

Cable tray shrinkage joint



Overview

Managing Thermal Expansion and Contraction in Cable Learn how to manage thermal expansion and contraction in cable tray systems with expert Thermal Contrac.

Key Takeaways

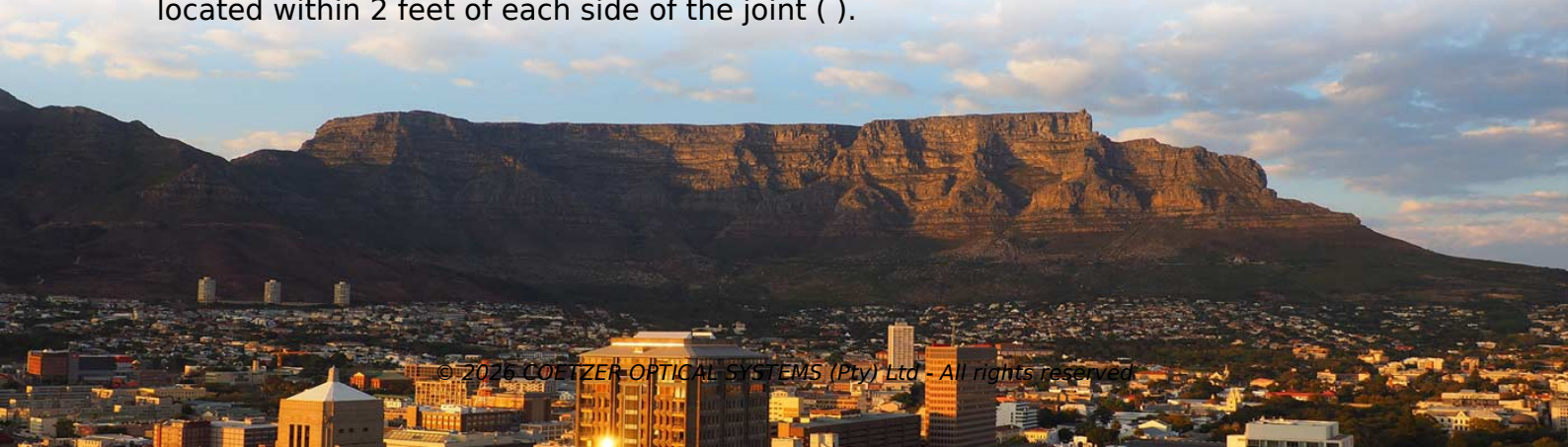
A cable tray shrinkage joint is a designed gap or joint in a cable tray system that accommodates thermal contraction and expansion, preventing deformation, bending, or bolt failure.

Purpose of a Shrinkage Joint

Cable trays made of metal, such as steel or aluminum, expand when heated and contract when cooled. Without proper provision for this movement, trays can bend, warp, or tear loose from supports, and bolts may elongate or break (). Shrinkage joints, also called expansion joints, allow the tray to move freely along its length while maintaining structural integrity and cable protection. They are particularly important in outdoor installations or areas with large temperature variations, such as rooftops or industrial facilities ().

Installation Guidelines

- Positioning: Expansion or shrinkage joints should be installed at points where the tray is expected to experience significant thermal movement. Supports should be located within 2 feet of each side of the joint ().



- **Anchoring:** The tray should be anchored at the midpoint between joints using hold-down clamps, while other supports use expansion guides that allow sliding movement ().
- **Gap Calculation:** The size of the shrinkage joint depends on the material of the tray, its length, and expected temperature range. For example, a 100-foot aluminum tray may expand or contract by approximately 2 inches over a 100°F temperature change (). Proper calculation ensures the gap is neither too small (causing stress) nor too large (causing instability).
- **Splice Plates and Bonding:** Special expansion joint splice plates and bonding jumpers are used to maintain electrical continuity while allowing mechanical movement ().

Material Considerations

- Aluminum trays expand and contract more than steel, so larger gaps or more frequent joints may be required ().
- Galvanized steel trays have a protective zinc coating that also affects thermal behavior slightly, but the main concern is mechanical movement ().

Best Practices

- Do not clamp the tray too tightly at supports; allow sliding movement.
- Install joints at structural expansion points rather than randomly along the tray.
- Follow NEMA VE 2 standards for spacing, guides, and expansion joint sizing to ensure compliance and long-term reliability ().

By properly implementing shrinkage joints, cable tray systems can accommodate thermal movement, maintain cable integrity, and prevent mechanical failures over time.

Article Content

Thermal Contraction and Expansion of Cable Tray

For a 100° F differential (winter to summer), a steel cable tray will require an expansion joint every 128 feet and an aluminum cable

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It is important that cable tray installations incorporate features which provide adequate compensation for their thermal contraction

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Cable Tray Technical Guide A practical guide to product selection

A practical guide to product selection and installation This guide for engineers and installers has been developed by ABB as a

Microsoft Word

The cable tray needs to be anchored at the support closest to the midpoint between the expansion joints with hold down clamps and

Cable Tray Thermal Expansion Guidelines

Thermal expansion and contraction of cable trays must be accounted for through the use of expansion joints. Proper installation of

MV Cable Joints

The Jointing Tech range of MV Joints includes cold shrink, heat shrink, inline, cold applied and resin filed joints as well as a range of

392.44 Expansion Splice Plates.

According to the document, there are four basic types of cable tray connectors including rigid, expansion, adjustable, and reducer. In

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Learn about cable tray joint plates, their types, materials, and proper installation. Ensure secure connections with this

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Heat shrink cable joints are specified where multiple cables are installed onto cable tray or ladder and space is at a premium The

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Heat shrink joints require heating to achieve a secure connection between the cable and joint. These joints offer excellent heat

Aluminum Cable Tray Accessories

Expansion Splice Plates • Expansion plates allow for one inch expansion or contraction of the cable tray, or where expansion joints

Related Video Reference

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