



SURFACE VEHICLE RECOMMENDED PRACTICE

J1362™

JAN2023

Issued 1986-08
Revised 2023-01

Superseding J1362 DEC2018

Graphical Symbols for Operator Controls and Displays on Off-Road Self-Propelled Work Machines

RATIONALE

Addition of nine new drill symbols, one general fork symbol, and a general recirculation symbol. Twenty-four symbols removed because they are now published in ISO standards.

FOREWORD

SAE J1362 covers graphical symbols for use on operator controls and other displays on off-road work machines as defined in SAE J1116, plus mobile cranes, but excluding agricultural tractors. Symbols for agricultural equipment are covered by ASABE S304 and are therefore excluded from the scope of SAE J1362.

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Full document details: SAE J1362_202301

For more information on this standard, visit
https://www.sae.org/standards/content/J1362_202301/

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1. SCOPE

SAE J1362 presents graphical symbols for use on operator controls and other displays on off-road work machines as defined in SAE J1116, plus mobile cranes, but excluding agricultural tractors. Symbols for agricultural tractors are covered by ASABE S304, ISO 3767-1, and ISO 3767-2.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publication

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1116 Categories of Off-Road Self-Propelled Work Machines

2.1.2 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ISO 2575 Road Vehicles - Symbols for Controls, Indicators, and Tell-Tales

ISO 3287 Powered Industrial Trucks - Symbols for Operator Controls and Other Displays

ISO 3767-1 Tractors, Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Symbols for Operator Controls and Other Displays - Part 1: Common Symbols

ISO 3767-2 Tractors, Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Symbols for Operator Controls and Other Displays - Part 2: Symbols for Agricultural Tractors and Machinery

ISO 3767-3 Tractors, Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Symbols for Operator Controls and Other Displays - Part 3: Symbols for Powered Lawn and Garden Equipment

ISO 3767-4 Tractors, Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Symbols for Operator Controls and Other Displays - Part 4: Symbols for Specialized Forestry Machinery

ISO 3767-5 Tractors, Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Symbols for Operator Controls and Other Displays - Part 5: Symbols for Manual Portable Forestry Machinery

ISO 6405-1 Earth-Moving Machinery - Symbols for Operator Controls and Other Displays - Part 1: Common Symbols

ISO 6405-2 Earth-Moving Machinery - Symbols for Operator Controls and Other Displays - Part 2: Specific Symbols for Machines, Equipment, and Accessories

ISO 7000 Graphical Symbols for Use on Equipment - Index and Synopsis
[ISO 7000 is available via subscription in database form at URL <http://www.graphical-symbols.info/>. Symbols are also available in the ISO Online Browsing Platform at URL <https://www.iso.org/obp/ui/>.]

ISO 7296-2 Cranes - Graphical Symbols - Part 2: Symbols for Mobile Cranes

ISO 8999 Reciprocating Internal Combustion Engines - Graphical Symbols

- ISO 11783-6 Tractors and Machinery for Agriculture and Forestry - Serial Control and Communications Data Network - Part 6: Virtual Terminal
- ISO 20381 Mobile Elevating Work Platforms - Symbols for Operator Controls and Other Displays
- ISO 80416-2 Basic Principles for Graphical Symbols for Use on Equipment - Part 2: Form and Use of Arrows
- ISO 80416-4 Basic Principles for Graphical Symbols for Use on Equipment - Part 4: Guidelines for the Adaptation of Graphical Symbols for Use on Screens and Displays (Icons)

2.1.3 Other Publications

- ASABE S304 Graphical Symbols for Operator Controls and Displays on Agricultural Equipment
- IEC 60417 Graphical symbols for use on equipment
[IEC 60417 is available via subscription in database form at URL <http://www.graphical-symbols.info/>.
Symbols are also available in the ISO Online Browsing Platform at URL <https://www.iso.org/obp/ui.>]
- IEC 80416-1 Basic Principles for Graphical Symbols for Use on Equipment - Part 1: Creation of Symbol Originals
- IEC 80416-3 Basic Principles for Graphical Symbols for Use on Equipment - Part 3: Guidelines for the Application of Graphical Symbols

3. DEFINITIONS

For the purpose of SAE J1362, the following definitions apply:

3.1 SYMBOL (GRAPHICAL SYMBOL)

A visually perceptible figure used to transmit information independent of language. It may be produced by drawing, printing, or other means. Letters, numerals, and mathematical symbols are used as symbols or symbol elements. For some specific applications, groups of letters (for example, AUTO, STOP) are used as symbols or symbol elements.

3.2 ICON (DIGITAL DISPLAY ICON)

A digitized (pixelated) representation of a graphical symbol, usually used on a reconfigurable electronic display screen or graphical user interface (GUI). A single symbol can be represented by multiple icons, each of a different size, pixel count, or colorization.

4. GENERAL

- 4.1 Except where indicated in subsequent clauses, symbols shall be used as shown in SAE J1362 or in the ISO standards cited by SAE J1362.
- 4.2 Selected symbols which are shown in outline form in SAE J1362 may be filled in actual use for enhanced clarity of reproduction and improved visual perception by the operator, except as otherwise specified for individual symbols and in accordance with IEC 80416-3.
- 4.3 Limitations inherent in some reproduction and display technologies can require increased line width or other minor modifications of symbols. Such modifications are allowed, provided that the symbol remains conceptually unchanged in its basic graphical elements and is easily discernible by the operator.
- 4.4 To improve the appearance and perceptibility of a graphical symbol, or to coordinate with the design of the equipment to which the symbol is applied, it can be necessary to modify the symbol as indicated in IEC 80416-3 (for example, to change the line width or round the corners of the symbol). Such modifications are allowed, provided that the essential perceptual characteristics of the symbol are maintained.

- 4.5 For actual use, all symbols shall be reproduced large enough to be easily discernible by the operator. Follow IEC 80416-1 for the proper sizing of symbols. Symbols grouped together in a display or on a set of controls should be scaled to the same degree relative to the corner marks of the original symbol as shown in SAE J1362 or in the ISO standards cited by SAE J1362 in order to maintain the correct visual relationship among the symbols. Symbols shall be used in the orientation shown in SAE J1362 or in the ISO standards cited by SAE J1362, unless rotation or mirror imaging is specifically allowed for individual symbols.
- 4.6 Most symbols are constructed using a building block approach in which various symbols and symbol elements are combined in a logical manner to produce a new symbol.
- 4.7 In some cases, symbols may be used in conjunction, without being combined into a composite symbol, to convey the same meaning as the composite symbol.
- 4.8 Symbols are generally intended to replace a word or words with a graphical representation that has the same meaning for all operators, regardless of their native language. However, the use of a graphical symbol to identify a control or display does not preclude the use of words in conjunction with that control or display.
- 4.9 If a symbol shows a machine or parts of a machine from a side view, a machine moving from right to left across the symbol area shall be assumed. If a symbol shows a machine or parts of a machine from an overhead view, a machine moving from bottom to top across the symbol area shall be assumed.
- 4.10 Symbols on controls and displays shall have good contrast to their background. A light symbol on a dark-colored background is preferred for most controls. Displays may use either a light symbol on a dark-colored background or a dark symbol on a light-colored background, depending upon which alternative provides the best visual perception. When a symbol image is reversed (for example, from black-on-white to white-on-black or vice versa), it shall be done for the entire symbol.
- 4.11 If symbols are cast, molded, embossed, or stamped into a surface, the symbols shall be visually distinct from that surface without dependence on color.
- 4.12 Symbols shall be located on or adjacent to the control or display that is being identified. Where more than one symbol is required for a control, the symbols shall be located in relation to the control such that movement of the control toward the symbol shall affect the function depicted by that symbol.
- 4.13 Arrows used in symbols shall conform to the requirements of ISO 80416-2. IEC 80416-1 shall be consulted for general principles for the creation of symbols. IEC 80416-3 should be consulted for guidelines for the application of symbols.
- 4.14 ISO/IEC registration numbers are shown for symbols in SAE J1362 which are registered in either ISO 7000 or IEC 60417. Absence of an ISO/IEC registration number indicates that no number has been assigned to that symbol.
- NOTE Symbol originals are approved and registered either by ISO/TC 145/SC 3 and published in ISO 7000 or by IEC/SC 3C and published in IEC 60417. In some cases, modified or application symbols, rather than the registered symbol originals are standardized in the ISO standards cited by SAE J1362.
- 4.15 When letters or numbers are used in a symbol, the font shown shall not be considered definitive. Other fonts may be used so long as the letters and numbers remain legible.
- 4.16 Symbols in SAE J1362 are shown within marks that delimit the corners of the 75 mm square basic pattern from IEC 80416-1. Corner marks are not part of the symbol itself but are provided to ensure consistent presentation of all symbol graphics.

5. COLOR

- 5.1 When used to indicate operating status or condition, the following colors have meaning as follows:
- 5.2 The color **red** denotes a failure, serious malfunction, or operating condition that requires immediate attention.
- 5.2.1 The colors **yellow** or **amber** denote a condition outside normal operating limits.
- 5.2.2 The color **green** denotes a normal operating condition.
- 5.3 The color **blue** shall be used for the headlight high beam, upper beam display.
- 5.4 The color **red** shall be used for the hazard warning display and for the hazard warning control.
- 5.5 The color **green** shall be used for the turn signal displays.
- 5.6 If color is used on or in association with symbols for heating and cooling systems, the color **red** shall be used to indicate hot and the color **blue** shall be used to indicate cold.
- 5.7 Additional information on the use of color with specific symbols is noted for individual symbols in SAE J1362 or in the ISO standards cited by SAE J1362.

6. DEVELOPMENT OF NEW SYMBOLS

- 6.1 Prior to developing a new symbol, a search should be conducted for previously standardized symbols with the same or similar meaning to what is needed. ISO 7000 and IEC 60417 (both available in database form) are compilations of internationally standardized symbols which can be used both for finding appropriate symbols that do not appear in SAE J1362, ISO 3767, or ISO 6405 and for generating concepts that can be used in the development of new symbols.
- 6.2 New symbols shall be developed in accordance with the principles of Appendix A of SAE J1362. IEC 80416-1 should be consulted for general principles for the creation of symbols. Arrows shall be in accordance with ISO 80416-2. Different arrow forms have different meanings according to ISO 870416-2. Care should be taken to use the correct arrow form. Following the guidelines of Appendix A of SAE J1362 makes possible the development of symbols appropriate in graphical form and content for international standardization and ISO 7000 or IEC 60417 registration.
- 6.3 Symbols proposed for standardization in SAE J1362 shall include a title and a short explanation of the function or expected use of the symbol. IEC 80416-1 uses the term “description” for such explanations and provides guidelines for writing descriptions for symbols intended for standardization in ISO 7000 or IEC 60417. The same guidelines apply to symbols proposed for standardization in SAE J1362.

7. ADAPTATION OF SYMBOLS AS DIGITAL DISPLAY ICONS

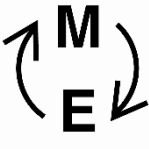
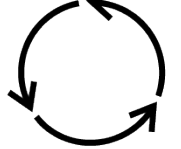
- 7.1 Symbols can be adapted for use as digital display icons on visual display units, reconfigurable or other electronic displays (for example, virtual terminals according to ISO 11783-6). Such adaptations should follow the principles of ISO 80416-4. Special care should be taken to ensure that digital display icons preserve the visual impression of the symbol from which the icon is adapted. The same principles regarding use of color with symbols apply to the use of color with digital display icons.

8. BASE SYMBOLS

Use base symbols standardized in clause 8 of ISO 3767-1:2016 or in clause 8 of ISO 6405-1:2017.

9. GENERAL SYMBOLS

Use general symbols standardized in clause 9 of ISO 3767-1:2016 (including amendments) or in clause 9 of ISO 6405-1:2017, plus the additional symbols standardized in this clause of SAE J1362.

	Graphical Symbol	Symbol Title and Description	ISO/IEC Registration Number	Included in Standards Cited Below
9.1		Convert digital display between metric and inch-pound units of measure To indicate the control that switches a digital display between metric (M) and inch-pound (E) units of measure.	None	-
9.2		Wheel drive, general To identify the control that activates drive wheels which are otherwise inactive.	None	-
9.3		Air pressure, general To identify the control for air pressure in general. To indicate air pressure.	None	-
9.4		Fork, general To identify the fork. To identify the control for operation of the fork. To indicate the operational status of the fork.	None	-
9.5		To identify the control to activate/deactivate a recirculation system	None	-

10. ENGINE SYMBOLS

Use engine symbols standardized in clause 10 of ISO 3767-1:2016 or in clause 10 of ISO 6405-1:2017.

11. TRANSMISSION SYMBOLS

Use transmission symbols standardized in clause 11 of ISO 3767-1:2016 or in clause 11 of ISO 6405-1:2017, plus the additional symbols standardized in this clause of SAE J1362.

	Graphical Symbol	Symbol Title and Description	ISO/IEC Registration Number	Included in Standards Cited Below
11.1		Worn clutch To indicate that the clutch has worn beyond a specified limit.	ISO 7000-2169	-