

THERMAL PRODUCTS CORPORATION

ELECTRA-FLOW CEILING DIFFUSER EFS-24 BALANCING MANUAL

?? Introduction

Balancing a system using VAV diffusers is in theory unnecessary as the damper in the diffuser will adjust the volume of air discharging to maintain a constant temperature. This essentially makes the system self balancing. This does not mean that a balancer and balancing is not needed. The purpose for balancing changes when using VAV diffusers vs. constant volume diffusers. Balancing an air distribution system adjusts the volume of air at each outlet to that specified by the mechanical engineer. This process has two purposes:

- ?? The first purpose is to certify that the mechanical equipment and air distribution system is physically capable of delivering the rated or specified volume of air to the conditioned space under the specified pressure and noise criteria.
- ?? The second purpose is to indirectly adjust the temperature within a control zone by adjusting the air volume at the outlet relative to the other outlets on that zone of control.

The first purpose for balancing (cited above) is the only reason that balancing is required on a system using VAV diffusers. There are several different models of Vari-Flow diffusers. The balancing procedure for each of the models may be different. It is important to know what model diffusers are used to know which procedure to follow.

?? Procedure for Balancing Electronic Diffusers

The supply air temperature will determine the operating mode of the diffuser. The modes of operation are, VAV cooling (supply air temperatures below 65 degrees F.) and VAV heating (supply air temperatures above 85 degrees F.) It is important to know what mode the diffuser is in before attempting to balance or adjust the temperature on the diffuser because the adjustments will be disengaged when the diffuser is not in its respective operating modes. A changeover sensor located in the supply air stream will determine the mode of operation of the diffuser. The changeover sensor will change the mode of operation from heating to cooling when the supply air temperature drops below 65 degrees F., it will change from cooling to heating when the supply air temperature exceeds 85 degrees F.

?? Required Tools

- 9/64" set screw wrench
- 1/16" set screw wrench
- Balancing pin (1/8" dia. x 2 1/8" rod)

?? Steps

1. Turn off the power to the diffusers.
2. Open and remove the appearance panel cover.
3. Slide open the access cover.

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4. Remove the "MINIMUM SET POINT" adjustment set screw with a 1/16" set screw wrench. Store the set screw where it can easily be found for reinstallation.
5. Insert the balancing pin (1/8" dia. x 2 1/8" rods) into the "MINIMUM SET POINT" adjustment hole. As the balancing pin is inserted, note that the damper is opened to the full open position. With the balancing pin fully inserted, replace the 1/16" set screw. This will hold the balancing pin in place with the damper in full open position.
6. *Repeat Steps 1-6 for all diffusers in the control zone.*
7. Measure the discharge volume with a flow hood., If there are balancing dampers, adjust the balancing dampers to the specified air volume. Repeat for all diffusers.
8. Remove the balancing pin.
9. Reinstall the "MINIMUM SET POINT" set screw. If a minimum air volume is not specified or required, go to Step #11. If a minimum air volume is specified, proceed to Step #10.
10. The damper should be in the full closed position before the minimum set point can be set properly. Check the damper position by visual inspection or feel. Adjust the minimum set point adjustment screw to open the damper. Check the volume with a flow hood. Adjust to the specified minimum volume.
11. Adjust the VAV cooling temperature set point. (See the instruction label on the diffuser). **CAUTION!** The temperature adjustments on the diffuser (wall mounted on remote models) are electronic. Due to the sensitive nature of electronic controls, appropriate handling is required.

DO NOT USE EXCESSIVE FORCE WHEN ADJUSTING THE TEMPERATURE SET POINTS.

DO NOT ATTEMPT TO ADJUST THE TEMPERATURE BEYOND THE LIMITS ON THE TEMPERATURE SCALE.

TEMPERATURE SET POINT CHANGES WILL NOT RESULT IN INSTANTANEOUS DAMPER MOVEMENT. DAMPER MOVEMENT MAY TAKE THREE TO SEVEN MINUTES.

12. *Repeat Steps 7 - 11 for all diffusers in the control zone*

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