Thermal Expansion and Contraction

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A cable tray system may be affected by thermal expansion and contraction, which must be taken into account during installation. To determine the number of expansion splice plates you need, decide the length of the straight cable tray runs and the total difference between the minimum winter and maximum summer temperatures. To function properly, expansion splice plates require accurate gap settings between trays. To find the gap (see Table 2):

PLOT YOUR GAP SETTING

a. Locate the lowest metal temperature on low temperature line.
b. Locate the highest metal temperature on high temperature line.
c. Connect these two points.
d. Locate installation temperature and plot to high/low line. Drop plot to gap setting.

MAXIMUM DISTANCE BETWEEN EXPANSION JOINTS (For 1" Movement)

Temperature Differential		Steel		Aluminum	
°C	(°F)	m	(Feet)	m	(Feet)
14	(25)	156	(512)	79	(260)
28	(50)	78	(256)	40	(130)
42	(75)	52	(171)	27	(87)
56	(100)	39	(128)	20	(65)
70	(125)	31	(102)	16	(52)
83	(150)	26	(85)	13	(43)
97	(175)	22	(73)	11	(37)

Note: Every pair of expansion splice plates requires two bonding jumpers for grounding continuity.

Table 1

The support nearest the midpoint between expansion splice plates should be anchored, allowing the tray longitudinal movement in both directions. All other support location should be secured by expansion guides. (see Table 3)

When a cable tray system is used as an equipment grounding conductor, it is important to use bonding jumpers at all expansion connections to keep the electrical circuit continuous.

Table 2

Gap Setting of Expansion Splice Plate

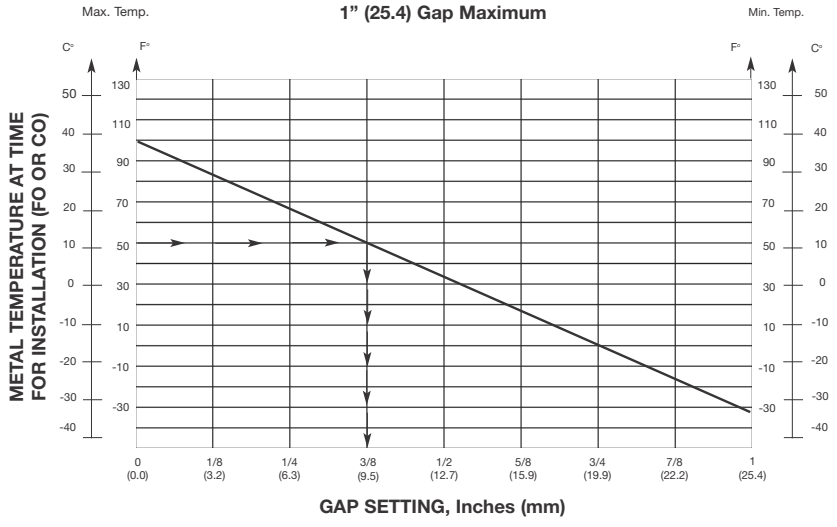
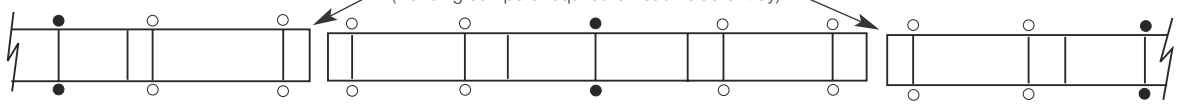


Table 3

Typical Cable Tray Installation

Expansion Splice Plates
(Bonding Jumpers required on each side of tray)



○ = hold down clamp (anchor) at support ● = expansion guide clamp at support