Does the cable tray bend require a deduction



Overview

Q1: Is bend deduction always necessary? Yes. Even small bends change material length, so BD is critical for accuracy. Q2: Can I use the same bend deduction for all materials? No.

Key Takeaways

Yes, a cable tray bend typically requires a deduction to ensure the installed length matches the design, similar to bend deduction in sheet metal fabrication. Why a Bend Deduction is NeededWhen a cable tray is bent, the material along the outside of the bend stretches while the inside compresses. This changes the effective length of the tray along the bend, meaning the straight sections (legs) on either side of the bend will not add up to the total intended length unless a bend deduction is applied.

Without this adjustment, the tray may end up too long or too short, causing misalignment during installation.

How to Calculate Bend Deduction

The calculation for cable trays is conceptually similar to sheet metal bending: Bend Deduction (BD) is the amount subtracted from the sum of the straight leg lengths to get the correct flat length before bending. Factors affecting BD include: Bend angle: Sharper angles require larger deductions. Bend radius: Tighter radii increase the material stretch.

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Material thickness and type: Thicker or more rigid materials may require larger adjustments. A simplified formula adapted from sheet metal work is: BD = (Leg A + Leg B) – Flat Length, where Leg A and Leg B are the straight sections adjacent to the bend. For example, if a 90° bend is made in a cable tray with legs of 1000 mm and 500 mm, and the measured flat length along the neutral axis is 1480 mm, the bend deduction would be: BD = (1000 + 500) – 1480 = 20 mm.

This 20 mm is subtracted from the total measured length to ensure the final installed tray fits correctly.

Practical Considerations

Standard bends: Many cable tray manufacturers provide tables or charts with recommended bend deductions for common angles and radii. Installation accuracy: Applying bend deduction ensures that multiple bends in a tray system align properly with supports and junctions. Material differences: Aluminum trays may require slightly different deductions than steel trays due to differences in elasticity.

In summary, applying a bend deduction for cable tray bends is essential for precise installation, and the principles from sheet metal fabrication can be adapted to calculate the correct adjustment based on bend angle, radius, and material properties.

Article Content

What is Bend Deduction in Sheet Metal | Fab-Line Machinery

Q1: Is bend deduction always necessary? Yes. Even small bends change material length, so BD is critical for accuracy. Q2: Can I use the same bend deduction for all materials? No. BD values vary

Cable Tray Bend Calculator | Arc, Chord & Offset Length

Calculate cable tray bend dimensions, centerline arc lengths, setback distances, and offset configurations. Ensure compliance with NEC, IEC, and NEMA bend-radius standards for safe cable

Cable Tray Bend and Offset Formulas | PDF | Galvanization | Screw

The document discusses Metstrut cable tray systems, including their configuration, materials, dimensions, and compliance with industry standards. Key points: - Cable trays have integral

Sheet metal bending calculation basics

Working with an included bend angle of 60 degrees, a material thickness of 0.062 in., an inside bend radius of 0.062 in., and a bend allowance

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Comprehensive Guide to Bend Deduction in Sheet Metal Fabrication

In sheet metal fabrication, achieving precise dimensions in the final bent part relies heavily on understanding Bend Deduction (BD). This calculation is essential for accounting for the

Sheet Metal Bending Calculation: Allowance, Deduction and K-Factor

Want to learn how to calculate bending allowance, bending deduction, and K-factor for sheet metal bending? Our guide offers a step-by-step process and practical tips to help you achieve

Bend Deduction – SheetMetal.Me

The Bend Deduction is defined as the material you will have to remove from the total length of your flanges in order to arrive at the flat pattern. The flange lengths are always measured to the apex of

Calculating Bend Allowance & Bend Deduction (+ Formulas)

The bend deduction tells us how much of the length we need to remove (deduct) from the part in order to put the bend lines in the right place. If we plug in those values from our example, we''ll

Bend Deduction Calculator

Because a bend deduction can be measured in a physical part, it is the most accurate way to calculate a material''s stretch. The bend allowance is the amount of the neutral axis that bends.

Sheet Metal Bend Deduction Guide | PDF | Sheet Metal | Industries

The document discusses bend deduction, which is the amount of material that must be removed from the total length of flanges in a sheet metal part to calculate the correct flat pattern.

B-Line series Cable Tray Design Considerations

As an industry leader in cable tray, Eaton offers one of the widest ranges of cable management solutions available in the market today with its B-Line series portfolio. With unmatched quality and service, we

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Contribute to annontopicmodel/unsupervised_topic_modeling development by creating an account on GitHub.

Cable tray manual

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Ventilated trough cable tray is often used when the specifier does not want to use ladder cable tray to support small diameter multiconductor control and instrumentation cables.

Cable Tray | PDF | Corrosion | Electrical Wiring

The Benets of Cable Tray Cable tray wiring systems offer significant advantages over conduit pipe and other wiring systems. Cable tray is more cost efficient, more reliable, more adaptable to changing

Cable tray manual | PDF

This document provides information on cable tray wiring systems, including safety benefits, dependability, space savings, and cost savings compared to conduit wiring systems. It discusses

Engineers guide to structural steel savings with B-Line series cable ...

Cable tray systems are defined to include, but are not limited to straight sections of [ladder type][trough type][solid bottom type][channel type] cable trays, bends, tees, elbows, drop-outs, supports and

Cable tray offset calculations

X-Tray Calculation Tool is a helpful tool where you can calculate how much cable trays/cable ladders and additional accessories you will need for a certain project. All you need to do is fill out the required

Wire Mesh Tray Technical Guide

Cablofil wire mesh tray and sup-ports are designed to support any cable load allowed by the NEC when supports are spaced on 8'' spans. Only the hea-viest cables (750 kcmil mulitconductor power or

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