice and the expansion process of liquid to solid is what caused the damage. Isn't that true?

A. No, it is the pressure inside the coil circuit that eventually causes the damage. It is a "hydraulic" related pressure, not a "change in state" pressure. The pressure will rupture the "weakest point" inside the circuit. It may be the tubes or return bends, but failure will always be above 1,000 PSIG with a properly built HVAC coil. Again, we are designating the failure point at the pressure relief plug. Therefore, the entire coil is protected from damage.

Q. Do I still need anti-freeze in my preheat water coils?

A. Yes and no. Let's review some applications to specifically answer this question. Preheat water heating coils may or may not need anti-freeze, based on your system and its controls. The worst that can happen during a "freeze" is that several relief plugs may rupture. The system will be down, and defrosted water may leak out of the coil at the plug(s). This "freeze" condition may only happen a handful of times in the life of the coil, because of a mechanical malfunction that holds water in coil. In this case, you may want the system without anti-freeze.

The answer might be "yes", if your system cycles on and off thus holding water in the coil a great deal of the time. Sometimes, just any down time, even if it is an hour, can't be tolerated.

The answer might be "no", if you are located in a part of the country where ambient temperatures are rarely below freezing. States such as Georgia, Mississippi, Florida, Alabama, Louisiana, Texas, New Mexico, Arizona and California would be perfect examples. The chance of a "freeze cycle" is reduced.

Q. What about a water coil that stays totally idle during the winter season? Do I have to add anti-freeze or drain the coil completely?

A. Again, the worst scenario during a "freeze cycle" with a Sentry Guard™ coil is that a few pressure relief inserts burst. With the idle coil, drain most of the water out of coil. That's all you need to do. When you are placing the coil back into operation in spring, just inspect inserts, replace as required and you are back in operation. No more expensive, corrosive glycol.

Q. Do I still need steam distributing (sometimes referred to as non-freeze) coils with Sentry Guard™?

A. In most cases, you probably do because steam distributing coils serve a very important purpose besides freeze protection. Steam needs an inner tube (especially with modulating steam) to properly distribute steam in a uniform manner down the entire length of each and every tube. Without this even distribution, coil air temperatures can be very uneven and performance may be reduced.

Remember, a steam distributing coil does offer some freeze protection if the coil sees freezing temperatures. If any coil pulls a negative pressure and condensate is held in the tubes with cold air being distributed on the outside of the coil at the same time, then even a steam distributing coil can get freeze damage. One third of the coils USA Coil replaces are steam distributing coils with freeze damage.

