

ARTICLE

314

Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures

Δ **Part I. General**

314.1 Scope. This article covers the installation and use of all boxes and conduit bodies used as outlet, device, junction, or pull boxes, depending on their use, and handhole enclosures. Cast metal, sheet metal, nonmetallic, and other boxes such as FS, FD, and larger boxes are not classified as conduit bodies. This article also includes installation requirements for fittings used to join raceways and to connect raceways and cables to boxes and conduit bodies.

314.2 Round Boxes. Round boxes shall not be used where conduits or connectors requiring the use of locknuts or bushings are to be connected to the side of the box.

314.3 Nonmetallic Boxes. Nonmetallic boxes shall be permitted only with open wiring on insulators, concealed knob-and-tube wiring, cabled wiring methods with entirely nonmetallic sheaths, flexible cords, and nonmetallic raceways.

Exception No. 1: Where internal bonding means are provided between all entries, nonmetallic boxes shall be permitted to be used with metal raceways or metal-armored cables.

Exception No. 2: Where integral bonding means with a provision for attaching an equipment bonding jumper inside the box are provided between all threaded entries in nonmetallic boxes listed for the purpose, nonmetallic boxes shall be permitted to be used with metal raceways or metal-armored cables.

314.4 Metal Boxes. Metal boxes shall be grounded and bonded in accordance with Parts I, IV, V, VI, VII, and X of Article 250 as applicable, except as permitted in 250.112(I).

N 314.5 Screws or Other Fasteners. Screws or other fasteners installed in the field that enter wiring spaces shall be as provided by or specified by the manufacturer or shall comply with the following as applicable:

- (1) Screws shall be machine type with blunt ends.
- (2) Other fasteners shall have blunt ends.
- (3) Screws attaching a cover shall extend no more than 10 mm ($\frac{3}{8}$ in.).
- (4) Screws or other fasteners, other than in (3), penetrating a cover shall extend no more than 8 mm ($\frac{5}{16}$ in.).
- (5) Screws or other fasteners penetrating a wall of a box exceeding 1650 cm³ (100 in.³) shall extend no more than 6 mm ($\frac{1}{4}$ in.), or more than 11 mm ($\frac{7}{16}$ in.) if located within 10 mm ($\frac{3}{8}$ in.) of an adjacent box wall.

- (6) Screws or other fasteners penetrating the wall of a box not exceeding 1650 cm³ (100 in.³) and not covered in 314.23(B)(1) shall be made flush with the box interior.
- (7) Screws or other fasteners penetrating the wall of a conduit body shall be made flush with the conduit body interior.

Exception to (3) through (6): A screw shall be permitted to be longer if the end of the screw is protected with an approved means.

Part II. Installation

Δ 314.15 Damp or Wet Locations. In damp or wet locations, boxes, conduit bodies, outlet box hoods, and fittings shall be placed or equipped so as to prevent moisture from entering or accumulating within the box, conduit body, or fitting. Boxes, conduit bodies, outlet box hoods, and fittings installed in wet locations shall be listed for use in wet locations. Approved drainage openings not smaller than 3 mm ($\frac{1}{8}$ in.) and not larger than 6 mm ($\frac{1}{4}$ in.) in diameter shall be permitted to be installed in the field in boxes or conduit bodies listed for use in damp or wet locations. For installation of listed drain fittings, larger openings are permitted to be installed in the field in accordance with manufacturer's instructions.

Informational Note No. 1: See 314.27(B) for boxes in floors.

Informational Note No. 2: See 300.6 for protection against corrosion.

Δ 314.16 Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies. Boxes and conduit bodies shall be of an approved size to provide free space for all enclosed conductors. In no case shall the volume of the box, as calculated in 314.16(A), be less than the fill calculation as calculated in 314.16(B). The minimum volume for conduit bodies shall be as calculated in 314.16(C).

This section shall not apply to terminal housings supplied with motors or generators.

Informational Note: See 430.12 for volume requirements of motor or generator terminal housings.

Boxes and conduit bodies enclosing conductors 4 AWG or larger shall also comply with 314.28. Outlet and device boxes shall also comply with 314.24.

(A) Box Volume Calculations. The volume of a wiring enclosure (box) shall be the total volume of the assembled sections and, where used, the space provided by plaster rings, domed covers, extension rings, and so forth, that are marked with their volume or are made from boxes the dimensions of which are listed in Table 314.16(A). Where a box is provided with one or more securely installed barriers, the volume shall be apportioned to each of the resulting spaces. Each barrier, if not marked with its volume, shall be considered to take up 8.2 cm³ ($\frac{1}{2}$ in.³) if metal, and 16.4 cm³ (1.0 in.³) if nonmetallic.