

DraftStop Application Guide

Used with Models AVS, AVB, AVV and AVR Floor Unit Ventilators

Window Downdraft Protection

Downdrafts can be generated in classrooms or other spaces with relatively large windows during prolonged periods of cold outside temperatures. For comfort during such conditions it is necessary to provide some form of downdraft protection. In installations utilizing unit ventilators, the Daikin “DraftStop” system can be used for this purpose.

Window downdraft protection is recommended for classrooms or other spaces where the following conditions exist:

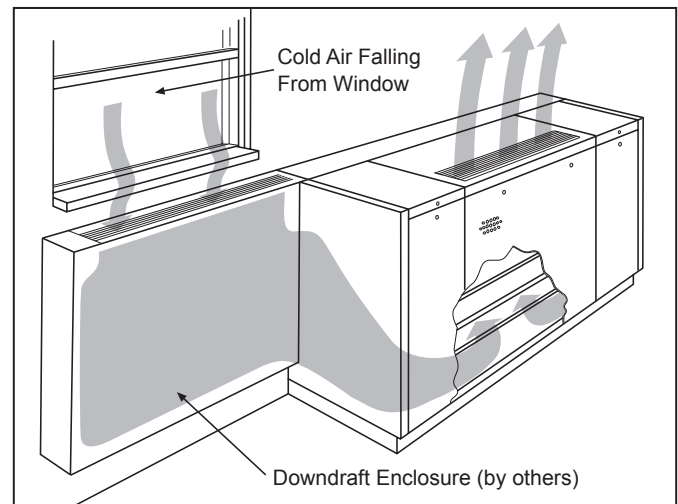
- Window area exceeds 40% of the total outside wall area.
- Single-pane glass is used.
- Outside temperatures are below 35°F for a significant portion of the occupied period.

The need for window downdraft protection will not always be so clear cut. Where uncertainty exists, a further check can be made by calculating the window heat loss at an outdoor temperature of 35°F. If estimated window heat loss exceeds 250 BTUH/ft., window downdraft protection is recommended. If estimated window heat loss is less than 250 BTUH/ft., the need for downdraft protection is marginal but should not be arbitrarily dismissed. The DraftStop system can be employed even in those marginal applications to provide the occupants comfort without the material, installation and operating cost penalty associated with “auxiliary radiation.”

DraftStop System

The Daikin DraftStop System is one of the best systems available to address the downdraft problem. This unique system intercepts falling cold air at the window sill level and draws it to the unit ventilator (Figure 1). Cool air from the windows is drawn into a plenum before it is allowed to reach the occupants. It then enters the unit’s air stream through the room damper and becomes part of the normal air circulation pattern. This is accomplished by blocking a portion of the return air grille at the front of the unit ventilator, causing the return air to be drawn in through the ends of the unit.

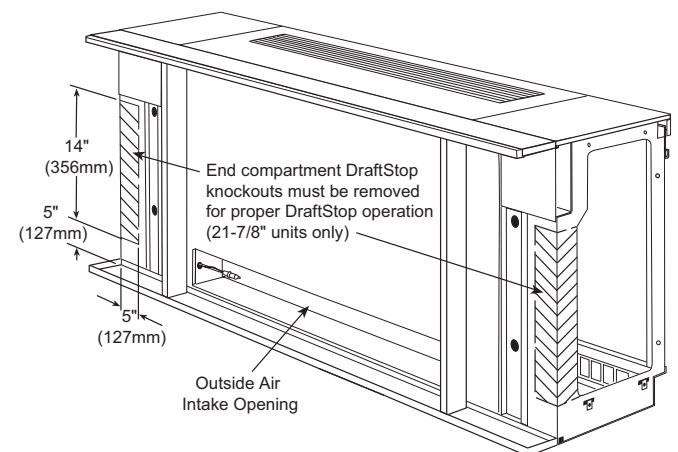
Figure 1: DraftStop Window Downdraft Protection



DraftStop Application

The unit ventilator is ordered with the factory installed Return Air Bottom with DraftStop option to restrict return air flow through the front bottom unit opening and induce air flow through the downdraft return path. The downdraft return path enters through the end compartments of the unit. There are two knockouts on the rear of the unit cabinet (Figure 2) that must be removed to allow proper operation of the DraftStop system.

Figure 2: DraftStop knockouts



The downdraft grilles are installed in cabinetry or other enclosures mounted along the exterior wall on either side of the unit ventilator (Figure 3). This cabinetry is not provided by Daikin. Either a steel bar inlet grille or a stamped inlet grille is fitted to the top rear of the cabinet, flush with the cabinet top. Daikin recommends a 3" wide grille with lengths as specified in Table 1. Note that the maximum lengths are based on maintaining sufficient velocity through the grille in order to capture the downdraft. If the maximum lengths are exceeded, the system will remain operational, but effectiveness will be reduced. A damper may be provided below the grille to allow for balancing of the downdraft airflow.

Table 1: Downdraft grille lengths

Unit Model	Minimum Length Each Side (ft)	Maximum Length Each Side (ft)
S07	3'	13'
S10	4'	18'
S13	5'	22'
S15	6'	25'

The unit ventilator may be installed between cabinetry that has a depth equal to the cabinet of the unit, where the downdraft return path is integrated into the rear of the cabinets as shown in Figure 3, or used with dedicated downdraft enclosures (provided by others) as illustrated in Figure 1 on page 1. Special unit end panels are available with cut-outs to provide a return air path when using dedicated enclosures (see Table 2). These end panels may or may not be used when the unit is installed between cabinetry. Between the grille and unit a minimum free area of 30 square inches should be maintained along the downdraft return air path.

Table 2: End Panels with cut outs for downdraft return

	16-5/8" (422mm) Deep End Panel	21-7/8" (556mm) Deep End Panel
Top View		
End View With 4" x 18" (102mm x 457mm) Cut-out		
End View With 4" x 22" (102mm x 559mm) Cut-out		

Figure 3: Cabinetry with integrated downdraft return air path

