Treatment of cable tray bends



Overview

When a load is more than the structural capacity of a cable tray, it bends between supports. Safety questions and cable damage can follow from this.

Key Takeaways

Cable tray bends are managed using standardized fittings, maintaining minimum bend radii, and ensuring proper support to protect cables and maintain system integrity.

Types of Cable Tray Bends

Cable tray systems require bends to navigate changes in direction. Common types include: Horizontal bends: Used to change the routing direction along the same plane. Vertical bends: Allow cables to move up or down between different elevations.

T-pieces and cross-overs: Facilitate branching or intersecting cable runs. Radius bends: Smooth curves designed to maintain the minimum bend radius for cables, preventing damage or excessive stress.

Use of Fittings

Specialized fittings are used to create bends without cutting or forcing cables: Pre-fabricated elbows: Available in standard angles (e.g., 30°, 45°, 60°, 90°) for both horizontal and vertical changes. Adjustable bends: Allow fine-tuning of angles on-site. Radius inserts or bend kits: Ensure cables follow a smooth curve, maintaining the minimum bend radius recommended by the cable manufacturer.

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Maintaining Minimum Bend Radius

Always respect the minimum bend radius specified for the cable type to avoid insulation damage or signal degradation. For multi-cable runs, ensure the bend radius accommodates the largest cable diameter in the tray. Avoid sharp bends or forcing cables into tight corners, which can lead to mechanical stress and reduced cable lifespan.

Support and Installation Practices

Bends should be supported at regular intervals to prevent sagging or cable strain. Use support brackets or hangers designed for the bend section to maintain alignment and stability. Ensure that bends do not interfere with airflow in ventilated trays, which could cause overheating.

When routing instrumentation or control cables, consider additional protection such as covers or separation from power cables to reduce electromagnetic interference.

Practical Tips

Plan the cable route in advance to minimize the number of bends. Use modular fittings compatible with the tray system to simplify installation and future maintenance. For complex installations, consider 3D modeling or layout drawings to visualize bends and support points.

Always follow manufacturer guidelines and relevant standards (e.g., BS EN 61537, DIN EN 61537) for safe and compliant installation. By combining proper fittings, maintaining minimum bend radii, and providing adequate support, cable tray bends can be handled safely and efficiently, ensuring long-term reliability of the cable management system.

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