

Top Versus Bottom Feed and Wire Bending Class 2110

Retain for future use.

Introduction

Common questions that come up from electrical contractors are whether or not there is adequate room within a panelboard to bend wires for proper installation. The answer to this question is often unclear due to the numerous ways a panelboard can be configured. The intent of this document is to explain the wiring of the I-Line™ Combo Panelboard and how it relates to this question.

What does "top feed" or "bottom feed" refer to?

When reading technical specifications or listening to electrical contractors speak about installing electrical distribution systems, the terms "top feed" and "bottom feed" will come up frequently. These terms refer to the entrance point on an electrical distribution panelboard where incoming wires will be brought in to supply the system with utility power or power from further upstream. The options for different entrance points give electrical contractors the flexibility to cable the panelboard in the most convenient way possible.

How much wire bending space is provided in panelboards?

In regards to panelboard electrical distribution systems, standards for wire bending space are determined by the *UL 67, Standard for Panelboards*. To ensure standards are met, panelboards are tested by wiring and/or cabling the maximum load possible to represent the "worst case scenario". From there, extensive testing is completed to determine if electrical contractors will be able to install the cables needed to provide power and to make certain that thermal requirements are met. For more information on wire bending standards, please refer to *UL 67, Standard for Panelboards, Section 15*, which will give a detailed explanation of the requirements for electrical distribution panelboards.

What standard is the I-Line Combo Panelboard tested to?



The Duplex I-Line Combo Panelboard pictured above includes a main circuit breaker installed on the bottom oriented I-Line power section. The panelboard illustrates a "top feed" application.

The I-Line Combo Panelboard is built and tested to *UL 67, Standard for Panelboards*. Upon seeing the I-Line Combo Panelboard for the first time, electrical contractors are curious about the horizontal bottom-mounted orientation of the I-Line power section and question if there is adequate gutter space for wire bending. The I-Line power section must always be installed at the bottom of the panelboard, which will hold the main incoming device. The interior cannot be rotated 180 degrees due to code restrictions. However, the I-Line Combo Panelboard does have the flexibility to feed wires from the top or bottom of the enclosure. Even though the I-Line Combo Panelboard contains up to three sections in one box, there is enough gutter space provided to pull wire meeting UL67 requirements.

The photo to the left illustrates a top fed Duplex I-Line Combo Panelboard fully populated with circuit breakers demonstrating a heavily wired configuration. Throughout design development, electrical contractors were asked to cable this panelboard to ensure all wires would fit and that UL67 standards would be met.

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