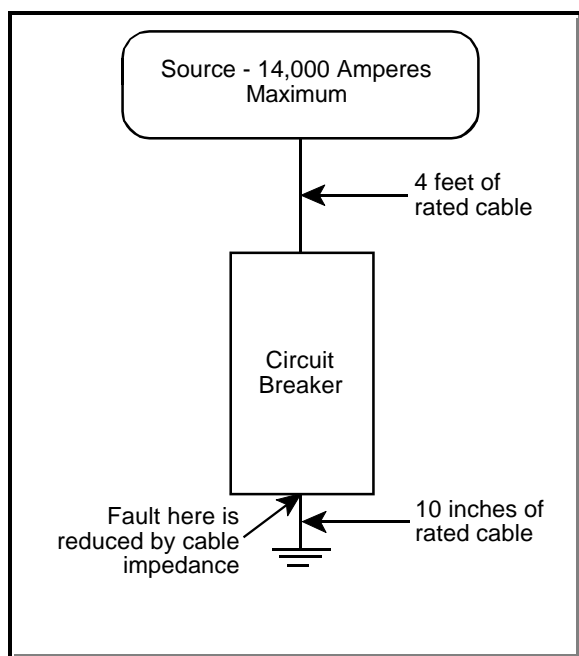


Special care must be exercised in evaluating the interrupting ratings of molded case circuit breakers (MCCB). Interrupting ratings of molded case circuit breakers are evaluated using a circuit similar to that shown in Figure 1<sup>1</sup>. A power source calibrated to precise voltage, short circuit capacity, and power factor is connected to the breaker under test via a maximum length of four (4) feet of rated cable. The actual short circuit is connected to the breaker via a ten (10) inch length of rated cable.



**Figure 1** - UL CB Test Circuit

If the circuit breaker successfully interrupts the short circuit (subject to the conditions imposed by the test parameters), the breaker is then listed with an interrupting rating equal to the source short circuit capability. In Figure 1, for example, the breaker would be rated at 14,000 Amperes.

Obviously the breaker is actually tested at a current lower than 14,000 Amperes. In fact, the smaller the breaker frame size, the greater will be the discrepancy between the rating and the actual tested value. For example, a breaker which uses AWG #12 wire, may be tested at a value of only 85% of the rated current.

This means that a circuit breaker applied within its published rating may, in fact, be over-dutied. This topic is covered in greater detail in the following two IEEE papers:

1. *Short Circuit Ratings Labels and Fault Withstandability of Molded Case and Insulated Case Circuit Breakers and Combination Motor Starters* by Arthur J. Smith III.
2. *Short-Circuit Ratings and Application Guidelines for Molded-Case Circuit Breakers* by Willaim M. Hall and George D. Gregory

Copies of these papers may be obtained from the IEEE.

John Cadick, P.E.

<sup>1</sup> This drawing is shown for illustration only is not an attempt to precisely re-create actual test conditions. For specific procedures refer to UL test standard 489.