

Q&A from Webinar 2 – Panic Hardware – When, Where, and Why?
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Is fire exit hardware allowed to be used on a non-fire-rated opening?

The model codes do not prohibit the use of fire exit hardware on a door that is not fire rated. This is demonstrated by a paragraph in Annex A of NFPA 101, which states: *“A.7.2.1.7.2 The presence of fire exit hardware on a door does not imply the door is required to be a fire protection-rated door.”*

More info: <https://idighardware.com/2017/04/qg-can-fire-exit-hardware-be-installed-on-a-non-fire-rated-door/>

Can you send a link to the “Know Your Codes” document on panic hardware?

All of the resources mentioned in the webinar can be found on the webinars page of iDigHardware: <https://idighardware.com/webinars/>.

Here is a direct link to the Know Your Codes document: <https://302lo7vqic1w7ipm26cbqvri-wpengine.netdna-ssl.com/wp-content/uploads/2020/04/Panic-Hardware-Infographic-Recording.pdf>

A webinar on fire history and how it affected codes over the years would be really interesting.

The Iowa Department of Public Safety gave me permission to upload a great presentation on historic fires and how they affected building codes and fire codes. NFPA also has a document on major building fires.

Iowa DPS Presentation: http://idighardware.com/wp-content/uploads/2013/11/History_of_Fire_and_Fire_Codes.ppt

NFPA Document: <http://idighardware.com/wp-content/uploads/2013/11/NFPA-Deadly-Fires-Handout.pdf>

Why do NFPA and IBC differ by a factor of 2?

The IBC was developed in the late 1990’s and was based on the 3 model building codes that were widely used in three regions of the U.S. At least one of these regions used a limit of 50 people for panic hardware in certain occupancies, and one or two regions used the 100-person limit. The IBC incorporated the 50-person limit that had been used in the Uniform Building Code, and NFPA 101 continues to use the 100-person limit.

More info: <https://idighardware.com/2015/08/where-is-panic-hardware-required-by-code-video/>

If a door does not have a lock or latch, but other doors along the egress path do, do these other doors require panic hardware?

When an egress path is serving a room or area that requires panic hardware, each door that is part of the egress route must comply. If the door has a lock or latch, it must have panic hardware. If the door does not have a lock or latch, it does not require panic hardware – for example, push/pull hardware is acceptable as long as it is not a fire door. So yes – some doors in the egress path might have push/pull hardware, and other doors in the egress path would still require panic hardware.

More info: <https://idighardware.com/2017/04/decoded-panic-hardware-refresher-may-2017/>

Is panic hardware required by NFPA 70 for rooms storing power supplies with battery back-up, used for an access control system?

Article 480 of NFPA 70 addresses storage batteries and the rooms where these batteries are contained. Typically these storage batteries are much larger than the batteries that would be found in an individual power supply for an access control system. These rooms often have racks of multiple batteries such as those used for back-up power in data centers, and there are specific safety protocols for working within the room. The NEC requires panic hardware for this type of battery room, but panic hardware would not normally be required for a room which houses low-voltage power supplies and their back-up batteries.

More info: <https://idighardware.com/2017/12/decoded-panic-hardware-requirements-for-rooms-housing-electrical-equipment/>

Some AHJs have concerns about less bottom rod (LBR) configurations due to firefighter access/entrapment if the auxiliary pin projects during a fire. Is there anything in the model codes about this?

The pin projects when the area near the bottom of the door reaches approximately 450 degrees. The doors and hardware are no longer used for egress at that time. The model codes do address hardware that does not function for egress after the minimum elevated temperature has been reached. Those code sections are included in the blog post below.

More info: <https://idighardware.com/2018/09/fire-door-latching-after-the-fire/>

**Is removing the bottom rod and installing an auxiliary fire pin allowed on an existing door?
Can the AHJ mandate reinstalling the bottom rod even though the manufacturer is no longer in business?**

Whether an existing door can be modified by removing the bottom rods/latches and adding an auxiliary fire pin depends on the age and construction of the door. Most doors manufactured after the late 1990's were tested for LBR devices, and may be modified in the field. Older doors may not have been tested for this application. It's always best to check with the door manufacturer as well as the manufacturer of the fire exit hardware. An AHJ can mandate something if he/she feels that a particular hazard exists, but providing the applicable documentation may address their concerns.

More info: <https://idighardware.com/2018/10/qg-field-preps-for-auxiliary-fire-pins/>

Do doors with panic hardware require a UL label?

Doors with panic hardware do not require a label on the door, although the panic hardware will be labeled to show compliance with UL 305. When a fire door is equipped with fire exit hardware, the hardware will be labeled for UL 305 and UL 10C, and the fire door label will state, *"This door to be equipped with fire exit hardware."* Some door manufacturers use multi-purpose labels that can be used on fire doors with fire exit hardware or other types of hardware.

If hospital corridors are fire rated, is fire exit hardware required?

According to recent editions of the model codes, double-egress pairs in a health care smoke barrier are not typically required to be fire doors, and do not require positive-latching hardware. If a fire rating is required, double-egress pairs would typically have fire exit hardware. There is more information about this in the article below.

More info: <https://idighardware.com/2015/04/decoded-double-egress-pairs-in-a-health-care-occupancy-june-2015/>

Can locking hardware be installed on doors leading into a stairway?

There are very few applications where a stair door can be locked on the egress side. Delayed egress locks and controlled egress locks are 2 possibilities. Normally, if stair doors are locked, they are locked on the stair side of the interior doors, and/or the access side of the stair discharge door.

Should we consider one set of standards more stringent than another when considering hardware? For example, do we use the IBC or NFPA 101 as more stringent where either could/would apply?

The adopted code(s) would apply to a particular jurisdiction. If the jurisdiction has adopted both codes – for example, the IBC as the building code and NFPA 101 as part of the fire code – the most stringent requirement for each application would apply. With regard to panic hardware, the IBC requirement for doors serving an occupant load of 50 people would be more stringent than the NFPA 101 threshold of 100 people.

Is it okay to remove the dogging device from the panic hardware device to allow the hardware to act as fire exit hardware?

Because fire exit hardware is required to be labeled for UL 10C (fire) in addition to UL 305 (panic), removing the dogging feature would not change the panic hardware to fire exit hardware. The original panic hardware would not have the required UL 10C label.

When designing a new office building, wouldn't it be wise to add panic hardware to the stair doors so tenants can add assembly spaces (for example, large meeting rooms) in the future?

I have seen some projects with panic hardware specified for this purpose – where the future tenants are unknown. It depends on the budget, and the likelihood that an occupancy type/load which requires panic hardware would be part of the fit-up.

Is there an exemption for panic hardware on the exterior gates on a day care center playground?

There is not a specific exemption in the model codes, so if a means of egress for the day care center passes through a playground, the gates would typically require panic hardware. Because of concerns about small children leaving the playground, the AHJ may allow a code modification. Another option is if the playground is large enough to have an area that qualifies as a safe dispersal area, the means of egress may not have to extend through the gates.

More info: <https://idighardware.com/2016/02/decoded-safe-dispersal-area/>

Why does the 2015 IBC code section 805.4.4 uses the threshold of 100 occupants which is different from IBC & IFC that use 50?

This is actually in the International Existing Building Code (IEBC), and I'm guessing that the 100-occupant limit has to do with requirements in past codes that referred to an occupant load of 100 people instead of 50 people. I am going to pursue this question with ICC staff and see if a code change proposal is warranted for consistency.

Can you clarify what a rim device is?

Panic hardware and fire exit hardware are available in several styles – rim, mortise, concealed vertical rod/cable, and surface vertical rod. The rim type is the simplest, with the latchbolt projecting from the hardware rather than from the door edge. The video below describes the various types of panic hardware.

More info: <http://idighardware.com/2016/01/types-of-panic-hardware-video/>

When does a stairwell require panic hardware?

Stairwell doors require panic hardware/fire exit hardware when they are part of the egress path serving a room or area where panic hardware is required. For example, if a 10-story office building has a conference center (assembly space) on the 5th floor, with only offices (business occupancy) on the other floors, the stair doors serving the 5th floor and the stair discharge doors would require panic hardware or fire exit hardware.

What is a Group H - High Hazard occupancy (IBC) or an area of High Hazard Contents (NFPA 101)? Would a gas meter room be a High Hazard occupancy?

The IBC defines a Group H - High Hazard occupancy as: *“High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in control areas complying with Section 414, based on the maximum allowable quantity limits for control areas set forth in Tables 307.1(1) and 307.1(2).”*

NFPA 101 states: *“High hazard contents shall be classified as those that are likely to burn with extreme rapidity or from which explosions are likely.”*

Annex A of NFPA states: *“High hazard contents include occupancies where flammable liquids are handled or used or are stored under conditions involving possible release of flammable vapors; where grain dust, wood flour or plastic dust, aluminum or magnesium dust, or other explosive dusts are produced; where hazardous chemicals or explosives are manufactured, stored, or handled; where materials are processed or handled under conditions producing flammable flyings; and other situations of similar hazard.”*

A gas meter room would not normally be considered a High Hazard occupancy.

If a door is not required to have panic hardware, would the minimum length of the actuating portion still apply? For example, could a 4-foot-wide door have panic hardware with an 18-inch touchpad, if the door was not in a location where panic hardware was mandated?

This is not very clear in the IBC. If panic hardware is not required on a particular door, then it seems like a stretch to apply the minimum touchpad length. With that said, the IBC says, *“Where panic or fire exit hardware is installed, it shall comply with the following.”* Based on the word “installed” (vs. “required”), an AHJ could require the touchpad to measure half the width of the door. I have not seen AHJs interpreting the IBC as requiring the minimum touchpad length where panic hardware is not required. I am going to request an ICC staff opinion on this question, and I will post the answer on iDigHardware.com.

NFPA 101 states: *“Where a side-hinged or pivoted-swinging door assembly is required to be equipped with panic or fire exit hardware, such hardware shall meet all of the following criteria:”* Based on the word “required” (vs. “installed”), it’s clear that the minimum touchpad width applies only when the panic hardware is required.

Is the width on a balanced door measured from the pivot point, or is it the entire width of the door?

The IBC states: *“If balanced doors are used and panic hardware is required, the panic hardware shall be the push-pad type and the pad shall not extend more than one-half the width of the door measured from the latch side.”* Because the pivot point is not mentioned, I think the intent is for the touchpad to extend no more than half the width of the door.

More info: <https://idighardware.com/2009/10/panic-hardware-on-balanced-doors/>

If panic hardware is allowed to operate with either 5 pounds or 15 pounds of force (depending on the applicable code or standard), what about the force used to OPEN the door?

The codes and standards mandate different opening force limits, depending on whether the door is interior or exterior, and whether it is a fire door. For interior, non-fire-rated doors, the accessibility standards require the door to open with 5 pounds of force, maximum. The accessibility standards don’t address a specific force requirement for fire doors or exterior doors, but typically the opening forces for those doors are limited by the building code. If the local code doesn’t include a specific force limitation, the IBC limits would apply. For manually-operated doors, the IBC limits are 15 pounds to release the latch, 30 pounds to set the door in motion, and 15 pounds to open the door to the fully-open position.

More info: <https://idighardware.com/2012/05/decoded-opening-force-and-closing-speed/>

What does the term “dogging” mean with regard to panic hardware? Where did this term originate?

To “dog” panic hardware is to hold the latch(es) retracted. In this position, the door is push/pull function and the hardware is not used to retract the latch(es) for access or egress.

For fire doors, mechanical dogging is not allowed because the door is required to latch when there is a fire. Electric latch retraction/electric dogging may be used on fire exit hardware if the latches are automatically projected upon actuation of the fire alarm system. As for the origin of the term, Wikipedia states: *In engineering, a dog is a tool or part of a tool that prevents movement or imparts movement by offering physical obstruction or engagement of some kind.*

More info: <https://idighardware.com/2017/09/fire-door-latching/>

What does UL 294 – Standard for Access Control System Units require or necessitate?

I will include more information about UL 294 in my webinars on access control hardware. UL 294 is used to evaluate the construction, performance, and operation of access control systems. The system components are tested to ensure they will operate reliably without creating a hazardous condition. Product performance is evaluated based on four different levels of testing - destructive attack, line security, endurance and standby power. Although the current model codes do not specifically state which of these levels must be met in order for the system to be code-compliant, the testing required for UL 294 – Level 1 establishes that the products are safe for egress purposes, which is the main concern of the model codes.

More info: <https://idighardware.com/2015/11/decoded-code-requirements-for-ul-294-standard-for-access-control-system-units-december-2015/>

Can delayed egress locks be used in assembly or educational occupancies?

The model codes limit where delayed egress locks can be used. For example, prior to the 2018 edition of the IBC, delayed egress locks were not allowed in assembly, educational, or high hazard occupancies, so no doors serving those occupancy types were allowed to have delayed egress locks. Two changes were made to the 2018 edition of the IBC, which would allow delayed egress locks on secondary exits in courtrooms (assembly) and on doors serving classrooms with a calculated occupant load of less than 50 people (educational).

More info: <https://idighardware.com/2018/05/decoded-delayed-egress-locking-systems/>
<https://idighardware.com/2015/10/decoded-delayed-egress-vs-controlled-egress/>

Can you explain the difference between IBC 1010.1.9.8 and 1010.1.9.9?

I will explain these two sections in-depth in a future webinar, but depending on which edition of the IBC you are referring to, it's likely that these are the sections that address locks released by a sensor and locks released by door-mounted hardware. Requirements for both of these applications are described in the video below.

More info: <http://idighardware.com/2018/02/code-requirements-for-electromagnetic-locks-video/>

On a glass door with an electromagnetic lock, is panic hardware required if the door is serving an occupancy type and occupant load that would mandate panic hardware?

There was a time when the common interpretation was that a door with a mag-lock (which does not latch) did not require panic hardware. That has changed, and now most AHJs require panic hardware in addition to the electromagnetic lock.

More info: <https://idighardware.com/2018/03/qq-panic-hardware-and-mag-locks/>