must flow through. Short circuit (fault) current flowing through the air gap resistance can produce temperatures that approach tens of thousands of degrees Fahrenheit. The effect of the extreme heat as well as the blast pressure, toxic gasses, shrapnel, ultraviolet light, and other hazards, can injure or kill people in close proximity as well as those located some distance away.

# Arcing Short Circuit Current Calculations

The IEEE P1584 working group has developed the IEEE Guide for Performing Arc-Flash Hazard Calculations. This document contains many equations, related theory, and information including two different sets of equations for calculating/estimating the arcing short circuit current. The calculations are based on a known bolted short circuit current and the system voltage. One set of equations is used for calculating the arcing current for systems ≤ 1 kV, and a second set of equations is used for systems operating between 1 kV and 15 kV. For systems operating above 15 kV, it is assumed the arcing current will be the same as the bolted short circuit current. The flow chart in **Figure 8-1** can be used to determine which calculation procedure to use.

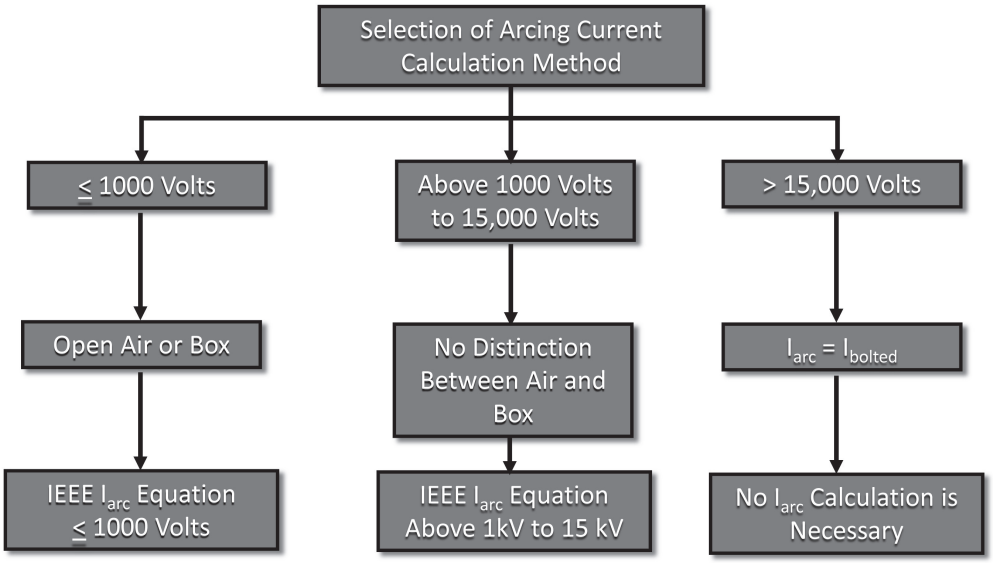


*Figure 8-1. The proper arcing current equation depends on the voltage level.*

## Limitations of Calculations

The equations from IEEE 1584 are empirically derived from test data and are valid for the following conditions:

- ✔ Systems operating from 208 V to 15 kV
- ✔ Three-phase arc flash from three-phase systems
- ✔ 50 and 60 Hz
- ✔ Short circuit current from 700 A to 106,000 A
- ✔ Conductor gap distances from 13 mm to 152 mm