

### Affects: Bosch Smoke Detectors

## 1.0 Installation Considerations

The proper location of detection devices is a critical factor in a properly installed and operating fire alarm system. Place the detectors according to the National Fire Protection Association (NFPA) recommendations. For commercial or industrial installations, refer to NFPA Standard, 72E Automatic Fire Detectors. When considering the detectors for residential applications, refer to NFPA Standard 74, Household Fire Warning Equipment. These standards are available from:

National Fire Protection Association  
Battery March Park, Quincy, MA 02269

Good judgement must prevail in all installations. Consider the following smoke detector guidelines:

- Do not install smoke detectors in dead air spaces, or close to ventilating or air-conditioning outlets because smoke can circulate away from the detector. Install smoke detectors near the return air inlets.
- Avoid areas that are exposed to normal smoke concentrations such as kitchens, garages, or near fireplaces.
- Do not install smoke detectors where the normal area temperatures are above +100°F (+38°C) or below +32°F (0°C).
- Do not install smoke detectors in areas of high humidity or dust concentrations.
- Do not install ceiling mounted smoke detectors with the edge less than 4 in. (10 cm) from any wall.
- Place the top edge of wall mounted detectors between 2 in. (10 cm) and 12 in. (30 cm) from the ceiling.

The following excerpt from NFPA Standard 74 is a basic requirement for residential installations.

### 2-1 Required Protection

- 2-1.1 This standard requires the following detectors within the family living unit.

2-1.1.1 Smoke detectors shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms and on each additional story of the family living unit including basements and excluding crawl spaces and unfinished attics.<sup>1</sup>

2-1.1.2 For family living units with one or more split levels (such as adjacent levels with less than one full story separation between levels), a smoke detector required by 2-1.1.1 shall suffice for an adjacent lower level, including basements.

*Exception: Where there is an intervening door between one level and the adjacent lower level, a smoke detector shall be installed on the lower level.*

<sup>1</sup> The provisions of 2-1.1.1 represent the minimum number of detectors required by this standard. It is recommended that the householder consider the use of additional smoke or heat detectors for increased protection for those areas separated by a door from the areas protected by the required smoke detectors under 2-1.1.1 above. The recommended additional areas are living room, dining room, bedroom(s), kitchen, attic (finished or unfinished), furnace room, utility room, basement, integral or attached garage, and hallways not covered under 2-1.1.1 above. However, the use of additional detectors remain the option of the householder."



Never consider a smoke or fire detection device 100 percent foolproof.

No device lasts forever. This detector was manufactured according to the highest quality and reliability standards in the industry. It is composed of components that, in time, might fail.

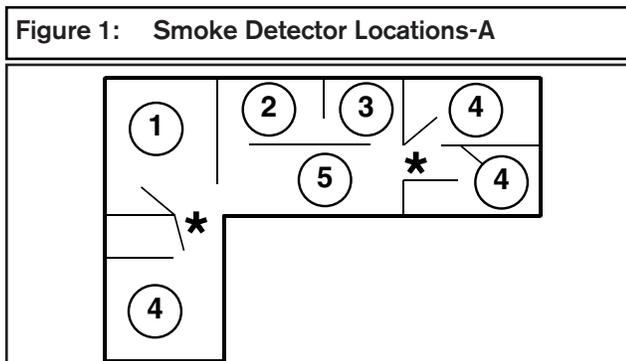


Smoke detectors do not operate without power. Because they are an important part of a lifesaving fire alarm system, frequently test your system, and in particular test the smoke detector.

# Smoke Detectors

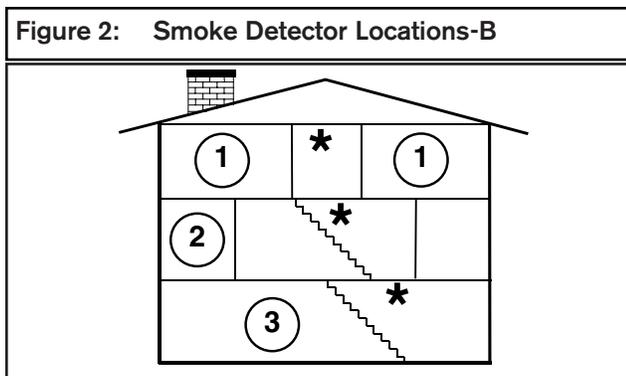
## Technical Service Note

Position smoke detectors between the sleeping areas and family living areas (see *Figure 1*).



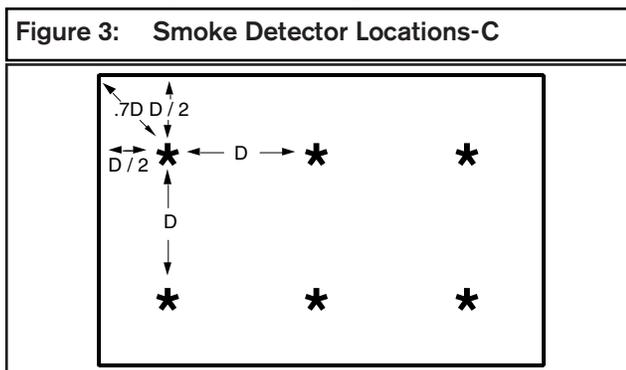
- 1 - Recreation room
- 2 - Dining room
- 3 - Kitchen
- 4 - Bedroom
- \* - Smoke detector

Place a smoke detector on each story of the building, including the basement. Do not place a smoke detector in a crawl space or unfinished attic (see *Figure 2*).



- 1 - Bedroom
- 2 - Living room
- 3 - Basement
- \* - Smoke detector

For commercial installations, use the smooth ceiling application where  $D = 30$  ft (9 m) as a guide for the NFPA 72E requirement (see *Figure 3*).



- \* - Smoke detector

When this detector is installed as part of an automatic fire alarm system, it provides an early warning of a developing fire. However, this system does not assure protection against property damage or the loss of life resulting from a fire.

Any fire alarm system can fail to warn for many reasons. For example, the smoke detectors might not:

- sense fires that start where smoke cannot reach the detector, such as in pipes, chimneys, or walls, on roofs, or behind closed doors.
- sense a fire on another level or floor. For example, a first-floor installed detector might not sense a fire in an attic, on a second-floor, or in the basement.
- always warn against fires caused by carelessness and safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage, using flammable materials, overloaded electrical circuits, children playing with matches, or arson.

### 1.1 Installation in Family Residences

It is important to understand that no rules, regulations, or constantly-tested fire warning equipment can protect all people at all times. Adhering to the procedures outlined in NFPA Standard 74 might not be enough to protect against the three traditional fire killers:

1. Smoking in bed
2. Leaving children unattended
3. Cleaning with flammable liquids

Adhering to NFPA Standard 74 can lead to reasonable safety from fire when you:

- minimize hazards,
- provide a fire warning system, and
- have and practice an escape plan.

NFPA Standard 74 recognizes that the majority of fire fatalities occur in the home, and that most of these occur at night during sleeping hours. This standard defines a minimum level of protection by requiring the installation of smoke detectors outside each sleeping area and on each additional story of the dwelling. However, the authors of NFPA Standard 74 believe that:

“The installation of additional detectors, of either the smoke or heat type, should result in a higher degree of protection.

“Adding detectors to rooms which are normally closed off from the required detectors will increase the escape time because the fire need not build to a higher level needed to force smoke out of the closed room to the required detector.”

For additional early warning protection, install detectors in all separated areas including the basement, bedrooms, dining room, utility room, furnace room, and hallways that are not protected by required detectors.

### 1.2 A Family Escape Plan

Even if a properly installed and operating fire alarm system gives adequate warning before a fire becomes deadly, this warning might be wasted unless the family plans in advance for a rapid and safe exit from the building.

Use these guidelines to develop a family escape plan:

- Draw a floor plan of the entire house, showing two exits from each bedroom and two exits from the house. Ensure the plan provides for exiting the residence without opening a bedroom door, and that exiting from bedroom windows might be necessary. Make copies of the plan and give one to each family member.
  - Arrange a meeting place outside and away from the residence. When all occupants are out of the building, they must go immediately to the selected location so everyone is quickly and accurately accounted for.
  - Ensure all family members regularly practice the escape plan. As part of each drill, instruct children on how to open their bedroom windows and exit safely from the building. If exiting is not possible, instruct them to remain at the open window and shout for help until it arrives.
  - Close all bedroom doors before retiring. This provides a barricade between family members and the fire, smoke, and toxic gases.
  - If a fire alarm sounds after retiring, shout to the children from behind your closed door to awaken them. Remind them to keep their bedroom doors closed. Then proceed to your own bedroom door and touch across the top.
    - If the top of the door is uncomfortably hot, do not open the door. Intolerable heat or smoke is probably on the other side. Shout to all family members to keep their bedroom doors closed and exit the building using alternate routes.
- If the top of the door is not extremely hot, brace the bottom of the door with your foot and the top of the door with one hand. Then, open the door approximately 1 in. (3 cm). Be prepared to close the door if there is pressure against the door, or if any in-rushing air is very hot.
  - If there is no evidence of excessive heat or pressure, leave the room and close the door behind you. Shout appropriate instructions to all family members and immediately leave the building using the planned routes. If there is heavy smoke, drop to your hands and knees or crawl on your stomach if necessary to be below the smoke level.

