

MEANS OF EGRESS

intent of the code is to provide sufficient space to enable occupants to negotiate the second door without being encumbered by the first door's swing arc. To facilitate accessibility, the space between doors should provide sufficient clear space for a wheelchair [30 inches by 48 inches (762 mm by 1219 mm)] beyond the arc of the door swing [see Commentary Figure 1010.1.7(2)]. Additionally, the approach and access provisions of ICC A117.1 must be considered for all doors along an accessible route.

Exception 1 permits horizontal sliding power-operated doors (see Section 1010.3.2) to be designed with a lesser distance between them in a series arrangement because they are customarily designed to open simultaneously or in sequence such that movement through them is unhampered.

Exception 2 addresses storm and screen doors on residential dwelling units in that storm and screen doors need not be spaced at 48 inches (1219 mm) since it would be impractical, and they do not operate the same as doors in a series. Storm and screen doors in these applications would need to meet all other requirements of the code but are exempt from the specific requirements of doors in series.

Exception 3 addresses doors within dwelling units of Group R-2 or R-3 that are not Type A dwelling units (see Section 1108) in that these doors are also permitted to have a lesser distance between doors because the accessibility provisions do not apply. There are requirements in Chapter 10 of the ICC A117.1 for door arrangements within Accessible and Type A dwelling and sleeping units.

1010.2 Door operations. Except as specifically permitted by this section, egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort.

- ❖ A door is required to be easily and quickly openable from the egress side without requiring a key, special knowledge or effort—except where permitted by this section. However, under certain circumstances, locks and latches can intentionally inhibit or delay the use of a door for egress and thus interfere with or prevent the egress of occupants at the time of a fire. While the security of property is important, the life safety of occu-

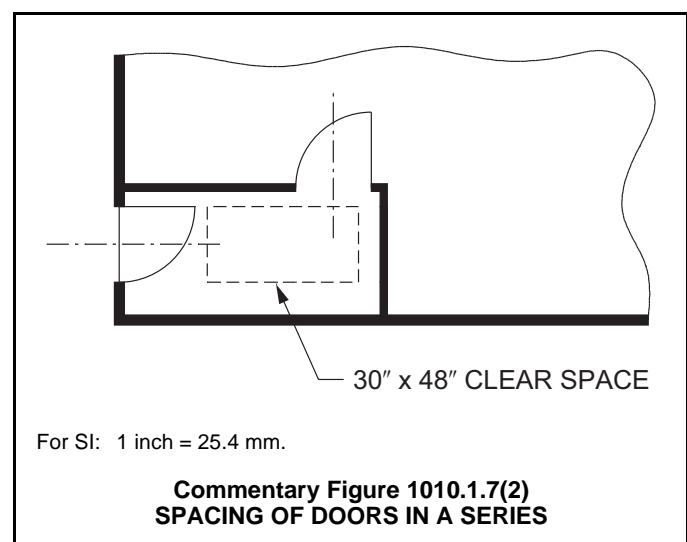
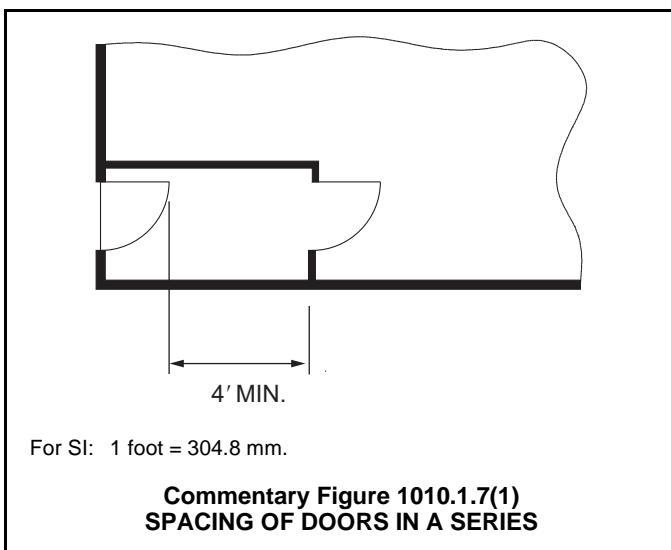
pants is essential. Where security and life safety objectives conflict, alternative measures, such as those permitted by each of the exceptions in Section 1010.2.4, may be applicable.

Egress doors are permitted to be locked to prevent entry, but must be capable of being unlocked and readily openable from the side from which egress is to be made. The outside of a door (the access side of the door) can be locked and unlocked with a key or electronic credential such as a card, fob, or code as long as the inside—the side from which egress is to be made—can be unlocked without the use of tools, keys or special knowledge or effort. For example, an unlocking operation that is integral with an unlatching operation is acceptable.

A common question: if a door has an access control system (such as a card reader and electrical locking hardware affecting ingress into a space) what does the code require for an access control system on the ingress side of the door? While some egress doors with electrified hardware are required to comply with the sections of this code that address special locking arrangements (Sections 1010.2.11, 1010.2.12, 1010.2.13, 1010.2.14 and 1010.2.15), the most common application for electrified hardware is one where an access control reader on the ingress side of the door controls access, and the door hardware on the egress side allows free egress at all times. A door with this most common configuration of electrified hardware is subject to the same requirements as a door with a mechanical lock controlling ingress (such as a lock operated by a key on the outside): the door must allow free and immediate egress with one releasing motion to unlatch the door, without the use of a key, special knowledge or effort, and with no tight grasping, tight pinching, or twisting of the wrist.

Examples of special knowledge would be a combination lock or an unlocking device or deadbolt in an unknown, unexpected or hidden location. Special effort would dictate the need for unusual and unexpected physical ability to unlock or make the door fully available for egress, or the need for two actions to be conducted simultaneously to release the latch.

Where a pair of egress door leaves is installed, with or without a center mullion, the general requirement is



that each leaf must be provided with its own releasing or unlatching device so as to be readily operable. Door arrangements or devices that depend on the release of one door before the other can be opened are not to be used except as permitted by Section 1010.2.5. This includes the use of manual flush bolts where allowed by Section 1010.2.5 and automatic flush bolts where allowed by Section 1010.2.4, Item 4.

1010.2.1 Unlatching. The unlatching of any door or leaf for egress shall require not more than one motion in a single linear or rotational direction to release all latching and all locking devices.

Exceptions:

1. Places of detention or restraint.
2. Where manually operated bolt locks are permitted by Section 1010.2.5.
3. Doors with automatic flush bolts as permitted by Section 1010.2.4, Item 4.
4. Doors from individual *dwelling units* and *sleeping units* of Group R occupancies as permitted by Section 1010.2.4, Item 5.

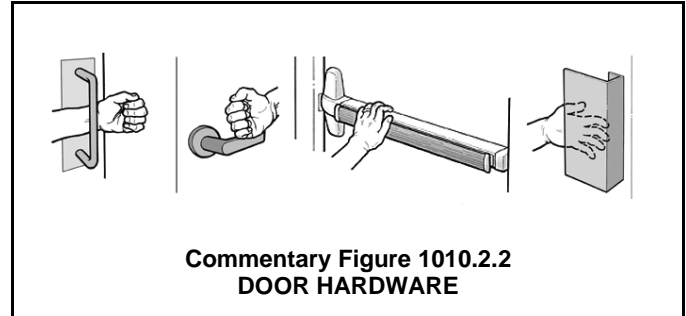
❖ The code prohibits the use of locks and/or latching devices on doors in the means of egress that require more than one motion to release all unlocking and unlatching devices on that door. That one motion can either be a single linear direction such as pushing or pulling, or a single rotational direction such as turning a handle clockwise or counterclockwise (but not both directions). The intent here is that any person under any conditions is quickly and easily able to unlock and unlatch a door for egress. Doors in the means of egress with door hardware that requires more than one motion to unlock and unlatch for egress could be a safety hazard in an emergency situation. The exceptions address locations where multiple locks or latching devices that require more than one operation are acceptable. See the referenced sections for additional commentary.

1010.2.2 Hardware. Door handles, pulls, latches, locks and other operating devices on doors required to be *accessible* by Chapter 11 shall not require tight grasping, tight pinching or twisting of the wrist to operate.

❖ Any doors that are located along an accessible route for ingress or egress must have door hardware that is easy to operate by a person with limited mobility or dexterity. This would include all elements of the door hardware used in typical door operation, such as door levers, locks, security chains, and so on. This requirement is also an advantage for persons with arthritis in their hands. Items such as small, full-twist thumb turns or smooth circular knobs are examples of hardware that is not acceptable. There are many types of latching or locking devices that can be operated without tight grasping, tight pinching, or twisting of the wrist that would comply with the requirements of this section.

Some people with disabilities are unable to grasp or twist objects. Such people are unable to operate, or have great difficulty operating, door hardware other than lever-operated mechanisms, push-type mecha-

nisms, U-shaped door pulls, and elongated thumb turns for locks. Door hardware that can be operated with a closed fist or a loose grip accommodates the greatest range of users. Hardware operated by simultaneous hand and finger movement requires greater dexterity and coordination and should be avoided for doors along an accessible route (see Commentary Figure 1010.2.2).



1010.2.3 Hardware height. Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finished floor. Locks used only for security purposes and not used for normal operation are permitted at any height.

Exception: Access doors or gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to have operable parts of the latch release on self-latching devices at 54 inches (1370 mm) maximum above the finished floor or ground, provided that the self-latching devices are not also self-locking devices operated by means of a key, electronic opener or integral combination lock.

❖ The requirements in this section place the operating devices of the door hardware at a level that is usable by most people, including a person using a wheelchair. Locks used only for security can be placed at any height. An example would be an unframed glass front door of a tenant space in a mall that has the lock near the floor level. The lock is only used when the store is not open for business. Such locks are not required for the normal operation of the door. Also note in this example, if this door is on an accessible route, the bottom 10 inches of the push side of a manually operated door must have a smooth surface (See ANSI A117.1 referenced by Chapter 11).

The exception permits a special allowance for security latches at pools, spas and hot tubs. The concern is that the 48-inch (1219 mm) maximum height would place the security latch within reach of children. The 54-inch (1372 mm) maximum height is intended to override the maximum 48-inch (1219 mm) reach range in ICC A117.1. This compromise addresses concerns for children's safety and still maintains accessibility to a reasonable level. Based on the last phrase in the exception, if the gate hardware also had an automatic-locking function and a key, access control credential, or other similar device would be needed to unlock the hardware to allow access, then the exception to allow the hardware to be up to 54-inches (1372 mm) above the floor is not applicable. This is because the secure nature of the hardware provide the level of security needed to prevent access by children, and the

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door hardware, causes the electric lock to release, allowing immediate egress. In other than Group H, doors in the means of egress are permitted to be locked with an electric locking system where equipped with door hardware that incorporates a built-in switch, provided all the specified conditions are met. The use of this type of locking system may provide for a greater degree of security, preventing or controlling access or ingress, than that afforded by a door with mechanical locking devices alone. The allowance for electrically locked egress doors is limited to low- and moderate-hazard occupancies where security may be a concern.

It may be important to note other “shall be permitted” locking arrangements in the code also use electric locks as part of their system: controlled egress locking systems (Section 1010.2.14), delayed egress locking systems (Section 1010.2.13), and sensor release of electrically locked egress doors (Section 1010.2.12).

When the occupant prepares to egress through the door, the method of operating the door hardware must be obvious, even under poor lighting conditions. The operation shall be accomplished through the use of a single motion and meet the general requirement that the door be readily openable without the use of special knowledge or effort. The release of the electric lock on the door must occur immediately on the operation of the door hardware by interrupting the power supply to the electric lock. This requirement is the same regardless of the type of door hardware: panic hardware, fire exit hardware, a latchset/lockset or a touch-sense bar. As an additional safeguard, the loss of power to the locking system is required to automatically release the electric lock on the door.

A properly designed and installed electric locking system complying with the requirements of this section may not be obvious to the occupants, as the door unlatches/unlocks (electrically and mechanically), allowing egress through the normal operation of the door hardware (panic or fire exit hardware, latchset/lockset, or touch-sense bar). Considering these performance requirements, this section does not include a requirement that the electromagnetic lock be unlocked (released) upon activation of the building fire alarm system. Also, this section does not limit the number of doors in the means of egress that may be equipped with these electric locking systems. The requirements of this section apply to electric locking systems on the egress side of the door that unlock upon hardware operation actuating a switch controlling the electric lock. The functions and requirements of an access control system on the ingress side of the door are not discussed in this section. Such a system, on the side of the door opposite the egress side, controls or prevents access or ingress to a space. Its functions and requirements are unrelated to this section as long as egress is provided as required or permitted by this section and other applicable provisions of the code (i.e. one releasing motion for egress, hardware operational forces, and be readily operable without a key, special knowledge, or effort, etc.).

UL 294, *Standard for Access Control System Units*, applies to construction, performance and operation of systems that control passage through a door and the electrical, electronic or mechanical units of these sys-

tems. Item 6 requires the locking system units of the door hardware release electrical locking system to comply with and be listed in accordance with UL 294. It may be appropriate to recognize that this code does not require the units of an access control system (ingress control system) to be listed to UL 294.

Where these special provisions are utilized, the requirements of Section 1010.2.9 regarding panic hardware remain applicable. In Group A and E occupancies having occupant loads of 50 or more, the door hardware must also comply with the requirements for panic hardware.

1010.2.12 Sensor release of electrically locked egress doors.

Sensor release of electric 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 electric locking system to unlock.
2. The electric locks shall be arranged to unlock by a signal from or loss of power to the sensor.
3. Loss of power to the lock or locking system shall automatically unlock the electric locks.
4. The doors shall be arranged to unlock 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.
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 door locking system units shall be *listed* in accordance with UL 294.

❖ This section is intended to provide consistent requirements where an electrically locked door is unlocked by activating devices mounted somewhere other than on the door itself. The unlocking activation is designed to be from a passive action by the occupant (e.g., walking to the door triggering a sensor), but the system includes a required nearby manual unlocking device (such as a push button) as a secondary electrical lock release device.

This section permits means of egress doors and entrance doors to tenant spaces in other than Group H occupancies to be electrically secured (locked) to con-