

De-Coding Delayed Egress Hardware

Also note that neither the IBC nor the UBC allow delayed egress hardware to be used in Educational Occupancies, while NFPA 101®, NFPA 5000™, BOCA, and SBC do allow the use of delayed egress hardware in Educational Occupancies.

Delayed egress hardware prevents a door from being opened from the egress side, usually for a period of 15 seconds. This type of device is often used to prevent theft, while maintaining life safety. The system is most commonly comprised of an exit device incorporating delayed egress features, or an electromagnetic lock and power supply, one of which would contain delayed egress circuitry. When the device is actuated, the door remains locked on the egress side for 15 seconds, and then releases to allow egress.

Requirements of NFPA 101® The Life Safety Code® and NFPA 5000™ Building Construction and Safety Code™:

The 2006 & 2009 editions of NFPA 101® (section 7.2.1.6.1) and NFPA 5000™ (section 11.2.1.6.1) state the following requirements for delayed egress locks. All of these requirements must be met.

- The building must be protected throughout by an approved, supervised automatic fire detection system or an approved, supervised automatic sprinkler system, installed in accordance with the applicable section.
- Delayed egress locks must be approved and listed, and must be permitted by the individual occupancy chapters, low and ordinary hazard content areas only (refer to Table 1 for occupancies and conditions for use).
- Devices must release immediately (no delay) upon actuation of the sprinkler system, any heat detector, or not more than two smoke detectors of the fire detection system, and loss of power to the lock.
- Devices must release 15 seconds after a force of 15 pounds is applied for a maximum of 3 seconds (the code official may increase the delay from 15 to 30 seconds). The initiation of the 15-second cycle must be an irreversible process.
- An audible local alarm must sound upon initiation of the release process.
- The system must be rearmed manually.
- Signage must be provided on the door adjacent to the release device stating "PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 SECONDS." Letters must be 1" (25 mm) minimum in height, with a stroke width of 1/8" (3.2 mm) minimum, on a contrasting background. If the code official has permitted an increase of the operation time, the sign must state the appropriate time.
- Emergency lighting is required (this requirement is located in section 7.9.1.1 / 11.9.1.1).
- Several occupancies, as well as several of the other referenced codes, require that a building occupant may not encounter more than one delay in a means of egress.

Notable differences in other codes:

Most of the referenced codes have similar requirements to those of NFPA 101® and 5000, but there are some important differences.

One major difference between codes is the occupancy types or use groups where delayed egress hardware may be used (Table 2).

For example, while NFPA 101® and 5000™ do not restrict the use of delayed egress hardware on doors in Assembly Occupancies (other than the main entrance/exit), none of the other referenced codes permit the use of delayed egress hardware on any egress doors in Assembly Occupancies. Libraries, which are a great

application for delayed egress hardware, are defined by most codes as Assembly Occupancies, so delayed egress hardware may be prohibited.

Another difference between code requirements is the manner in which the delayed egress system may be initiated and rearmed. Table 3 illustrates these differences. The amount of time that force must be applied before the 15-second cycle begins is important because delayed egress hardware that has been designed to meet NFPA 101® requirements (3-second application of force) may need factory modifications to meet the other codes. Rearming the delayed egress hardware refers to "resetting" the device. Several codes require the device to be manually rearmed by a person going to the door to reset the device. Other codes allow the device to automatically rearm itself after the door has been opened, and in the case of BOCA, only after the door has opened, closed, and remained closed for 30 seconds. For some delayed egress hardware, this would require that a door position switch be added to the system.

Several codes state that the delayed egress device must be able to be released by a signal from a remote location. BOCA requires that the signal originate from an emergency control station, which is "an approved location on the premises where signals from emergency equipment are received and which is staffed by trained personnel." Per the IBC, the signal must originate from the fire command center. The UBC requires the signal switch to be in an "approved location."

Table 1: Occupancies Permitting Delayed Egress Locks NFPA 101 & NFPA 5000, 2006, 2009 Editions
Industrial, Storage

Occupancy	Condition
Assembly	Only doors other than main entrance/exit doors may be equipped with delayed egress locks.
Educational, Day Care	No restrictions
Health Care Lodging and Rooming Houses Hotels and Dormitories Apartment Buildings	Not more than one delayed egress device may be encountered in any egress path.
Residential Board and Care	Exterior doors only. Not more than one delayed egress device may be encountered in any egress path.
Ambulatory Health Care	No restrictions (Editions of NFPA 101 prior to 2003 limit the use of delayed egress devices in ambulatory health care occupancies to exterior doors.)
Mercantile, Business,	No restrictions

What about battery backup?

Unfortunately, this article will not give a definitive answer to this common question. In some applications, it may be desirable to use battery backup to ensure that delayed egress hardware will remain armed in the case of power failure. Each of the referenced codes has slightly different statements regarding loss of power, as illustrated by Table 4. The SBC is the only code that specifically states that "independent standby power" is acceptable under certain conditions.

The gray area is in the definition of "loss of power". I solicited informal opinions from engineers at two of the model code groups, and the engineers agreed that "power" could be defined as the building's primary power source, back-up generator power, or even battery power. If power is provided by any means, the engineers felt that it is acceptable for the device to be armed with the 15-second delay, as long as all of the other code requirements are met. One of the engineers pointed out that the codes say "loss of power" rather than "loss of primary power", and felt that the code would have been more specific if the intent was to distinguish between different power conditions. Until the codes (other than the SBC) are more specific about this requirement, the final decision must be made by the local code official.

To understand and follow the code requirements for delayed egress hardware, you must consult the appropriate edition of the code that is being enforced for the project in question. The following codes were researched for this article. For more information, determine the code that is being enforced and refer to the appropriate edition of that code.

- International Building Code® (IBC) – 2003, 2006, 2009
- BOCA National Building Code (BOCA) - 1999
- NFPA 101® Life Safety Code® (NFPA 101®) – 2003, 2006, 2009
- Standard Building Code (SBC) - 1999
- NFPA 5000™ Building Construction & Safety Code (NFPA 5000™) – 2003, 2006, 2009
- Uniform Building Code™ (UBC) – 1997

Table 2: Occupancies/Use Groups Permitting Delayed Egress Hardware

Code - Edition	Occupancies/Use Groups
NFPA 101/5000 - 2003, 2006 & 2009	Allowed in all occupancies with some conditions for use. Refer to Table 1.
IBC - 2003, 2006, & 2009	Allowed in all occupancies EXCEPT A (Assembly), E (Educational), and (H) High Hazard.
BOCA - 1999	Allowed in Use Groups B (Business), E (Educational), F (Factory and Industrial), I (Institutional), M (Mercantile), S (Storage), and R (Residential).
SBC - 1999	Allowed in all use groups except Group A (Assembly)
UBC - 1997	Allowed (when approved by the building official) in Group B (Business), F (Factory & Industrial), I (Institutional) - Division 2 only (nursing homes for ambulatory patients, homes for children 6 years of age or over, each accommodating > 5 patients or children), M (Mercantile), R (Residential) - Division 1 only (congregate residences serving as group-care facilities only) and Group S (Storage).

Table 3: Initiating and Rearming of Delayed Egress Hardware

Code - Edition	15-Second Cycle Initiated By:	Rearming:
NFPA 101/5000 – 2003, 2006, & 2009	15 pounds applied for 3 seconds.	Must be manually rearmed.
IBC – 2003, 2006, & 2009	15 pounds applied for 1 second.	Must be manually rearmed.
BOCA - 1999	15 pounds applied for 1 second.	Device may automatically rearm after door has been opened and returned to the closed position for at least 30 seconds (45 seconds when approved by the code official). Reopening the door shall restart the 30-second rearm cycle.
SBC - 1999	15 pounds, time limit not stated in the Code.	Device may automatically rearm after door has been opened. No time limit stated in the Code.
UBC - 1997	15 pounds applied for 2 seconds.	Must be manually rearmed.

Table 4: Loss of Power

Code - Edition	Code Excerpt:
NFPA 101/5000 – 2003, 2006, & 2009	"The doors shall unlock upon loss of power controlling the lock or locking mechanism."
IBC – 2003, 2006, & 2009	"The doors unlock upon loss of power controlling the lock or lock mechanism."
BOCA - 1999	Egress control devices shall unlock in accordance with: "Loss of power to the egress control device. Loss of power to the building."
SBC - 1999	"Independent standby power is acceptable as long as the supervised automatic smoke detection system, automatic fire detection system, or automatic sprinkler system, when activated, has precedence over the standby power and unlocks the door. If a non-emergency situation occurs such as a power outage, the door shall be allowed to remain locked until the detection system(s) operate, provided that the power outage does not disable these detection systems. If any of the detection systems are disabled in any way, standby power controlling the locking devices will be interrupted."
UBC - 1997	"The egress-control device shall automatically deactivate upon loss of electrical power to any one of the following: The egress-control device itself. The smoke detection system. Means of egress illumination as required by section 1003.2.9."