



On Your Mark is a monthly column written by Geoffrey Peckham, President of Clarion Safety Systems and chair of both the ANSI Z535 Committee and the U.S. Technical Advisory Group to ISO Technical Committee 145- Graphical Symbols. Over the past two decades he has played a pivotal role in the harmonization of U.S. and international standards dealing with safety signs, colors, formats and symbols.

Globally Standardized Symbols

BY GEOFFREY PECKHAM

Globally standardized symbols are available for you in two categories, those that identify functions and controls, and those that identify safety concerns.

Symbols are standardized worldwide by two highly-active global committees. ISO/TC 145 is the horizontal committee of the International Organization for Standardization (ISO) that addresses standardization of non-electrical function and control symbols and all safety symbols. The International Electrotechnical Commission's IEC SC3C committee defines function and control symbols for electrical equipment.

Here's how these global symbol standards are related and differ:

- Non-electrical function and control symbols are standardized in ISO 7000. Electrical function and control symbols are standardized in IEC 60417. Both standards are titled, *Graphical symbols for use on equipment*. Safety symbols are standardized in ISO 7010.
- ISO/IEC function and control symbols tend to be more abstract

whereas the ISO safety symbols are typically more representational in form.

- ISO safety symbols use a colored surround shape (circle, square or triangle) to define their overall safety function and to make these symbols more easily noticed and recognized.
- ISO/IEC function and control symbols are designed according to a strictly defined grid template that standardizes the size, shape and line thickness of the symbol's elements. This helps in obtaining both uniformity and maximum visual

“legibility” for these symbols, many of which are used in small sizes on control buttons and small labels.

To illustrate the points made above, Figure 1 shows the three IEC function/control symbols used to identify ground connections. All three symbols are related by their similar vertical/horizontal design element and they are similarly abstract. But the use of the curved design element in 5018 and 5019 easily differentiates one symbol from another. Here are the precise definitions for each symbol:



Figure 1: IEC 60417 ground symbols (from left to right: 5017, 5018 and 5019)



Figure 2: ISO safety symbol examples (from left to right: laser beam, no open flame, wear face shield, assembly point, fire hose)

No. 5017 Earth (ground): Identifies an earth (ground) terminal in cases where neither the symbol 5018 nor 5019 is explicitly stated.

No. 5018 Noiseless (clean) earth (ground): Identifies a noiseless (clean) earth (ground) terminal, e.g. a specially designed earthing (grounding) system to avoid causing malfunction of the equipment.

No. 5019 Protective earth (ground): Identifies any terminal which is intended for connection to an external conductor for protection against electrical shock in case of a fault, or the terminal of a protective earth (ground) electrode.

(In the next article in this series, I will explain what the standards say as to when and where to use the grounding symbols and the role training plays in their comprehension).

In contrast to ISO/IEC function and control symbols, ISO safety symbols use color and shape to define an overall safety meaning. As shown in Figure 2, the ISO safety sign types are:

Warning sign: Black banded yellow triangle with black symbol

Prohibition sign: Black symbol behind red circle with slash

Mandatory action sign: Blue circle with white symbol

Safe condition/location of safety equipment sign: Green rectangle with white symbol

Fire safety/location of fire equipment sign: Red rectangle with white symbol

Once standardized, ISO/IEC function and control symbols and ISO safety symbols do not change and that's good for product manufacturers, especially those with a global market. These world-wide symbol standards let you conform at the outset without having to reinvent the process of properly identifying functions, controls and safety concerns each time you design a product. Further, from the product user's viewpoint there is greater certainty of meaning when seeing familiar, standardized symbols. That's the beauty and practical usefulness of international symbol standards, assuring a clear win for both the manufacturer and the user.

For more information about safety signs and symbols, visit www.clarionsafety.com. 