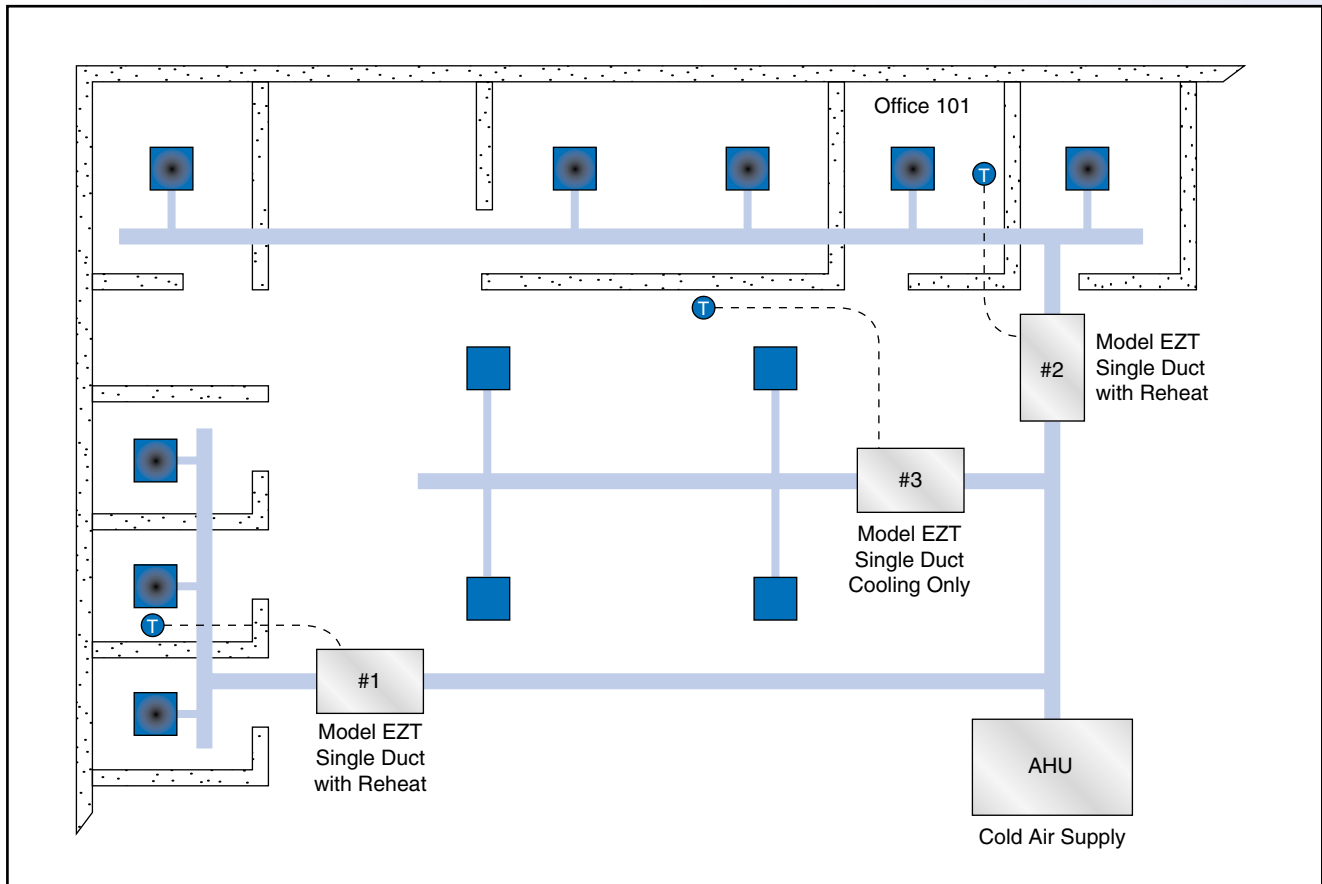
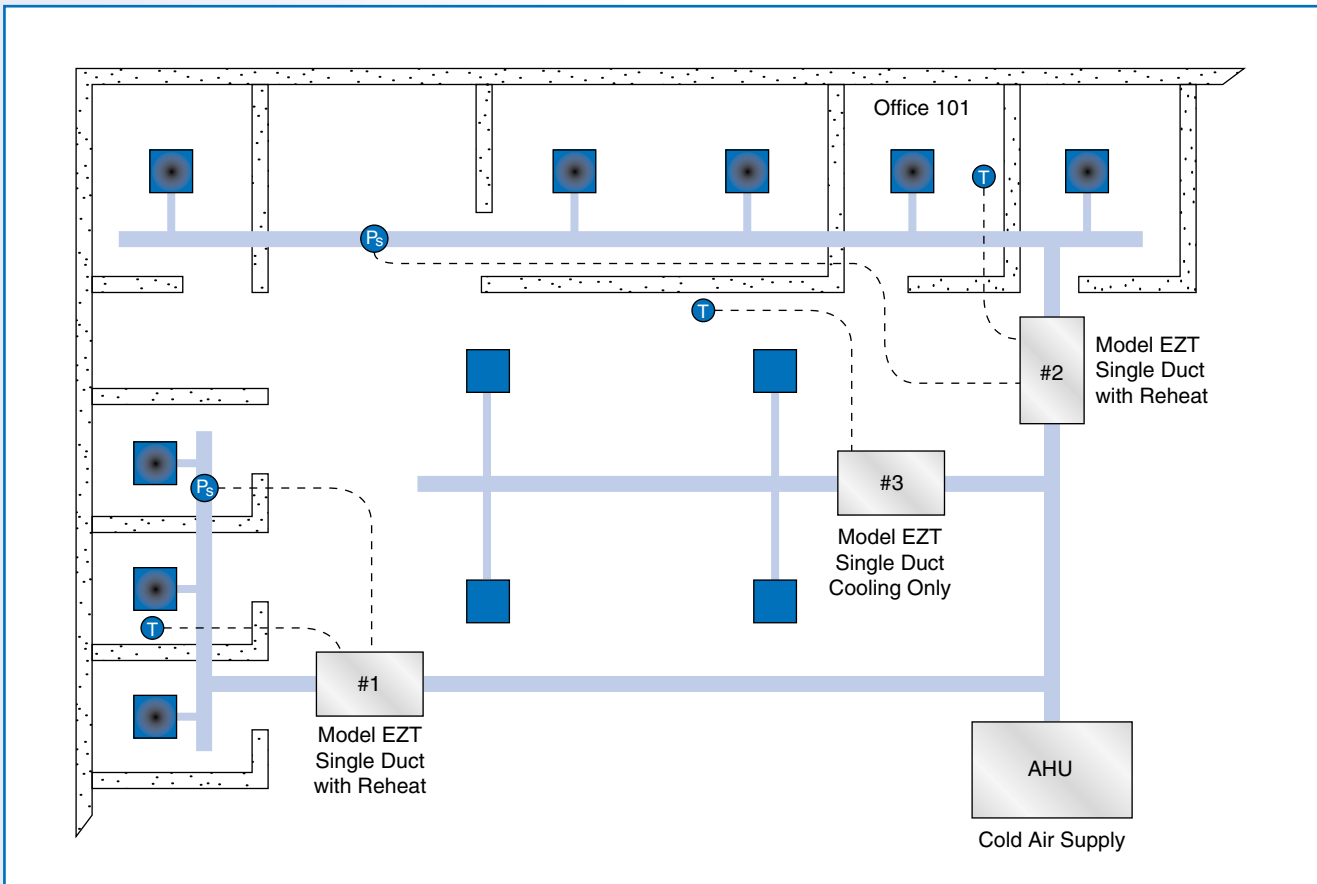


**TYPICAL MULTI-ZONE VAV SYSTEM W/ REHEAT**



Typical office space shown with single duct VAV air terminals with interior and exterior zones requiring temperature control. VAV terminals #1 & #2 use supplemental reheat to satisfy the demand of each unit's respective wall thermostat. VAV terminal #3 provides cooling only into the interior space. The VAV terminals use pressure independent controllers to vary the airflow rate from maximum to minimum in response to one thermostat. The max/min proportion or turn down ratio is essentially the same for all zones off the same air terminal. The multi-zoned perimeter offices are susceptible to unequal loading due to exterior exposure and room use. Should the salesman who occupies Office #101 (and also owns the wall thermostat) be out of town traveling with lights out and door closed, then the adjacent occupied spaces will most likely undercool or overheat.

VAV DIFFUSERS IN A MULTI-ZONED VAV SYSTEM W/ REHEAT



Typical office space shown with AnemoTherm Model ATHC VAV Heating & Cooling diffusers applied to the perimeter offices. Each VAV diffuser monitors the supply air temperature and provides direct acting VAV cooling or reverse acting VAV heating to meet the load conditions in each office. The wall thermostat (or an outdoor temperature sensor) signals for heat as required. A simple control loop to keep the VAV air terminal downstream static pressure constant (typically around .25" wg) as the VAV diffusers modulate is shown. VAV diffuser relief collars could be utilized for bypass of supply air into the ceiling plenum in lieu of a static pressure control system for constant volume fan systems. VAV air terminal #3 provides cooling required for the single interior space with relatively uniform loading, and typical ceiling diffusers are used.

**System Static Pressure**

The sound generated by conventional VAV air terminals supplying ceiling diffusers are typically attenuated by the discharge ductwork. Because VAV diffusers incorporate the flow control damper in the diffuser, the static pressure at the inlet of the diffuser must be limited and controlled to maintain acceptable sound levels in the space. AnemoTherm VAV diffusers are typically sized and selected at a maximum .25" static pressure.

Static pressure can be adequately controlled using a control damper / air terminal with a static pressure sensor appropriately located in the discharge duct feeding the VAV diffusers. Duct work design should minimize friction losses. Designs utilizing static pressure regain with constant size loops are preferred over equal friction designs.

For constant volume fan systems, pressure relief collars may be used with ceiling returns to bypass supply air directly into the ceiling.