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3V- VVT® PARALLEL (INTERMITTENT) FAN POWERED TERMINAL CONTROL ON/OFF HOT WATER HEAT

PRESSURE INDEPENDENT

CARRIER CONTROL PACKAGE NO. 8826

Application:

Parallel fan powered terminals equipped with the above control package are designed to work with cooling only primary air source equipment and provide pressure independent, variable volume, variable temperature (VVT) control when connected to a VVT zone thermostat. The intermittent terminal fan is used to pull in ceiling plenum air as the first stage of heat and provide sufficient airflow when the hydronic heat is energized. These systems allow a low minimum inlet static pressure, permitting the use of smaller, more energy efficient fan systems. Hot water reheat coils located at each terminal can satisfy additional zone heating loads when the equipment is providing cooling. The minimum airflow set points can be set to zero. The fan provides airflow across the heat coil when the primary air source is off.

A wall-mounted thermostat located in each zone will sense load requirements and activate the control sequence to accommodate cooling or heating. Load requirements and sound level acceptability govern terminal sizing. This control package provides the following sequences of operations:

A. Cooling: When the primary air source is providing cooling (as detected by the primary air sensor). Refer to numbers on flow diagram. See Fig. 1.
   1. 1-2 indicates that maximum primary airflow is established by the user-defined maximum airflow set point until the zone comes under control at 2.
   2. Beginning at 2, the primary airflow is regulated over a throttling range by the damper until the user-defined minimum airflow set point is reached at 3.
   3. 3-4 indicates that, should the zone temperature continue to fall, the damper will hold primary air at the minimum airflow set point.

NOTE: The minimum airflow set point could be set to zero by the user. In this case, the damper will hold a fully closed position if the zone temperature continues to fall.

B. Hot water reheat: When the primary air source is cooling (as detected by the primary air sensor), refer to numbers on flow diagram.
   1. As the zone temperature falls below the occupied heating set point, the Occupied Heating mode is in effect at 4. Fan will run to induce plenum heat.
   2. At .25 F degrees below the heat set point, the terminal fan will be energized. If the heat demand increases, the hot water valve will be energized and open.
   3. As the zone temperature rises above the occupied heating setpoint, the terminal fan and hot water valve will be deenergized.

C. Unoccupied time period: (cooling)
   When the unoccupied period is reached, the user-defined occupied cooling set point is reset upward to a user-defined unoccupied cooling set point. The damper will throttle in the same manner (as per A) during the unoccupied period, using the unoccupied cooling set point.

D. Unoccupied time period: (auxiliary heat)
   When the unoccupied period is reached, the user-defined occupied heating set point is reset downward to a user-defined unoccupied heating set point. The fan will start and the hot water valve will operate as required to satisfy the heating load.

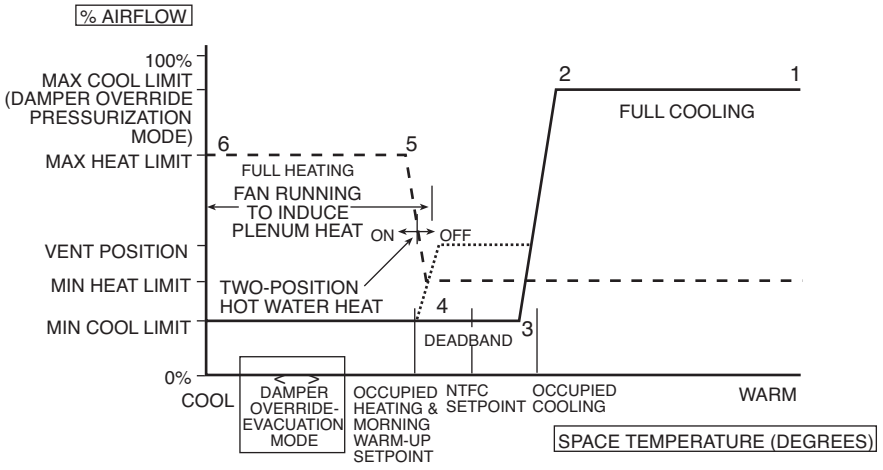

Figure 1 - Sequence of Operation for Parallel Fan Powered Air Terminal with Two-Position Hot Water or Steam Heat

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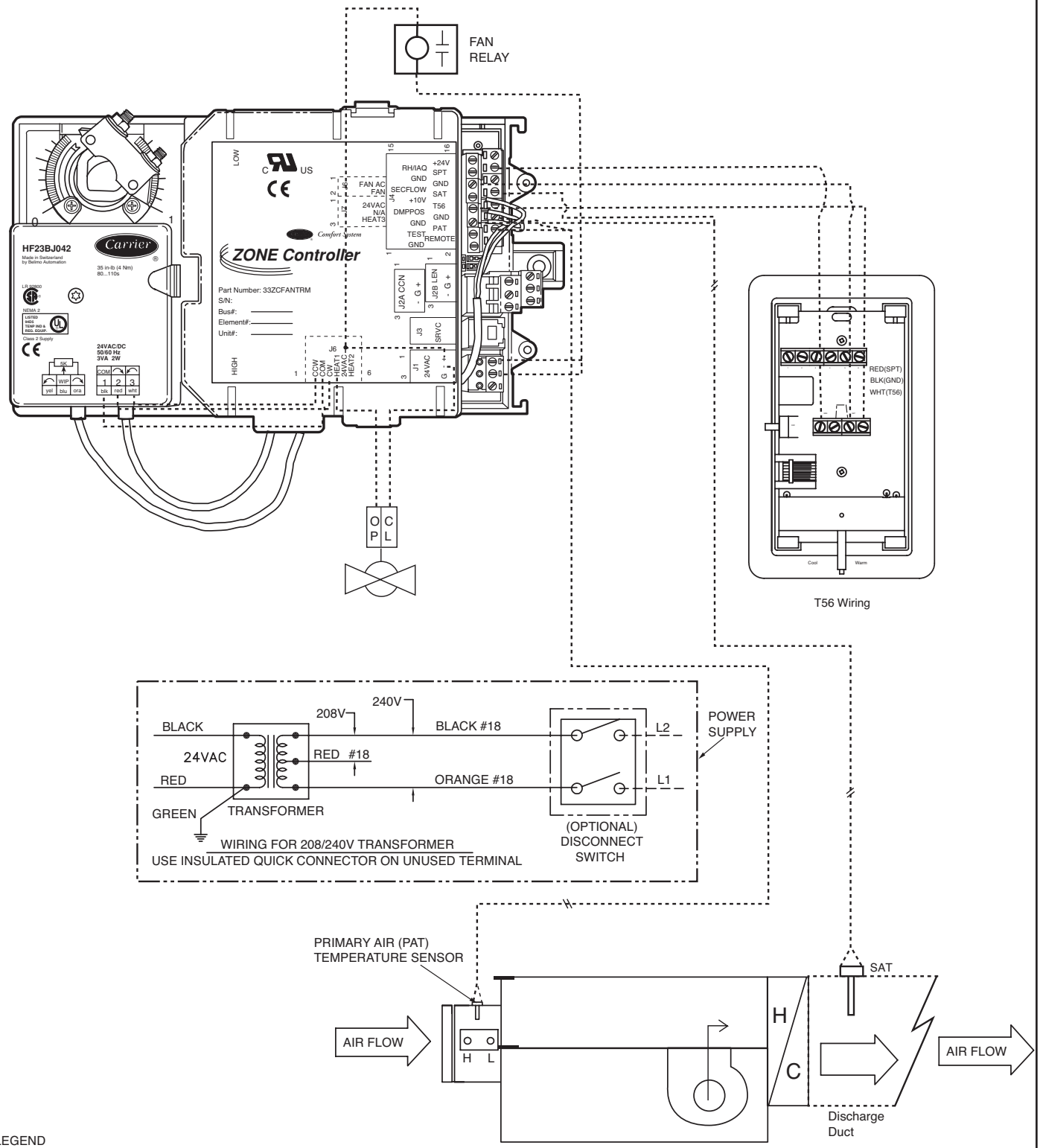

LEGEND
CCW – Counterclockwise
COM – Common
CW – Clockwise
DMPPOS – Damper Position
GND – Ground
DAT – Discharge Air Temperature Sensor
- - - - - - - - - Field-Supplied Wiring
———— Factory Wiring

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11/18/2005