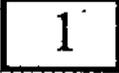
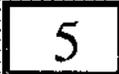
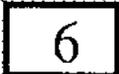
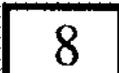
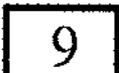
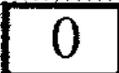
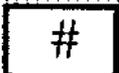
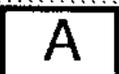
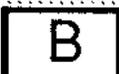
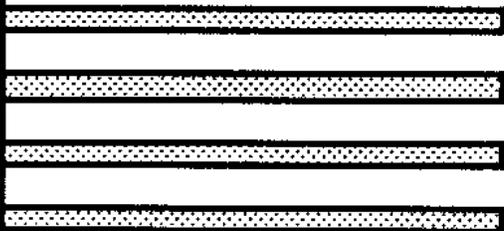


# 7090 Security System User's Guide

	ARMED		
	PARTIAL	1	
	ALERT	2	
	POWER	3	
	FIRE	4	
		5	

	ALL	INSTANT	DELAY
			
			
ALERT	TEST	BYPASS	
			
RESET	PROGRAM	COMMAND	
			
			



**Area No.**

**Protected Area**

1

\_\_\_\_\_

2

\_\_\_\_\_

3

\_\_\_\_\_

4

\_\_\_\_\_

5

\_\_\_\_\_

### **Maintenance and Service**

The system should be tested weekly to insure that it is functioning properly. If any problems are detected in testing or any changes are noticed in normal operation call your alarm company for service. The manufacturer recommends replacing the system battery every 3 to 5 years.

Monitoring Service Phone No. \_\_\_\_\_

Monitoring Service System No. \_\_\_\_\_

### **Audible Alarm Signalling Device Sounds**

Intrusion     Pulse     Continuous

Fire             Pulse     Continuous

Keypad Emergency Alarm

Pulse     Continuous     Silent

Medical Emergency Alarm

Pulse     Continuous     \_\_\_\_\_

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## KEYPAD INDICATOR LIGHT OPERATION

### Armed (red light):

OFF – The control is disarmed.

FLASHING – The control is still armed, and an alarm has occurred or the control was just armed and it is in exit delay.

ON – The control is armed, and no alarms have occurred.

### Partial (yellow light):

OFF – *The interior area is not bypassed.*

ON – *All interior areas are bypassed.*

### Alert (yellow light):

OFF – The control is **not** in the instant mode (when armed), or in the Alert mode (when disarmed).

FLASHING - Special Area protection is activated.

ON – The control *is* in the instant mode (when armed), or in the Alert mode (when disarmed).

### Power (green light):

OFF – The control has lost all power (there is no AC or battery).

FLASHING – Control problems exist. (See *Error Display*, page 16.)

ON – The control is running on AC power without problems. (Normal operation.)



Fire (red light):

OFF – There have been no Fire Alarms.

FLASHING - There has been an Fire Alarm.

ON – The Fire zone has problems.

1 - 5 (red) Area Lights:

OFF – The area is secure.

SLOW FLASH - The area is bypassed.

FAST FLASH - The area has alarmed.

ON – The area is not secure.

The yellow *Partial*, and red *Armed* lights **Flashing together** indicate the control is in the "Area Test" Mode (See page 13).

## KEYPAD INFORMATION

All = Arm (turn on) all areas not bypassed

Instant = Arm only Perimeter areas , make them Instant alarms

Delay = Arm only Perimeter areas , allow delayed entry

Alert = Perimeter Alert tone enable

Test = Test selected system functions

Bypass= Bypass violated areas

Reset = Cancel present keypad sequence entries

Program = Enter the Program mode

Command = Pressed before the above "Commands"

A = \_\_\_\_\_

B = \_\_\_\_\_

C = \_\_\_\_\_



COMMAND

ALL

# TURNING ON YOUR SYSTEM

#

1

To turn on ( arm) the system, all of the area lights must be off (secured) or flashing (bypassed). If an area light is on steady, see AREA BYPASS on page 9 or FORCE ARMING on page 8.

DO  DO NOT, enter your User Code before entering the Arming Command.

Enter the command sequence above. After entering the proper code sequence, the red *Armed* light will flash during the exit delay interval, then turn *ON* when the exit delay expires. You should leave the premises *before* the delay period ends but only after the following sound is heard.

- Bell or Siren for 2 seconds.
- Control Station sounds a **single** beep for 1 second.

This sound may be delayed while the control verifies the phone line connection. If the above sound is not heard, or the control station sounds a three beep tone, disarm the control and call your Monitoring Service listed on the inside cover of this manual.

*Note: The control battery is automatically tested every 24 hours, however it is possible to arm the control in a residential application with a depleted battery. See BATTERY TEST page 14.*

# TURNING ON YOUR SYSTEM

COMMAND

INSTANT

**with someone remaining on  
premise, no entry allowed**

#

2

To turn on (arm) the system, all of the area lights must be off (secured) or flashing (bypassed). If an area light is on steady, see AREA BYPASS on page 9 or FORCE ARMING on page 8.

( ) DO ( ) DO NOT, enter your User Code before entering the Arming Command.

Enter the command sequence above. After entering the proper code sequence, the red *Armed* light will flash during the exit delay interval, then turn *ON* when the exit delay expires. You should leave the premises *before* the delay period ends if you desire to leave. Remember that if you re-enter after arming the control with this command an alarm will result.

The control will acknowledge that the protection is in place by sounding a single Control Station beep.

Arming the system with this command will cause the yellow *Partial* light to turn ON constant. The control will arm only Perimeter protection areas (including entry/exit). Areas programmed as Interior protection will **not** be armed (that is, interior protection remains off, and movement in the premise is allowed). The yellow *Alert* light will also light indicating instant alarm.

COMMAND

#

DELAY

3

# TURNING ON YOUR SYSTEM with someone remaining on premise, allow entry

To turn on (arm) the system, all of the area lights must be off (secured) or flashing (bypassed). If an area light is on steady, see AREA BYPASS on page 9 or FORCE ARMING on page 8.

( ) DO ( ) DO NOT, enter your User Code before entering the Arming Command.

Enter the command sequence above. After entering the proper code sequence, the red *Armed* light will flash during the exit delay interval, then turn *ON* when the exit delay expires. You should leave the premises *before* the delay period ends if you desire to leave.

The control will acknowledge that the protection is in place by sounding a single Control Station beep.

Arming the system with this command will cause the yellow *Partial* light to turn ON constant. The control will arm only Perimeter protection areas. Areas programmed as Interior protection will not be armed (that is, interior protection remains off, and movement within the premise is allowed).

# CUSTOM ARMING YOUR SYSTEM

To turn on (arm) the system, all of the area lights must be off (secured) or flashing (bypassed). If an area light is on steady, see AREA BYPASS on page 9 or FORCE ARMING on page 8.

( ) DO ( ) DO NOT, enter your User Code before entering the Arming Command.

Enter the command sequence above. After entering the proper code sequence, the red *Armed* light will flash during the exit delay interval, then turn *ON* when the exit delay expires. You should leave the premises *before* the delay period ends if you desire to leave.

The control will acknowledge that the protection is in place by sounding a single Control Station beep.

*This feature must be disabled on UL certificated installations.*

COMMAND

#

4

\_\_\_\_\_

COMMAND

#

5

\_\_\_\_\_

COMMAND

#

6

\_\_\_\_\_

# FORCE ARMING YOUR SYSTEM

## with one or more areas lights on steady

When one or more areas are faulted (red area lights are on steady), the control may be forced to arm the system by bypassing the violated areas.

To Force arm the control, first enter any of the arming command sequences on pages 4, 5, 6 or 7, at which time the sounder will start sounding a 5 second long beep. Then (during the beep), press [Bypass/9]. All violated areas will be bypassed, the sounder will cease, and the control will arm.



BYPASS



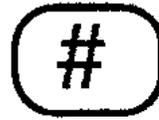
If a three beep tone is heard instead of the 5 second long beep, then the control may not be forced armed. Any violated areas will have to be cleared of alarms prior to attempting to arm the control. (See *Area Bypass*, Page 9, for individual area bypassing.)

*This feature must be disabled on UL certificated installations.*

**The user is cautioned that any area bypassing or force arming removes some of your protection. Therefore, an intrusion may not be detected or the detection may be delayed. Use area bypassing and force arming with caution, and always attempt to correct any area problems (open doors and windows etc.) before using these features. If the problem can't be corrected contact your alarm service company.**

# AREA BYPASS

COMMAND    BYPASS



There may be occasions when it is desirable or necessary to temporarily bypass one or more areas prior to arming the system. For instance, a faulty detector causing an area light to remain on constantly.

( ) DO ( ) DO NOT, enter your User Code before entering the Bypass Command.

Area bypassing is accomplished by entering [Command/#] [Bypass/9], then the area number (1 through 5).

Only one area may be bypassed each time the command is used. If more than one area requires bypassing, repeat the command for each area that must be bypassed.

When one or more areas have been successfully bypassed, the yellow *Partial* light will pulse on and off to draw attention to the bypass, and will continue to pulse even when the control is armed. The area lights for bypassed areas will flash until the system is turned on.

If a area is already bypassed, re-entering the command will cancel the bypass for that area. Disarming the control will cancel all previously entered Area Bypass commands. To cancel all areas bypassed, enter [Command/#] [Bypass/9] [Reset/\*].

NOTE: See *Force Arming*, Page 8, for another method of area bypassing.

# TO TURN OFF (disarm) YOUR SYSTEM



To turn off the system enter your User Code, then press [Command/#]. Then the red *Armed* light will turn OFF.

## TO TURN OFF THE SYSTEM UNDER DURESS

- ( ) This system has the Duress Alarm feature.
- ( ) This system **does not have** the Duress Alarm feature.

Entering a code one (1) digit higher than your User Code is a Duress code. A Duress code is used when someone demands, by threatening your life or well-being, that the system be turned off. When used, the code will both turn off the system and report a silent duress alarm if connected to a monitoring service. Extreme care should be used when entering your users code to turn off the system, so the duress code is not inadvertently entered.

Example; if your User Code is 222, then 223 is a Duress code if enabled. The control will give no indication that the Duress code was used, and will outwardly respond the same as if the Default Disarming code was used. **NOTE: Be careful of User Codes that end in a 9.** Example; if your User Code is 229, then the Duress Code is 220, *and not 230.*

# IN THE EVENT OF AN ALARM

## **A CAUTIONARY NOTE:**

How you respond in the event of an alarm will depend, for the most part, on the type of alarm and the time the alarm occurs. You should seek the advice of your installing company in developing your response plan during the installation phase of your system ..... and not later, after an alarm has occurred. \*

*Above all else, common sense should prevail. If there is any threat or hint of danger to yourself or others on the premises, such as in the event of a fire alarm, everyone should be instructed to leave the premises immediately. Do not enter the premises unless in company with the appropriate Emergency Services' personnel, or after they have given the OK to do so.*

**To silence an alarm enter your user code, which will silence the alarm and turn off (disarm) the control.**

## **CAUTION WHEN ENTERING A BUILDING:**

If the red *ARMED* light is flashing, and the control station is sounding a pulsing tone, the control is signalling that an alarm has occurred. If the alarm has not been previously investigated, **do not enter the building unless in the company of the appropriate emergency services' personnel.**

( ) DO ( ) DO NOT, enter your User Code before entering a Command.

## ACCESS CONTROL

Your system may feature electric locking control of a door:



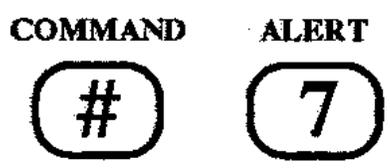
usually the main entrance door or a door into a restricted area. If so, then one or more User Codes may be programmed as Access Control Codes allowing the door to be electrically unlocked.

To operate the locking mechanism, first enter the access control code, then [Command/#]. The door will then remain unlocked for the programmed time period.

This system features Access Control of the \_\_\_\_\_

## ALERT MODE

This mode causes the control station sounders to beep each time a Perimeter or Entry/Exit area is violated while the control is turned off (disarmed).



When the control is turned off (disarmed), the Alert mode will light the yellow *Alert* light on all control stations. Arming and disarming the control does not affect the Alert mode, although the *Alert* light will turn off during armed periods.

## AREA TEST

COMMAND

#

TEST

8

ALL

1

The Area Test is used to assure detectors connected to a area will report an alarm to the Control.

( ) DO ( ) DO NOT, enter your User Code before entering the Area Test Command.

While in Area Test, the yellow *Partial* and red *Armed* lights will pulse on and off together. Each detector should then be tested one at a time as instructed by the installing company.

While in Area Test, *all* control station sounders will turn *ON* continuously while any area detector is alarmed.

Area Test works on all burglary areas. However, the Fire zone is not affected, and will function normally. While in Area Test, no Control alarms will occur with the exception of a fire alarm which will override the Area Test function.

Each time the *Area Test* sequence is entered, all the area lights will flash. As each area is tested that area's light will come on continuously. When the area is restored then its area light will go out.

To exit the Area Test mode at any time, press [Reset/\*].

( ) DO ( ) DO NOT, enter your User Code before entering a Command.

## BATTERY TEST

In the event there is a power failure, your control should have a built-in battery that will continue to power the control for many hours. The control will then automatically recharge the battery when power is restored.

COMMAND	TEST	PROGRAM
#	8	0

*SAME AS FIRE RESET COMMAND*

In addition to an automatic battery test performed every 24 hours, the battery may also be tested with the above key-command. However, as the Battery test uses the same key-command sequence as the Fire reset, *the user is cautioned to understand that testing the battery will also reset any smoke detectors that may be in an alarm condition.*

The green *Power* light will pulse on and off during the key-command battery test. If the battery tests OK, the *Power* light will return to normal after 10 seconds. If the test fails, the *Power* light will continue to pulse. (See *Error Display*, page 16 if the *Power* light continues to flash.)

The Sounder Test on page 16 will also test the battery while the alarm sounders are sounding. This is a better test of the battery but the alarm sounders will sound for two seconds.

DO  DO NOT, enter your User Code before entering a Command.

## COMMUNICATOR TEST

COMMAND

TEST

INSTANT

#

8

2

The alarm communications may be manually tested by entering this sequence. The green *Power* light will pulse on and off while a "Test" report will be sent to the monitoring service. You should call your monitoring service listed on the inside cover before testing the communicator.

A long beep will initially sound to acknowledge the start of the test. If the test is successful, the sounder will again issue one long beep, and the *Power* light will return to normal. If the test fails, the *Power* light will continue to pulse. The keypad sounder will turn ON constant until the [Reset/\*] key is pressed. (See *Error Display*, page 16 if the *Power* light continues to flash.)

- This system has the communicator test feature.
  - This system does **not** have the communicator test.
- 

## EMERGENCY KEYPAD ALARMS

The Alarm Keys [A], [B] and [C] may generate Fire, Emergency and Panic alarms if programmed by the installer. The functions, if any programmed for these keys, are listed on page 3.

When using the Alarm Keys, they must be held for two seconds to generate an alarm.

*Use the Disarming command sequence to cancel these emergency alarms (Page 10).*

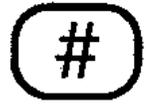
( ) DO ( ) DO NOT, enter your User Code before entering a Command

## ERROR DISPLAY

COMMAND

TEST

ALERT



Control problems are indicated by a pulsing green *Power* light.

To display the problems, enter this sequence and observe the area lights, which will display the problem indications for 10 seconds. If there are no problems the three beep error tone will sound.

*Contact your installing company if the problems persist.*

**Area 1** = AC power failure. *To arm without AC, enter the arming sequence desired (pages 4, 5, 6 or 7) then press [Bypass/9].*

**Area 2** = Battery problem. Missing or low voltage. If system has just been through a power failure, wait at least two hours for the battery to begin recharging to full potential, then enter the Battery Test command shown on page 14.

**Area 3** = Communicator failed to communicate.

**Area 4** = AUX power shorted.

**Area 5** = Internal system fault (EEPROM).

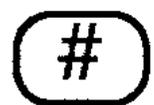
**Fire** = Internal system fault (EPROM or RAM).

COMMAND

TEST

ALERT

RESET



## ERROR RESET

To reset the pulsing green *Power* light, enter the key sequence shown to the right only after displaying the errors above.

( ) DO ( ) DO NOT, enter your User Code before entering a Command.

## FIRE RESET

This command will reset any smoke detectors after a fire alarm has occurred.

COMMAND

#

TEST

8

PROGRAM

0

This command initiates two functions: resets fire detectors, and performs a battery test. *Before this command is used, determine which smoke detector had alarmed.*

## INDICATOR LIGHT TEST

To test the Control Station indicator lights to see if they are in working condition, enter this sequence. When this test is run, all control station lights will turn *ON* constant for five (5) seconds. At the end of this time, the lights will return to their previous condition and three beeps will sound.

COMMAND

#

TEST

8

4

## SOUNDER TEST

To test the alarm sounding devices, enter this sequence. This will cause

the Control Station sounders and all alarm sounding devices to operate for two (2) seconds. If the alarm sounding devices do not sound or the green **POWER** light starts flashing, call your alarm monitoring company listed on the inside cover of this manual. Also see **ERROR DISPLAY** page 16.

COMMAND

#

TEST

8

5

## USERS CODE GENERAL INFORMATION

Your system will support fifteen (15) User codes. Each code may be from one to five digits in length. *All disarm codes should be programmed for at least 3 digits.*

Of the User codes, only a *Master code* may be used to add, delete or change other User codes. There may be many Master codes. *Man Number 01 the factory shipped (default) Master Code is the four digit sequence of 1 2 3 4. This code should be changed to one of your choosing, and must be programmed as a Master Code. Users codes should never be programmed to 1234 or 1111 as these are common system defaults.*

*Temporary* codes will be cancelled the next time a Permanent code (not a temporary code) is used to **disarm** (turn off) the system.

A *Duress code* will both disarm the system and report a silent duress alarm to a central station. This feature must be enabled by the system installer and does not require a special code to be programmed. Review page 10, *Duress Disarming* for details.

An *Access Control code* is used to control devices such as electric door locks. (Review page 12, *Access Control* for details.)

NOTE: *An attempt to program a user code to the same digits as an existing user code, or one higher or lower than an existing user code, will produce the three beep error tone, and will not change the code.*

# USERS CODE CHANGE FORMAT

All User Code changes will follow the same basic format regardless of the change involved. First enter a Master Code followed by



FOLLOWED BY



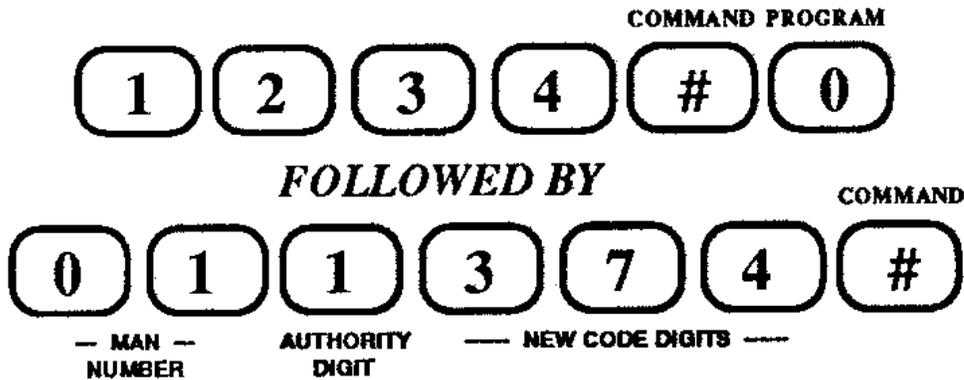
[Command/#] [Program/0] [Man Number] [Auth], the same or new User Code, and finally [Command/#].

**There are 15 Man Numbers (01-15). Each Man Number can have only one Users Code. Attempting to assign the same User Code to two different Man Numbers will result in the three beep error tone and the change will not be made. Man Number 01 must be a Master Code and therefore requires [Auth] =1.**

The Authority [Auth] selections are:

- 0 = Service Code, all privileges, always reports.
- 1 = Master Code, pass code changes, arm, disarm, force arming, bypassing, and system test.
- 2 = Arm, disarm, force arming, bypassing, and system test.
- 3 = Arm, disarm, force arming, and bypassing.
- 4 = Arm, disarm.
- 5 = Temporary code arm, disarm.
- 6 = Arming only, force arming and bypassing.
- 7 = Arming only.
- 8 = Temporary code arming only.
- 9 = Access code.

## TO CHANGE THE MASTER CODE

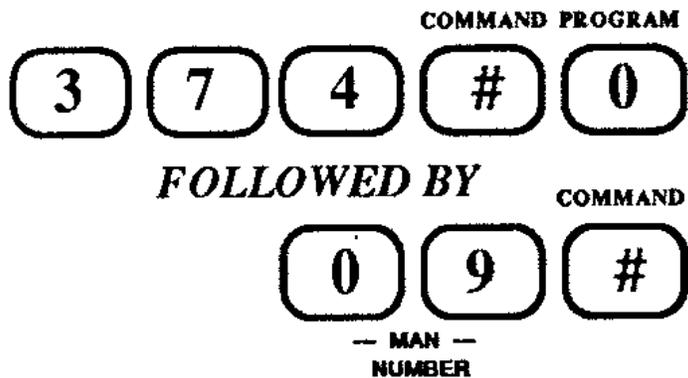


As an example, we wish to change from the 4-digit factory pre-set Master Code 1 2 3 4, to a new 3-digit Master Code 3 7 4.

\* This is Man Number 01, therefore the Authority must be set to 1 (Auth =1), the Master code.

If entered correctly, a long beep will sound. Wait no longer than twenty (20) seconds between key presses when entering the *new* code information, or the three beep error tone will sound and the sequence will have to be restarted.

## CANCELLING A USER CODE

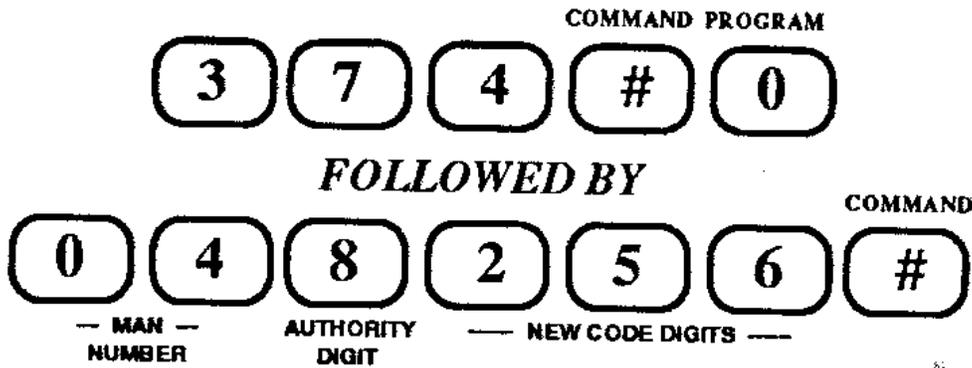


To cancel an existing code, enter a Master Code, [Command/#] [Program/0] the User Code Man Number to be cancelled, and then [Command/#] again.

In this example, we wish to cancel the user code in Man Number 09 which was a users code assigned to contractors doing work on the building.

NOTE: *Man Number 01 can not be cancelled in this manner. Man Number 01 can be changed (as shown above, but not cancelled).*

## PROGRAM TEMPORARY USER CODE



To create a temporary code (for use by the cleaners later in the evening), again start with a Master Code followed by [Command/#]

[Program/0] [Man Number] [Auth], a new code for the cleaners, and finally [Command/#].

In this example, the Master Code is 3 7 4. We will use the fourth Man Number [04]. We will allow the cleaners to arm only, not disarm (Auth=8), and they will be assigned the temporary user code of 2 5 6.

## MODIFYING A USER CODE



Just prior to leaving for the evening, we wish to upgrade the cleaners' temporary code to include disarm privileges. In effect, we wish to

change the Authority from 8 to 5.

To do so, the sequence is the same as programming the temporary user code above, with the exception that [Auth]=5.

# FIRE PROTECTION CONSIDERATIONS.

**WARNING: NO FIRE DETECTION DEVICE OR SYSTEM SHOULD EVER BE CONSIDERED 100% FOOL PROOF.**

This automatic fire alarm system, can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire. *Any fire alarm system may fail to warn for any number of reasons, including:*

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

## ● INSTALLED IN FAMILY RESIDENCES

*It is important to understand that no rules, regulations or even constantly tested fire warning equipment can be counted on to protect all persons at all times.* For instance, adherence to the procedures outlined in NFPA Standard 74 still may not be enough to protect against the three traditional fire killers:

- 1.) Smoking in bed;
- 2.) Leaving children unattended; and
- 3.) Cleaning with flammable liquids, such as gasoline.

But adherence to the Standard can lead to reasonable safety from fire when the following three items are practiced:

- 1.) Minimizing fire hazards;
- 2.) Providing a fire warning system; and
- 3.) Having and practicing an escape plan.

The Standard recognizes that the majority of fire fatalities and deaths occur in the home, and that most of these occur at night during sleeping hours. While the Standard defines a minimum level of protection by requiring smoke detectors be installed outside of each separate sleeping area and on each additional story of the dwelling, the authors of the Standard are also of the opinion that .....

"The installation of additional detectors 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 added early warning protection, the authors then go on to recommend that detectors be installed in all separated areas including the basement, bedrooms, dining room, utility room, furnace room, and hallways not protected by the required detectors.

## **AND A FAMILY ESCAPE PLAN**

Even though a properly installed and operating fire alarm system may give adequate warning before a fire becomes deadly, **this warning may be wasted unless the family has planned in advance for a rapid and safe exit from the building.** Following are some guidelines for use in developing a family escape plan.

√ Draw a floor plan of the entire house showing **two exits from each bedroom, and two exits from the house.** The plan should provide for an exit out of the residence without opening a bedroom door, and should provide for the possibility that exits out of bedroom windows may be necessary. Make copies of the plan and give one to each member of the family.

√ Prearrange a meeting place **outside and away from the residence.** Once out of the building, all occupants should go immediately to the pre-selected location so that every one can be quickly and accurately counted and accounted for.

√ All members of the family should practice the escape plan frequently. As part of each drill, children should be instructed on how to open their own bedroom windows and exit safely from the building. If exiting is not possible, they should be instructed to stay at the open window and shout for help until help arrives.

- √ To provide a barricade between family members and fire, smoke and toxic gases, close all bedroom doors before retiring.
- √ In the event of a fire alarm after retiring, shout to the children from behind your closed door to awaken them and remind them to keep their bedroom doors closed. Proceed to your own bedroom door and feel across the top.
- √ **If the top of the door is uncomfortably hot, do not open the door** as there is most likely fire or intolerable heat and smoke on the other side. Shout to all members to keep their bedroom doors closed and to exit the building via alternate routes.
- √ If the top of the door is not unduly hot, brace the bottom of the door with your foot, and the top with one hand, and open the door about one inch. Be prepared to slam the door shut if there is any pressure against the door, or any in-rushing air is very hot.
- √ If there is no evidence of excessive heat or pressure, **leave the room closing the door behind you**. Shout appropriate instructions to all family members and immediately leave the building via the pre-planned routes. If heavy smoke is present, drop to your hands and knees, or crawl on your stomach if necessary to drop below the smoke level.

## INSTALLATION CONSIDERATIONS:

Proper location of detection devices is one of the most critical factors in a properly installed and operating fire alarm system. For best results, the detectors should be located in accordance with 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 at a nominal cost from: The National Fire Protection Association, Batterymarch Park, Quincy, MA., 02269.

In all installations, good engineering judgement should prevail. Following are some general considerations:

- √ Smoke detectors should not be installed close to ventilating or air-conditioning outlets where smoke might be circulated away from the detector. Locations near return air inlets should be favored.
- √ Avoid areas subject to normal smoke concentrations such as kitchens, near fireplaces, and in garages.
- √ Do not install smoke detectors where normal ambient temperatures are above 100 degrees F. (38 degrees C.) or below 32 degrees F. (0 degrees C.), nor in "dead air" spaces. Areas of high humidity and dust concentrations should also be avoided.
- √ The nearest edge of ceiling mounted detectors should not be closer than 4 inches (10 cm) from any wall.

✓ Locate the top edge of wall mounted detectors between 4 and 12 inches (10 to 30 cm) from the ceiling.

For residential installations, the following is a Basic Requirement excerpt from NFPA Standard 74:

## 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.\*

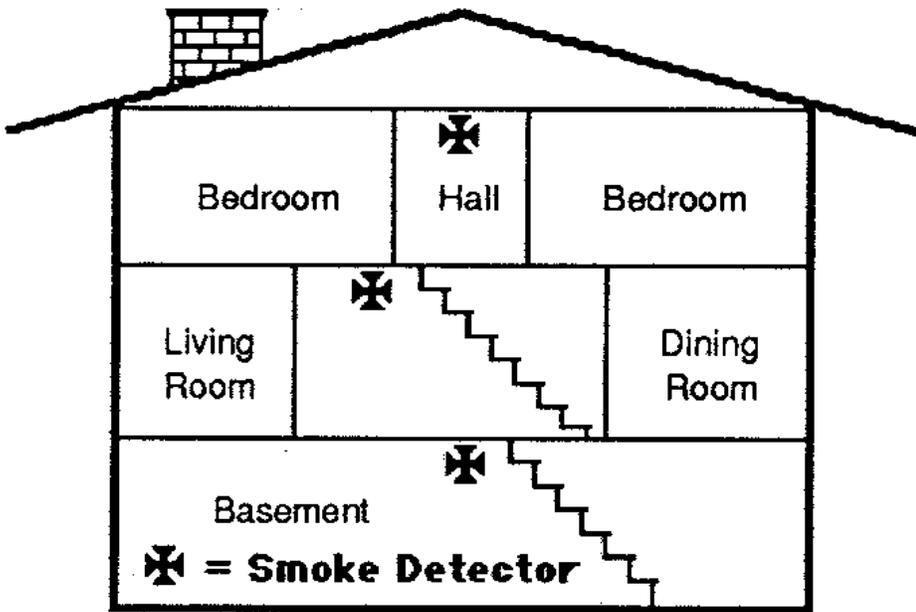
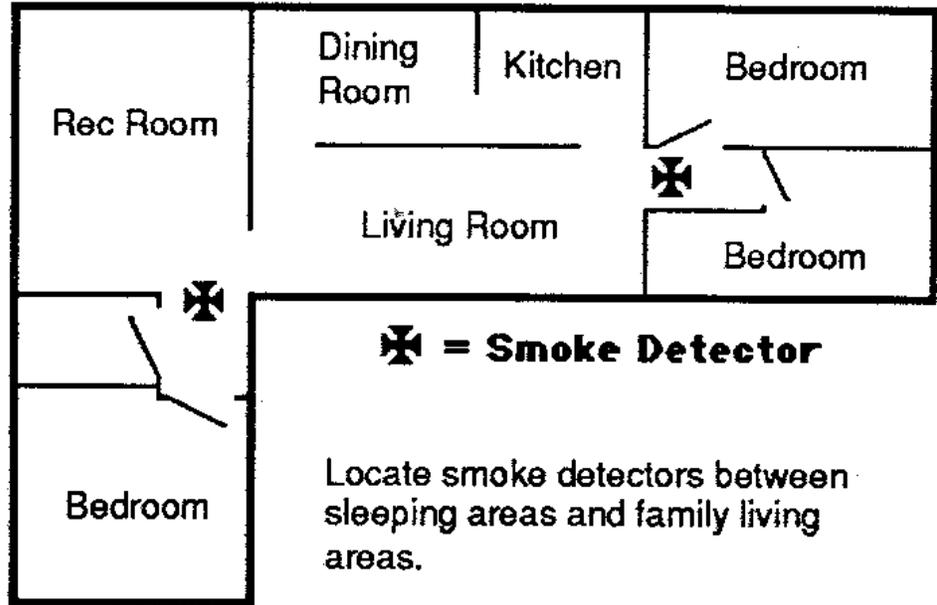
2-1.1.2 For family living units with one or more split levels (i.e. adjacent levels with less than one full story separation between levels), a smoke detector required by 2-1.1.1 shall suffice for an adjacent lower level, including basements.

*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.*

\* 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 all-ways not covered under 2-1.1.1 above. However, the use of additional detectors remain the option of the householder.

End of excerpt from NFPA Standard 74.



A smoke detector should be located on each story including basements, but excluding crawl spaces and unfinished attics.

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