

Standard requirements for parallelism of cable tray elbows



Overview

This guide for engineers and installers has been developed by ABB as a practical reference regarding cable tray characteristics, installation, and requirements.

Key Takeaways

Cable tray elbows should maintain parallelism within the tolerance recommended by IEC 61537 and NEMA VE 1, typically ± 2 mm per meter of tray length, to ensure proper cable alignment and mechanical integrity.

Overview

Parallelism in cable tray elbows refers to the alignment of the tray sections at bends, ensuring that the sides of the tray remain parallel to each other. Proper parallelism is critical to:

- Prevent cable damage due to uneven support or sharp bends
- Maintain consistent cable spacing and fill ratio
- Ensure mechanical stability and load distribution

Standard Guidelines

IEC 61537: This international standard for metallic cable tray systems specifies construction, mechanical strength, and installation requirements. While it does not provide a fixed numerical value for parallelism, it emphasizes that tray fittings, including elbows, must allow smooth cable routing without excessive deformation and maintain electrical continuity and mechanical integrity.



NEMA V

E 1: The NEMA standard for cable tray systems recommends that elbows and bends should be fabricated to maintain uniform spacing and alignment, ensuring that cables are not subjected to sharp angles or uneven support. Practical Engineering Tolerance: In practice, installers and manufacturers often adopt a parallelism tolerance of ± 2 mm per meter of tray length for elbows and bends. This ensures that the tray sides remain effectively parallel, preventing cable pinching or sagging, especially in long runs or heavy-duty installations.

Additional Considerations

Minimum Bend Radius: Ensure that the bend radius of the elbow is at least 10 times the cable diameter for power cables or as specified by the manufacturer to avoid cable stress. **Rung Spacing:** Maintain consistent rung spacing (typically 150–230 mm) to support cables evenly through the elbow. **Material and Finish:** Use corrosion-resistant materials (galvanized steel, aluminum, or stainless steel) to maintain structural integrity over time.

Installation Verification: After installation, check alignment with a straightedge or laser level to confirm parallelism and proper fit.

Summary

While IE

C 61537 and NEMA VE 1 do not specify an exact numerical value for parallelism, engineering best practice is to maintain tray elbow parallelism within ± 2 mm per meter of tray length, ensuring smooth cable routing, mechanical stability, and compliance with international standards. Proper attention to bend radius, rung spacing, and material selection further supports safe and reliable cable tray installations.

Article Content

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This guide for engineers and installers has been developed by ABB as a practical reference regarding cable tray characteristics, installation, and requirements.

NEMA Standards Publication VE 2-2018

Attaching a channel cable tray by using the method illustrated in Figure 3-88 maintains the electrical requirements, and the bolted mechanical connection while providing a practical method for dropping

GUIDE CABLE TRAYS TECHNICAL

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Cable Tray Spacing Standards for Installation and Safety

Key Factors Impacting Cable Tray Spacing Understanding cable tray spacing is key to meeting safety regulations and maintaining system performance. The spacing between trays,

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Core rules for selecting, installing, grounding, and filling cable trays—clearances, materials, separation, and bonding explained.

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Codes and Standards | Cable Tray Institute

This standard specifies the requirements for nonmetallic cable trays and associated fittings designed for use in accordance with the rules of the Canadian Electrical Code (CEC) Part 1, and the National

12-SDMS-06

Cable tray sections, fittings and connected raceways shall be bonded properly using bonding jumper at both ends. The bonding jumper shall be bare copper conductor of 50 mm² size and 400 mm long.

Cable tray manual

There are several sections which cover the requirements for the use of single conductor cables in cable tray even though they only comprise a small percentage of cable tray wiring systems.

Cable Tray Installation Guide | NEMA VE 2-2018

NEMA VE 2-2018 Cable Tray Installation Guidelines. Learn best practices for cable tray installation, support, and accessories.

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NCCER 26207-Cable Trays Flashcards | Quizlet

Study with Quizlet and memorize flashcards containing terms like Which of the following consist of two parallel channels connected by rungs?, What can be used to change the elevation of a run in the

Cable Tray Installation Guidelines for Engineers

Cable Tray Installation Guidelines for Engineers Cable Tray Installation Guidelines for Engineers Cable trays shall be installed according to the latest revision of the NEC, NEMA VE 2, and manufacturer's

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