What is the normal amperage rating for a secondary distribution box

Overview

Sub-panels are manufactured with specific amperage ratings that dictate the maximum current they can safely handle.

Key Takeaways

The minimum amperage rating for a secondary distribution box (subpanel) is determined by the calculated load, but common minimum ratings start at 60A for residential or light commercial applications.

Determining Minimum Amperage

The minimum amperage rating of a secondary distribution box, also known as a subpanel, is based on the total electrical load it will serve. The subpanel must have a main breaker or main lug rating equal to or greater than the calculated load to ensure safe operation and compliance with electrical codes. For example, a typical detached garage or small workshop may require a 50A or 60A subpanel, while larger residential or commercial areas may need 100A or more.

Feeder Breaker and Wire Considerations

The feeder breaker in the main panel protects the wire supplying the subpanel. Its rating must not exceed the ampacity of the feeder wire and should be equal to or greater than the calculated load. For instance: A 60A feeder requires 6 AWG copper or 4 AWG aluminum wire at 75°C terminal rating.

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A 100A feeder typically uses 3 AWG copper or 1 AWG aluminum wire. The subpanel's internal bus bars and lugs must also be rated to handle the chosen amperage without overheating.

NEC Compliance

According to the National Electrical Code (NEC), the subpanel and its overcurrent protective devices must be sized to handle the full load safely.

NE

C 240. 6(A) and 450. 3(B) provide guidance for selecting the correct overcurrent protection for secondary circuits, including the maximum allowable OCPD for the secondary side of a transformer.

The subpanel rating should accommodate the calculated load plus a margin for future expansion, often rounded up to the next standard size (e.g., 60A, 100A, 125A),. Practical RecommendationsResidential/light commercial: Minimum 50A–60A subpanel is typical. Medium to large loads: 100A–200A subpanels may be required.

Future expansion: Choose a panel with a higher physical rating than the feeder breaker to allow additional circuits without replacing the panel. Always verify load calculations and wire sizing to ensure safety and code compliance. In summary, the minimum amperage rating for a secondary distribution box is not fixed; it depends on the calculated load, but 60A is a common starting point for small residential or light commercial applications, with higher ratings used for larger loads or future expansion.

Article Content

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