RetroZone

Don't Pull Those Dampers!

Retrofit existing VVT Generation One, Carrier VVT & Omnizone at less than $300.00* per zone with

RetroZone

Designed specifically for retrofitting VVT Generation One, Carrier VVT & Omnizone systems without changing out dampers.

- Vote based auto changeover strategy
- Fully modulating
- Patented 5 wire Communication Bus daisy chains for easy wiring
- 5 wire Communication Bus controls up to 25 zones
- All 24 volts, no interference problems
- No shielded cable, use standard 18 gauge stat wire
- Zone reheat & auxiliary heat functions
- Night set-up or set-back setpoints
- Remote sensor stat capability
- Temperature setpoint lock feature eliminates locking covers
- No digital controls, no programming
- Save labor cost by not tearing out old damper pipe

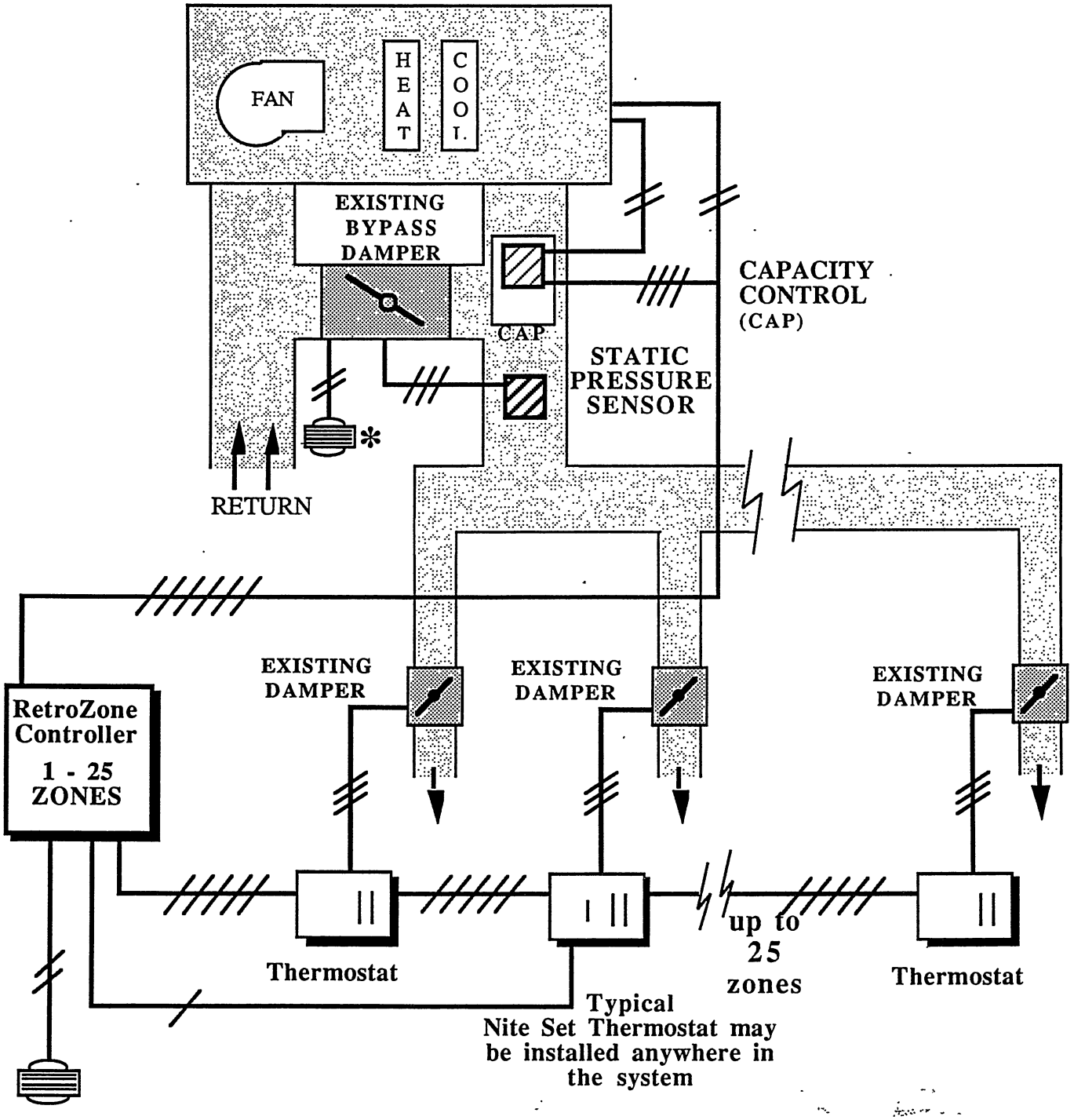
You now have an opportunity to quickly, easily and profitably update old VVT and Omnizone systems

*Based on 10 zone system

For product literature, please contact your distributor or the California Economizer Sales Manager in your area.

RetroZone

SYSTEM DIAGRAM



24 VOLT TRANSFORMER SIZED TO CARRY 6 VA FOR EACH RetroZone ACTUATOR

* INDEPENDENT 24 VOLT 40 VA TRANSFORMER

RetroZone

The RetroZone system offers three different types of thermostats to retrofit existing VVT Generation One, Carrier VVT or Omnizone dampers systems. The thermostats are designed to control the RetroZone damper operators which can easily be installed onto an existing damper.

Zone Thermostats

The RetroZone Thermostat contains all of the electronic parts needed to control a modulating zone damper. Multiple modulating dampers may be slaved to one thermostat. The thermostat has its own thermistor based temperature sensing system. This gives each zone the opportunity to request cooling or heating. Each stat is auto changeover and has an individual heat setpoint, cool setpoint and heat / cool mode indicator. Only three wires run from the thermostat to the zone damper motors. All of the zones electronic parts are located on the thermostat. An "Off" switch is provided on the stat board. This switch forces the damper closed and takes the zone out of the system vote for heating or cooling. A temperature setpoint lock is also provided on each thermostat. This lock allows the sliding setpoints to be fixed.

Night Set Thermostat

When night setup or setback operation is desired RetroZone provides a Night Set Thermostat. This stat in combination with a field supplied SPST time clock will provide seven day set up or set back capability. The three slide Night Set Thermostat is designed to act as a normal zone thermostat and provide a night heating or cooling setpoint for the system. When the time clock sets the system back, the Night Set slide pot becomes the active setpoint for the system. A jumper on the stat board switches the operation to heating setpoint or cooling setpoint. Each HVAC unit requires only one Night Set Thermostat for night time control.

Auxiliary Heat Thermostat (AHT)

Any zone that requires auxiliary heat (i.e. radiant ceiling panel, radiant baseboard, hot water valves or duct heaters) must be controlled by an AHT. The AHT contains all the elements of the Zone Thermostat and combines auxiliary heat capabilities. The AHT will bring on the auxiliary heat source for that zone at the heat setpoint and will also send a heat call to the System Controller.

DAMPER CONTROL STRATEGY

COOLING: When the zone temperature is one degree above cooling setpoint, the damper will be full open. As the zone satisfies, the damper will modulate toward the closed position. At cooling setpoint the damper will be 70% closed. The damper will close 100% if the zone temperature drops one half degree below setpoint.

HEATING: When the zone temperature is one degree below the heating setpoint the damper will be full open. As the zone satisfies, the damper will modulate toward the closed position. At heating setpoint the damper will be 70% closed. The damper will close 100% if the zone temperature rises one half degree above the heating setpoint.

CHANGEOVER: On a change of mode, the dampers will remain in their last position for one minute. At the end of this time the dampers are instructed to operate in the new mode. For heating or cooling, the dampers require 90 seconds to get to their new positions. This strategy prevents residual heating or cooling of the zones. When neither heating or cooling is called for, the dampers will all modulate to 50% open position. In this way ventilation air will be circulated to all zones.

RetroZone

SYSTEM CONTROLLER

The RetroZone Controller is designed to operate a system of 2-25 zones and one air conditioning unit. One outstanding feature of this system is its' wiring. Communication to the zone stat is accomplished with a Five (5) wire communications buss from the Controller. This 5-wire buss requires no home runs.

When heating or cooling calls are sent to the Controller, the Controller will treat these calls as votes. If cooling votes are greater than heating votes, the Controller will turn on the compressor and fan. The compressor will continue to operate until all cooling calls are satisfied or until heating calls are greater. While in the cooling mode, heating calls must outnumber cooling calls by at least two to begin the changeover cycle. When this occurs the Controller starts a series of timers. The Controller will give the cooling calls five minutes to try and satisfy. If after the five minute period the cooling calls are not satisfied, the compressor is shut off and a delay of two and one half minutes begins. After this delay the heat will be turned on. If the fan switch is set for auto, the fan will be started independently by the bonnet control or the units fan delay relay.

In the heating mode, if the cooling calls outnumber the heating calls by two, the heating calls will be given five minutes to try and satisfy before changeover is allowed. In this way, heating and cooling calls can be satisfied as building load changes occur. When loads shift because of outside temperature and solar changes, the system can respond to the most demanding zones. In mild weather, the Controller can subsequently heat and cool areas as the demand shifts.

When all calls are satisfied, the air conditioner will shut down and the dampers will open to 50%.

Variable air volume changeover systems have been around for almost 20 years. These systems convert a single zone air conditioner into a multiple zoned system. Two old systems dominate the market, Carrier VVT and Omnizone. Many of these systems are ideal retrofit candidates. The cost of maintaining a Carrier Generation One system has become exorbitant. Replacement parts are very expensive. RetroZone is an ideal solution for updating these old systems. Using a RetroZone system to supersede an Omnizone Discriminator, overcomes cooling priority control problems. RetroZone Controllers give each damper a controlling vote. The Controller operates a cooling or heating unit to satisfy the zones and mode of operation based on a first call first served strategy. The RetroZone system is installed using the existing dampers. No damper tear out is required.

RetroZone

Manufactured by CALIFORNIA ECONOMIZER

RetroZone

See how easy it is to convert an already existing modulating zone system to **RetroZone**.

For each damper

Remove all of the electronic and mechanical parts from the damper assembly leaving the damper shaft and hat section intact.

Slide the RetroZone Actuator onto the damper shaft and secure it to the dampers hat section.

Replace zone thermostats

Mount the RetroZone thermostat in the zone where it will sense zone needs.

Connect three wires from the zone stat to the RetroZone actuator.

System Controller

Mount the RetroZone Command Center in a location where it is accessible yet out of the way.

Run the five wire communications bus from zone stat to zone stat.

Connect the communications bus to the Command Center.

Capacity Control

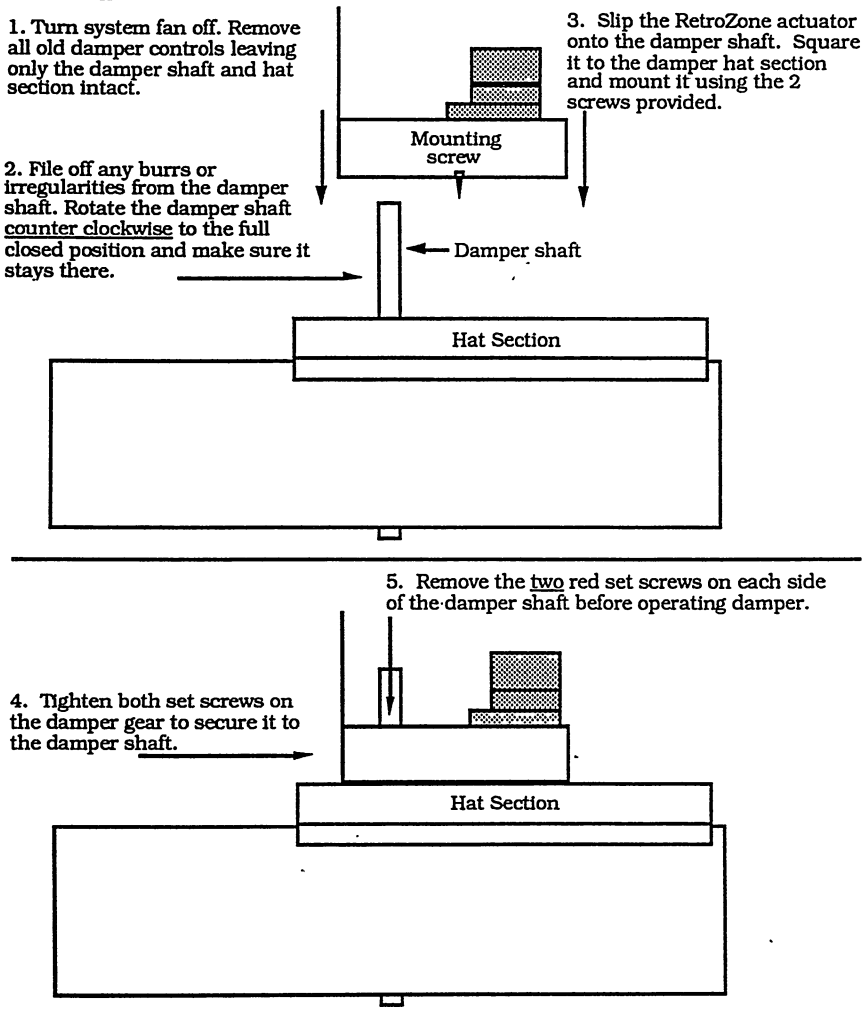
Locate the RetroZone LAT down stream of the unit where it can measure the leaving air temperature

Connect the Command Center to the LAT and then connect the LAT to the unit.

Power the Command Center with a 24 volt transformer. Allow for 6VA for each RetroZone Actuator.

Turn the Command Center on and proceed through the Check, Test and Start.

Damper Retrofit



CALIFORNIA ECONOMIZER
The Zoning Systems Company

For more information call:
800-228-2966
714-898-9963

or visit our website at:
www.
hvaccomfort.com

A. SYSTEM OPTIONS – Select a System:	LENNOX CAT. NO.	LIST PRICE	PART NO.
CALIFORNIA ECONOMIZER SYSTEM 2000			
1. CONTROLLERS (Supports up to 20 zones)			
A. System 2000 G/E Controller (Capacity Control Required)	98N48	575.00	101ASSB
B. Heat Pump 2-Stage Heat/Cool with Electric Heat and L.A.S.	30N51	625.00	101AACBHP
2. ZONE KITS* (Includes thermostat with hat section, actuator and relay board)			
A. Digital Kit		349.00	101DIGIRK
B. Digital 2-Stage Kit		363.00	101DIGITSRK
C. Remote Sensor, add "RS" to the part # combine both list prices		76.00	101_____RS
3. Slave Damper Actuator		215.00	101SLVRK
SELECT-TEMP			
1. CONTROLLERS (Supports up to 25 zones)			
A. Modulating G/E Controller (Capacity Control Required)	98N48	575.00	101ASSB
B. Heat Pump 2-Stage Heat/Cool with Electric Heat and L.A.S.	27N97	625.00	STACB-HP
2. ZONE KITS* (Includes thermostat with hat section and actuator)			
A. Zone Kit		385.00	STDIGIRK
B. Night Set Kit		437.00	STNSTSRK
C. Auxiliary Heat Kit		414.00	STAHTSRK
D. Remote Sensor, add "RS" to the part # and add both list prices		76.00	ST___RS
E. Time Clock 2-Channel Seven-Day Clock	40N80	567.00	STCLOCK
F. System Manager-10 – Ten-Channel Building Management System	70N11	1208.00	SYS10
(2-Stage Heat, 2-Stage Cool Stand Alone Unit Thermostat)	70N12	222.00	STAT10
3. Slave Damper Actuator		215.00	STSLVRK
VVHC (For VVHC ENHANCED – Contact the Factory)			
1. CONTROLLER (Supports up to 32 zones) (Capacity Control Required) 2-Stage Heat / 2-Stage Cool Fahrenheit		854.00	37P37
2. OPTIONAL ATS Air Temperature Sensor		107.00	37P41
3. ZONE THERMOSTAT KITS* (Includes thermostat with hat section and actuator)			
A. Zone Kit		599.00	VVHCRK
B. Remote Sensor		675.00	VVHCRKRS
4. Slave Damper Actuator		215.00	STSLVRK
B. CAPACITY CONTROL			
CAPL-2 2-Stage Modulating Control for G/E Equipment		330.00	87N88
CAPL-4 3- or 4-Stage Modulating Control for G/E Equipment		650.00	87N89
C. BYPASS DAMPER			
ROUND BYPASS KIT* Includes static pressure controller, hat section and actuator		345.00	BYPRK
D. TRANSFORMER:			
A. 150 VA 24 Volt Foot Mounted	30N75	189.00	101ARTN-150
B. 250 VA 24-Volt Foot Mounted	30N76	286.00	101ARTN-250

***NOTE: When ordering zone kits and bypass kits, specify the type of damper that is being retrofitted (Carrier, Omnizone, etc.). Indicate round shaft for Carrier or hex shaft for Omnizone.**

For shipments requiring immediate processing or priority shipping, add 10% to quoted prices. All prices are in U.S. dollars.
TERMS: Net 30 days from date of invoice.
FREIGHT POLICY: Paid by buyer, F.O.B. Huntington Beach, CA.