Datasheet

Application of expansion couplers for ECL Cable Ladders

Eurostrut Cable Ladders – Design Smart, Install Smarter

Eurostrut offers complete and modular cable management systems for a wide range of industrial applications. This document provides a technical guideline for the use of expansion couplers in longer cable ladder runs, with the aim of controlling thermal expansion and preventing stress build-up, deformation, and fastening issues.

Coefficient of Expansion

Hot-dip galvanized steel:	0.012 mm/m/°C
Stainless steel 304 / 316:	approx. 30% higher expansion than galvanized steel

Temperature Range

For outdoor and unheated applications:	–20°C to +50°C ΔT = 70°C

Thermal Expansion (reference: 40 meters)

Hot-dip galvanized steel:	≈ 34 mm length change
Stainless steel 304 / 316:	≈ 45 mm length change

Stainless steel therefore reacts significantly more to temperature variations.

Application Guidelines for Expansion Couplers

Movement capacity of expansion coupler:	± 20 mm
Hot-dip galvanized steel:	20 meters: apply expansion
	40 meters: minimum 2 expansion couplers
Stainless steel 304 / 316:	15–18 meters: apply expansion
	40 meters: minimum 3 expansion couplers

Installation Principle

The expansion coupler must be fully fixed on one side. The other side should be installed semi-fixed using lock nuts. An expansion coupler that is fully fixed on both sides loses its function.

Fixing vs Clamping

To allow the cable ladder run to expand and contract freely and prevent stress, it is essential to use clamping rather than rigid fixing when attaching the ladder to the support structure on longer routes.

Stress Corrosion

Stainless steel (304 and 316) is generally corrosion-resistant but can be susceptible to stress corrosion when tensile stress occurs in combination with a corrosive environment such as chlorides (salt components).
Hot-dip galvanized steel is far less susceptible to stress corrosion than stainless steel, and in practice this rarely occurs with steel.

Application of Expansion Coupler with ECP Coupler Plate