Standard for jumpers in distribution boxes



Overview

Learn the 4 types of bonding jumpers, how to size them per NEC Table 250.102 (C) (1), and the exact NEC code rules every electrician must follow.

Key Takeaways

Jumpers in distribution boxes must ensure electrical continuity, proper grounding, and compliance with safety standards, typically using copper or aluminum conductors of adequate cross-section. Jumper Material and Cross-SectionMaterial: Jumpers are generally made of annealed copper or aluminum, depending on the application and connection requirements. Copper is preferred for its conductivity and flexibility, while aluminum is used for larger feeders or where cost and weight are considerations.

Cross-

Section: Standard jumper cross-sections are typically 50 mm² for copper in low-voltage applications, ensuring sufficient current-carrying capacity and minimal voltage drop. Aluminum jumpers may be larger to compensate for lower conductivity.

Connection Points and Installation

Jumpers should connect bus bars, feeders, and grounding points within the distribution box to maintain continuity and safety. Earthing: Distribution boxes must have at least two solid earthing points on either side, with jumpers connecting the box body to the grounding system. Flexible Connections: Jumpers must accommodate minor movements or vibrations without fatigue failure, especially in outdoor or high-current applications.

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Bend radius and strain relief should be considered to prevent strand breakage. Compliance and Safety StandardsNEC and OSHA Guidelines: Jumpers and conductors must comply with NEC Article 408 for panelboards and OSHA 1926. 405 for electrical enclosures, ensuring proper grounding, protection from abrasion, and secure connections.

Protection: Distribution boxes should meet IP-55 or equivalent protection standards, and jumper connections must maintain continuity even under environmental exposure. Maintenance: Periodic inspection is required to check for fatigue, corrosion, or loose connections, especially in flexible jumper strands.

Practical Considerations

Routing: Jumpers should be routed to avoid sharp bends, excessive tension, or contact with sharp edges. Connection Hardware: Use appropriate lugs, clamps, or bus bar terminals rated for the jumper size and current. Ensure all connections are tight and corrosion-resistant.

Load Sharing: In some systems, jumpers provide parallel paths to share load current between conductors, improving reliability. By following these standards, jumpers in distribution boxes will ensure safe, reliable, and code-compliant electrical distribution.

Article Content

Bonding Jumpers: Types, Sizing & NEC Code Rules (2026)

Learn the 4 types of bonding jumpers, how to size them per NEC Table 250.102 (C)(1), and the exact NEC code rules every electrician must follow. Updated for 2026

Bonding and Grounding, based on the 2020 NEC

Where oversized, concentric, or eccentric knockouts are not encountered, or where a box or enclosure with concentric or eccentric knockouts is listed to provide a

Jumper Planning Guide

It is important to use proper methods when removing jumpers from a populated bay line-up to prevent temporary attenuation or permanent damage to the jumper being removed and the other jumpers in

System Bonding Jumpers vs. Supply-Side Bonding Jumpers

Clarifying the roles of System Bonding Jumpers and Supply-Side Bonding Jumpers under NEC Article 250. Learn where and how to install each correctly.

EGC vs EBJ: How to Size Equipment Grounds and Bonding Jumpers

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A working electrician''s breakdown of the difference between equipment grounding conductors and equipment bonding jumpers — and how the 2023 NEC changes the way you tie

nec 250-79

Main and equipment bonding jumpers shall be attached in the manner specified by the applicable provisions of Section 250-113 for circuits and equipment and by Section 250-115 for grounding

Grounded Conductor, Bonding Conductors, and Jumpers | UpCodes

This section outlines the specifications for bonding jumpers and conductors, emphasizing materials such as copper and aluminum. Bonding jumpers must be appropriately sized according to Table 250.102

Selection and Use of Terminal Block Jumpers

In this short article, we focus on the jumpers that may be used to link multiple blocks together. This provides a convenient way to expand the number of wires attached to a single node.

How to Select Temporary By-Pass Jumper Components

This article takes a closer look at some key points found in this important standard, the intended use and purpose of temporary By-Pass jumpers, and how to select the right components

Service & Main Bonding Jumpers

The basic rule for sizing of the equipment bonding jumper for bonding these various configurations is found in Section 250-102 (c). This section requires that the bonding jumpers on the

Wiring Jumpers Part 1: What They Are & Why We Use Them

[0m:44s] Today we will discuss in more detail why we use jumpers, how we use them, and a few of the different types of jumpers that exist and are commonly used. [0m:55s] First, what is a jumper, and

Wiring Jumpers Part 2: Types and How we Use Them

In today''s video we will pick up where we left off last time: talking about jumpers. If you have not seen the other video one jumpers, we will link it in the description below. Today we will show you some of

Terminal Block Jumpers | McMaster-Carr

Choose from our selection of terminal block jumpers, including terminal blocks, modular DIN-rail mount terminal blocks, and more. Same and Next Day Delivery.

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Electrical Control Panels & Distribution Boxes: Sizes,

Learn about control panels, breaker boxes, junction boxes, and custom enclosures. Explore standard panel sizes, applications, and key

Jumpers Tips and Tricks

[0m:21s] If you have not seen some of our other videos where we talk about what jumpers are used for and the different kinds of jumpers, we will link those in the description below. For the purpose of this

PROPER CARE, INSPECTION AND INSTALLATION OF INSULATED MECHANICAL JUMPERS

Insulated jumpers extended period of time clamps will eventually loosen from line vibrations and thermal cycling that could lead Insulated are used jumpers to temporary to are failure! used by pass to

Bonding and Grounding, based on the 2020 NEC

For example, use two locknuts on rigid metal conduit or intermediate metal conduit, one inside and one outside of boxes and cabinets. Equipment bonding jumpers must terminate by any of the eight

Distribution Box vs Control Box vs Junction Box: Key

Learn the differences between distribution boxes, control boxes, and junction boxes. Discover their functions, applications, and how E-abel provides

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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