



HEATED AND INSULATED RECEIVER ON CONDENSING UNITS

What it is, how it works - and why, where and when to use it.

1. Description:

A heated and insulated receiver is used to add heat to the refrigerant stored in the receiver during the off cycle of a refrigeration system. This accessory is available on all outdoor air-cooled refrigeration condensing units selected as a voluntary option at the discretion of the user or as a requirement, with its dependence on other options or the location of installation.

2. How it Works:

An electric self-regulating heater is affixed to the external surface of the receiver. The receiver is completely wrapped with 0.5" inch closed cell foam insulation and sealed with an adhesive to prevent moisture incursion. The heater is powered by the condensing unit control circuit via a normally closed (NC) auxiliary contact attached to the compressor contactor. This circuit allows for the receiver heater to be energized only while the compressor is off.

Because the refrigerant in the receiver is at saturation the warmed refrigerant will also stay at a higher pressure than it otherwise would if the surrounding ambient temperature was allowed to affect it.

3. Why Use It?

While the condensing unit is off refrigerant liquid temperature and pressure can be greatly affected by the ambient temperature. During long off cycles at low ambient, the refrigerant temperature and resulting pressure can drop close to the ambient temperature acting on the shell of the receiver it's stored in. When the liquid line solenoid opens, the cold liquid entering the low side of the system may not be at a sufficient pressure to allow for the low-pressure control to close. This can result in a flooded start and or frequent cycling of the low-pressure control resulting in the potential for compressor damage.

Maintaining a warm receiver allows for sufficient liquid pressure to enter the low side of the system, closing the low-pressure control quickly and allowing the compressor to start before the suction line fills with liquid refrigerant.

4. When to Use It:

National Refrigeration and Air Conditioning Canada Corp. suggest that a heated and insulated receiver be implemented on any and all outdoor condensing units whose installation location results in an ambient temperature less than or equal to zero degrees Fahrenheit (0°F) for a few hours per year. See Figure #1 for a map indicating locations where this option is recommended. Current ASHRAE weather data was utilized to determine this temperature and location guideline.

This option is also a requirement as part of the Limitrol+ floating head pressure control system offered on many outdoor air-cooled condensing units.

5. Where to Use It:

See *Figure #1* (next page) The area north of the black line and marked as "Moderate / Low Ambients" is the suggested region where a heated and insulated receiver should be implemented on any and all outdoor condensing units.

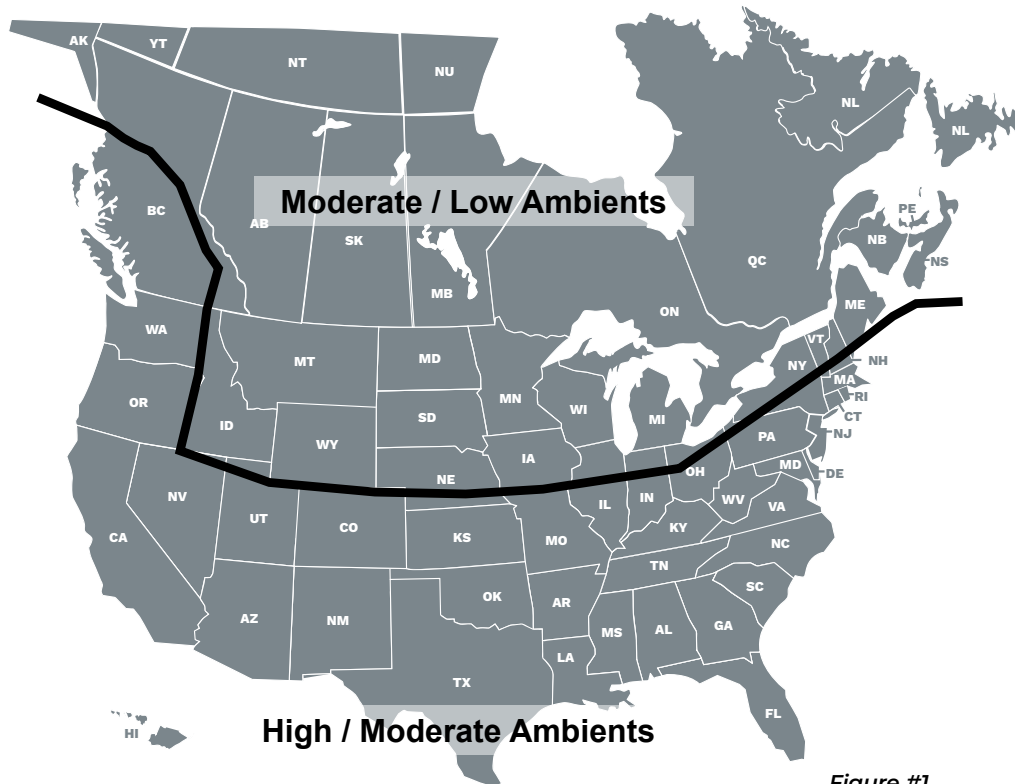


Figure #1

Additional Resources:

KeepRite Refrigeration website: <https://k-rp.com>

KeepRite Refrigeration Condensing Unit Support page: <https://k-rp.com/product-category/condensing-units>

ASHRAE Climate Data Center: <https://www.ashrae.org/technical-resources/bookstore/ashrae-climate-data-center>

Products Affected:

KEH – Outdoor Air Cooled Hermetic Condensing Units: <https://k-rp.com/keh>

KEZ – Outdoor Air Cooled Scroll Condensing Units: <https://k-rp.com/kez>

KES – Outdoor Air Cooled Semi-Hermetic Condensing Units: <https://k-rp.com/kes>

KQZ – Outdoor Air Cooled Quiet Scroll Condensing Units: <https://k-rp.com/quietunit>

KC Combination Condensing Units: <https://k-rp.com/kc>

KM – Medium Outdoor Air Cooled Condensing Units: <https://k-rp.com/km>

KV – Large Outdoor Air Cooled Condensing Units <https://k-rp.com/kv>

KF – Outdoor Air Cooled Multi-Compressor Condensing Units: <https://k-rp.com/kf>

Related Product Specialist Groups:

For Small Condensing Units: smcu@k-rp.com 1-844-893-3222 ext. 521

For Medium or Large Condensing Units: mdcu-lgcu@k-rp.com 1-844-893-3222 ext. 522

Author:

Norman Haimes – Senior Application and Systems Specialist