FIREHOUSE® Weekly Drill

Drill #71: Ventilation Part I

Introduction

We all learned about ventilation in rookie training. But, did we really have a good understanding of the benefits it produced on the fireground? By definition, ventilation is a systematically controlled process for removing the smoke and heated gases from a structure, also known as the by-product of combustion.

There two primary reasons for ventilating:

1) It removes the heat and gases and provides trapped occupants with fresh air, while firefighters are searching for them

2) It makes the environment more tenable and allows the firefighters to enter the structure with greater visibility to seek the seat of the fire.

When it has been determined that there are trapped occupants, ventilation should begin as soon as possible. It is of the utmost importance to remember, though, that while ventilation brings needed oxygen to those who are trapped, it also feeds oxygen to the fire, which will cause it to intensify. This is why firefighters really need to understand the principles of ventilation.

Principles of Ventilation

When performed correctly, ventilation will draw the heat and deadly gases away from those trapped. In this instance, vertical ventilation should be performed. By venting vertically, it release the pressure and mushrooming affects that take place in a structure during a fire, while drawing in fresh air from below.

When firefighters are assured that there is no life safety issues (trapped occupants) then ventilation should be delayed or controlled until the proper resources for an aggressive interior attack are in place. This means having a charged hoseline in place at the point of entry. This entry point may be the front door or it may be the second-floor landing, depending on the fire's location.

Vertical and Horizontal Ventilation

Once this hoseline is in place, and the attack on the fire is in order, the ventilation team should be given the go ahead to commence ventilation operations. For a fire on the first or second floor, horizontal ventilation can be performed by the outside ventilation group using pike poles or portable ground ladders.

Factors to take into consideration for whether to perform vertical or horizontal ventilation are: the size of the fire and its location in the structure; construction features on the building; weather conditions; and the number of personnel available to perform these tasks.

Horizontal ventilation in general will be undertaken at fires that range in moderate-size buildings, such as single-family dwellings or two-story multiple-family dwellings or apartments. Here, firefighters have access to windows from the ground, making the job faster and much easier.

Vertical ventilation, on the other hand, requires more firefighters to access the roof, taking up considerable time, as ladders have to be raised and equipment carried to the roof. However, under heavy fire conditions, vertical ventilation may be the determining factor as to whether the fire is controlled in a timely manner or continues to burn.

–Prepared by Russell Merrick