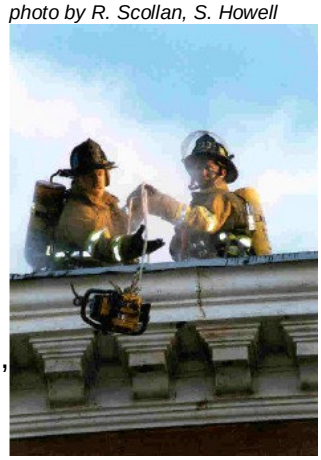
# Safe use of power saws

We have all seen the drastic increase in the use of power saws on the fireground. They are used commonly for ventilation, forcible entry, as well as a plethora of other activities and tasks. As you can imagine, this has created numerous problems regarding how to carry, properly handle and use different saws.

**ACCESSING THE ROOF**

Before you ever think about climbing a ladder with a saw, take a few extra seconds to start it and make sure that it will run. A smoky rooftop is not the place to find out that your saw is not operating correctly. It is much easier to transport a power saw, whether rotary or chain, and place that saw in service, if a strap or sling is used. This is especially true when trying to climb or navigate on a portable ground ladder or aerial unit. Having a sling on the saw allows the firefighter the ability to still have the use of both hands, thus allowing them to have four points of contact with the ladder while climbing. As you can imagine, different lengths of straps are needed for different saws. The sling must be long enough so that it rides down off the firefighter's back, does not interfere with the SCBA and allows the firefighter to carry the saw comfortably.

*photo by R. Scollan, S. Howell*



The saw hanging this low may be a problem for some shorter firefighters and may make them feel like the saw is going to swing out and cause it to fall off the shoulder. However, passing the sling over the head, which would cause the saw to ride higher and alongside the SCBA, can eliminate this problem.

Anyone who has ever worked on a ventilation crew will tell you that one of the most nerve-racking operations on the fire-ground is moving from point to point on a smoky roof, especially when there are multiple saws running. Not only is the rooftop a hazard (i.e., not knowing exactly where the edges of the roof are located, structural integrity, etc.), but the other ventilation crews and their equipment are as well. You can hear the saws and you know they are close, but you are not exactly sure where they are. This is especially true during major ventilation operations
(trenching, etc.).

**MOVING ON THE ROOF**

What is the proper way to move on a smoky roof when you have a saw? There is no one correct way to move on a roof. However, there are a number of factors to keep in mind. Sounding the roof is an extremely important and, often times, overlooked step. Before leaving the relative safety of the ladder, make sure you have a tool to sound the roof with (i.e., an axe, Halligan tool, etc.) and remember to sound the roof early and often. Once you have determined the roof is safe, you have a couple of choices on how to move with your power saw. If the saw is

not yet running, you can simply carry it slung over your shoulder or in your hand. However, if the saw is running, it is usually best to place the blade of a rotary saw against the roof's surface in order to stop its rotation. Even if the tension on the belt is improperly adjusted, the spinning blade will stop spinning once contact is made with the roof. If you are using a chain saw, it is best to engage the blade break before moving.

**BEFORE CUTTING**

*photo by Normal FD*

Once on the roof ask yourself, "is cutting the roof necessary?" If you are operating at a residential structure, the answer is probably yes. However, in many cases (i.e., commercial structures), opening up scuttles, bulkheads, and/or removing skylights can accomplish initial vertical ventilation. As a general rule, the opening or removal of the above listed items should be completed before commencing saw operations (if the structure is equipped with such items). Once the initial vertical ventilation is completed, the firefighters on the roof should evaluate the smoke conditions and any radio reports to determine if additional ventilation is necessary. Positive Pressure Ventilation (PPV) is an excellent way to increase the effectiveness of ventilation whether the opening is natural (i.e., skylight, etc.) or manmade.

If additional ventilation is needed, there are two basic options. The first and fastest is to remove the top-floor windows from the roof level. This can be accomplished in a number of ways, such as reaching over the side of the building with a pike pole and busting the windows out (again, primarily used while operating at commercial structures) or using a Halligan tool or axe and a rope (it always pays to have the irons with you). If this additional ventilation is not sufficient (or feasible i.e., operating at most residential structures) to remedy the smoke condition, then the roof must be cut.

**CUTTING THE ROOF**

photo courtesy of SJFD

So where should you place the ventilation cut? The proper placement of the ventilation hole depends on several factors, with the most important factor being the fire's location within the building. The opening needs to be cut where it will provide the most effective escape route for the fire's heat and toxic gases. With this in mind, it is easy to

see why the ventilation opening must be as close as possible to the main body of fire. The seat of the fire may already be known (i.e., reports from the interior crew, visual observations of the fire, etc.) if you happen to be operating at a residential structure fire.

Many times, ventilation crews are assigned to cut an opening at a specific location (i.e., E-45's crew has been assigned to ventilation, open the roof on the South East side, or A, D side, etc.). However, if you are operating at a commercial structure, finding the seat of the fire will be more challenging. In these instances, several different visual indicators can help you determine the location of the fire. Indicators may include but are not limited too: bubbling tar on the roof's surface as well as smoke pushing through seams in the roof or around vent pipes. Employing the use of a thermal camera is another excellent way to find the seat of a fire. Example - if the fire is now blowing out of several windows on the top floor of a building, it should be fairly easy to narrow down the location for the ventilation opening.

Watch out for what I like to call the "parapet paradigm." This paradigm refers to the frequently made mistake of cutting the ventilation hole too close to the outside or parapet wall. With fire showing from multiple windows, the ventilation opening should be placed farther in toward the middle of the roof's surface. Why? The rooms that have fire emanating from the windows already have plenty of ventilation and cutting too close to these exterior walls would only vent the same area that is already being vented by the windows. The rest of the floor, especially the hallways, has limited ventilation. However, this lack of ventilation can be eliminated by pulling back from the exterior walls (location of windows) between 10-15 feet and then opening up the roof. The location of this opening will allow for venting of the fire's gases and heat and aid the interior crews in their efforts.

**DOES SIZE REALLY MATTER?**

As we all know, much has been written about what the size of the ventilation opening should be (and you thought I was talking about something else… shame on you). Over the years, you have heard quoted dimensions of 8'x8' or 12'x12', or as an old friend of mine used to put it, "if you can't drive a small automobile though the opening, it's too small!" Although it is ideal to end up with the above-mentioned sizes, it is impractical to initially try to cut the ventilation opening to those sizes. It is the author's opinion that cutting smaller, more manageable

openings (4’x4’) not only saves time over cutting the traditional 8’x8’ or 12’x’12’, but it is also much easier to pull.

Time and speed are of the utmost importance during ventilation operations, especially when cutting the original ventilation opening. The quicker the opening is made and pulled, the faster the fire floor will be vented. Again, it is prudent, not to mention advantageous, to cut and pull a 4’x4’ opening and then add to that size if needed, than it is to cut an 8’x8’ opening. Your interior crews will thank you! (See, sometimes smaller and quicker is better!)