

EASY BONDING STEPS*

Based on the 2023 NEC & Recommended for Service Installations

(This Study Guide was prepared by Gaylord Poe)

STEP 1 – If the system has a grounded service conductor (neutral), it must be run to all service disconnects as per Art. 250.24(D)

STEP 2 – Using a main bonding jumper, bond the grounded service conductor to all service disconnects. Art. 250.24 (C)

STEP 3 – Whenever possible, bond the grounded service conductor directly to all line-side equipment, i.e.: CT cabinets, tap boxes, wireways, etc. Art. 250.92(B)(1)

STEP 4 – Terminate the main grounding electrode conductor directly to the grounded service conductor at any accessible point. Art. 250.24(A)(1)

STEP 5 – Bond the supplemental electrode (Art. 250.53(A)(2)) to any of these points: the “other” ground rod, the grounding electrode conductor, the grounded service conductor, the grounded service raceway (non-flexible raceways only), or any grounded service enclosure.

STEP 6 – Now, arrange the bonding points (conduits, nipples, etc.) so you will have **bond continuity** from any metal part (line-side metal and service equipment) to the main grounding electrode conductor or to equipment that is bonded to the grounded service conductor. Art. 250.28, 250.90, 250.92(A) & (B), 250.142(A).

INSTALLATION GUIDELINES

- A. For field punched holes or factory K.O.’s that are totally removed – use wedges, grounding lock-nuts, or bonding bushings.
- B. For concentric K.O.’s, or poor fits, or holes where there are reducing washers – use grounding bushings with tails attached from bushing to equipment and sized per Art. 250.102(C).
- C. Bolted-on hubs do not require bonding nor do sections of equipment that are bolted together.
- D. Size the main grounding electrode conductor per Art. 250.66.
- E. **For ungrounded services** (3- ϕ , 3-wire), use the above steps with some “modified thinking” --- remember that you don’t have a grounded service conductor (neutral) to help you out and you will probably use more bonding points to achieve the results required by STEP 6.

Note: The above steps are not the only way to bond a service, but they will help you to logically lay-out an NEC compliant bonding plan for almost all of the services that you will encounter. Remember that local requirements may vary from the NEC.