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Installation Guidelines for Expansion and Expansion/Deflection Fittings

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Foreword

This Standards publication provides recommended installation practices for all expansion and expansion/deflection fittings used in electrical raceways.

User needs have been considered throughout the development of this publication. Proposed or recommended revisions should be submitted to:

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This Standards publication was developed by a Joint Sections Committee of the Conduit Fittings (5FB), Steel Conduit and Electrical Metallic Tubing (5RN), and Polymer Raceway Products (5TC) sections of the National Electrical Manufacturers Association. Section approval of the Standard does not necessarily imply that all section Members voted for its approval or participated in its development. At the time it was approved, these sections were composed of the following Members:

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Introduction

All materials expand and contract with changes in temperature. The amount of expansion and contraction varies depending on the temperature, type, and composition of raceway material. Expansion fittings are used to compensate for changes in length (the expansion and contraction—a linear movement) in electrical raceways, thus preventing harmful stresses in the raceway system and supporting structures.

Raceways subjected to structural movement experience shear and lateral forces. Expansion/deflection fittings are used to compensate for these forces, thus safely permitting three-dimensional (linear, angular, and parallel) movement of the raceway.

Without the use of expansion or expansion/deflection fittings, the forces and length change can cause

- a. raceway bowing,
- b. distorted electrical boxes and enclosures,
- c. broken couplings or fittings,
- d. separation of raceways,
- e. structural damage,
- f. damage to cables and conductors, and
- g. interruption of electrical continuity in the system.

The most common error is not using enough expansion or expansion/deflection fittings. Inserting an expansion or expansion/deflection fitting after the conductors have been installed and put into service is much more difficult and costly than when the conduit system is first installed.

This guideline is intended as an informational document. It is recommended that users of this document contact the manufacturer for additional information and specifications on product use and limits.

Section 1 General

1.1 Scope

This guideline provides information on the proper application and installation of expansion and expansion/deflection fittings intended for use in hazardous and non-hazardous locations in accordance with the *National Electrical Code*[®] (NEC); the *Canadian Electrical Code (CE Code)*, Part I; the International Building Code; and the National Building Code of Canada. This guideline cover expansion and expansion/deflection fittings for nonflexible metallic and nonmetallic conduit and tubing, including the following:

- a. Electrical metallic tubing: type EMT
- b. Intermediate metal conduit: type IMC
- c. Reinforced thermosetting resin conduit: type RTRC
- d. Rigid metal conduit: type RMC
- e. Rigid polyvinyl chloride conduit: type PVC