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Sensor Release and Door Hardware Release Electrified Hardware Applications

Note: This session will be recorded.

Introducing The Speakers



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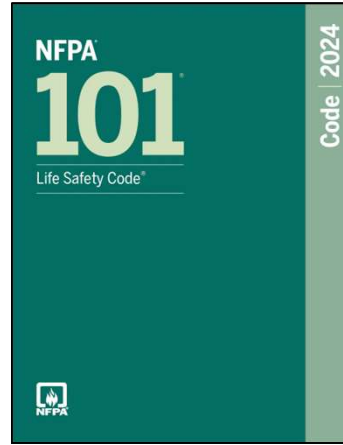
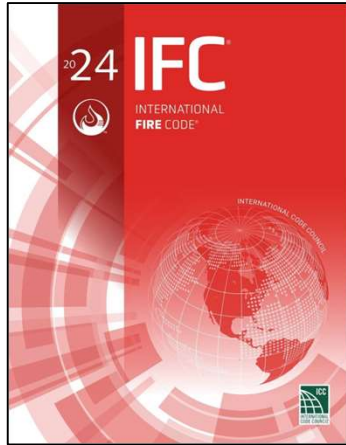
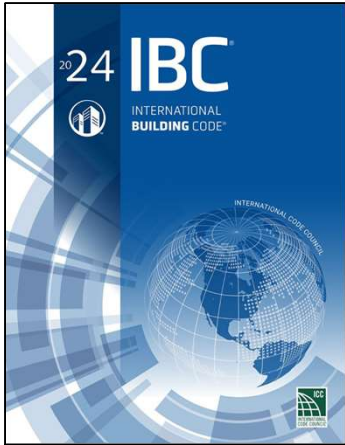
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Today's Topics

- What types of locks are used in sensor release and door hardware release systems?
- What release devices or methods are required by the model codes for these systems?
- What has recently changed in the IBC with regard to sensor release systems?
- Q&A

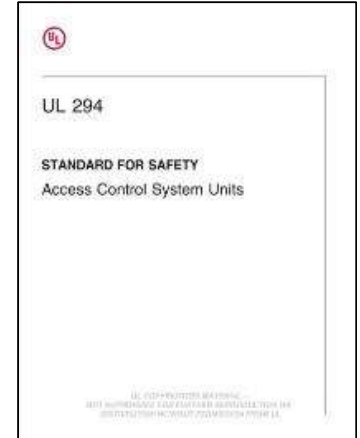
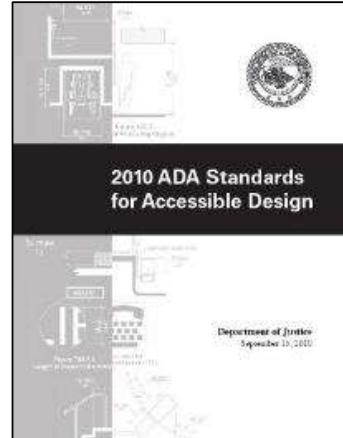
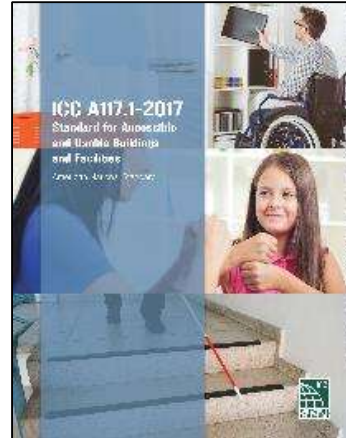
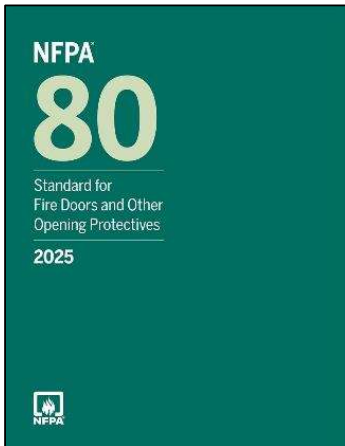


This is a MODEL code update. State codes may vary.



**COMING
SOON**

2027





CLARIFICATION

CHANGE



Special Locking Arrangements

- Sensor Release
- Door Hardware Release
- Delayed Egress
- Controlled Egress in Health Care
- Stairwell Reentry
- Elevator Lobby Egress
- Interlocks
(2027 I-Codes)





SENSOR RELEASE

Sensor, Push Button,
Fire Alarm, Power Failure Unlock



Typically an
Electromagnetic
Lock



DOOR HARDWARE RELEASE

Switch in Door-Mounted Hardware and
Power Failure Unlock

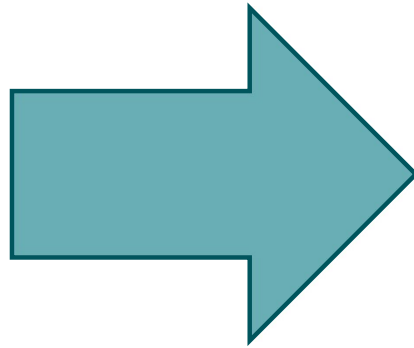
Electromagnetic Lock

- Electromagnet in housing on frame bonds to steel armature on door to lock the door
- Separate sensor/switch(es) needed to release for egress
- Always fail safe



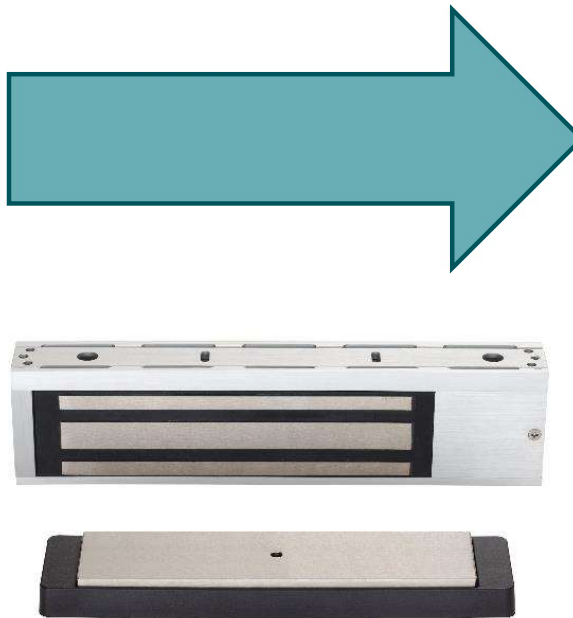
Why are the code requirements different for doors with electromagnetic locks?

The most common type of access control door allows free egress at all times (this is not a special locking arrangement).



Why are the code requirements different for doors with electromagnetic locks?

A door with a mag-lock will not allow free egress unless the required release devices are provided (mag-locks ARE typically considered special locking arrangements).



How the codes view mag-locks...



- Mag-lock used in a **delayed egress system** = delayed egress lock
- Mag-lock used in a **controlled egress system in health care** = controlled egress lock
- Mag-lock used in an **elevator lobby** = elevator lobby lock
- Mag-lock used in an **interlock** = control vestibule lock
- Mag-lock released by a **sensor above the door** = sensor-release lock
- Mag-lock released by an **RX switch** in a panic, lever handle, or touch-sense bar = door-hardware-release lock

2024 IBC – 1010.2.11 Sensor Release

*Sensor release of electrical locking systems shall be permitted on doors located in the means of egress in **any occupancy except Group H** where installed and operated in accordance with all of the following criteria:*

- 1. The **sensor** shall be installed on the egress side, arranged to detect an occupant approaching the doors, and shall cause the electrical locking system to unlock the electric lock.*
- 2. Upon a **signal from a sensor or loss of power to the sensor**, the electrical locking system shall unlock the electric lock.*
- 3. **Loss of power** to the electric lock or the electrical locking system shall automatically unlock the electric locks.*

Continued...

2024 IBC – 1010.2.11 Sensor Release

4. The doors shall be arranged to unlock the electric lock from a **manual unlocking device** located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors.

Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads **"PUSH TO EXIT."**

When operated, the manual unlocking device shall result in **direct interruption of power to the electric lock—****independent** of other electronics—and the electric lock shall remain unlocked for not less than **30 seconds.**

Continued...

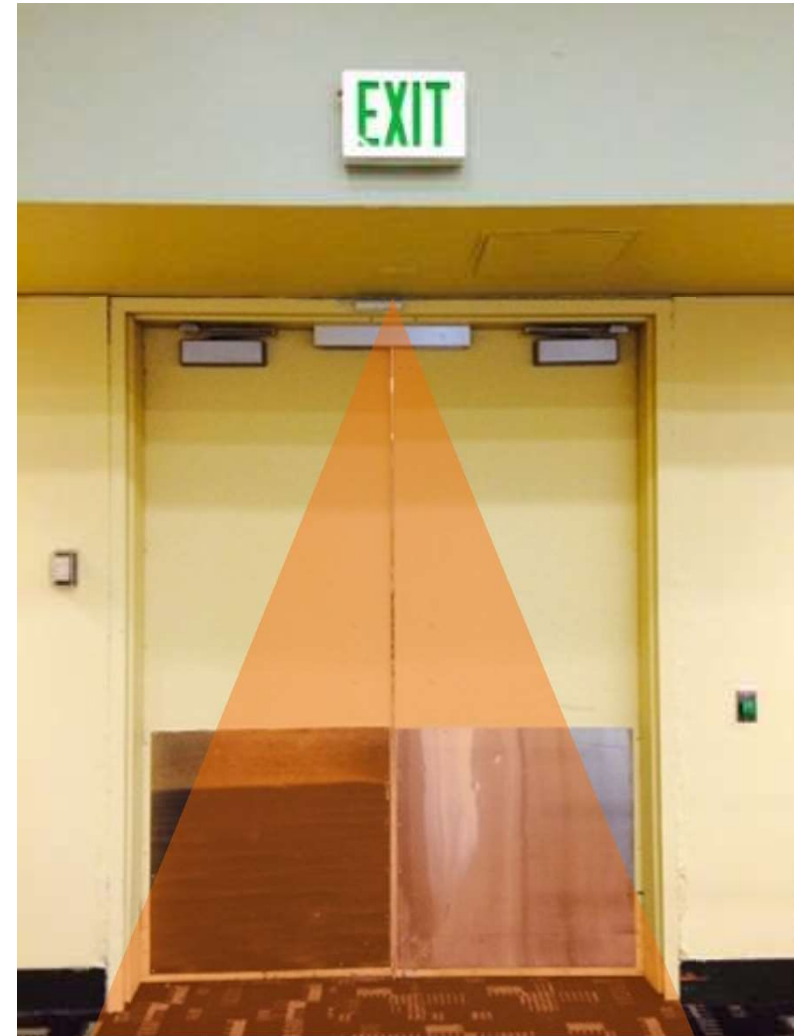


2024 IBC – 1010.2.11 Sensor Release

5. Activation of the **building fire alarm system, where provided**, shall automatically unlock the electric lock, and the electric lock shall remain unlocked until the fire alarm system has been reset.
6. Activation of the **building automatic sprinkler system or fire detection system, where provided**, shall automatically unlock the electric lock. The electric lock shall remain unlocked until the fire alarm system has been reset.
7. **Emergency lighting** shall be provided on the egress side of the door.
8. The electromechanical or electromagnetic locking device shall be listed in accordance with either **UL 294 or UL 1034**.

Sensor Release

- Permitted by use group/occupancy classification
- Sensor on the egress side to detect an occupant and release the lock
- Power failure lock release
- Manual unlocking device (AKA auxiliary push button) to release lock
- Fire alarm / sprinkler system lock release (if provided)
- Emergency lighting at the door
- UL 294 or UL 1034 (new in 2024)





Door Hardware Release

Door is unlocked when a switch in the door-mounted hardware is activated

Electromagnetic lock (typical)



2024 IBC – 1010.2.10 Door Hardware Release

Door hardware release of electrical locking systems shall be permitted on doors in the means of egress in any occupancy except Group H where installed and operated in accordance with all of the following:

- 1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.*
- 2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.2.1.*
- 3. Operation of the door hardware directly interrupts the power to the electric lock and unlocks the door immediately.*

Continued...

2024 IBC – 1010.2.10 Door Hardware Release

4. *Loss of power to the electrical locking system automatically unlocks the electric lock.*
5. *Where panic or fire exit hardware is required by Section 1010.2.8, operation of the panic or fire exit hardware also releases the electric lock.*
6. *The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL1034.*

Door Hardware Release

- Permitted in all use groups except H and in any occupancy per NFPA 101
- RX switch in door-mounted hardware to release lock
- Power failure lock release
- UL 294 or UL 1034 (new in 2024)
- No auxiliary button required
- No fire alarm release required



Door Hardware Release

Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section 1010.2.10 ~~or 1010.2.11.~~

No more sensor release mag-locks
on doors required to have
panic hardware

2024 IBC

NEW!



Only the names have changed...

- **Sensor Release**

- NFPA 101 Section: Sensor-Release of Electrical Locking Systems (prior to 2018: Access-Controlled Egress Door Assemblies)
- IBC Section: Sensor Release of Electrically Locked Egress Doors (prior to 2015: Access-Controlled Egress Doors)

- **Door Hardware Release**

- NFPA 101 Section: Door Hardware Release of Electrically Locked Egress Door Assemblies (prior to 2018: Electrically Controlled Egress Door Assemblies)
- IBC Section: Door Hardware Release of Electrically Locked Egress Doors (prior to 2018: Electromagnetically Locked Egress Doors)



iDigHardware

Answers to your door, hardware, and code questions from Allegion's Lori Greene.

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Electrified Hardware and Special Locking Arrangements

The code requirements that apply to electrified hardware and access control can be difficult to interpret, although code changes approved through the last few editions of the model codes have helped to clarify the intent. This page includes questions to help identify which code section applies to a particular type of access control opening, a short summary of each of the electrified hardware applications, and links to additional information about each type.



- Accessibility
- Escape Rooms
- Fire Doors
- Health Care
- Multifamily Resources
- Panic Hardware
- Safety Glazing
- School Security and Safety
- Special Locking Arrangements



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Special Locking Arrangements are electrified

ALLEGION

APPLICATIONS FOR ELECTROMAGNETIC LOCKS



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ALTHOUGH THE CODE REQUIREMENTS THAT TYPICALLY APPLY TO ELECTROMAGNETIC LOCKS IN A MEANS OF EGRESS HAVE BEEN STABLE FOR THE PAST FEW EDITIONS OF THE MODEL CODES, QUESTIONS STILL ARISE. THIS ISSUE'S DECODED COLUMN WILL ANSWER SOME OF THE FREQUENTLY ASKED QUESTIONS RELATED TO THESE APPLICATIONS.

If you're not familiar with electromagnetic locks, they are a type of electrified lock that features an electromagnet in a housing mounted on the door frame, and a steel armature mounted on the door. When power is applied to the electromagnet, it bonds to the steel armature and locks the door.

These locks differ from other types of electrified and mechanical hardware because without the release methods mandated by code, an electromagnetic lock would not allow egress. Other types of electrified locks — such as power bolts — could be used in the systems discussed here. Still, electromagnetic locks are by far the most common type of hardware for both of these special locking arrangements.

WHICH MODEL CODE SECTIONS ADDRESS DOORS WITH ELECTROMAGNETIC LOCKS?

There are two code sections in each of the model codes addressing access control systems incorporating maglocks. The difference between these two sections is that one requires a switch in the door-mounted hardware (panic hardware, sensor bar, or lever handle) to unlock the electromagnetic lock for egress. The other code section applies to locking systems with a sensor on the egress side to detect a building occupant approaching, which unlocks the door to allow the person to exit.



Electromagnetic locks installed in a means of egress must have the release methods specified in the adopted codes to help ensure life safety requirements are met.

ASK YOUR MOST PRESSING QUESTIONS!

Decoded now features a new question-and-answer format. We are selecting some of the most pressing questions that readers have about codes and answering them here. Submit your questions at idighardware.com/decoded-qa and we'll answer as many as we can in future Decoded columns.

This entry door to an office building has electromagnetic locks mounted at the top of the door, a sensor near the exit sign, and an auxiliary push button on the wall.



In the 2024 editions of the model codes, the applicable sections are:

IBC/IFC:

1010.2.10 - Door Hardware Release of Electrically Locked Egress Doors

1010.2.11 - Sensor Release of Electrically Locked Egress Doors

NFPA 101:

7.2.1.6.2 - Sensor-Release of Electrical Locking Systems

7.2.1.6.3 - Door Hardware Release of Electrically Locked Egress Door Assemblies

In other editions of the model codes, the section numbers and titles may vary from those in the 2024 edition.

ARE THERE LIMITATIONS ON THE USE GROUPS OR OCCUPANCY CLASSIFICATIONS WHERE MAGLOCKS CAN BE INSTALLED?

In previous editions of the model codes, there were some limitations on the types of facilities where electromagnetic locks were permitted. However, in recent editions of the I-Codes, the only use group where maglocks may not be installed is in Group H — high hazard occupancies. That said, a recent code change affects the use of maglocks in assembly and educational occupancies.

Prior to the 2024 I-Codes, both sensor-release and door-hardware-release applications for electromagnetic locks were permitted on doors required to have panic hardware. A change was made to the 2024 editions of the IBC and IFC that limits doors with panic hardware to the door hardware release application.

The panic hardware switch must unlock the electromagnetic lock, and sensor release options will no longer be allowed by the I-Codes on doors that require panic hardware. These doors

typically serve assembly and educational occupancies where the occupant load is 50 or more people.

In NFPA 101, Life Safety Code, there are no restrictions on the occupancy classifications where electromagnetic locks released by a switch in the door-mounted hardware are permitted. NFPA 101 allows sensor release maglocks where permitted by the occupancy chapters (Chapters 11-43). There are limitations in the occupancy chapters for assembly and mercantile occupancies.

Chapters 12 and 13, addressing new and existing assembly occupancies, state: Doors in the means of egress shall be permitted to be equipped with an approved access control system complying with 7.2.1.6.2, and such doors shall not be locked from the egress side when the assembly occupancy is occupied.

Chapters 36 and 37, addressing new and existing mercantile occupancies, state: Sensor-release of electrical locking systems complying with 7.2.1.6.2 shall

be permitted in buildings protected throughout by an approved, supervised fire detection system in accordance with Section 9.6 or an approved automatic sprinkler system in accordance with 9.7.1.1(1).

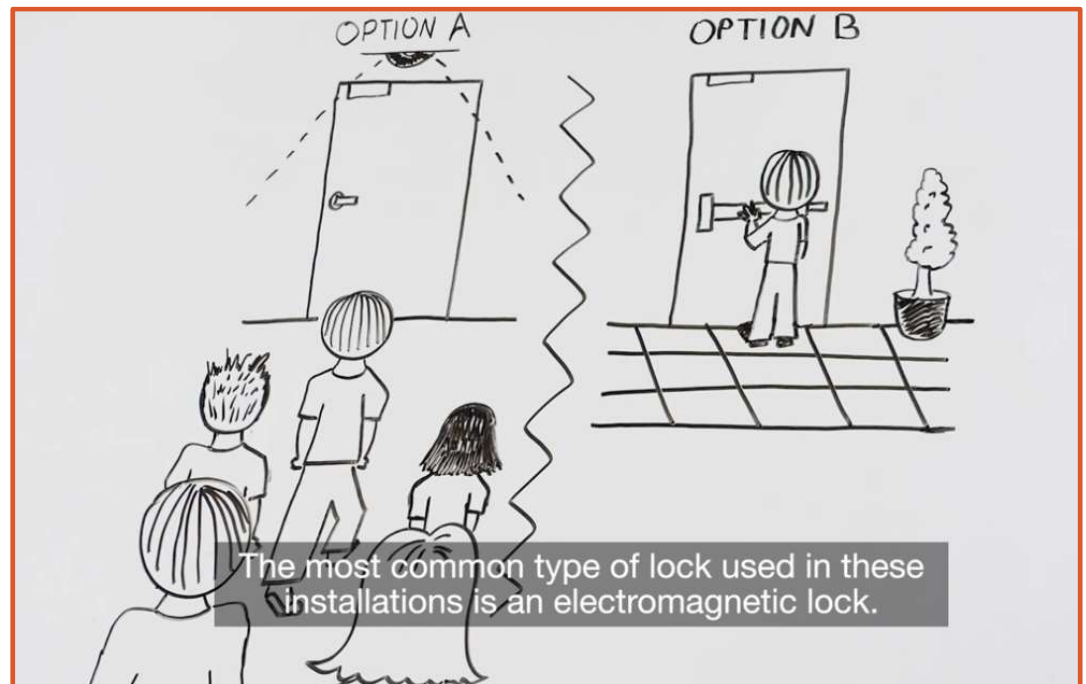
The other occupancy chapters specifically permit applications complying with Section 7.2.1.6.2 without limitations, except that this section is not explicitly mentioned in Chapter 26, which applies to lodging or rooming houses.

DO BOTH THE SENSOR RELEASE AND DOOR HARDWARE RELEASE SECTIONS REQUIRE THE AUXILIARY PUSH BUTTON AND FIRE ALARM RELEASE?

The short answer is no. These release methods are not required for both types of systems. In addition to the sensor, the sensor release sections of the model codes state that the electrified lock must unlock upon loss of power and upon activation of the fire alarm system or sprinkler system if present.

Whiteboard Animation Video

- Option A = Sensor Release
- Option B = Door Hardware Release
- iDigHardware.com/videos





- **Allegion Code Reference Guide – UPDATED!**
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