

DEHUMIDIFICATION

by

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Controlling indoor relative humidity in the warm, humid south Florida weather is very difficult. Florida may be considered a paradise, however, the outside air is warm, wet, and full of contaminants. Indoor air conditions are just the opposite, cool, dry, and clean. The ASHRAE Handbook states that this excess, moisture load will lead to high indoor relative humidities, which is a breeding ground for mold and mildew. The handbook recommends two methods for controlling indoor relative humidity, reheat or stageable cooling. The majority of air conditioning systems in warm, humid climates are not designed using either of these two methods. This leads to failure in most air conditioning systems.

Poor control of indoor humidity control begins with the heat load calculations which are used to determine the size of the air conditioning equipment.

The maximum calculated load normally occurs in the peak cooling month of August. The equipment is then sized for this load, even though this maximum load occurs only several months of the year. Partial loads, which occur in the milder fall and spring months, are not taken into consideration.

Air conditioning capacities during these months are reduced up to 50% of the peak cooling loads. The end result is oversized equipment for a majority of the year.

Dehumidification takes place with air conditioning equipment only when the cooling coil is active. During the peak cooling months, the coil will remain active a majority of the time, thus providing dehumidification. The milder months provide a different problem. Heat gains are minimal, the coil remains inactive, and indoor relative humidities increase. In reality, two separate systems of different capacities should be installed, one for the hot months and one for the milder months.

Two options exist to provide consistent dehumidification - stageable air conditioning equipment or stand-alone dehumidifiers. In new design, equipment can be specified to provide multiple cooling stages. However, in existing buildings the most cost effective solution which provides constant dehumidification, without altering temperature settings, is to install a whole house dehumidifier. A high-efficiency unit such as the Sahara Ultra Efficient Dehumidifier by Therma-Stor has performed quite well. The unit is installed parallel to the existing air conditioning system. The dehumidifier is controlled independently of the air conditioning system to maintain indoor relative humidities. Lower indoor relative humidities also allow occupants to be comfortable at higher temperatures, thus saving energy. (See Page 2 for installation details.)

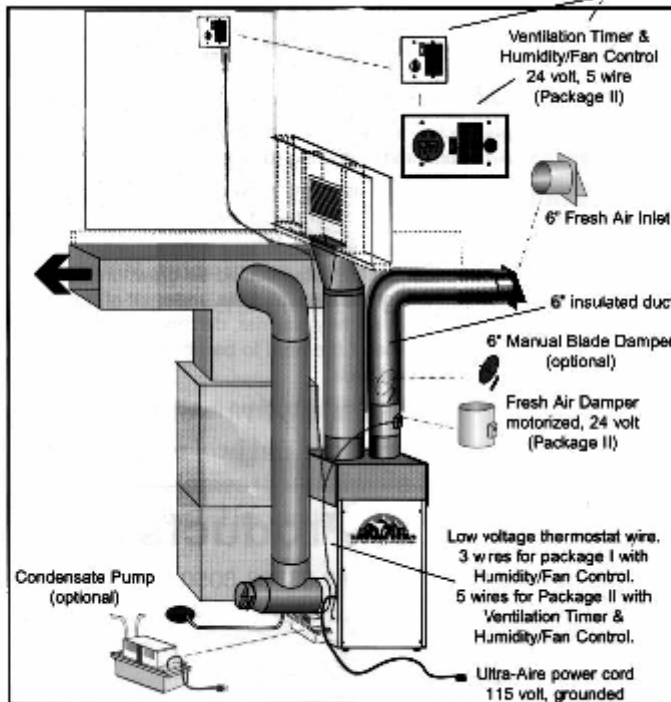
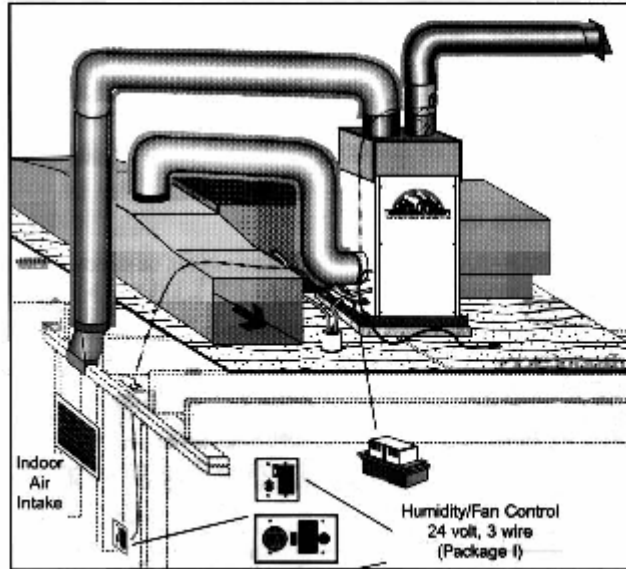


Installation Recommendations and Options

ATTIC

Attic installation basics:

1. Indoor air return should come from an open area of the first (preferred) or second floor.
2. The Ultra-Aire supply should be ducted into the forced air system past the air conditioning coil. The duct connection should be perpendicular to the air flow.
3. The Ultra-Aire should be installed in a drip pan placed on a vibration absorbing foam pad.
4. The six inch fresh air intake should be located at least 6 feet away from any exhaust ports.
5. In high humidity climates, an optional insulation kit is available to prevent condensation on the Ultra-Aire cabinet.



BASEMENT or CRAWL SPACE

Basement and crawl space installation basics:

1. Indoor air return should come from an open area of the first or second (preferred) floor.
2. The Ultra-Aire supply should be ducted to the forced air system supply above the "A" or air conditioning coil. The duct connection should be perpendicular to the air flow.
3. An eight inch tee with an adjustable blade damper on the straight run should be attached at the Ultra-Aire supply duct. This allows for increased air flow to the basement during summer months.
4. The six inch fresh air intake should be located at least 6 feet away from any exhaust ports. i.e. dryer, range hood or combustion device exhaust.