

B Y R N E



Tamper Resistant Receptacle

Tamper Resistant Receptacle White Paper

Purpose: To give a general overview of the description, application, and code discussions for Tamper Resistant Receptacles

General Discussion about where Tamper Resistant Receptacles are required.

Introduction: Tamper Resistant (TR) receptacles were designed to limit the risk of the “proverbial finger in the light socket”. As children are known to explore all aspects of their environments, TR was developed as a solution of keeping children safe. They are designed to limit access to the hot and neutral contacts and as a result, reduce the risk of inserting foreign objects and getting shocked. This is most commonly accomplished with shutters that cover the hot and neutral openings and will only allow plugs to be inserted when both shutters have pressure applied simultaneously.

TR receptacles are intended to protect children from electrical burns and shocks. In an explanation of the requirements in the National Electrical Code, statistics from 2005 indicated that approximately 89 percent of electrical burn and shock incidents occurred among children 6 years of age or less.

Background: The National Electrical Code (NEC) first added requirements for TR receptacles in 2002 in pediatric patient care areas. These areas have the highest traffic volumes for children under age 8. In 2005 the NEC added dwellings to the 2002 required spaces of pediatric rooms, bathrooms, playrooms, and activity rooms. This additional scope then covered the safety of an even greater number of children.

The next logical step was shared spaces used by children, as a result, 2011 NEC required TR receptacles in guest rooms and guest suites, child care facilities, and further defined pediatric areas as “designated pediatric locations”. They also provided exceptions for certain type and location of receptacles in dwellings. Finally, the 2014 NEC provided further clarification of the existing locations including: guest rooms and guest suites of hotels and motels and excluding nurseries for pediatric locations.

The NEC is updated every 3 years, so additional changes may happen in 2017 (there are currently no proposals submitted that change or add requirements for TR Receptacles). Each state and or local jurisdiction that utilizes the NEC code for TR enforcement, however, may use different revisions (2005, 2008, 2011, 2014, or future).

Locations and Markets that Require Tamper Resistant Receptacles:

Depending on the final installation and application of the product, TR receptacles are required in dwellings (residential market), guest rooms and guest suites of hotels and motels (hospitality market), and designated pediatric locations (healthcare market).

Even with these requirements being clearly communicated in the NEC, gray areas exist for applications of TR receptacles that require some “unintended” locations. An example of this would be when specifiers apply the TR receptacle requirement to all areas of a healthcare facility including areas not applicable to the TR receptacle NEC Code requirements.

The code requires TR receptacles in designated pediatric locations but, like many other existing NEC requirements, they may be applied as a preference or out of concern or fear of compliance vs. following TR receptacle NEC requirements. Hospital grade receptacles are a great example of what architects/engineers may do in specifying TR receptacles. More often than not, specific codes are blanketed across all parts of a healthcare facility whether they need it or not.

The biggest ambiguity is what product types will require TR receptacle for code compliance applications. For example, the NEC TR code dwelling requirements specify “appliances” as exempt from the scope of TR receptacles. Relocatable Power Taps are often grouped into this category.

It is not clear if accessories, like Relocatable Power Taps, are required to have TR receptacles when used in residential applications given their “temporary” nature. However, if RPT’s are used to comply with the specific locations and number of receptacles called out in the code, hardwired versions most likely will need TR Receptacles. More simply put, if the product is part of the scope for inspection TR will be considered.

The code requires TR receptacles in guest rooms and guest suites of hotels and motels. If the product in question is applied “temporarily” and is outside the scope of the local jurisdiction having authority, however, the product most likely will be accepted. Currently feedback from customers and local authorities having jurisdiction has not been negative.

TR Receptacle Requirements by the NEC in Effect

The following table breaks down the 3 primary locations that require TR receptacles by the version of the NEC and compares those to commercial spaces. As noted above, there will be exceptions where TR receptacles will be required and exceptions where TR receptacles won't be required.

NEC Version (Year)	Residential	Hospitality	Healthcare	Commercial
2008 NEC	All Required Receptacle Locations	None	Pediatric rooms, playrooms, activity rooms, patient care areas	Not Required
2011 NEC	All Required locations except at least 5 ½ ft. off floor and receptacles for two appliances in a dedicated space	All guest rooms and guest suites	Pediatric rooms, playrooms, activity rooms, patient care areas	Not Required
2014 NEC	All Required locations except at least 5 ½ ft. off floor and receptacles for two appliances in a dedicated space	All guest rooms and guest suites of hotels and motels	Pediatric rooms, playrooms, activity rooms, patient care areas other than nurseries	Not Required

Conclusion

TR receptacles are only required in areas that children under the age of 7 are exposed. Commercial spaces and office buildings, other than childcare facilities, do not require TR receptacles.

A significant amount of gray area exists in the application of the NEC requirements. Both the codes and the product categories they cover have ambiguities. Ultimately it will fall on the local jurisdiction that has authority to apply all state, federal (NEC), or municipal codes and regulations that apply to the specific environment. Byrne Electrical Specialists, Inc. has extensive experience in navigating the NEC and working directly with inspectors. We welcome the opportunity to understand the specific environment TR is being required and look forward to finding a solution that works best for you and your customers.

Glossary:

Depending on the final installation and application of the product, TR receptacles are required in dwellings (residential market), guest rooms and guest suites of hotels and motels (hospitality market), and designated pediatric locations (healthcare market).

Appliances: Per the National Electrical Code, Appliances are: “Utilization equipment, other than industrial, that is normally built in standardized sizes or types and is installed or connected as a unit to perform one or more functions such as clothes washing, air-conditioning, food mixing, deep frying, and so forth.: Many include Relocatable Power Taps as appliances.

Authority(ies) Having Jurisdiction: Per the National Electrical Code, Authority Having Jurisdiction (AHJ) is: “An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.” In this discussion, an AHJ is an electrical inspector, building inspector, or fire marshal that is responsible for confirming electrical installations comply with applicable codes. Sign-off by an AHJ is required before an occupancy permit can be granted. The AHJ makes all final interpretations of the code, even if it seems to be contrary to requirement.

Child Care Facilities: Per the National Electrical Code, a Child Care Facility is: “a building or structure, or portion thereof, for educational, supervisory, or personal care services for more than four children 7 years old or less.” Based on this definition, Child Care Facilities not only include day care centers, they could also include elementary schools.

Dwellings: Per the National Electrical Code, a Dwelling is: “A single unit, providing complete and independent living facilities for one or more persons, including permanent provisions for living, sleeping, cooking, and sanitation.” Dwellings include one family buildings, two family buildings, and multifamily buildings (i.e. apartments).

Guest Rooms and Guest Suites: Per the National Electrical Code, a Guest Room is: “An accommodation combining living, sleeping, sanitary, and storage facilities within a compartment.” A Guest Suite is: “An accommodation with two or more contiguous rooms comprising a compartment, with or without doors between such rooms, that provides living, sleeping, sanitary, and storage facilities.” The requirements for TR Receptacles specifically calls out guest rooms and guest suites of hotels and motels.

Glossary:

National Electrical Code (NEC): The National Electrical Code (NEC) is a document that outlines minimum safety requirements for electrical installations and operations in all types of buildings. The NEC is written and updated by volunteers who are experts in electrical safety, electrical inspectors, etc., and is controlled by the National Fire Protection Association. The NEC is updated every 3 years. The NEC is considered a voluntary standard and its adoption is up to individual states and/or local municipalities. The version of the NEC in effect in specific locations from the 2005 edition to the 2014 edition. Some states/cities rewrite the NEC or provide addendums to the NEC. California, Chicago, and New York City are examples.

Tamper Resistant (TR) Receptacle: Tamper Resistant (TR) Receptacle – Tamper Resistant (TR) Receptacles are designed to limit access to the hot and neutral contacts. This is most commonly accomplished with shutters that prevent access to the contacts unless even pressure is applied to both the hot and neutral shutters at the same time.

Index:

NEC Adoption Info: What version of the NEC is in effect in your area – This page provides a pdf document of NEC adoption by jurisdiction: nema.org [NEC version by location](#)

California Electrical Code: This page has access to an online version of the current California Electrical Code: <http://www.bsc.ca.gov/codes.aspx>

Chicago Electrical Code: This page is an online version of the current Chicago Electrical Code. Select more in the left column and select Division 27 to see the electrical code: [Chicago Electrical Code](#)

New York City Electrical Code: This page is a pdf of the current New York Electrical Code. Note in section 27-3024 (Page 2) that New York adopts the 2008 edition of the NEC with changes noted in this code: [New York City Electrical Code](#)