THE CLIMATEMASTER CLIMADRY® II REHEAT AND DEHUMIDIFICATION OPTION

OVERVIEW

Indoor Air Quality (IAQ) and Relative Humidity (RH) are increasingly becoming design issues that must be addressed by selecting heating and cooling equipment with advanced capabilities. The ClimateMaster ClimaDry® II reheat and dehumidification option offers unique features unlike anything currently available today.

The patented ClimaDry® II option is an innovative means of providing fully modulating reheat without the complication of intricate refrigeration controls. ClimaDry® II is a form of Hot Gas Generated Reheat, which utilizes one of the biggest advantages of a water source heat pump (WSHP), the transfer of energy through the water piping system. ClimaDry® II simply diverts condenser water through a water-to-air coil that is placed after the evaporator coil.

CLIMADRY II BENEFITS

ClimaDry® II is like no other reheat option on the market. Proportional reheat is controlled to the desired leaving air temperature setpoint (factory setpoint of 72°F) no matter the water loop temperature. If condenser water is not warm enough, the internal circulating loop increases the water temperature with each pass through the condenser coil. Since dehumidification operation will occur under less than full load cooling conditions a good percentage of the time, it is important to have a reheat function that provides 100% reheat in the spring and fall when the water loop is cool.

Competitors without the ClimaDry® II option typically use an on/off (non-modulating) refrigeration based reheat circuit, typically referred to as “Hot Gas Reheat” (HGR). By passing the hot discharge gas from the compressor through an air coil, these systems do provide the ability to reheat the leaving air. However, these systems must rely on complex controls to operate and contain many additional valves and complex piping schemes. In addition, the performance of HGR units typically fluctuates with the outside air temperature and thus provides a varying amount of dehumidification. Rarely will a HGR unit provide 100% reheat and provide supply air at a neutral temperature, like a ClimaDry® II system.

The simplicity of the ClimaDry® II circuit makes it incredibly easy to maintain. No refrigerant switching valves or hard to diagnose leaky check valves are utilized. No unusual refrigerant pressures occur during the reheat mode. There is no requirement for antifreeze in the reheat circuit.* The refrigerant circuit is identical to a standard ClimateMaster unit (without reheat). Plus, the water loop portion of a ClimaDry® II unit is simple and easy to understand.

CLIMADRY® II APPLICATIONS

The ClimaDry® II option can be applied to a number of common applications, such as:

- Classrooms
- Computer rooms
- Spaces with high latent loads like auditoriums, theaters, convention centers, etc.
- Most anywhere humidity is a problem
REHEAT FUNCTION

With the ClimaDry® II option, the return air from the space is conditioned by the air-to-refrigerant (evaporator) coil, and then reheated by the water-to-air (reheat) coil to dehumidify the air, but maintain the same space temperature. The moisture removal capability of the heat pump is determined by the unit’s latent capacity rating.

UNIT FEATURES

- Fully modulating reheat for precise control of supply air temperatures
- 100% reheat to operate as a dehumidifier
- “Neutral” 72°F supply air temperature even at part load (non-design) conditions
- Supply air temperature adjustable from 69°F to 75°F with optional potentiometer
- Specially designed freeze-resistant reheat circuit does not require antifreeze*
- Integrated reheat controls - simply attach a humidistat or dehumidistat
- Microprocessor (DXM) controls standard
- Simple AHRI certified refrigeration circuit
- All water system eliminates refrigeration circuit modifications (same refrigeration circuit as units without ClimaDry® II)
- Stable refrigeration pressures, even at low entering water temperatures
- All components located inside the cabinet
- Two-speed fan (direct drive units) automatically controlled for increased latent capacity in reheat mode

AVAILABILITY

The ClimaDry® II option is currently available on ClimateMaster Tranquility® 27 Series, Tranquility® 20 Series, Tranquility® Large (TL) Series, and Tranquility® TR Series units. Other units will soon have the ClimaDry® II option available.

*Antifreeze may be required for normal operation depending on location but not specifically for ClimaDry® II operation.
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