How to lay the grounding flat steel for the distribution box



Overview

Ensure electrical safety. Learn the crucial steps for properly grounding metal electrical boxes to prevent shock hazards.

Key Takeaways

Flat steel bars can be used as grounding conductors for distribution boxes if installed according to NEC standards, ensuring low-resistance and mechanically protected connections.

Selecting and Preparing the Flat Steel Bar

Use a low-carbon steel bar that meets NEC dimensional requirements (Article 250. 52(A)(7) and Table 250. 66).

The bar should be coated or galvanized to prevent corrosion, and its thickness must comply with NEC minimums to maintain safe fault current handling. If the soil is acidic or rocky, additional corrosion protection or thicker bars may be required, and all measures should be documented and approved by the Authority Having Jurisdiction.

Positioning the Bar

The flat steel bar should be laid horizontally, either above or below the frost line, depending on local conditions. Ensure the bar is mechanically protected from physical damage, such as by embedding in concrete or using protective conduits where exposed. Avoid sharp bends or kinks, as these can increase impedance and reduce grounding effectiveness.

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Connecting to the Distribution BoxAttach the bar to the distribution box using a threaded stud or grounding lug at the bottom of the housing. Use a green-insulated or bare copper pigtail to connect the box to the flat steel bar if a direct connection is not feasible. Ensure all connections are tight and corrosion-free, using appropriate hardware to maintain a continuous low-resistance path.

Connecting to the Main Grounding SystemConnect the flat steel bar to the central grounding point or main panel ground bus. Verify that the total ground resistance between the distribution box, mounting plate, and main ground is less than 0. 1 Ohm.

For longer tool cables or multiple spindles, consider parallel grounding wires to maintain low resistance and meet safety requirements.

Testing and Verification

After installation, measure the ground resistance to ensure compliance.

The NE

C recommends that the grounding system provides a low-impedance path to allow circuit breakers to trip quickly in case of a fault. Regular inspection and maintenance are essential to prevent corrosion or loosening of connections. By following these steps, the flat steel grounding system will provide a safe, code-compliant path for fault currents, protecting both equipment and personnel.

Article Content

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Attach a ground wire from one of the threaded studs (A) at the bottom of the housing, to the mounting plate (B). Attach a second grounding wire from the mounting plate (B), to the factory

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