

Standard for jumper wires on distribution box doors



Overview

Many panelboards are rated for use as service disconnects, which means they are supplied with a main bonding jumper [250.28].

Key Takeaways

Jumper wires on distribution box doors must provide a secure, dedicated grounding path using appropriately sized, corrosion-resistant conductors bonded to the cabinet's grounding system. Grounding and Bonding Requirements

Metallic distribution box doors must be bonded to the cabinet's grounding system to ensure safety and compliance with the National Electrical Code (NEC). Each door requires a dedicated grounding conductor, typically a green insulated or bare copper wire, connected via a grounding screw or clip directly to the cabinet's grounding bar. Daisy-chaining doors is not permitted; each door must have its own connection to maintain a low-impedance path for fault currents (NEC 250.148, 314.28) .

Jumper Wire Materials and Sizing

Bonding jumpers may be made of copper, aluminum, or copper-clad aluminum, and must be corrosion-resistant. The minimum size of the jumper is determined by the largest ungrounded conductor in the panel or the equivalent area for parallel conductors, following NEC Table 250.102(C)(1) . For example, if the largest ungrounded conductor is 500 kcmil copper, the minimum bonding jumper would be 2/0 AWG copper .

Installation Guidelines

- **Attachment:** Use dedicated grounding screws or clips; do not rely on mounting bolts or hinges. Ensure all contact surfaces are free of paint, enamel, or corrosion to maintain electrical continuity .
 - **Slack and Routing:** Provide sufficient slack to allow door movement without stretching the wire. Avoid tight bends and ensure the wire is not pinched or subject to mechanical stress .
 - **Connection:** Bond the jumper securely to the door and the cabinet's grounding bar. The connection should be snug but not overly tight to prevent damage to the conductor .
 - **Isolation:** If the enclosure is part of an EMI-sensitive system, consider isolated equipment grounding practices while maintaining a proper fault path .
- ### Safety Considerations

Properly installed jumper wires ensure that any fault current on the door is safely conducted to ground, allowing overcurrent protection devices to operate correctly. This prevents electric shock hazards and reduces the risk of equipment damage. Always follow NEC requirements and local codes for grounding and bonding . By adhering to these guidelines, jumper wires on distribution box doors will provide reliable grounding, mechanical durability, and code compliance, ensuring both safety and operational integrity.

Article Content

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1926.405

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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

250.28 (A) Main Bonding Jumper and System Bonding Jumper. Material.

2020 Code Language: 250.28 (A) Material. Main bonding jumpers and system bonding jumpers shall be of copper, aluminum, copper

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Learn about the rules for bonding isolated grounding circuits and sizing bonding jumpers. The NEC permits installing

Switchboards and Panelboards, based on the 2023 NEC

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The construction and installation points of distribution boxes and switch boxes are summarized as follows: 1. Select qualified

Junction box

An electrical junction box (also known as a "jbox") is an enclosure housing electrical connections. Junction boxes protect the

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

[0m:55s] First, what is a jumper, and why do we use them? As mentioned before, a jumper is a conductor that is used to connect two

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Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and metal outlet or junction boxes

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The grounded (neutral) terminal bar in a service panel is the heart of an electrical distribution system because it ties

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A distribution box ensures that electrical supply is distributed in the building, also known as a distribution board, panel board, breaker

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These contains the approved technical specifications of materials including distribution, sub-transmission lines,

How to Wire a Main Breaker Panel

Wiring a main breaker panel means setting up the central hub that distributes electricity

What is the Main Bonding Jumper (MBJ) and How to

In a main service panel, the grounded terminal bar (neutral busbar) is connected to all grounding wires, i.e.

How to Wire a Junction Box: Step-by-Step Safety Guide

How to wire a junction box safely, avoid common mistakes, and choose the right box for indoor, outdoor, and OEM use.

NEC Basics: Connections and Continuity of Equipment

Connecting the receptacle grounding terminal to the metal box ensures an effective ground

250.28 (A) Main Bonding Jumper and System Bonding Jumper. Material.

A main bonding jumper and a system bonding jumper shall be a wire, bus, screw, or similar suitable conductor. 2020 Code

bonding jumper

R randypape Member Mar 15, 2007 #1 hello, when we wire subpanels for enclosures for machines, i'm having trouble finding in the

5 Types of Electrical Boxes

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Watch this video to see how the WAGO Gelbox can elevate your electrical installations

What does bonding (bonded) mean and what does NEC say about it?

See Figure 1 below which shows two metal boxes bonded together with the metal raceway installed between the two

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

We have one wire feeding power to the circuit breakers. So, how are they connected together? [1m:47s] We have a jumper bar that

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Wiring Jumpers Part 2: Types and How we Use Them

We also have a jumper here that is used for a specific type of PLC that jumpers several different points on that PLC together with one

Complete Guide For Distribution Boxes Types

What Are Distribution Boxes? Distribution boxes, also known as junction boxes, electrical boxes, or panelboards, are essential

Distribution board

A distribution board (also known as a panelboard, circuit breaker panel or box, electric panel, fuse box or DB box) is a component of

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BONDING OF ENCLOSURE DOORS

Would you have a picture of the enclosure and door (s)? If there is a panelboard in the enclosure then 408.38

1910.305

1910 Subpart S Subpart Title: Electrical Standard Number: 1910.305 Title: Wiring methods, components, and equipment for general

A Full Guide to the NEC Code for Junction Boxes | Polycase

Section 250.110 outlines the grounding requirements for electrical equipment, including junction boxes. Junction boxes must be

Electrical Codes for Junction Boxes

Electrician Explains Electrical Codes for Home Electrical Junction Boxes with Photos, Wiring Diagrams and Answers to Your Questions

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