

2017

# NEC<sup>®</sup> Code Changes

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**Hubbell Code Solutions**



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## **Article 100: Definitions**

Accessible, Readily (Readily Accessible)	6
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## **Article 110: Requirements for Electrical Installations**

Section 110.14(D):	<i>Electrical Connection Torque Tools</i>	7
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## **Article 210: Branch Circuits**

Section 210.8:	<i>Measurements for GFCI Protection</i>	9
Section 210.8(A)(7):	<i>GFCI Protection at Sinks</i>	11
Section 210.8(B):	<i>Three-Phase GFCI Protection</i>	13
Section 210.8(B)(9):	<i>Non-Dwelling Unit Crawl Space</i>	14
Section 210.8(B)(10):	<i>GFCI Protection for Receptacles in Non-Dwelling Unit Unfinished Basements</i>	16
Section 210.8(E):	<i>GFCI Protection for Lighting Outlets in Crawl Spaces</i>	18
Section 210.11(C)(4):	<i>Garage Branch Circuits</i>	19
Section 210.12(C):	<i>AFCI Protection in Guest Rooms and Guest Suites</i>	21
Section 210.12(D):	<i>Branch Circuit Extensions or Modifications—Dwelling Units and Dormitory Units</i>	22
Section 210.17:	<i>Electric Vehicle Branch Circuit</i>	25
Section 210.52(A)(2)(1):	<i>Receptacle Wall Space</i>	26
Section 210.52(B)(1), Ex. No. 2:	<i>Appliance Branch Circuit</i>	29
Section 210.52(C)(3):	<i>Peninsular Countertop Spaces</i>	31
Section 210.52(G):	<i>Receptacle for Basements, Garages and Accessory Buildings</i>	34
Section 210.52(G)(1):	<i>Dwelling Unit Garages</i>	36
Section 210.64:	<i>Receptacle at Electrical Service Areas</i>	38
Section 210.70(C):	<i>Lighting Outlet(s) All Occupancies</i>	40
Section 210.71:	<i>Receptacle Outlets in Meeting Rooms</i>	43
<b>Article 250: Grounding and Bonding</b>		
Section 250.148:	<i>Continuity and Attachment of EGC to Boxes</i>	45

# Article 100

## Definitions

### Article 100: Accessible, Readily (Readily Accessible)

**Revision:** The use of a key is not considered taking an action such as the use of a “tool” to gain ready access. Crawling under something is not considered readily accessible.

#### Code Language: Article 100 Definitions

**Accessible, Readily (Readily Accessible).** Capable of being reached quickly for operation, renewal, or inspections without requiring those to whom ready access is requisite to take actions such as to use tools (other than keys), to climb over or under, to remove obstacles, or to resort to portable ladders, and so forth.

**Informational Note:** Use of keys is a common practice under controlled or supervised conditions and a common alternative to the ready access requirements under such supervised conditions as provided elsewhere in the *NEC*.

**Analysis:** Revisions were made to indicate that the use of a key does not fall under the “use of tools.” Having to resort to “crawling under” (as well as “climbing over”) an obstacle was added to actions that do not meet the definition. This change aligns with the language in 110.26(F), which indicates that electrical rooms or enclosures controlled by a lock are considered accessible to qualified persons.

#### Hubbell Solution: HBL1221RKL, HBL1223RKL, HBL1201L, HBL1221L

*Heavy Duty Industrial Locking Switches and Barrel Key Locking Switches do not restrict being “readily accessible” for those requiring access with a key. The key is not considered a tool under the Code.*



### Section 110.14(D): Electrical Connection Torque Tools

**New:** New requirements were added for the use of torque measuring tools where torquing is indicated numerically.

#### **Code Language: 110.14 Electrical Connections**

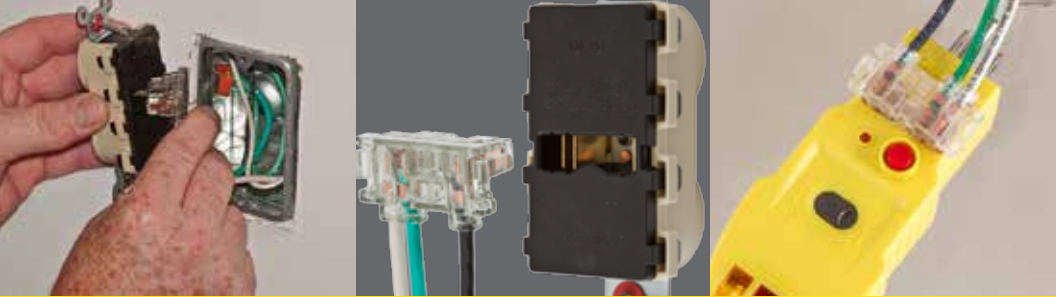
**(D) Installation.** Where a tightening torque is indicated as a numeric value on equipment or in installation instructions provided by the manufacturer, a calibrated torque tool shall be used to achieve the indicated torque value, unless the equipment manufacturer has provided installation instructions for an alternative method of achieving the required torque.

**Analysis:** The Informational Note that was located after the parent text of 110.14 has been deleted and replaced with enforceable Code text at new 110.14(D). This new requirement calls for the implementation of tightening torque tools where torquing is specified on the equipment or in installation instructions provided by the manufacturer.

#### **Hubbell Solution: SNAP2162WA; SNAP2RA**

Hubbell SNAPConnect® line of modular wiring devices install without terminal screws, eliminating the need for a calibrated driver for device wiring. SNAPConnect® devices are available in a wide variety of switches and receptacles.





# HUBBELL SNAPConnect® Receptacles

*No terminals, no torque*

*Energize and test circuits  
at rough-in*

*Full breadth of line*



Savings and Productivity  
are just a **SNAP** away



### Section 210.8: Measurements for GFCI Protection

**New:** New language added to clarify how measurements are to be determined for GFCI receptacles.

#### **Code Language: 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel**

Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) through (E). The ground-fault circuit interrupter shall be installed in a readily accessible location.

**Informational Note No. 1:** See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

**Informational Note No. 2:** See 422.5(A) for GFCI requirements for appliances.

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

**Analysis:** A new provision was added to the parent text of 210.8 to indicate that measurements from receptacles to objects (such as a sink) that would qualify for GFCI protection should be measured as the “shortest path” a cord of an appliance connected to a receptacle would take without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

(Continued on the next page.)

# Article 210

## Branch Circuits

### Hubbell Solution: GFRST15, GFRST20; GFTRST15, GFTRST20

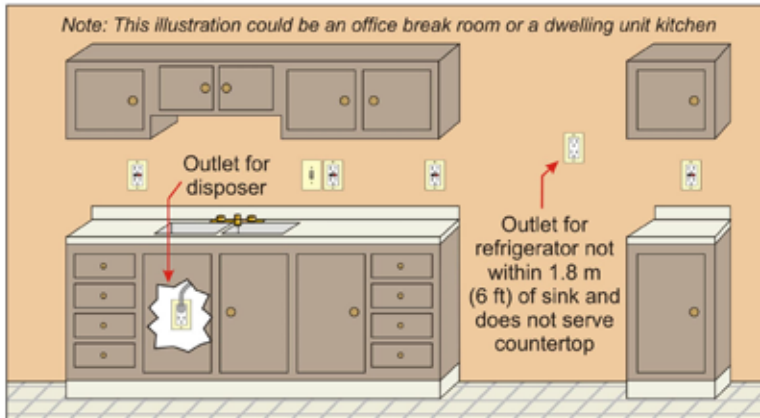
Patented AUTOGUARD® technology continually self-tests functionality and disconnects power to the receptacle if GFCI protection is lost.



## 210.8 Measurements for GFCI Protection



GFCI protection shall be provided as required in 210.8(A) through (E) and installed in a readily accessible location



When determining distance from receptacles, distance shall be measured as the "shortest path" the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window

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### Section 210.8(A)(7): GFCI Protection at Sinks

**Revision:** Measurement criteria at dwelling unit sinks were revised for clarity in determination of which receptacles around these sinks would and would not require GFCI protection.

#### **Code Language: 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel**

Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) through (E). The ground-fault circuit-interrupter shall be installed in a readily accessible location.

**Informational Note No. 1:** See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

**Informational Note No. 2:** See 422.5(A) for GFCI requirements for appliances.

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

**(A) Dwelling Units.** All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified in 210.8(A)(1) through (10) shall have ground-fault circuit-interrupter protection for personnel.

**(7) Sinks** – where receptacles are installed within 1.8 m (6 ft) from the top inside edge of the bowl of the sink.

**Analysis:** All 125-volt, single-phase, 15- and 20-ampere receptacles installed within 1.8 m (6 ft) of the “top inside edge of the bowl” of any dwelling unit sink (including the kitchen sink) requires GFCI protection without the measurement piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

*(Continued on the next page.)*

# Article 210

## Branch Circuits

### Hubbell Solution: GFRST15, GFRST20; GFTWRST15, GFTWRST20

Clear visual indicators on the device face represent power status, trip condition, ground fault condition & end of life.



### 210.8(A)(7) GFCI Protection at Sinks



GFCI required for all 125-volt, single-phase, 15- and 20-ampere receptacles installed within 1.8 m (6 ft) from the top inside edge of a dwelling unit sink (laundry, utility, mud room, kitchen, wet bar, etc.) without the measurement piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window

Note: Same requirement at 210.8(B)(5) for non-dwelling unit sinks

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### Section 210.8(B): Three-Phase GFCI Protection

**Revision:** The GFCI requirements for receptacles at commercial/industrial applications have been expanded to recognize ground faults occurring at other than solely 15 and 20A 125-volt applications.

#### **Code Language: 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel**

Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) through (E). The ground-fault circuit-interrupter shall be installed in a readily accessible location.

**Informational Note No. 1:** See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

**Informational Note No. 2:** See 422.5(A) for GFCI requirements for appliances.

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

**(B) Other Than Dwelling Units.** All single-phase receptacles rated 150 volts to ground or less, 50 amperes or less; and three-phase receptacles rated 150 volts to ground or less, 100 amperes or less, installed in the locations specified in 210.8(B)(1) through (10) shall have ground-fault circuit-interrupter protection for personnel.

**Analysis:** The GFCI requirements at “Other Than Dwelling Units” still include coverage of 125-volt, single-phase, 15- and 20-ampere receptacles. These requirements have been expanded to include all single-phase receptacles supplied by branch circuits rated 150 volts to ground or less, 50 amperes or less; and three-phase receptacles supplied by branch circuits rated 150 volts to ground or less, 100 amperes or less.

# Article 210

## Branch Circuits

### Section 210.8(B)(9): Non-Dwelling Unit Crawl Space

**New:** GFCI protection for receptacles in non-dwelling unit crawl spaces has been added.

#### **Code Language: 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel**

Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) through (E). The ground-fault circuit-interrupter shall be installed in a readily accessible location.

**Informational Note No. 1:** See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

**Informational Note No. 2:** See 422.5(A) for GFCI requirements for appliances.

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

**(B) Other Than Dwelling Units.** All single-phase receptacles rated 150 volts to ground or less, 50 amperes or less; and three-phase receptacles rated 150 volts to ground or less, 100 amperes or less, installed in the locations specified in 210.8(B)(1) through (10) shall have ground-fault circuit-interrupter protection for personnel.

**(9) Crawl Spaces—** at or below grade level

**Analysis:** GFCI protection is now required in non-dwelling unit crawl spaces for all single-phase receptacles supplied by branch circuits rated 150 volts to ground or less, 50 amperes or less; and three-phase receptacles supplied by branch circuits rated 150 volts to ground or less, 100 amperes or less.

*(Continued on the next page.)*

### Hubbell Solution: GFRST15B, GFRST20B

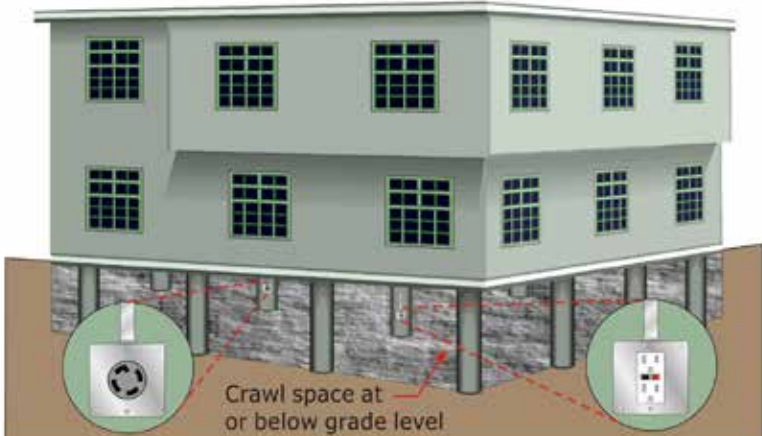
GFCI in crawl spaces are typically in remote locations lacking visibility to a trip condition. Hubbell's alarm version provides an immediate audible alert to a power interruption due to a ground fault or end of life.



### 210.8(B)(9) GFCI for Non-Dwelling Unit (Commercial, Industrial) Crawl Spaces



All single-phase receptacles (150 volts to ground or less, 50 amperes or less) and three-phase receptacles (150 volts to ground or less, 100 amperes or less) installed in **non-dwelling unit crawl spaces** requires GFCI protection



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# Article 210

## Branch Circuits

### Section 210.8(B)(10): GFCI Protection for Receptacles in Non-Dwelling Unit Unfinished Basements

**New:** GFCI protection has been added for receptacles installed in non-dwelling unit unfinished basements.

#### **Code Language: 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel**

Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) through (E). The ground-fault circuit-interrupter shall be installed in a readily accessible location.

**Informational Note No. 1:** See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

**Informational Note No. 2:** See 422.5(A) for GFCI requirements for appliances.

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

**(B) Other Than Dwelling Units.** All single-phase receptacles rated 150 volts to ground or less, 50 amperes or less; and three-phase receptacles rated 150 volts to ground or less, 100 amperes or less, installed in the locations specified in 210.8(B)(1) through (10) shall have ground-fault circuit-interrupter protection for personnel.

**(10)** Unfinished portions of the basement not intended as habitable rooms.

*(Continued on the next page.)*



**Analysis:** GFCI protection for receptacles installed in unfinished basements has been expanded to include commercial applications, as well as dwelling units. Revisions to the parent text at 210.8(B) has expanded the receptacles involved to those that are supplied by branch circuits rated 150 volts to ground or less, 50 amperes or less; and three-phase receptacles supplied by branch circuits rated 150 volts to ground or less, 100 amperes or less.

### Hubbell Solution: GFRST15B, GFRST20B

*Essential equipment including freezers and sump pumps are ideal applications for Hubbell's audible alarm GFCI. Immediate notification enables a quick response to remedy a 'no power' condition.*



# Article 210

## Branch Circuits

### Section 210.8(E): GFCI Protection for Lighting Outlets in Crawl Spaces

**New:** GFCI protection for lighting outlets in crawl spaces has been added.

#### **Code Language: 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel**

Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) through (E). The ground-fault circuit-interrupter shall be installed in a readily accessible location.

**Informational Note No. 1:** See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

**Informational Note No. 2:** See 422.5(A) for GFCI requirements for appliances.

For the purposes of this section, when determining distance from receptacles the distance shall be measured as the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or passing through a door, doorway, or window.

**(E) Crawl Space Lighting Outlets.** GFCI protection shall be provided for lighting outlets not exceeding 120 volts installed in crawl spaces.

**Analysis:** In addition to the GFCI requirements for lighting outlets of the previous Code, GFCI protection is now required for lighting outlets not exceeding 120 volts in crawl spaces where space is at or below grade level.

#### **Hubbell Solution: GFRST15B, GFRST20B; GFBFHP20**

*Lighting outlets for crawl spaces are often not visible and are in a remote location. The Hubbell alarm unit will sound when either the device trips or is in end of life.*



### Section 210.11(C)(4): Garage Branch Circuits

**New:** New requirement added for minimum rated 120-volt, 20-ampere branch circuit for dwelling unit garage receptacles.

#### **Code Language: 210.11 Branch Circuits Required**

Branch circuits for lighting and for appliances, including motor-operated appliances, shall be provided to supply the loads calculated in accordance with 220.10. In addition, branch circuits shall be provided for specific loads not covered by 220.10 where required elsewhere in this Code and for dwelling unit loads as specified in 210.11(C).

#### **(C) Dwelling Units.**

**(4) Garage Branch Circuits.** In addition to the number of branch circuits required by other parts of this section, at least one 120-volt, 20-ampere branch circuit shall be installed to supply receptacle outlets in attached garages and in detached garages with electric power. This circuit shall have no other outlets.

**Exception:** This circuit shall be permitted to supply readily accessible outdoor receptacle outlets.

**Analysis:** The branch circuit supplying receptacle outlets in dwelling unit garages is now required to be a 120-volt, 20-ampere rated branch circuit. The garage receptacle outlet branch circuit is still prohibited from serving other outlets with the exception of readily accessible receptacles located outdoors.



(Continued on the next page.)

# Article 210

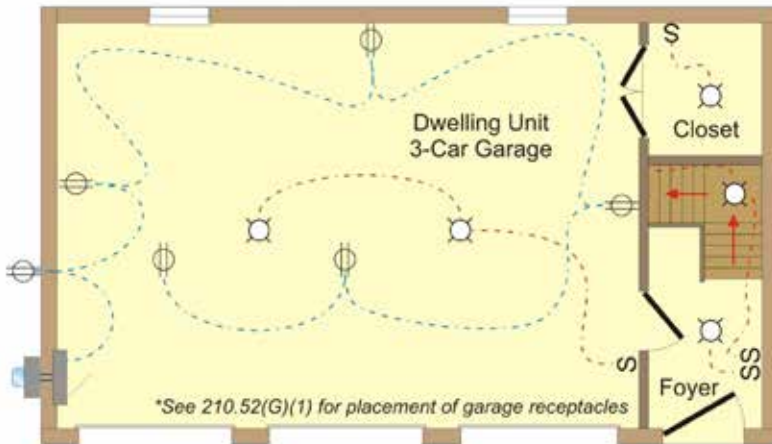
## Branch Circuits

### Hubbell Solution: GFRST20; GFRST20B; GFWRST20

Multiple choices are available for 20A branch circuits in garages, including audible alarm, standard and weather resistant GFCI receptacles, to also comply with existing GFCI requirements 210.8(A)(2) and (3) for dwelling unit garages and exteriors, respectively.



### 210.11(C)(4) Garage Branch Circuit(s)



At least one 120-volt, **20-ampere** branch circuit shall be installed to supply **receptacle outlets** in dwelling unit garages (no other outlets)

Exception permits supply of readily accessible **outdoor receptacle outlets**

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### Section 210.12(C): AFCI Protection in Guest Rooms and Guest Suites

**New:** New provisions added requiring AFCI protection for guest rooms/guest suites of hotels/motels.

#### **Code Language: 210.12 Arc-Fault Circuit-Interrupter Protection**

Arc-fault circuit-interrupter protection shall be provided as required in 210.12(A), (B), (C), and (D). The arc-fault circuit interrupter shall be installed in a readily accessible location.

**(C) Guest Rooms and Guest Suites.** All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets and devices installed in guest rooms and guest suites of hotels and motels shall be protected by any of the means described in 210.12(A)(1) through (6).

**Analysis:** New provisions were added at 210.12(C) requiring AFCI protection for all 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets and devices installed in guest rooms and guest suites of hotels and motels, regardless of the existence of “permanent provisions for cooking” or not.

#### **Hubbell Solution: AFR15TR, AFR20TR, AFR20BF**

*Hubbell's AFCI receptacle helps protect against electrical fires caused by unwanted electrical arcing. This safety solution is conveniently located within the living space, clearly visible and easily resettable, if necessary.*



# Article 210

## Branch Circuits

### Section 210.12(D): Branch Circuit Extensions or Modifications—Dwelling Units and Dormitory Units

**New:** AFCI branch circuit extensions in dormitory units have been added.

#### **Code Language: 210.12 Arc-Fault Circuit-Interrupter Protection**

Arc-fault circuit-interrupter protection shall be provided as required in 210.12(A), (B), (C), and (D). The arc-fault circuit interrupter shall be installed in a readily accessible location.

#### **(D) Branch Circuit Extensions or Modifications— Dwelling Units and Dormitory Units.**

In any of the areas specified in 210.12(A) or (B), where branch circuit wiring is modified, replaced, or extended, the branch circuit shall be protected by one of the following:

- (1)** A listed combination-type AFCI located at the origin of the branch circuit
- (2)** A listed outlet branch-circuit-type AFCI located at the first receptacle outlet of the existing branch circuit.

**Exception:** AFCI protection shall not be required where the extension of the existing conductors is not more than 1.8 m (6 ft) and does not include any additional outlets or devices.

**Analysis:** New provisions were added at 210.12(D) requiring AFCI protection for all 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets and devices installed in dormitory units that are being renovated or extended.

*(Continued on the next page.)*

### Hubbell Solution: AFR15TR, AFR20TR, AFR20BF

Hubbell's AFCI receptacle helps protect against electrical fires caused by unwanted electrical arcing. This safety solution is conveniently located within the living space, clearly visible and easily resettable, if necessary.



For branch circuit extensions and modifications feeding outlet branch circuit AFCI devices, unlike for new construction, this NEC® section does not require that the branch circuit wiring from the panel to the first outlet be protected.



\*Article 210.12(D) reference pages are not directly from the IAEI.



## **AUTOGUARD® Self Test Ground Fault Receptacles**

**Patented AUTOGUARD® Technology**  
continuously self tests functionality & disconnects  
power to receptacle if GFCI protection is lost.

### **Available In:**

- Tamper-Resistant
- Weather Resistant
- Night Light
- Alarm
- Isolated Ground
- Standard
- Hospital Grade
- SNAPConnect®

**Innovative Power Solutions since 1888**



### Section 210.17: Electric Vehicle Branch Circuit

**Deletion & Relocation:** The requirement for an individual branch circuit for electric vehicle outlets has been relocated from 210.17 to 625.40.

#### **Code Language: 625.40 Electric Vehicle Branch Circuit**

Each outlet installed for the purpose of charging electric vehicles shall be supplied by an individual branch circuit. Each circuit shall have no other outlets.

**Analysis:** The requirement for a separate branch circuit for electric vehicle outlets was relocated to 625.40, the article for electric vehicle charging systems. During this relocation, the requirement for a “separate” branch circuit was changed to an “individual” branch circuit. There is still no requirement for an outlet to be installed specifically for the purpose of charging of an electric vehicle.

#### **Hubbell Solution: HBL9367, HBLEV30B, HBLEV30BHW**

*The EV Charge Station must be supplied by an individual branch circuit with no other outlets.*



# Article 210

## Branch Circuits

### Section 210.52(A)(2)(1): Receptacle Wall Space

**Revision:** Fixed cabinets “that do not have countertops or similar work surfaces” was added as an item that will constitute a break in a wall space for receptacle spacing requirements at dwelling units.

#### **Code Language: 210.52 Dwelling Unit Receptacle Outlets**

This section provides requirements for 125-volt, 15- and 20-ampere receptacle outlets.

(Remainder of text unchanged.)

**(A) General Provisions.** In every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom, recreation room, or similar room or area of dwelling units, receptacle outlets shall be installed in accordance with the general provisions specified in 210.52(A)(1) through (A)(4).

**(2) Wall Space.** As used in this section, a wall space shall include the following:

- (1) Any space 600 mm (2 ft) or more in width (including space measured around corners) and unbroken along the floor line by doorways and similar openings, fireplaces, and fixed cabinets that do not have countertops or similar work surfaces.
- (2) The space occupied by fixed panels in exterior walls, excluding sliding panels.
- (3) The space afforded by fixed room dividers, such as freestanding bar-type counters or railings.

**Analysis:** All “fixed cabinets,” regardless of their dimension or size, with or without countertop or work surfaces were considered as items (along with doorways and fireplaces) that would not be counted as “wall space” and would establish a break in that wall space as far as receptacle spacing and location were concerned.

*(Continued on the next page.)*

### 210.52(A)(2)(1) Receptacle Wall Space



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Any space 600 mm (2 ft) or more in width and unbroken along the floor line by doorways and similar openings, fireplaces, and fixed cabinets that do not have countertops or similar work surfaces

### Hubbell Solution: RR1512W; NSAV62M

For wall spaces not covered by built-ins that may have outlets that are partially restricted by furniture, consider the flat panel TV box. These provide recessed duplex outlets as part of the enclosure that accommodates power for entertainment systems and accessories.



# XCLAMP™ external clamping

*Best solution for residential  
15A & 20A branch circuit wiring*

## Fast & Secure

- Eliminates the need to loop the wire
- External back-wire clamp for quick, easy installation of 15A & 20A branch circuits in residential applications



strip



insert



clamp



### Section 210.52(B)(1), Ex. No. 2: Appliance Branch Circuit

**Revision:** An individual branch circuit supplying a receptacle outlet for any specific appliance (not just the refrigerator) at a dwelling unit is allowed to be rated 15-ampere or greater.

#### **Code Language: 210.52 Dwelling Unit Receptacle Outlets**

This section provides requirements for 125-volt, 15- and 20-ampere receptacle outlets.

(Remainder of text unchanged.)

#### **(C) Small Appliances.**

**(1) Receptacle Outlets Served.** In the kitchen, pantry, breakfast room, dining room, or similar area of a dwelling unit, the two or more 20-ampere small-appliance branch circuits required by 210.11(C)(1) shall serve all wall and floor receptacle outlets covered by 210.52(A), all countertop outlets covered by 210.52(C), and receptacle outlets for refrigeration equipment.

**Exception No. 1:** In addition to the required receptacles specified by 210.52, switched receptacles supplied from a general-purpose branch circuit as defined in 210.70(A)(1), Exception No. 1, shall be permitted.

**Exception No. 2:** In addition to the required receptacles specified by 210.52, a receptacle outlet to serve a specific appliance shall be permitted to be supplied from an individual branch circuit rated 15 amperes or greater.

**Analysis:** Individual branch circuits installed in dwelling kitchen and dining areas and rated 15 amperes (or greater) are now each permitted to supply one specific kitchen appliance (no longer just a refrigerator), rather than being supplied by one of the 20-ampere-rated small-appliance branch circuits.

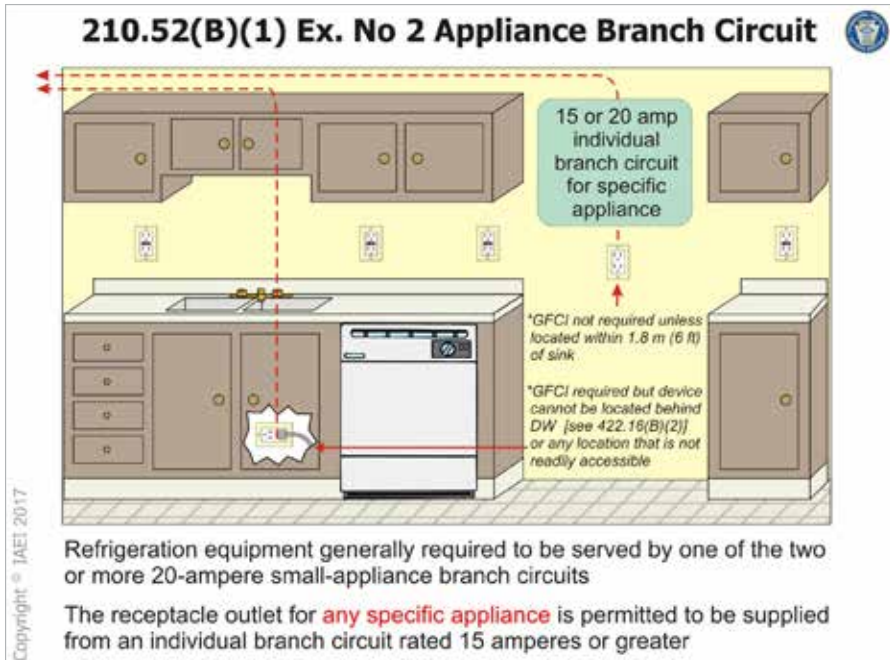
(Continued on the next page.)

# Article 210

## Branch Circuits

### Hubbell Solution: RR15SWTRX

The X-Clamp duplex receptacle is the best solution for residential 15A and 20A branch circuit wiring. The external back-wire clamps allow for fast and simple installation of #14 and #12 AWG wire.



### Section 210.52(C)(3): Peninsular Countertop Spaces

**Revision:** The measurement point for peninsular countertops has been changed from the “connecting edge” to the “connected perpendicular wall.”

#### **Code Language: 210.52 Dwelling Unit Receptacle Outlets**

This section provides requirements for 125-volt, 15- and 20-ampere receptacle outlets.

(Remainder of text unchanged.)

**(C) Countertops and Work Surfaces.** In kitchens, pantries, breakfast rooms, dining rooms, and similar areas of dwelling units, receptacle outlets for countertop and work surface spaces shall be installed in accordance with 210.52(C)(1) through (C)(5).

**(3) Peninsular Countertop Spaces.** At least one receptacle outlet shall be installed at each peninsular countertop long dimension space with a long dimension of 600 mm (24 in) or greater and a short dimension of 300 mm (12 in) or greater. A peninsular countertop is measured from the connected perpendicular wall.



(Continued on page 33.)

# HUBBELL Countertop Receptacles

Because  
Spills Happen

Built and listed to be water resistant to a half gallon of liquid spilled on the device

Permanent installation ready (suitable for MC cable or non-metallic sheath cable)

Easy to install—simply drop in and tighten  
Surface or flush mount options available.



**The *only* UL listed  
spill-resistant pop-up receptacle**



Available in 7 finishes to match any decor:





**Analysis:** At least one receptacle outlet is still required at each peninsular countertop with a long dimension of 600 mm (24 in) or greater and a short dimension of 300 mm (12 in) or greater, but the measurement is now measured from the “connected perpendicular wall.”

### Hubbell Solution: RCT200NI

The Pop-up Countertop Receptacle is a convenient UL Listed surface mount Tamper Resistant solution to provide power to a peninsula.



**210.52(C)(3) Peninsular Countertop Spaces**

At least one receptacle outlet to be installed at each peninsular countertop **long dimension space** with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater

Measurements to be measured from the “**connected perpendicular wall**”

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# Article 210

## Branch Circuits

### Section 210.52(G): Receptacle for Basements, Garages and Accessory Buildings

**Revision:** Receptacle requirements for dwelling unit garages, basements, and accessory buildings expanded to two-family dwellings (not just one-family dwellings).

#### **Code Language: 210.52 Dwelling Unit Receptacle Outlets**

This section provides requirements for 125-volt, 15- and 20-ampere receptacle outlets.

(Remainder of text unchanged.)

**(G) Basements, Garages, and Accessory Buildings.** For a one- and two-family dwellings, at least one receptacle outlet shall be installed in the areas specified in 210.52(G)(1) through (3). These receptacles shall be in addition to receptacles required for specific equipment.

**Analysis:** The same one receptacle outlet requirement still applies to qualifying basements, garages, and accessory buildings, but this requirement has been extended to two-family dwellings as well as one-family dwellings.

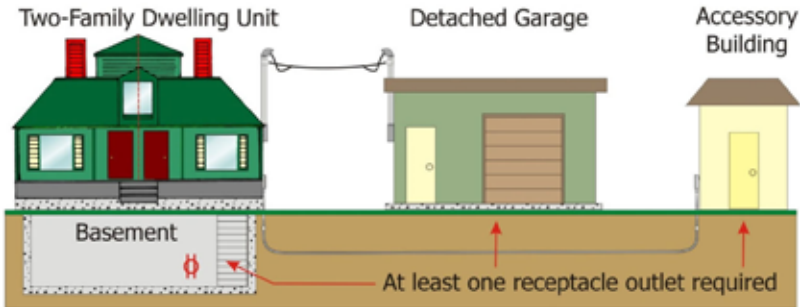
*(Continued on the next page.)*

### Hubbell Solution: GFRST15B, GFRST20B; GFTRST15B, GFTRST20B

Hubbell's alarm version GFCI receptacle provides protection you can hear when installations are out of sight. Applications with freezers, refrigerators and basement sump pumps are ideal.



### 210.52(G) Receptacle for Basements, Garages, and Accessory Buildings



At one- and **two-family** dwellings, at least one 125-volt, 15- or 20-ampere receptacle outlet, in addition to those for specific equipment, shall be installed in areas specified below:

- Attached garages and in each detached garage with electric power
- Accessory buildings with electric power
- Unfinished basements - each separate portion of the basement

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# Article 210

## Branch Circuits

### Section 210.52(G)(1): Dwelling Unit Garages

**Revision:** At least one receptacle outlet is required to be installed “in each vehicle bay” and not more than 1.7 m (5½ ft) above the floor in dwelling unit garages.

#### **Code Language: 210.52 Dwelling Unit Receptacle Outlets**

This section provides requirements for 125-volt, 15- and 20-ampere receptacle outlets.

(Remainder of text unchanged.)

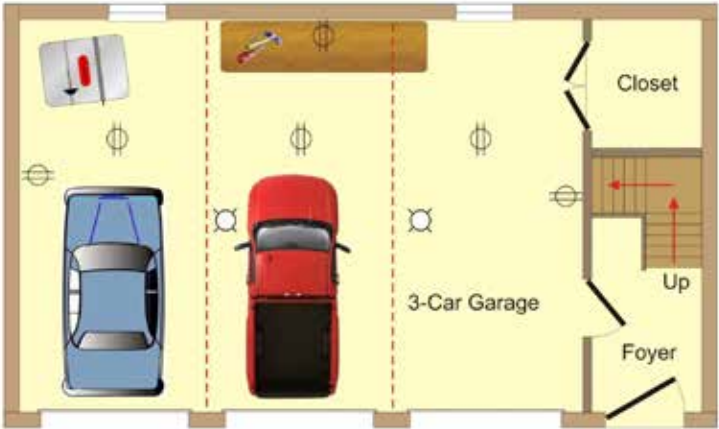
**(G) Basements, Garages, and Accessory Buildings.** For a one- and two-family dwellings, at least one receptacle outlet shall be installed in the areas specified in 210.52(G)(1) through (3). These receptacles shall be in addition to receptacles required for specific equipment.

**(1) Garages.** In each attached garage and in each detached garage with electric power, at least one receptacle outlet shall be installed in each vehicle bay and not more than 1.7 m (5½ ft) above the floor.

**Analysis:** In each attached garage and in each detached garage with electric power, at least one receptacle outlet is required to be installed “in each vehicle bay and not more than 1.7 m (5½ ft) above the floor.” The change from “for” to “in” each vehicle bay will eliminate the interpretation of one receptacle outlet being shared by two adjacent spaces. The term “car space” was changed to “vehicle bay” to recognize that vehicles other than a car such as pickup trucks, sports utility vehicles, tractors, etc. could be parked in a dwelling unit garage, as well. The “not more than 1.7 m (5½ ft) above the floor” requirement eliminates interpretations that a duplex receptacle outlet installed in the ceiling specifically for a garage door opener can serve double-duty. The branch circuit supplying these receptacle(s) cannot serve outlets outside of the garage with the exception of readily accessible receptacles located outdoors. This latter requirement concerning the branch circuit supplying the garage is now located at 210.11(C)(4).

*(Continued on the next page.)*

**210.52(G)(1) Dwelling Unit Garages**



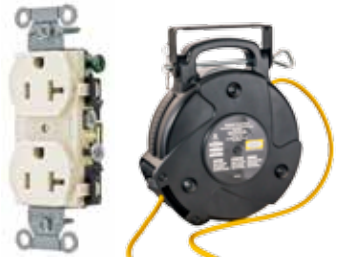
The diagram illustrates a 3-car garage layout. It is divided into three vehicle bays by dashed lines. The left bay contains a blue car, the middle bay contains a red car, and the right bay is empty. Each bay has a circular ceiling outlet. A pendant receptacle is shown hanging from the ceiling in the middle bay. To the right of the garage is a foyer with a staircase labeled 'Up' and a closet. A copyright notice 'Copyright © JAEI 2017' is on the left side.

In each attached garage and in each detached garage with electric power, at least one receptacle outlet is required to be installed "in each vehicle bay and not more than 1.7 m (5½ ft) above the floor"

Note: See 210.11(C)(4) for garage branch circuit requirements

### Hubbell Solution: CR20, HBLC40123TT, HBLC25163C

In garage bays with only ceiling outlets, the pendant receptacle, reference 210.50(A), extended from a cord reel with the cord stop set so the end is less than 5 ½ feet from the floor in each bay would comply.



# Article 210

## Branch Circuits

### Section 210.64: Receptacle at Electrical Service Areas

**Revision:** The required receptacle outlets at electrical service equipment must be installed in an accessible location within 7.5 m (25 ft) of indoor electrical service equipment.

#### **Code Language: 210.64 Electrical Service Areas**

At least one 125-volt, single-phase, 15- or 20-ampere-rated receptacle outlet shall be installed in an accessible location within 7.5 m (25 ft) of the indoor electrical service equipment. The required receptacle outlet shall be located within the same room or area as the service equipment.

**Exception No. 1.** The receptacle outlet shall not be required to be installed in one- and two-family dwellings.

**Exception No. 2.** Where the service voltage is greater than 120 volts to ground, a receptacle outlet shall not be required for services dedicated to equipment covered in Articles 675 and 682.

**Analysis:** At least one 125-volt, single-phase, 15- or 20-ampere-rated receptacle outlet is still required to be installed at the electrical service equipment. The maximum distance this receptacle outlet can be located from the electrical service has been shortened to 7.5 m (25 ft) and limited to indoor service equipment only. This required receptacle outlet is now required to be installed in an accessible location and must be located within the same room or area as the service equipment. This requirement is still not applicable to one- and two-family dwellings. A new exception was also added allowing services dedicated to equipment covered in Articles 675 and 682 to be exempt from this requirement when the service voltage is greater than 120 volts to ground.

*(Continued on the next page.)*

### 210.64 Receptacle at Electrical Service Areas



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At least one 125-volt, single-phase, 15- or 20-ampere-rated receptacle outlet shall be installed **in an accessible location** within **7.5 m (25 ft)** of all **indoor electrical service equipment** and located within the **same room or area** as the service equipment (*other than one- and two-family dwellings*)

Exception added for service areas covered in **Articles 675 and 682**

### Hubbell Solution: USB15AC, USB8300

Hubbell USB charging receptacles can be used to power, or recharge, a technician's or maintenance person's communication device, yet leave power outlets available for equipment requiring plug-in electrical power.



# Article 210

## Branch Circuits

### Section 210.70(C): Lighting Outlet(s) All Occupancies

**Revision:** Lighting outlet requirements for storage or equipment spaces added for non-dwelling unit utility rooms and basements.

#### **Code Language: 210.70 Lighting Outlets Required**

Lighting outlets shall be installed where specified in 210.70(A), (B), and (C).

**(C) All Occupancies.** For attics and underfloor spaces, utility rooms, and basements, at least one lighting outlet containing a switch or controlled by a wall switch shall be installed where these spaces are used for storage or contain equipment requiring servicing. At least one point of control shall be at the usual point of entry to these spaces. The lighting outlet shall be provided at or near the equipment requiring servicing.

**Analysis:** The title of 210.70(C) was changed from “Other Than Dwelling Units” to “All Occupancies” and the text at this provision was revised to mirror the Code text at 210.70(A)(3) for dwelling units. This lighting outlet requirement for storage or equipment spaces now applies to dwelling units as well as non-dwelling unit attics, underfloor spaces, utility rooms, and basements.




(Continued on the next page.)




### Hubbell Solution: GFRST15B, GFRST20B

Both dwelling and nondwelling applications in storage and utility rooms often are not visible to the occupants. The audible alarm GFR immediately provides notice of a tripped and/or end of life condition.



**210.70(C) Lighting Outlet(s) All Occupancies** 



The diagram shows a cross-section of a building. Above ground is a multi-story white building with a blue circular logo on its side. Below ground is a basement area labeled "Non-Dwelling Unit Basement". Inside the basement, there is a green cabinet, a blue and green machine, and a white water heater. A lighting outlet with a switch is shown on the wall of the basement.

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At non-dwelling unit attics, underfloor spaces, **utility rooms**, and **basements**, at least one **lighting outlet** containing a switch or controlled by a wall switch must be installed where these spaces are used for storage or contain equipment requiring servicing [See 210.70(A)(3) for dwelling units]

At least one switch to be located at the "usual point of entry" to space with lighting outlet(s) located "at or near the equipment requiring servicing"

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Recessed 4" Floor  
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Poke-Throughs

*Hubbell SystemOne offers:*

A cohesive aesthetic  
regardless of installation

Flexible, easily accessible,  
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Convenient, reliable & safe access  
to power, data & AV, anywhere it's needed.



Available in 6 finishes to match any decor:



### Section 210.71: Receptacle Outlets in Meeting Rooms

**New:** Receptacle outlet requirements were added for non-dwelling unit meeting rooms.

#### **Code Language: 210.71 Meeting Rooms**

**(A) General.** Each meeting room of not more than 93 m<sup>2</sup> (1000 ft<sup>2</sup>) in other than dwelling units shall have outlets for nonlocking-type, 125-volt, 15- or 20-ampere receptacles. The outlets shall be installed in accordance with 210.71(B). Where a room or space is provided with movable partition(s), each room size shall be determined with the partition in the position that results in the smallest size meeting room.

**Informational Note No. 1.** For the purposes of this section, meeting rooms are typically designed or intended for the gathering of seated occupants for such purposes as conferences, deliberations, or similar purposes, where portable electronic equipment such as computers, projectors, or similar equipment is likely to be used.

**Informational Note No. 2.** Examples of rooms that are not meeting rooms include auditoriums, schoolrooms, and coffee shops.



*(Continued on the next page.)*

# Article 210

## Branch Circuits

### Code Language: 210.71 Meeting Rooms Continued

**(B) Receptacle Outlets Required.** The total number of receptacle outlets, including floor outlets and receptacle outlets in fixed furniture, shall not be less than as determined in (1) and (2). These receptacle outlets shall be permitted to be located as determined by the designer or building owner.

**(1) Receptacle Outlets in Fixed Walls.** Receptacle outlets shall be installed in accordance with 210.52(A)(1) through (A)(4).

**(2) Floor Receptacle Outlets.** A meeting room that is at least 3.7 m (12 ft) wide and that has a floor area of at least 20 m<sup>2</sup> (215 ft<sup>2</sup>) shall have at least one receptacle outlet located in the floor at a distance not less than 1.8m (6 ft) from any fixed wall for each 20 m<sup>2</sup> (215 ft<sup>2</sup>) or major portion of floor space.

**Analysis:** New requirements were added at 210.71 for the minimum number of fixed-wall receptacle outlets and floor receptacle outlets and for floor spacing requirements in non-dwelling unit meeting rooms, such as those found at hotels and convention centers. Previously, there was no minimum number of required receptacle outlets for such meeting rooms. See *NEC*<sup>®</sup> text for complete requirements and specifics.

### Hubbell Solution: S1R4PTALU

Hubbell's SystemOne product line is a comprehensive product portfolio of recessed Fire Rated Poke Through Devices and Recessed Floor Boxes that are ideal for adding power, data and AV to any conference room. With floor boxes from 1 gang to 11 gangs, and poke throughs from 4" diameter to 10" diameter, Hubbell has a wide assortment of products to fit every application. The SystemOne concept allows you to use floor boxes in one area and poke throughs in another, while maintaining the same look in both locations.



### Section 250.148: Continuity and Attachment of EGC to Boxes

**Revision:** Revision to clarify that all equipment grounding conductors associated with any and all circuits in the box must be connected together and to the box and not just each equipment grounding conductors of each associated circuit.

#### **Code Language: 250.148 Continuity and Attachment of Equipment Grounding Conductors to Boxes**

If circuit conductors are spliced within a box, or terminated on equipment within or supported by a box, all equipment grounding conductor(s) associated with any of those circuit conductors shall be connected within the box or to the box with devices suitable for the use in accordance with 250.8 and 250.148(A) through (E).

**Exception.** The equipment grounding conductor permitted in 250.146(D) shall not be required to be connected to the other equipment grounding conductors or to the box.

**Analysis:** Clear directions in 250.148 specify that all of the equipment grounding conductors present in a box or enclosure are required to be connected, regardless of the circuit with which they are associated. The existing exception to 250.148 still applies, giving relief to the equipment grounding conductor of an isolated ground circuit for an isolated ground receptacle not being required to be connected to the other equipment grounding conductors or the box.

*(Continued on the next page.)*

# Article 250

## Grounding and Bonding

### Hubbell Solution: IG5262; IG5352; GFTWRST20IIG

The requirement to connect all ground conductors insures a properly bonded facility, but raises the likelihood that any potential ground noise will find its way to sensitive electronics.

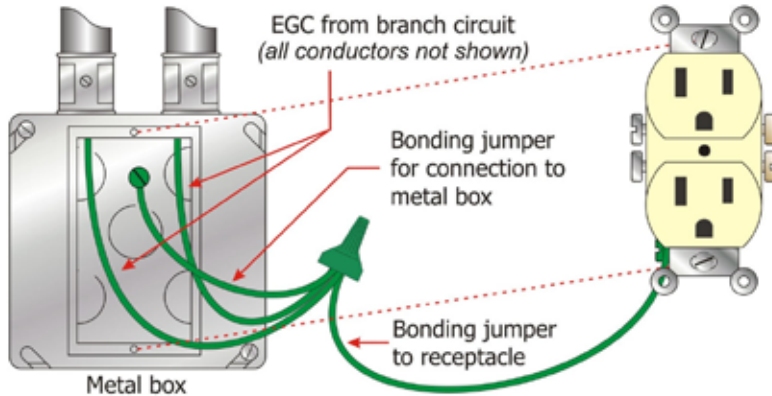
Hubbell offers conventional Isolated Ground receptacles in all performance grades, along with IG SNAPConnect® and IG GFCI.



### 250.148 Continuity and Attachment of EGC to Boxes



If circuit conductors are spliced within a box, or terminated on equipment within or supported by a box, **all** equipment grounding conductor(s) (EGC) associated with **any** of those circuit conductors shall be connected within the box or to the box with devices suitable for the use



See exception for isolated ground receptacles at 250.146(D)

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# HUBBELL

## Tamper-Resistant Receptacles

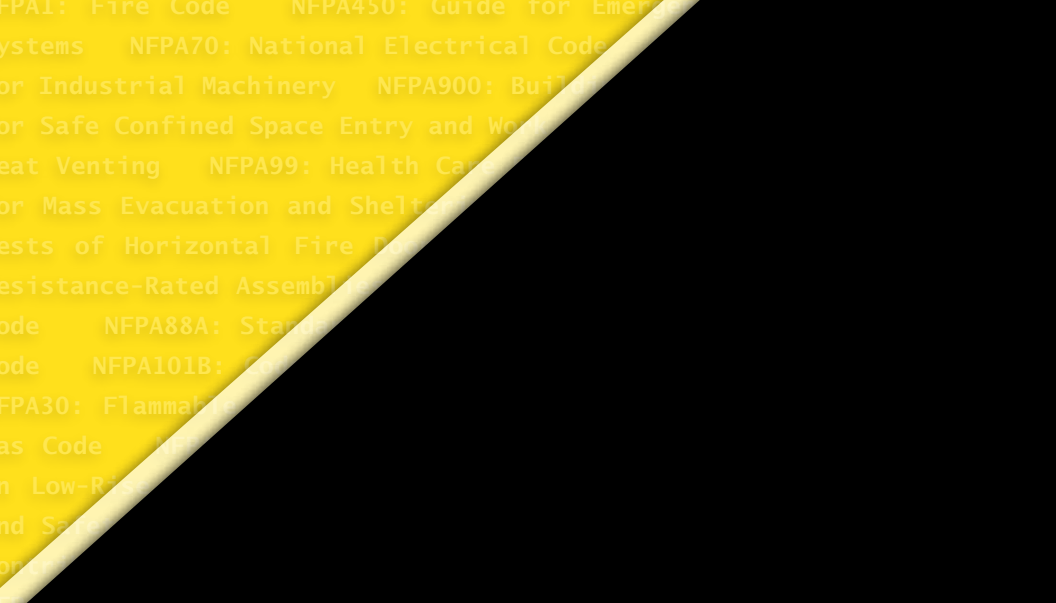
Hubbell's patented Cam Action Technology makes inserting a plug as easy as plugging into a standard receptacle. This design has been incorporated into our Industrial, Hospital, Commercial and Residential receptacles. This broad offering ensures the right quality product for all projects.

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