December 5, 2022

Space Heater Shielding and Clearances

Wood-burning space heaters can take up a lot of living space. An uncertified appliance with 1200 mm (48") clearance to the rear and the standard front clearance of 1200 mm (48") can easily occupy more than half the width of a room. Most homeowners want their wood-burning installation to take up as little space as possible. As a result, some amount of clearance reduction is used with nearly every installation. Fortunately, the rules for clearance reduction are very effective in safely reducing the space occupied by an appliance installation.

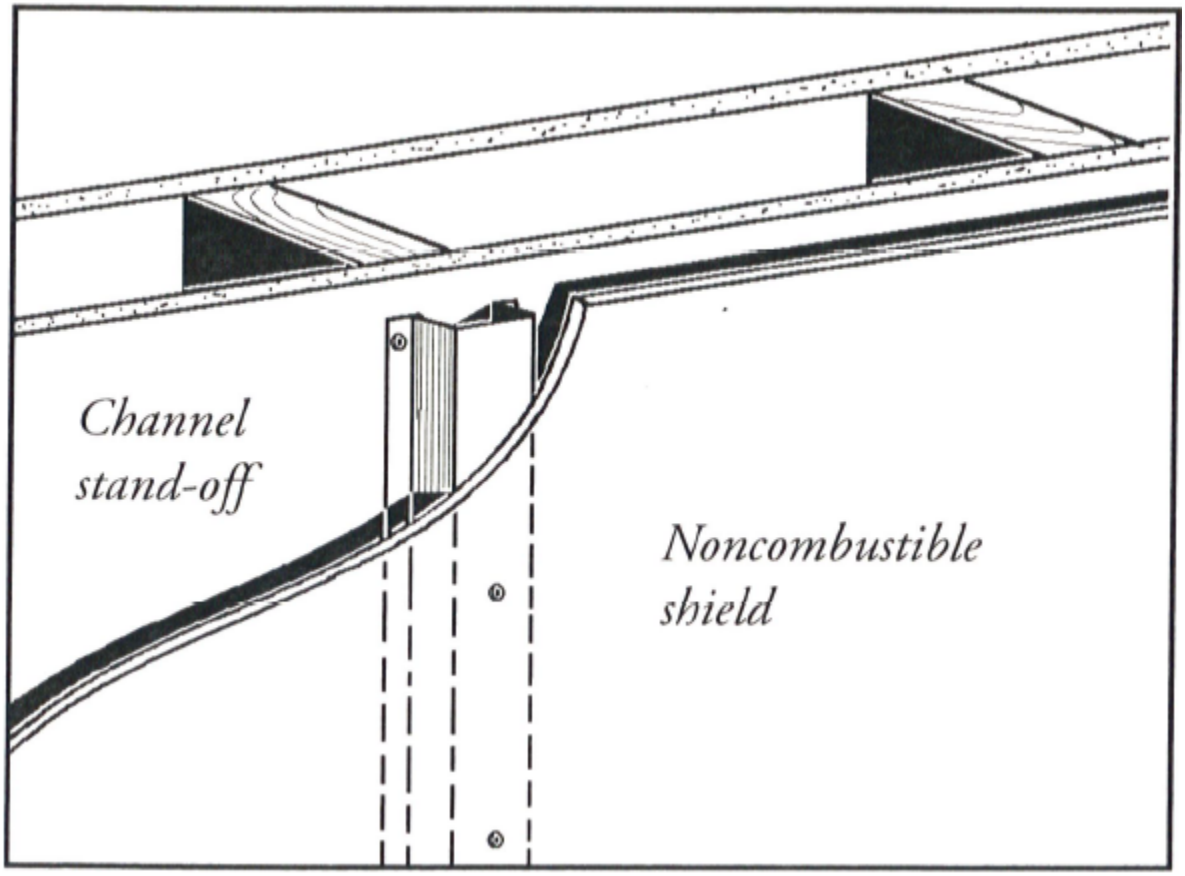
Code B365 gives percentage reductions of minimum clearances for various forms of protection. For minimum clearances of uncertified appliances, see Table 2 of B365. On certified appliances, check the information label or installation manual.

The approach to clearance reduction is the same for both certified and uncertified appliances. Some appliance manufacturers, however, place limitations on how close to combustible material their product can be installed, regardless of the shielding provided. Before using shielding to reduce clearances for certified appliances, check the
label and installation manual for restrictions.

HOW CLEARANCES ARE MEASURED
The way clearances are measured, and the way clearance requirements are interpreted can have a large effect on the resulting figures.

For example, if an uncertified appliance has a shield attached to it, the measurement for its clearance to a wall is taken from the surface of the shielding, not from the firebox wall behind the shield. The procedure at the other end of the measuring tape is different. If a wall has a suitable shield mounted on it, the shield is ignored, and the measurement is taken from the wall itself. Also, if the wall is covered with a non-combustible material such as tile, brick or brick slices with no air space, the measurement is taken from the combustible material behind the wall covering.

Perhaps most importantly, clearances are measured with a measuring tape. While this advice may seem obvious, it is worth remembering. Never guess about a clearance, no matter how good you think your eye is. The clearance figures on labels are precise and leave little room for error. After all, manufacturers want their products to be capable of placement as close to walls as possible and will make sure that testing reveals the minimum possible clearance. If the minimum clearance is not provided, there is a good chance that adjacent combustibles will overheat.



CHANNEL STAND-OFF

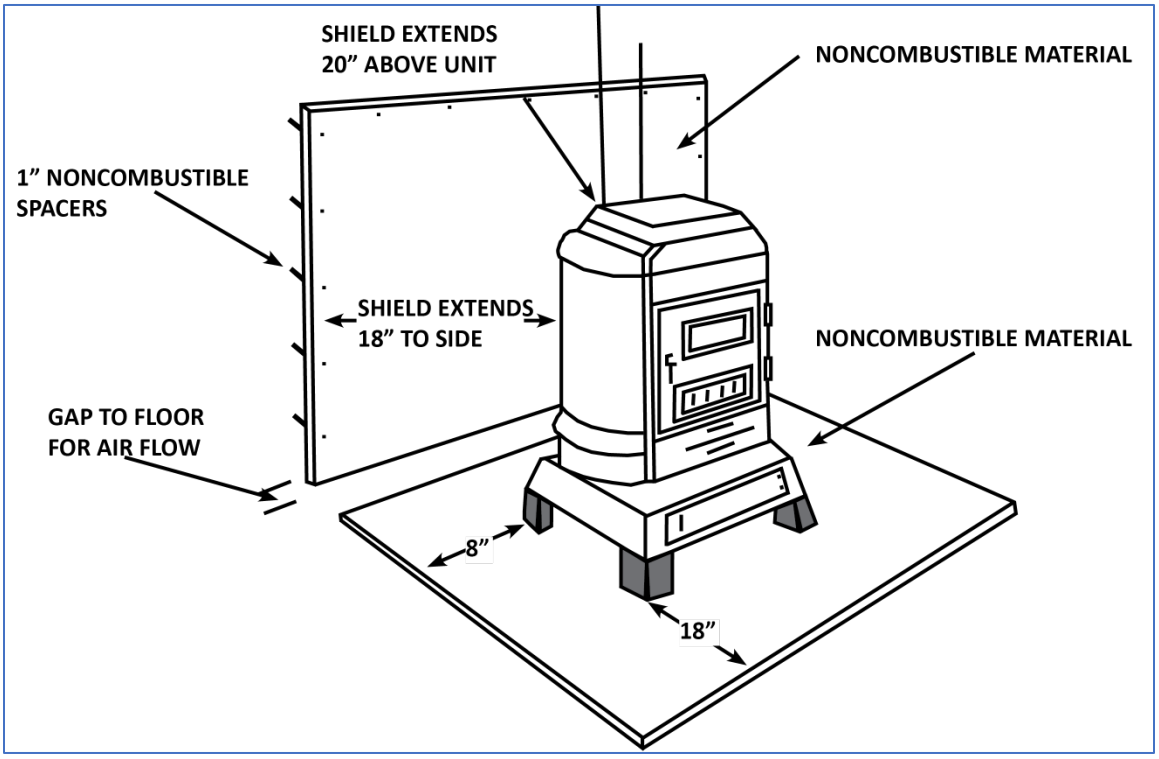
Channel stand-offs provide better shield support and faster installation than tube spacers. Because the mounting screws do not pass from the face of the shield to the combustibles behind, channel stand-offs can be placed more directly behind the appliance.

Keep in mind that heat can be conducted down the shank of mounting screws into the studs into which they are anchored. Evidence of this phenomenon has been seen in actual installations where studs have been charred around the screw threads. For this reason, Table 3 specifies that shield-mounting hardware should not be placed directly behind the appliance in the area of the most intense radiation. Where the shield-mounting hardware extends from the face of the shield into combustibles behind, it must be located only at the outer edges of the shield. However, if channel stand-offs are used, they may be located within 200 mm (8") from the vertical centre line of the appliance.

Shields must be supported at least 25 mm (l") up from the floor to provide an entry point for the cooling air. If the shield is large or heavy, or you feel that the wall mounting hardware is not sufficient to support it, metal feet should be attached at the bottom of the shield for additional vertical support. If the installation calls for the shield to extend to ceiling level, a 75 mm (3") space must be left between the top of the shield and the ceiling to allow convection air flow to exit from behind the shield.

For the same reason, air cooled shields for ceilings should be given a 75 mm (3) edge clearance. Wall shields are to extend 450 mm (18") beyond each edge of the appliance. The spaces at the edges of the shield should be left open to allow air to flow in from the sides unless the shield extends more than 450 mm (18") beyond the edges of the appliance. The top of the shield should extend at least 500 mm (20") above the top surface of the appliance. The air space at the top of the shield must never be closed because the cooling air flow would be

blocked. The calculation of minimum wall shield size is simple. For example, a space heater that is 600 mm (24") wide needs a wall shield 1500 mm (60") wide. If the stove were 750 mm (30") tall, the shield would have to protect the wall to at least 1250 mm (50") above the floor. The actual dimension of the shield would be 1225 mm (49") because of the 25 mm (l") space needed under the shield for air flow. The 500 mm (20") extension beyond the top and 450 mm (18") beyond each edge of the appliance are minimum values and must not be compromised.



For more information on residential wood heating, read "A Guide to Residential Wood Heating" provided by Natural Resources Canada