

250.138 Cord-and-Plug-Connected Equipment. Non-current-carrying metal parts of cord-and-plug-connected equipment, if required to be connected to an equipment grounding conductor, shall be connected by one of the methods in 250.138(A) or (B).

(A) By Means of an Equipment Grounding Conductor. By means of an equipment grounding conductor run with the power supply conductors in a cable assembly or flexible cord properly terminated in a grounding-type attachment plug with one fixed grounding contact.

Exception: The grounding contacting pole of grounding-type plug-in ground-fault circuit interrupters shall be permitted to be of the movable, self-restoring type on circuits operating at not over 150 volts between any two conductors or over 150 volts between any conductor and ground.

(B) By Means of a Separate Flexible Wire or Strap. By means of a separate flexible wire or strap, insulated or bare, connected to an equipment grounding conductor, and protected as well as practicable against physical damage, if part of equipment.

Δ 250.140 Frames of Ranges and Clothes Dryers. Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and outlet or junction boxes that are part of the circuit shall be connected to the equipment grounding conductor in accordance with 250.140(A) or the grounded conductor in accordance with 250.140(B).

Prior to the 1996 edition of the *NEC*, use of the grounded circuit conductor as a grounding conductor was permitted for range installations. In many instances, the wiring method was service-entrance cable with an uninsulated neutral conductor covered by the cable jacket. Where Type SE cable was used to supply ranges and dryers, the branch circuit was required to originate at the service equipment to avoid neutral current from downstream panelboards being imposed on metal objects, such as pipes or ducts. The grounded conductor (neutral) of newly installed branch circuits supplying ranges and clothes dryers is not permitted to be used for grounding the non-current-carrying metal parts of the appliances. Branch circuits for new appliance installations are required to provide an EGC sized in accordance with 250.122 for grounding the non-current-carrying metal parts.

An older appliance connected to a new branch circuit must have its 3-wire cord and plug replaced with a 4-conductor cord, with one of those conductors being an EGC. The appliance bonding jumper between the neutral and the frame of the appliance must be removed. Where a new range or clothes dryer is connected to an existing branch circuit without an EGC, an appliance bonding jumper must be connected between the neutral terminal and the frame of the appliance.

The grounded circuit conductor of an existing branch circuit is permitted to be used to ground the frame of an electric range, wall-mounted oven, or counter-mounted cooking unit, provided the conditions in 250.140(B)(1), (2), and (3) are all met, and one of either (4) or (5) is met. In addition, the grounded circuit

conductor of the existing branch circuits is also permitted to be used to ground any junction boxes in the circuit supplying the appliance, and a 3-wire pigtail and range receptacle are permitted to be used.

N (A) Equipment Grounding Conductor Connections. The circuit supplying the appliance shall include an equipment grounding conductor. The frame of the appliance shall be connected to the equipment grounding conductor in the manner specified by 250.134 or 250.138.

N (B) Grounded Conductor Connections. For existing branch-circuit installations only, if an equipment grounding conductor is not present in the outlet or junction box the frame of the appliance shall be permitted to be connected to the grounded conductor if all the conditions in the following list items (1), (2), and (3) are met and the grounded conductor complies with either list item (4) or (5):

- (1) The supply circuit is 120/240-volt, single-phase, 3-wire; or 208Y/120-volt derived from a 3-phase, 4-wire, wye-connected system.
- (2) The grounded conductor is not smaller than 10 AWG copper or 8 AWG aluminum or copper-clad aluminum.
- (3) Grounding contacts of receptacles furnished as part of the equipment are bonded to the equipment.
- (4) The grounded conductor is insulated, or the grounded conductor is uninsulated and part of a Type SE service-entrance cable and the branch circuit originates at the service equipment.
- (5) The grounded conductor is part of a Type SE service-entrance cable that originates in equipment other than a service. The grounded conductor shall be insulated or field covered within the supply enclosure with listed insulating material, such as tape or sleeving to prevent contact of the uninsulated conductor with any normally non-current-carrying metal parts.

250.142 Use of Grounded Circuit Conductor for Grounding Equipment.

(A) Supply-Side Equipment. A grounded circuit conductor shall be permitted to be connected to non-current-carrying metal parts of equipment, raceways, and other enclosures at any of the following locations:

- (1) On the supply side or within the enclosure of the ac service disconnecting means
- (2) On the supply side or within the enclosure of the main disconnecting means for separate buildings as provided in 250.32(B)(1) Exception No. 1
- (3) On the supply side or within the enclosure of the main disconnecting means or overcurrent devices of a separately derived system where permitted by 250.30(A)(1)

Δ (B) Load-Side Equipment. Except as permitted in 250.30(A)(1), 250.32(B)(1), Exception No. 1, and Part X of Article 250,