the other supply system grounded conductor (neutral), other than the bonding and equipment grounding conductors (EGCs). Therefore, the system supplied by the generator is considered separately derived.

Δ **(A) Grounded Systems.** A separately derived ac system that is grounded shall comply with 250.30(A)(1) through (A)(8). Except as otherwise permitted in this article, a grounded conductor shall not be connected to normally non-current-carrying metal parts of equipment, be connected to equipment grounding conductors, or be reconnected to ground on the load side of the system bonding jumper.

Informational Note: See 250.32 for connections at separate buildings or structures and 250.142 for use of the grounded circuit conductor for grounding equipment.

Exception: Impedance grounded system grounding connections shall be made in accordance with 250.36 or 250.187, as applicable.

(1) System Bonding Jumper. An unspliced system bonding jumper shall comply with 250.28(A) through (D). This connection shall be made at any single point on the separately derived system from the source to the first system disconnecting means or overcurrent device, or it shall be made at the source of a separately derived system that has no disconnecting means or overcurrent devices, in accordance with 250.30(A)(1)(a) or (A)(1)(b). The system bonding jumper shall remain within the enclosure where it originates. If the source is located outside the building or structure supplied, a system bonding jumper shall be installed at the grounding electrode connection in compliance with 250.30(C).

Exception No. 1: For systems installed in accordance with 450.6, a single system bonding jumper connection to the tie point of the grounded circuit conductors from each power source shall be permitted.

Exception No. 2: If a building or structure is supplied by a feeder from an outdoor separately derived system, a system bonding jumper at both the source and the first disconnecting means shall be permitted if doing so does not establish a parallel path for the grounded conductor. If a grounded conductor is used in this manner, it shall not be smaller than the size specified for the system bonding jumper but shall not be required to be larger than the ungrounded conductor(s). For the purposes of this exception, connection through the earth shall not be considered as providing a parallel path.

Exception No. 3: The size of the system bonding jumper for a system that supplies a Class 1, Class 2, or Class 3 circuit, and is derived from a transformer rated not more than 1000 volt-amperes, shall not be smaller than the derived ungrounded conductors and shall not be smaller than 14 AWG copper or 12 AWG aluminum.

(a) *Installed at the Source.* The system bonding jumper shall connect the grounded conductor to the supply-side bonding jumper and the normally non-current-carrying metal enclosure.

(b) *Installed at the First Disconnecting Means.* The system bonding jumper shall connect the grounded conductor to the supply-side bonding jumper, the disconnecting means enclosure, and the equipment grounding conductor(s).

Separately derived systems are required to have a system bonding jumper to connect the grounded circuit conductor (neutral) to the supply-side bonding jumper, the EGC, or both.

The system bonding jumper can be installed in several ways. For example, if a multi-barrel lug is connected to the XO terminal of a transformer, the system bonding jumper, GEC, grounded conductor, and supply-side jumper can be connected at that connector. If a multi-barrel lug is connected to the transformer or generator enclosure, a common practice is to connect the system bonding jumper, the GEC, and the bonding jumper or conductor to that connector. The grounded conductor should always connect directly to the XO terminal.

See also

250.28(D) and its commentary for more information on sizing the system bonding jumper

Exception: Separately derived systems consisting of multiple sources of the same type that are connected in parallel shall be permitted to have the system bonding jumper installed at the paralleling switchgear, switchboard, or other paralleling connection point instead of at the disconnecting means located at each separate source.

The sizing requirements for system bonding jumpers in 250.28(D) and Table 250.102(C)(1) use ungrounded conductor size as the basis. In large-capacity parallel generator standby power systems, the connections from the generators to a collector bus can be done exclusively with busbars. To size a system bonding jumper in that case, it is necessary to convert the busbar ampere rating to an equivalent ungrounded conductor size in order to be able to use Table 250.102(C)(1).

For example, if the busbar rating (per ungrounded phase) for a paralleled installation is 2500 amperes, it is necessary to establish the minimum copper or aluminum wire size to supply 2500 amperes and, using that conversion, then apply Table 250.102(C)(1) to size a single system bonding jumper for the paralleled installation. Because of the system size in this example, the equivalent wire size will exceed 1100 kcmil copper or 1750 kcmil aluminum. Therefore, an additional calculation using the 12½ percent rule will have to be performed to size the system bonding jumper.

(2) Supply-Side Bonding Jumper. If the source of a separately derived system and the first disconnecting means are located in separate enclosures, a supply-side bonding jumper shall be installed with the circuit conductors from the source enclosure to the first disconnecting means enclosure. A supply-side bonding jumper shall not be required to be larger than the derived ungrounded conductors. The supply-side bonding jumper shall be permitted to be of nonflexible metal raceway type or of the wire or bus type as follows: