

## Installation, Operation & Maintenance of the ZECV Analog Pressure Controller

### General Description

When applying Zcom diffusers in an changeover/ bypass application with a constant volume rooftop unit, provisions must be made to control duct static pressure. The duct static pressure is typically controlled by a system bypass damper installed off of the supply duct, and controlled from a static pressure tap installed 2/3 down the main duct.

Figure 2 illustrates a recommended installation of the bypass damper to maximize mixing of the bypass air with the return air. This location of the bypass minimizes the opportunity for developing hot or cold spots in the rooftop.

### Installation Instructions

These instructions are intended only as a basic guide for the installer. They do not assure compliance with local codes. Consult the authorities having jurisdiction before installing this terminal.

### Receiving Inspection

After unpacking the pressure controller, check it for shipping damage. If any shipping damage is found, report it immediately to the delivering carrier.

### Supporting the Terminal

The basic control is light enough so that it can be supported by the duct work in which it is installed. Where the accessory modules such as coils, attenuators or multiple outlets are included, the assembly should be supported directly. Use the support method prescribed for rectangular duct in the job specifications.

### Duct Connections

Slip the inlet duct over the inlet collar. The diameter of the inlet duct in inches must be equal to the listed size if the terminal: e.g., a duct that actually measures 8 inches must be fitted to a size 8 terminal. Attach the rectangular outlet duct by using standard SMACNA slip and drive connection method. Fasten and seal all connections by the method prescribed by the job specifications.

Figure 1. ZECV

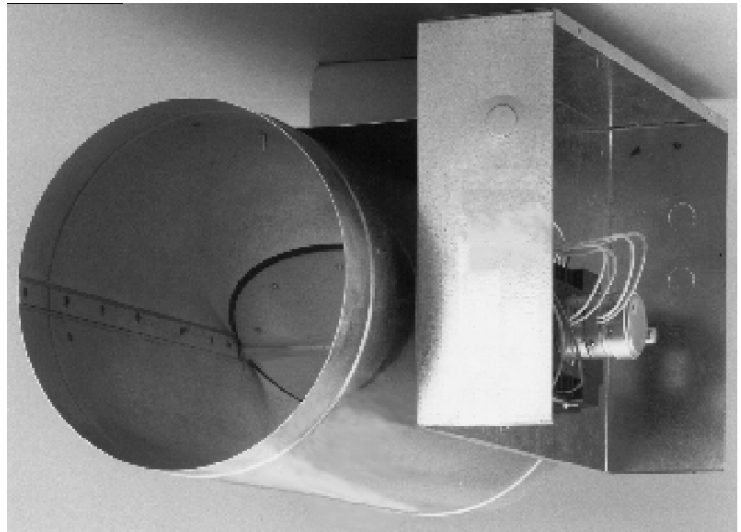
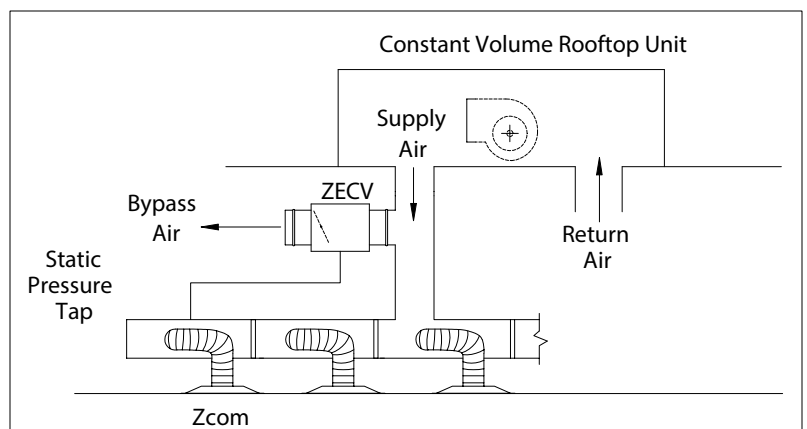


Figure 2.



## Field Wiring Instructions

### Inspection

Factory mounted controls and accessories are mounted inside the sheet metal enclosure located on the side of the terminal. Remove the cover and inspect all components for visual damage.

### Power and Supply

Analog electronic controls require 24 VAC -15/+20 percent power supply. Allow 14 VA for the controller. Factory supplied transformers are available with supply voltages of 277V, 240V, 208V, or 120V. Field supplied transformers can be mounted inside the control box. Attach the 24 volt leads to terminals 9 and 10 on the controller (See Figure 3).

### Single Transformer Wiring

The same 24 VAC transformer may be used to power the controller plus control relays, contractors and/or valves on a terminal. For single transformer wiring see figure 3.

### Multiple Loop Wiring

If multiple controllers are looped together in a single circuit using a common transformer, wire all #9 connections together, and all #10 connections together. If the transformer secondary is connected to earth ground, this lead must also be connected to terminal #9. ALWAYS OBSERVE PHASING!

**CAUTION:** NEVER connect power to the controls until all wiring has been installed. ALWAYS disconnect power to the controls before servicing the unit controls or accessories. DO NOT connect line voltage to the controller or other unit components.

### Balancing

The following guidelines are recommended when balancing a constant volume rooftop unit and Zcom diffuser system.

1. Adjust rooftop to supply cooling or heating during the balance. The Zcom diffuser has three modes of operation; cooling, heating and ventilation. If the supply air temperature is between the heating and cooling setpoints, the Zcom will operate in the ventilation mode and go to the ventilation damper position of 50% closed. Therefore, to properly balance the system, the rooftop unit must be in either cooling or heating.
2. Drive the Zcom diffusers fully open with the Zapper, shown on the Zapper as "CL Open" or "HT Open" (CL for cooling mode and HT for heating mode), or power down all Zcom diffusers which will return the Zcom's to the fully open position.
3. Balance each diffuser for the required design air flow.

The next steps apply to balancing the bypass damper to maintain duct static pressure.

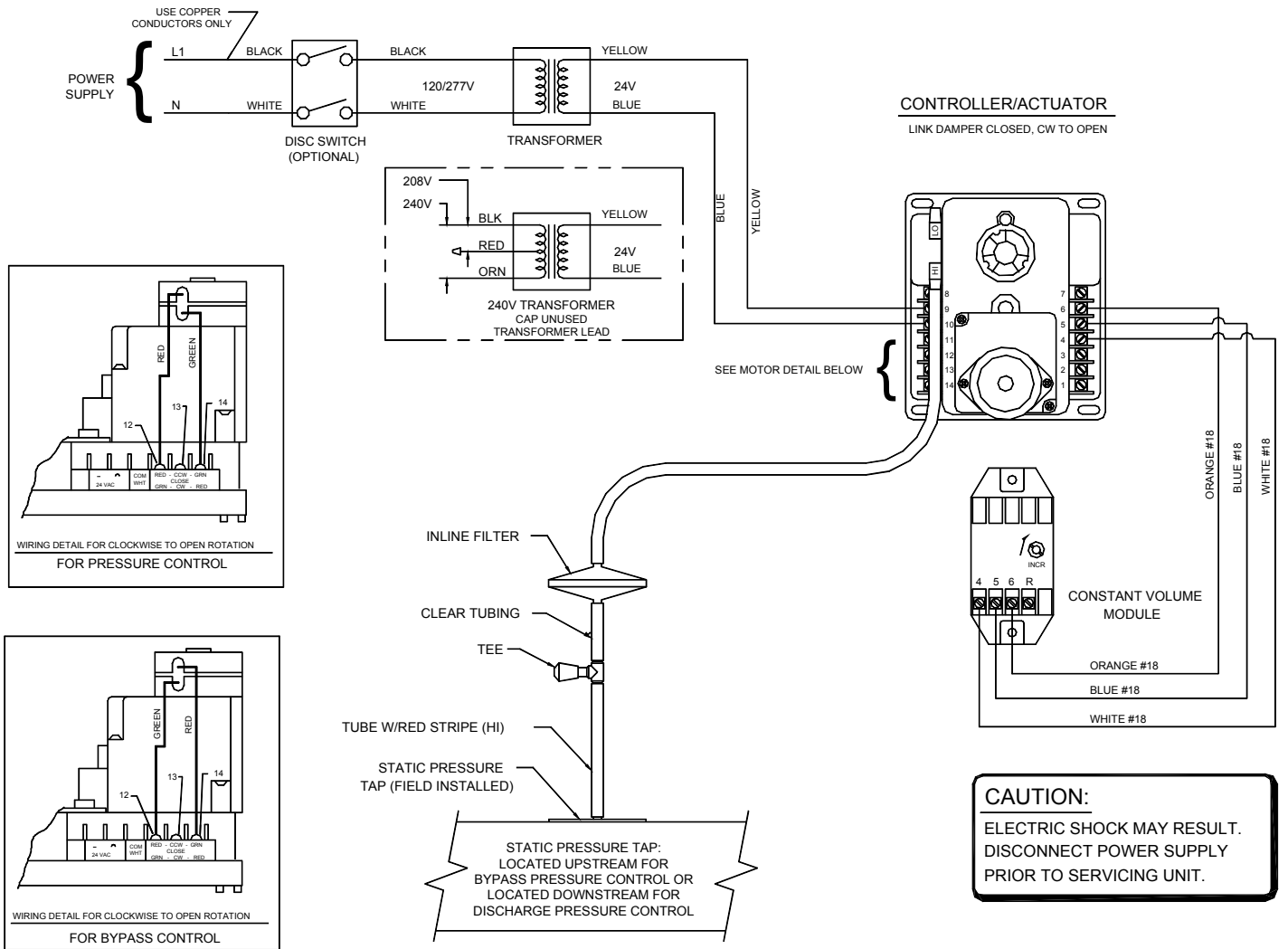
1. Command all Zcom diffusers to the minimum position except one Zcom master, which is to remain fully open. The Zapper is used to command the Zcom to the minimum position by pushing the down arrow selector button until "CL Close" or "HT Close" (CL for cooling mode and HT for heating mode) is displayed on the Zapper.
2. Set the bypass damper by adjusting the ZECV constant volume module to the desired static pressure as measured at the static pressure tap installed 2/3 down the main duct. The TITUS ZECV has a time delay of approximately five minutes before reacting to any adjustment.

### NOTES:

Consult local codes for specific types of wires and enclosures required for low voltage wiring. Troubleshooting information is found on page.

All wiring diagrams shown in this manual show single transformer wiring.

Figure 3.



**CAUTION:**  
ELECTRIC SHOCK MAY RESULT.  
DISCONNECT POWER SUPPLY  
PRIOR TO SERVICING UNIT.

### Replacement Parts

DESCRIPTION	MODEL #	TITUS PART #	DESCRIPTION	TITUS PART #
Controller-Actuator-Sensor (Sizes 4–10)	CEP-4011	100277-01	Transformers 120/24V 50VA	100058-01
(Sizes 12–16)	CEP-4012	100277-02	208/24V 50VA	100575-01
System Control Modules			240/24V 50VA	100575-01
Constant Volume			277/24V 50VA	100066-01
Pressure Controller	REE-1004	101711-01	480/24V 50VA	101003-01
			24V/24V 50VA	101066-01

**NOTES:**

Vendor part numbers may vary by date of manufacture. Series 4000 controls and accessories began with TITUS Factory No. 37337 (1988). Series 4000 controllers and modules must be matched together. All other series are interchangeable.

All valve sizes are National Pipe Thread (NPT). Valves include one female and one male union.

Proportional control water valves may be used as proportional with above listed modules or as two-position with standard reheat module.

Water control valves and actuators are shipped separately from terminal unit to reduce damage.

Primary Damper Assy.	
Size 4–5–6"	301820-01
Size 7"	301820-02
Size 8"	301820-03
Size 9"	301820-04
Size 10"	301820-05
Size 12"	301820-06
Size 14"	301820-07
Size 16"	301820-08
Damper Shaft Extension	
Short Stub-ALL	703003-01
Long Extension	
Sz. 4–6, 14, 16	703003-02
Sz. 7–12	703003-03
Shaft Bearing	703249-01

## Service Procedure Check Sheet

Voltage Range		Supply Voltage, AC		
		20.4-28.8	0 or 24	0 or 24
Terminal Connectors		#9, #10	#11, #12	#13, #14
Tag Location	Thermostat Setting	Power Supply	CCW Motor	CW Motor

I. Verify all wires are tightly secured to the proper terminals. CAUTION: Do NOT touch terminals with a screwdriver while power is on.

II. Verify CONTROLLER/ACTUATOR operation:

A. Observe motor operation through observation window. It should be rotating frequently and rocking back and forth in response to changes in air flow.

B. Observe arrow on the end of the damper shaft. Verify that damper rotates a full 90 degrees on call from full pressure.

C. Verify the setscrew is secure to the damper shaft at the proper location. Do NOT alter factory setting. CAUTION: Motor may be hot to the touch. (May be up to 150° F).

III. PROBLEMS AND POSSIBLE SOLUTIONS:

A. Power supply (#9 and #10) out of range -

- If ZERO, turn power on the read again.
- If power is on, determine reason for damage, Replace faulty or undersized transformer.

B. Damper remains full OPEN-

- Verify sufficient primary air flow to terminal.
- Check for loose damper set screw.
- Verify damper is positioned correctly.
- Verify limits are not set too high at the thermostat.

C. Damper remains full CLOSED-

- Check continuity for broken sensor wires.
- Verify damper set screw is secure.
- Verify damper position is correct.
- Verify damper is free to turn.

D. Damper remains STOPPED (won't open or close)

- Verify 24 VAC on motor that should be rotating.
- Reset thermostat slider and check opposite motor for 24 VAC.
- Verify damper is free to turn.
- Replace faulty controller/actuator.