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Earth-moving machinery — Operator's manual —

Part 1: Contents and format

Engins de terrassement — Manuel de l'opérateur —

Partie 1: Présentation et contenu

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 3, *Machine characteristics, electrical and electronic systems, operation and maintenance*.

This document cancels and replaces the third edition (ISO 6750:2005), which has been technically revised. The main changes compared to the previous edition are as follows:

— the required contents of the operator's manual of earthmoving machinery has been updated;

— additional information on the use of electronic media for the operator's manual is now provided.

A list of all parts in the ISO 6750 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Operators need to have available an operator's manual giving guidance for the correct use and maintenance of the machine and its equipment and attachments. It is accordingly expected that such an operator's manual be clear and simple to understand, that it contains warnings for reasonably foreseeable hazards as well as definitions of terms, and that the units, symbols and pictorials used comply with the relevant International Standards.

This edition has been prepared such that it is aligned with the similar technical area covered by ISO 3600.

Earth-moving machinery — Operator's manual —

Part 1: Contents and format

1 Scope

This document specifies the contents of operator's manuals for earth-moving machinery as defined in ISO 6165, and gives guidance on how to structure such operator's manuals. It is intended to assist manufacturers of the machinery in the drafting and presentation of these manuals.

Manuals intended for use by service technicians are not within the scope of this document.

NOTE 1 Annex A provides basic information items to be included in the operator's manual.

NOTE 2 Annex B provides guidance on the presentation and format of hardcopy operator's manuals.

NOTE 3 Annex C provides recommendations on the electronic means of communication that can be used to convey the contents of operator's manuals.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3864 (all parts), *Graphical symbols — Safety colours and safety signs*

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: Symbols for specific machines, equipment and accessories*

ISO 6749, *Earth-moving machinery — Preservation and storage*

ISO 7010, *Graphical symbols — Safety colours and safety signs — Registered safety sign*

ISO 7130, *Earth-moving machinery — Operator training — Content and methods*

ISO 9244, *Earth-moving machinery — Machine safety labels — General principles*

ISO 12100, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 17100, *Translation services — Requirements for translation services*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
attachment
component (3.2) or assembly of components that can be mounted onto the base machine or *equipment* (3.5) for specific use

Note 1 to entry: See ISO 6746-1 and ISO 6746-2 for the dimensions and codes of the base machine and the equipment and attachments, and ISO 6016 for measuring their masses.

[SOURCE: ISO 6746-2:2003, 3.5, modified — "component or" added to the definition; Note 1 to entry added.]

3.2
component
part or an assembly of parts of a base machine, *equipment* (3.5) or an *attachment* (3.1)

[SOURCE: ISO 6746-2:2003, 3.6]

3.3
display
electronic device capable of visibly communicating information

[SOURCE: ISO 14861:2015, 3.1]

3.4
document
discrete unit or collection of content

[SOURCE: ISO 22938:2017, 3.1]

3.5
equipment
set of *components* (3.2) mounted onto the base machine which allows an *attachment* (3.1) to perform the primary design function of the machine

[SOURCE: ISO 6746-2:2003, 3.4]

3.6
falling-object protective structure
FOPS
system of structural members arranged in such a way as to provide *operators* (3.12) with reasonable protection from falling objects (trees, rocks, small concrete blocks, hand tools, etc.)

[SOURCE: ISO 3449:2005, 3.1]

3.7
graphical symbol
visually perceptible figure with a particular meaning, used to transmit information independently of language

[SOURCE: ISO 9244:2008, 3.5]

3.8
jobsite organization
rules and procedures for the jobsite that coordinate machines and people working together

[SOURCE: ISO 5006:2017, 3.7, modified — The example has been deleted.]

3.9
operating mass
mass of the base machine, with *equipment* (3.5) and empty *attachment* (3.1) in the most usual configuration as specified by the manufacturer, and with the *operator* (3.12) (75 kg), full fuel tank and all fluid systems (i.e. hydraulic oil, transmission oil, engine oil, engine coolant) at the levels specified by the manufacturer and, when applicable, with sprinkler water tank(s) half full

Note 1 to entry: The mass of an operator is not included for non-riding machines.

Note 2 to entry: Ballast mass at delivery can be included if specified by the manufacturer.

[SOURCE: ISO 6016:2008, 3.2.1, modified — The accepted term "OM" has been eliminated.]

3.10
maintenance
all activities necessary to prevent failure and retain a machine in operable condition

[SOURCE: ISO 8927:1991, 3.5.7, modified — The word “item” has been replaced with “machine”, the phrase "maintenance can be detailed as scheduled maintenance and conditioning monitoring" has been eliminated and Note 1 to entry has been eliminated.]

3.11
modification
changes made to the form, fit, or function/functional range of a product in order to alter its specified intended use

3.12
operator
person who operates and could perform routine *maintenance* (3.10) of earth-moving machinery

[SOURCE: ISO 7130:2013, 3.1, modified — The Note 1 to entry has been eliminated.]

3.13
operator’s manual
document (3.4) that identifies machines covered and containing information describing and illustrating the safe operation, *maintenance* (3.10), and safety precautions applicable to the machine

3.14
periodic maintenance
scheduled *maintenance* (3.10) performed at prearranged time intervals

[SOURCE: ISO 8927:1991, 3.5.9]

3.15
personal protective equipment
any device or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards

[SOURCE: ISO 11660-1:2008, 3.1.15]

3.16
repair
activity necessary to restore a machine to the operable condition after a failure has occurred

[SOURCE: ISO 8927:1991, 3.5.12, modified — “all activities necessary to restore an item” has been replaced with “activity necessary to restore a machine”, and “Repair can be detailed as non-urgent repair and urgent repair.” has been deleted.]

3.17
roll-over protective structure
ROPS
system of structural members whose primary purpose is to reduce the possibility of a seat-belted *operator* (3.12) being crushed in the event of a machine roll-over

Note 1 to entry: It can include *components* (3.2) such as sub-frame, bracket, mount, bolt, pin, suspension or flexible shock absorber.

Note 2 to entry: Non-load-carrying members (posts) are not considered.

[SOURCE: ISO 3471:2008, 3.13, modified — Original Note 1 to entry has been deleted and later notes have been renumbered, also an internal referencing term number 3.12 in the bracket has been added to the word “operator” within the definition.]

3.18
spare part
replacement part
single, or multiple, part or subassembly used to replace a worn or failed part or subassembly

3.19
tip-over protective structure
TOPS
system of structural members whose primary purpose is to reduce the possibility of a seat-belted *operator* (3.12) being crushed by a machine tip-over

[SOURCE: ISO 12117:1997, 3.1, modified — The definition has been slightly reworded and Note 1 to entry has been deleted.]

3.20
target group
group of persons identified as target readers of the *operator's manual* (3.13)

EXAMPLE *Operators* (3.12), persons responsible for the installation, *repair* (3.16) or *maintenance* (3.10).

4 General information for operator's manuals

4.1 General information

An operator’s manual is the primary source of information for the operator. It shall provide a description of the machine, its functional elements, and operational instructions for the intended use of the machine.

Different intended target groups can be specified at the beginning of the operator’s manual, for example, in the foreword.

4.2 Machine configurations

If more than one machine configuration is addressed by one operator’s manual, the identifier of a specific configuration shall be clearly recognizable in the operator’s manual and on the machine in order to ensure unambiguous identification by the operator. As a consequence, the relationship between content and operational features of different machine configurations shall be unambiguous. There are different ways to organize the information, for example:

— each machine configuration has its own sections. Common parts are repeated in each machine configuration section.

— all machine configurations have one common section. Machine configuration specific information is highlighted either typographically or by document structure.

4.3 Attachments, tools, additional equipment

The operator's manual for any given machine shall include, if applicable, instructions on how to connect, disconnect, and use attachments, tools or additional equipment as approved by the machine manufacturer. Those instructions may be provided in a separate operator's manual.

4.4 Units of measurement

Units of measurement used in the operator's manual and on the machine shall be stated in the operator's manual.

4.5 Original language and translations

Operator's manual shall be supplied in a language in accordance with the local or regional legal and regulatory requirements or customs.

Where an operator's manual is translated from the original language, the translation shall be done in accordance with ISO 17100 or equivalent requirements.

4.6 Graphical symbols

Graphical symbols, including machine safety labels, used on the machine or within the operator's manual shall be explained in the operator's manual so that they are easily recognized and understood by the operator.

4.7 Meaning of audible and visual signals on the machine

The meaning of visual or audible signals on the machine, such as flashing lights, use of colours or audible alarms, shall be explained in the operator's manual so that they are easily recognized and understood by the operator.

4.8 Basic information

The manual shall contain instruction aimed at the target group on how to approach the machine in an appropriate way and get acquainted with its intended use as well as with its reasonably foreseeable misuse, physical boundary conditions, and risks related to application of the machine in its intended operation.

Annex A provides a list of items to be included in the operator's manual, which are indispensable for regulatory compliance in certain regional/national contexts.

5 Content of operator's manuals

5.1 General

The information as specified in 5.2 through 5.13 shall give a complete overview over the machine's functional range and operation as appropriate and applicable to the machine.

5.2 Identification of the operator's manual

An operator's manual drafted in accordance with this document shall be identified as relevant to a specific machine by the following information on the cover:

— manufacturer or distributor of machine;

— model and type designation of machine;

— name or type of publication;

— information on original text or translation of the original text; whilst specifying the language of origin;

NOTE This information can be placed elsewhere in the manual, such as the inside front cover.

— part number or publication number by which the operator's manual can be ordered;

— revision number or publication code, that can be used to fully identify the publication.

5.3 Table of contents

The operator's manual shall include a table of contents identifying the main categories of information and where they can be found. Page numbers for the beginning of each major section shall be clearly indicated.

5.4 Identification of the machine

Operator's manuals shall provide information that enables the operator to readily identify the machine to which the operator's manual relates. The following information shall be included:

— model designations of the machines to which the manual applies;

— serial numbers, serial number range, beginning of the range or a date of manufacture to which the manual applies, as appropriate;

— description, either by words or pictorially, or both, of the location of serial numbers of the machine and of serialized components;

— spaces to record serial numbers pertaining to the particular machine the manual accompanies.

The section covering the identification of the machine shall include a detailed description of the base machine (see ISO 6746-1) and its systems, and the optional equipment and attachments (see ISO 6746-2) permitted by the manufacturer to be used with the machine. Furthermore, the following shall be considered:

— presentation and nomenclature of major components, for example, engine, transmission, brake systems, steering system, pressure vessels, operator's enclosure;

— presentation of equipment, its functions, location and relationship with the machine;

— illustrations showing the location of product and component plates, for example, PIN, cab number, engine number, axle number; see Figure 1;

— illustrations showing the location of instructions; the layout of panels, for example, switches, gauges, control lamps, hour meter.

Where appropriate, components shall be identified, and terms unique to a specific type of earth-moving machine defined, utilizing the terms and definitions according to the respective terminology and commercial specification standards.

The operator's manual shall indicate either by words or pictorially, or both, the location and content of the product identification plate attached to the machine.

