इंटरनेट मानक

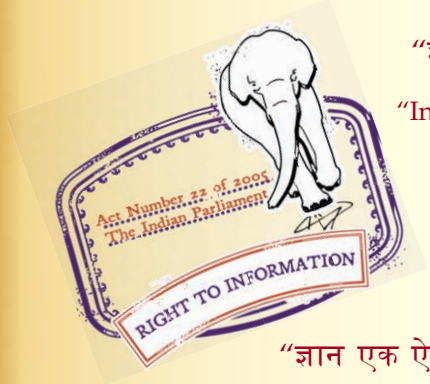
Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 8132 (1999): Tractors and Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Operator's Manuals - Content and Presentation [FAD 11: Agricultural Tractors and Power Tillers]



"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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IS 8132 : 1999
ISO 3600 : 1996
(Reaffirmed 2004)

भारतीय मानक

कृषि एवं वानिकी के लिए ट्रैक्टर एवं मशीनें, लान और बगीचे के लिए शक्तिकृत उपस्कर — प्रचालक मैनुअल — विषयवस्तु और प्रस्तुतीकरण

(दूसरा पुनरीक्षण)

Indian Standard

TRACTORS AND MACHINERY FOR AGRICULTURE AND FORESTRY, POWERED LAWN AND GARDEN EQUIPMENT — OPERATOR'S MANUALS — CONTENT AND PRESENTATION

(Second Revision)

ICS 65.060.01

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 1999

Price Group 7

NATIONAL FOREWORD

This Indian Standard (Second Revision), which is identical with ISO 3600 : 1996 'Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Operator's manuals — Content and presentation' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Agricultural Tractors and Power Tillers Sectional Committee and approval of the Food and Agriculture Division Council.

This standard was first published in 1976 and subsequently revised in 1983 and was identical with ISO 3600 : 1981. With the revision of ISO 3600 in 1996 and it was decided to revise this standard also.

In the adopted standard certain terminology and conventions are not identical to those used in Indian Standards. Attention is drawn specially to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, the following International Standards are referred to. Read in their respective place, the following:

International Standard	*Indian Standard*	*Degree of Correspondence*
ISO 31-O : 1992 Quantities and units — Part 0 : General principles	IS 1890 (Part 0) : 1995 Quantities and units : Part 0 General principles	Identical
ISO 31-1 : 1992 Quantities and units — Part 1 : Space and time	IS 1890 (Part 1) : 1995 Quantities and units : Part 1 Space and time	do
ISO 31-2 : 1992 Quantities and units — Part 2 : Periodic and related phenomena	IS 1890 (Part 2) : 1995 Quantities and units : Part 2 Periodic and related phenomena	do
ISO 31-3 : 1992 Quantities and units — Part 3 : Mechanics	IS 1890 (Part 3) : 1995 Quantities and units : Part 3 Mechanics	do
ISO 31-4 : 1992 Quantities and units — Part 4 : Heat	IS 1890 (Part 4) : 1995 Quantities and units : Part 4 Heat	d o
ISO 31-5 : 1992 Quantities and units — Part 5 : Electricity and magnetism	IS 1890 (Part 5) : 1995 Quantities and units : Part 5 Electricity and magnetism	do
ISO 617 : 1983 Graphical symbols for diagrams (published in 13 parts)	IS 12032 : 1987 Graphical symbols for diagrams (published in 13 parts)	do
ISO 1000 : 1992 SI units and recommendations for the use of their multiplies and of certain other units	IS 10005 : 1995 SI units and recommendations for the use of their multiplies and of certain other units	do
ISO 3339-O : 1986 Tractors and machinery for agriculture and forestry — Classification and terminology — Part 0 : Classification system and classification	IS 9939 : 1981 Glossary of terms relating to tractors and power tillers	Related

(Continuedon third cover)

Indian Standard

TRACTORS AND MACHINERY FOR AGRICULTURE AND FORESTRY, POWERED LAWN AND GARDEN EQUIPMENT — OPERATOR'S MANUALS — CONTENT AND PRESENTATION

(Second Revision)

1 Scope

This International Standard gives guidance for the content and presentation of operator's manuals for tractors, machinery for agriculture and forestry, and powered lawn and garden equipment. It is intended to assist manufacturers of tractors, machinery for agriculture and forestry, and powered lawn and garden equipment in the production of operator's manual.

2 Normative references

The following standards contain provisions which, through reference in this text,. constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated **below. Members** of IEC and ISO maintain registers of currently valid International Standards.

ISO 999:1975, *Documentation — Index of a publication.*

ISO 3767-I *: 1991, Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 7: Common symbols.*

ISO 3767-2:1991, *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: 1995, 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: 1993, Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 4: Symbols for forestry machinery.*

ISO *3767-5: 1992, 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 11684:1995, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 left-hand side: Side which is on the left when an observer is facing in the normal forward direction of travel of the machine.

3.2 right-hand side: Side which is on the right when an observer is facing in the normal forward direction of travel of the machine.

4 Content of operator's manuals

4.1 Identification of manual

4.1.1 Any document drafted in accordance with this International Standard shall be identifiable as the relevant manual for a specific machine.

NOTE 1 This requirement can be achieved by including such informatipn as the identity of the manufacturer, machine model, and publication name on the front cover of the manual.

4.1.2 Each operator's manual shall have its own part number and date of issue.

4.1.3 Each publication should identify the following:

— manufacturer or distributor of the machine;

— the model designation of the machine;

— the name or type of publication;

— the part number or publication number by which the manual may be ordered;

— the printing or publication date;

— the language in which the manual is written.

4.2 Categories of information

4.2.1 The categories of information given in this International Standard cover the whole range of information that the user of a machine is likely to need. Manuals shall be organized to present the appropriate information in a logical sequence that allows easy access by the user of the manual.

4.2.2 Operator's manuals should give safety precautions, controls, and operating instructions in the front portion. The extent of information provided will depend on the type of machine and the operator's needs.

4.2.3 Where the work involved is complex, procedures that are performed only once (for example, initial set-up or installation) may be detailed in a separate publication.

4.3 Machine identification

4.3.1 Model designation and number

This information enables the operator to identify readily the machine to which the operator's manual belongs.

4.3.2 **Serial numbers**

Information that enables the operator to locate and identify the whereabouts of serial numbers and/or codes of the major components of the machine, and any additional information necessary for intial communication with a dealer, shall be provided within the manual.

A section shall be provided in the manual to record this information, and it shall be completed at the time of delivery or installation. Figure 1 shows an example of the identification section of the operator's manual provided by a tractor manufacturer.

4.4 Introduction

4.4.1 The introduction shall stress the importance of the information given in the manual. Figure 2 shows an example of how this may be done.

4.4.2 The introduction shall explain why the manual has been provided with the machine. It shall also provide the reader with any information that will help him to interpret the manual correctly.

4.4.3 Each publication should contain 'a statement advising the reader where to get assistance if items covered in the publication are not understood.

4.4.4 Attention shall be drawn to the use of the safety alert symbol to highlight information about potential safety concerns. Figure 3 shows an example of how this may be done.

The safety alert symbol may be either the solid background version, ISO 11684:1995, figure 5, or the outline version, ISO 11684:1995, figure 7.

4.5 "Intended use"

This category shall inform the operator of the functions for which the machine is designed and, where appropriate, draw attention to ways in which the machine should not be used. If the machine is designed for use in association with other machinery, the information shall state the type of machinery that is suitable for such use. Figure 4 gives an example of a manufacturer's definition of "intended use".

Model designation

Model number

- Note the model and serial numbers of your tractor. Always quote these numbers in any communication with your dealer

Serial numbers')

- Machine serial number
- Engine serial number
- Transmission serial number
- Cab serial number

Supplier

Date of delivery and installation

Information about manufacturer and/or importer

- Name
- Address
- Phone number

Owner or operator

1) It is extremely important to quote the complete serial number group, including all letters, or both the machine and its relevant components on all warranty claims and correspondence pertaining to this machine. This point cannot be overemphasized.

Figure 1 — Example of the identification section of the operator's manual provided by a tractor manufacturer

This operator's manual should be regarded as part of the machine. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this manual was provided with the machine.

Figure 2 — Example introductory statement stressing the importance of the operator's manual

A **Safety alert symbol**

This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury, carefully read the message that follows, and inform other operators.

Figure 3 — Example explanation of the safety alert symbol

This machine is designed solely for use in customary agricultural or similar operations. Use in any other way is considered as contrary to the intended use. Compliance with and strict adherence to the conditions of operation, service, and repair as specified by the manufacturer, also constitute essential elements of the intended use.

This machine should be operated, serviced, and repaired only by persons who are familiar with its particular characteristics and who are acquainted with the relevant safety procedures.

Accident prevention regulations,' all other generally recognized regulations on safety and occupational medicine, and all road traffic regulations must be observed at all times.

Any arbitrary modifications carried out to this machine may relieve the manufacturer of liability for any resulting damage or injury.

Figure 4 — Example of a manufacturer's definition of "intended use"

4.6 Contents

A contents list shall be provided to identify the main categories of information in the manual and where they can be found. The contents list shall be presented clearly and simply; it shall begin on a right-hand page. Page numbers for the beginning of each main category shall be clearly shown. Figure 5 shows- an example of a contents list.

4.7 Safety notes and warnings

4.7.1 General

This category shall draw the operator's attention to potential hazards associated with the following:

— use:

— movement;

— transport;

— cleaning;

— clearing blockages;

— maintenance of the machine;

— associated machinery with which it is designed to work (where appropriate).

It is important also to state the precautions to be taken to minimize or avoid any hazards.

An example of the hazards and precautions identified by a tractor manufacturer is given in figure 6. An example of the hazards and precautions identified by a sprayer manufacturer is given in figure 7. These examples are not intended to be exhaustive lists, but only as indications of the type of information that may be included.

Safety information should also be included in other sections of operator's manuals whenever an operating procedure may result in personal injury or damage to machinery if not observed carefully.

Example	Explanation
[Outer front cover1 • Model number and model designation • Part number and issue date of the operator's manual	Identification of the machine For ordering additional or replacement copies of the operator's manual
[Inner front cover1 • Introduction • Purpose of the machine	What the manual is for What the machine is for
[Next page1 **Contents** **Page** Safety notes and warnings Operating information Accessories and attachments Maintenance instructions Storage Handling, reception, transportation, assembly, and installation Specifications Dismantling and disposal Alphabetical index Parts lists	What the manual consists of What hazards exist and what safety precautions should be taken How to use the machine How to add and use accessories and attachments How to keep the machine working properly and safely How to look after the machine when it is not in use How to prepare the machine for use; for complex machines, this should be a separate publication What the machine is and what its physical and performance specifications are How to take the machine apart and dispose of it safely; applies only to simple machines Where information can be found In most cases, this should be a separate publication

Figure 5 — Example of contents with explanation of each category

Driving on slopes
Roll-over or overturning
Driving on public roads
Stability
Power take-off
Falls
Runovers
Hitching, towing, and recovery
Lifting

Figure 6 — Example of the information headings that a manufacturer could include on the hazards and precautions associated with tractor operation

Chemicals
Personal protective equipment
Overhead lines
Clearing blockages
Minimizing spray drift
Power take-off
Hitching
Tractor ballast

Figure 7 — Example of the information headings that a manufacturer could include on the hazards and precautions associated with sprayer operation

4.7.2 Safety signs

Safety signs that appear on the equipment shall be reproduced in legible size in the operator's manual, either in the appropriate section of the text relative to the point of use, or in the safety section, or in a separate safety sign section. Text that explains the meaning of a safety sign should be included in the operator's manual if the safety sign itself does not contain a written message. A safety sign may appear in more than one section of the manual.

Other relevant information about safety signs includes:

— information on the location of each safety sign on the machine or equipment;

— instructions on the need to keep safety signs clear and visible on the equipment;

— instructions to replace safety signs if they are missing or illegible;

— instructions that new equipment components installed during repair shall include the current safety signs specified by the manufacturer and shall be affixed to the replacement component;

— instructions on how to obtain replacement safety signs.

NOTE 2 Refer to ISO 11684 for information on safety signs.

4.7.3 Hazards

It is essential that any known hazards relating to the use of the machine, and any restrictions for its use by classes of persons (such as children) are clearly stated. Figure 8 shows an example of hazard information provided by a chain-saw manufacturer.

NOTE 3 Refer to ISO 11684 for information on harzard pictorials.

4.8 Operating information

4.8.1 This category shall provide the operator with logical instructions for the effective operation of the machinery. Operating information should include:

— general specifications and description of the machinery or equipment;

— identification of controls and displays by means of:

illustrations that identify controls and displays relative to the operator's position;

detailed illustrations and explanation of controls and displays if their purpose, function, and mode of operation are not readily apparent;

illustrations and explanations of all symbols used on the machinery or equipment;

— instructions for proper operation of the machinery or equipment;

— troubleshooting information.

4.8.2 Where appropriate, the information should be subdivided. Figure 9 shows an example of subheadings for operating information provided by the manufacturer.

4.9 Accessories and attachments

This category shall inform the operator of any choice of authorized accessories and attachments and how they affect the safety, operation, and maintenance of the machine.

4.10 Maintenance instructions

4.10.1 General

This category shall provide information to the operator in light of the resources likely to be available to him. The extent, level, and location of maintenance is dependent on the owner's maintenance policy. Maintenance instructions should be divided into logical groups appropriate to the machinery; for example,

— checks, inspections and tests;

— other routine maintenance tasks;

— fault diagnosis and correction.

A CAUTION

A chain-saw is a demanding tool. It shall only be used by fully trained operatives or by trainee operatives under the close supervision of a fully trained person.

Anyone using a chain-saw should be fully aware of the hazards involved and how to avoid these hazards.

Always wear appropriate personal protection equipment when using a chain-saw.

- Safety helmet
- Ear protection
- Eye protection
- Leg protection
- Suitable gloves and boots

A first aid kit should be readily available to the operator.

Figure 8 — Example of hazard information provided by a chain-saw manufacturer

- Instruments and controls
- Starting and stopping safely
- Running in
- Advice on efficient operation and checks prior to and during operation
- Safety
- Mounting and dismantling of equipment and attachments
- Malfunctions and troubleshooting
- Movement of machinery between sites (driving on the road)

Figure 9 — Example of subheadings for operating information provided by the manufacturer

The manual should be confined to maintenance tasks within the capability of the operator. Such tasks may include:

— cleaning;

— clearing blockages;

— replenishment;

— lubrication;

— external visual examination;

— simple tests;

— correction of minor deterioration.

The designer of the machinery should consider the maintenance work necessary to keep it running "as designed" and make a decision as to which information is to be included in the operator's manual and which information is more suited to a workshop or technical manual.

NOTE 4 There may be circumstances in which manufacturers wish to give advice on maintenance carried out by technicians limited by the available service parts, tools and skills, including on-the-spot rectification or replacement.

4.10.2 Maintenance schedules

Where maintenance tasks are required to be carried out at specific intervals (such as time, distance, running hours, completed operations) they should be summarized in tabular form with further details, if necessary, in the text. Where maintenance times vary according to individual conditions of operation (for example, checking and replenishing coolant) this should be stated.

4.10.3 Specialized tasks

Where maintenance tasks require specialist knowledge'or resources, this shall be stated. If any work carried out by an unauthorized person would affect the warranty on the machinery, it is important that this be stated.

4.10.4 Details of maintenance work

The instructions for each task should include details of dismantling and reassembly procedures and identification of replacement parts, materials, tools, test equipment, and services required. It is important that warnings of possible hazards and information about safety precautions are given. For example, if a ballasted rear wheel is to be removed from a tractor, there is a potential stability hazard both during removal and subsequent temporary storage; the manual should identify this potential hazard and give instructions for safe removal of the wheel and its temporary storage.

4.11 Storage

This category shall provide the operator with instructions and information, including precautions to be taken and any tools or special equipment required, to prepare the machinery for storage. A list of storage requirements should be provided, including information about supplies and services needed, periodic inspections, tests, limitations on storage life, etc. Procedures for preparing the machinery for use after storage should also be given.

4.12 Handling, reception, transportation, assembly, and installation

4.12.1 General

This category shall contain technical information and instructions for

— handling;

— reception;

— transportation;

— assembly;

— installation;

— initial set-up of the machinery (unless this will be carried out by the dealer).

It should also describe machine disassembly for transport and subsequent reinstallation in another location or different environment.

Information on handling, reception, transportation, assembly, and installation may be either contained in a separate publication or included in the operator's manual. A separate publication is usually appropriate for more complex machines.

4.12.2 Reception

Unpacking instructions should be given and attention drawn to any specific points that need care or special treatment, unless this will be carried out by the dealer. Lifting points, slings, spreaders, etc. should be specified.

4.12.3 Transportation

Instructions for preparing the machinery for transportation, including precautions and information about the tools required, should be included. A list of requirements should be provided and procedures for preparing the product for use after transportation should be given.

4.12.4 Installation

Detailed instructions should be given about the operations necessary to install the machinery and to bring it to full working condition. Where necessary, reference should be made to performance specifications and to acceptance inspection and testing. Externally provided services (such as air, electricity, gas, water, and fuel) should be specified and methods of connection detailed. It is important to emphasize any precautions that must be taken before connecting services.

4.12.5 Initial set-up

Procedures for the initial set-up of the machine should be detailed in full. Any special tools or testing and calibration equipment should be listed.

4.12.6 Environment

The required environment for handling, installation and storage should be stated.

4.12.7 Hazards

It is important that specific notes on hazards and safety precautions should be included where appropriate. If applicable, information on fire prevention and chemical or other contamination should be included.

4.13 Specifications

This category shall include all relevant dimensions and technical data necessary to assist the operator achieve a high standard of operational performance and reliability. Where applicable, the relevant national or International Standards to which the machine or its component parts have been built should be stated.

If two or more machines are linked to form a system in which their functioning is interdependent, the technical specifications of the interface should be provided.

4.14 Dismantling and disposal

This category shall inform the operator of the action to be taken on the completion of the useful life of the machine or its parts, with instructions on dismantling and disposal. It is essential to include warnings of any hazards and safety precautions to be taken during dismantling and disposal.

4.15 Warranty

It is important that manufacturers draw the operator's attention to any actions which may invalidate the warranty.

4.16 Alphabetical index

A document of more than 32 pages should have an alphabetical index. The index should conform to the relevant provisions of ISO 999 and should be placed at the end of the manual.

4.17 Parts list

4.17.1 Where no separate parts list or catalogue exists, a parts list shall be included within the operator's manual. When included, a parts list should contain sufficient information (such as part number and description) for each item so that the correct replacement part can be obtained. Sources of supply should be indicated. Ratings, dimensions, and recognized standards should be quoted for items such as bolts, nuts, seals, and O-rings.

4.17.2 Parts lists should indicate those replacement assemblies, subassemblies, and parts which the operator is expected to identify. Parts lists should be illustrated, where applicable, or refer to suitable illustrations elsewhere, so that each item can be located. If it is impossible or inadvisable to dismantle an assembly or to replace an individual part of an assembly, the constituent parts should not be listed.

5 Presentation of operator's manuals

5.1 General considerations

This clause provides guidance on presentation which is applicable to operator's manuals.

5.1.1 Paper size

A5 format is suitable for most cases, although 1/3 A4 format is adequate for simpler machinery and equipment. A4 format is recommended for complex machines to allow coverage with an acceptable number of pages. A4 format is also suitable for static equipment where there is no storage problem.

NOTES

5 ISO 216111 specifies A4 (297 mm x 210 mm) and A5 (210 mm x 148 mm) paper sizes.

6 Comparable paper sizes conforming to other standards or national customary practices may also be used as alternatives to sizes specified in ISO 216.

5.1.2 Protection

For initial shipment, the manual should be sealed inside a transparent, water- and oil-resistant, plastic envelope.

5.1.3 Front cover

The front cover should be made from a stiff, durable material, and be the same size as the pages of the manual. A cover of greater stiffness than the pages is generally appropriate, although a paper cover of the same stiffness as the pages is acceptable for small manuals.

5.1.4 Rear cover

The rear cover should be of the same material and size as the front cover. If appropriate, there should be a pocket inside for storage of a separate parts list.

5.1.5 Binding

Any type of binding which provides substantial anchorage for the pages, while allowing the text to be accessed without damage, may be used.

5.1.6 Divider leaves

Major subjects or categories of information may be conveniently indicated for rapid reference by divider leaves, which may be ordinary card or printed in colour to attract attention.

5.1.7 Notes

One or two blank pages at the back of the manual for notes on individual conditions are always useful.

5.2 Presentation of the text

5.2.1 General

The manual should be written in a style and language which can be readily understood by the operator. Manuais shall be available in the language of each country where the machine is sold.

Where the manufacturer presents instructions concurrently in more than one language, the number of languages should be restricted to allow easy use of the manual. The number of languages to be presented depends upon the complexity of the machine, i.e. the more complex the machine, the fewer languages should be used.

5.2.2 Author

The author should be generally conversant with agriculture and engineering, but need not be an expert on the machine in question. He or she should have some knowledge of technical writing principles. It is also useful if the author has operated the machine or is otherwise familiar with its operation.

5.2.3 Level of text

When developing the text, it should be assumed that the reader (operator) has only minimal prior knowledge of the machine and its operation.

5.2.4 Style of text

Text should be brief and simple. Related data should be grouped together in a logical order. Sentences should be short and direct. References to time intervals should be specific. Paragraphs should be short and relate to one topic only; accepted standards of grammar and usage should be maintained.

Instructions should be positive and given in the imperative. Extensive use of negative statements is not good practice psychologically; negatives should therefore be used only sparingly. The active voice should be used for descriptive discussion. Figure 10 shows examples of positive instructions.

5.2.5 Checking

The draft should be carefully checked for typographical errors, technical accuracy, and ease of understanding.

5.3 Typographic design

5.3.1 General

Page layout should be designed for easy reading. Line length and type size are interrelated.

5.3.2 Paper

The paper should be good quality white paper that is sufficiently opaque to prevent information printed on one side of the sheet from making information printed on the other side difficult to read.

- Remove the filter body retaining nut.
- Pull off the filter body.
- Remove the element.

Figure 10 — Examples of positive instructions

5.3.3 Colour

Where coloured paper is used, the contrast between the paper and the ink should not be appreciably less than that provided by black ink on white paper. Where coloured inks are used, consideration should be given to the relationship with the colour of the paper, the increased cost, and the effect on methods of reproduction.

5.3.4 Reproduction

Reproduction **copies** should be clean, clear, and durable. Such copies may be produced by lithography, by xerography, by laser printing or by letterpress. Inks should produce a dense, sharp image.

5.3.5 Type size

Ideally, the type size should be such. that the main text will not be less than 10 points.

NOTE 7 For many common founts, 10 point upper case fetters are approximately 2.5 mm to 3 mm in height.

5.3.6 Margins

The margins should be wide enough to allow for binding. Inner margins (left-hand on odd-numbered pages, right-hand on even-numbered pages) should be 10 mm to 15 mm to allow clear readability when the bound manual is open. Outer margins (right-hand on odd-numbered pages, left-hand on even-numbered pages) should be sufficient (6 mm to 10 mm) to ensure that page content. is not cut during the printing and binding process. Top and bottom margins should be equal to the inner margins.

5.3.7 Columns

Text on A5 format paper should usually be presented in a single column. On larger page sizes, two columns may be used, although a single-column format is also acceptable.

5.3.8 Headings

Headings should be used consistently throughout the manual to provide a systematic method of presentation. Headings should be in larger type size than the text and in a bolder type face or an alternative colour. Levels of headings can be differentiated by the use of varying weights or typographical founts, upper case and lower case letters, and by underlining. To avoid confusing the reader, the number of levels should be kept to a minimum; normally three levels are sufficient.

5.4 Text conventions

5.4.1 General

Consistent forms of language, spelling, numbering, symbols, etc. shall be used throughout the manual.

54.2 Terminology

Terminology should be consistent throughout the manual. Names and part numbers shall be used consistently in all technical information. For example, a part termed a “cover“ in one place shall not be termed a “plate” in another place.

Terminology from relevant International Standards (such as ISO 5681[2], ISO 3339-0[3], and ISO 5395[4]) should be used wherever possible. Technical terms that require specialized knowledge should be avoided except where no other terms convey the intended meaning.

If a manual uses an appreciable number of words, phrases, or abbreviations that may be unfamiliar to the reader, a glossary should be provided or reference made to appropriate documents. Alternatively, if only a small number of terms are used, an explanatory note may accompany the first use of each term, either in parentheses (round brackets) or as a footnote.

5.4.3 Glossaries, abbreviations, signs, and symbols

Glossaries, abbreviations, signs and symbols shall conform to relevant International Standards or other generally accepted systems. The system ‘used should be stated. Graphical symbols for operator controls and displays should conform to ISO 3767-1, ISO 3767-2, ISO 3767-3, ISO 3767-4 or ISO 3767-5.

NOTE 8 ISO 7000[5], IEC 417[6], and IEC 617[7] are additional references for graphical symbols that may be applicable to operator’s manuals and related technical publications.

Abbreviations should not be used unless a list of those used, together with their meanings, is included. Abbreviations should terminate in a full stop.

Symbols for units of measurement shall remain the same in both singular and plural forms and shall not be followed by a full stop except at the end of a sentence.

NOTE 9 For units of measurement and symbols, ISO 31-0[8], ISO 31-I [9], ISO 31-2[10], ISO 31-3[11], ISO 31-4[12] and ISO 31-5[13] may be consulted.

5.4.4 Upper case letters

Words set in upper case letters should be used sparingly. It is usually better to use bold lower case letters to emphasize key words or phrases. When referring to controls which have identifying titles on them (for example, STOP control) then upper case letters can be used.

5.4.5 Spelling

Spelling should conform to standard practice for the language in which the manual is published and should be consistent throughout the manual.

5.4.8 Measurements and quantities

All measurements and quantities should be expressed in the International System of Units (SI units) followed, where appropriate, by an equivalent alternative in parentheses.

NOTES

10 ISO 1 000[14] is a useful guide.

11 In countries where non-SI units are customary, the customary units may be given first, followed by the equivalent in SI units, in parentheses.

5.4.7 Numbers

All numbers shall be written in arabic numerals. This includes numbers that form part of a hyphenated adjective: for example, 7-position switch. The only exception is when a sentence starts with a number; in such cases, the sentence should be reordered to move the number from the beginning of the sentence, or, if this proves impossible, the number may be expressed in words.

Numbers consisting of more than four digits (except dates) should be shown in groups of three, counting from the decimal marker to the left: for example, 21 000. This practice will avoid confusion in areas where a comma is used as a decimal marker.

5.4.8 Left-hand and right-hand

Left-hand and right-hand (see also clause 3) should not be abbreviated in the text, except in charts. For static or unusual equipment, these terms should be defined. Clockwise and counter-clockwise require an explanation of the direction of view.

5.5 Illustrations

5.5.1 General

Illustrations with supporting text are, in general, a "user-friendly" way of presenting technical information; good illustrations provide relief in what may be a difficult document for the reader.

When a manual is likely to be translated into a foreign language, it is important that no words appear on the illustrations. Use numbers, letters or symbols on the illustration, with an explanation for each number, letter or symbol used in the text of the manual.

illustrations should be provided with a descriptive caption. Illustrations should be as simple as possible with no superfluous information.

Illustrations should be reviewed in detait for consistency throughout the manual and for agreement with general engineering and technical writing practices.

Where an illustration appears in the text of a manual, it should be referred to as a "figure". Components should be identified in illustrations by numbers or letters, which can then be referred to in the text. Figure 11 shows an example of such references.

5.5.2 Position

Illustrations in the body of the text should be either adjacent, or as close as possible, to the related text. If repeated reference to a diagram is made from different parts of the text, consideration should be given to the use of a fold-out diagram. Where possible, illustrations should be presented in portrait format for easy reading. If, because of its size, an illustration is presented in landscape format, then the top of the illustration should be on the left side of the page.

5.5.3 Use of colour

Colour should be used only if it is necessary to clarify complicated diagrams. Techniques such as shading, cross-hatching, and screening should be used in preference to colour. If colour is used, primary colours are preferable. If black-and-white illustrations in a manual appear in coloured form elsewhere (for example, in coloured wall charts or transparencies) the manual should make use of distinctive shading patterns to delineate the different colours consistently.

Remove the split pin (B in figure I-4) from the slotted nut (C in figure 1-4) and withdraw the pin.

Figure 11 — Example of text references to components in an illustration

5.5.4 Limitations of colour

The following points should be taken into account when the possiblity of using colour is considered:

— colour blindness;

— microfilming;

— photocopying;

— possible confusion of colours when seen in poor or coloured light;

— cost and difficulties of reproduction.

These considerations apply particularly to safety notices.

5.5.5 Clarity

Simple line illustrations or good quality photographs provide the best clarity of reproduction. Shading should be used only if it contributes to the information given in the drawing; decorative shading should be avoided.

5.5.6 Scale

If an indication of scale is required, it should be given in a form which is independent of the reproduced size of the drawing. It is sometimes possible to indicate scale by including in the illustration a ruled measure or some object of known size.

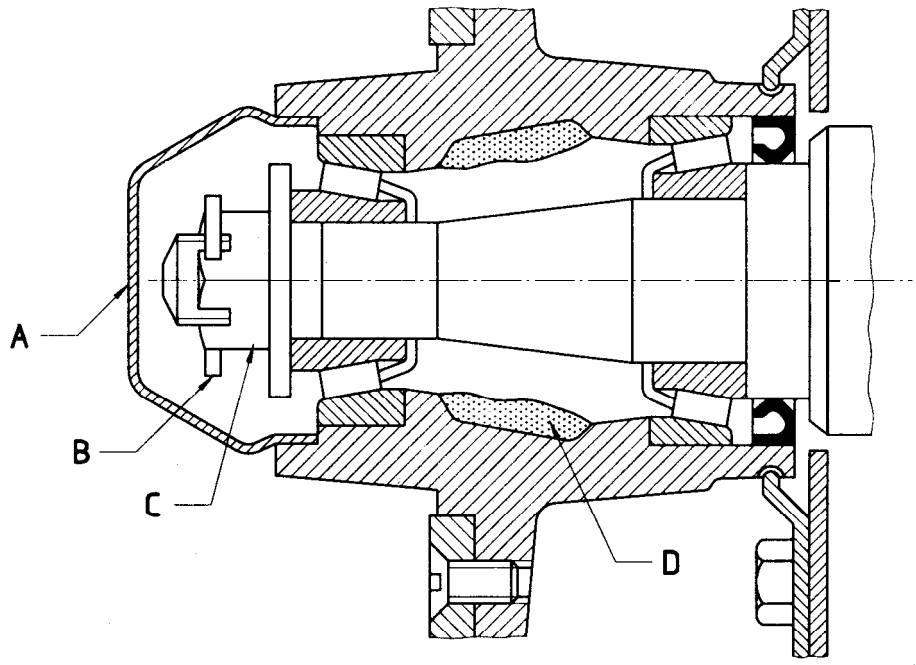
5.5.7 Balance between text and illustrations

Illustrations and text should complement each other and should be prepared together to shorten and simplify the subject matter. Illustrations should always appear adjacent to the related text.

A modular approach may be used which links text and illustrations closely together in logical blocks, groups, or modules, each covering one topic. Figure 12 shows an example of the modular integration of text and illustrations.

\djustment of wheel bearings

:heck the front wheels periodically for bearing end play by raising the front wheels off the ground. If end play is evident, the bearings have to be adjusted.



A Hubcap B Split pin C Slotted nut D Grease

Figure 1-4 — Front of wheel bearings

Remove hub cap (A).

Pull split pin (B) from slotted nut (C).

Tighten slotted nut (C) to 48 N·m torque. Then untighten nut to nearest slot that matches pin hole and insert split pin (B). If slot ust matches hole after tightening, untighten to one full slot.

f slotted nut (C) has to be tightened more than three slots to remove bearing end play, remove wheel. Clean bearing and pack vith fresh grease (D).

Figure 12 — Example of the modular integration of text and illustrations

55.8 Charts

Information which is required frequently, or which is easier to explain in flow form should be included as charts. These should be accompanied by a glossary of abbreviations, symbols, and any unfamiliar terms.

5.5.9 Tables

Tables should be presented with the minimum number of lines required for clarity. Tables should preferably appear at the appropriate point in the body of the text. Alternatively, tables may be collected together at the end of the relevant text or form a separate supplementary document. A title and number shall be provided for each table. Figure 13 shows an example of the use of charts and tables.

5.6 Instructions (WARNING, CAUTION, IMPORTANT, and NOTE)

5.8.1 General

Instructions identified as WARNING, CAUTION, and IMPORTANT should be used to emphasize important points in the manual. WARNING and CAUTION are used for safety-related information where personal injury may be involved. IMPORTANT is used for instructions when machine damage is involved. "NOTE" is used for supplementary information.

Table 1 — Maintenance chart

Do jobs below[1]		Every			
		100 h	250 h	500 h	1 000 h
Grease points	Grease four-wheel drive universal joints and couplers				●
	Grease all other grease-nipples	●			
Engine	Check the engine oil level and top up as needed[2]	Flexible			
	Change the engine oil and filter		●		
	Check the tappets[3]				●
Fuel system	Check the fuel filter bowls*)	Flexible			
	Change the fuel filter elements			●	
	Service the injectors[3]				●
Air cleaner	Check the dry air cleaner	●			
	Clean the dry air cleaner element				●
	Check the oil bath air cleaner oil level[2]	Flexible			
	Service the oil bath air cleaner		●		
Cooling system	Check the radiator coolant and top up as needed[2]	Flexible			
	Clean the radiator and oil cooler fins[2]	Flexible			
	Drain, flush and refill the cooling system				●

1) Black bullets in the columns indicate the frequency at which the tasks are to be carried out.

2) Flexible maintenance times vary according to individual conditions of operation. Establish your own times for servicing flexible items. An average interval time for checking these items is at every fuel fill-up.

3) This job should be done by your local dealer.

Figure 13 — Example of the use of charts and tables

5.6.2 WARNING **and CAUTION**

Instructions identified as WARNING or CAUTION emphasize important safety points where personal injury may be involved. These instructions call attention to instructions which need to be followed precisely to avoid a hazardous situation.

WARNING or CAUTION instructions should be placed immediately before the text to which they apply and should be signalled in the left-hand margin by the safety alert symbol. These instructions should be placed in prominent positions that relate directly to any illustrations to which they apply. The appropriate heading should always be included and set in bold upper case type. Figure 14 shows an example.

5.6.3 **Important**

Instructions identified as IMPORTANT call attention to instructions which must be followed precisely to avoid damaging the product, process, or its surroundings.

These instructions should be worded or located to indicate their point of application and be set to the same measure (column or page width) as the related text. The heading should always be included and set in bold type. Figure 15 shows an example.

5.6.4 **Notes**

Instructions identified as NOTE present supplementary information. These instructions should be worded or located to indicate their point of application and be set to the same measure (column or page width) as the related text. The heading should always be included and set in bold type. Figure 16 shows an example.

5.7 Numbering of pages, figures and tables

5.7.1 General

Arabic numerals should normally be used for all numbering of pages, figures, and tables within the manual. Blocks of text (such as clauses and subclauses, divisions and subdivisions, or paragraphs and subparagraphs) may also be numbered.

5.7.2 **Page numbering**

Page numbers should be visually separate from the text. The numbering system should be designed to make selection of the correct page as simple as possible. In short manuals, pages should be numbered consecutively throughout the manual. In long manuals, pages should be numbered consecutively throughout the manual. In long manuals, pages should be numbered consecutively within each main division. It may be helpful to identify pages by the number of the main division followed by a hyphen and then the page number: for example, “Page 7-I 2” is the twelfth page of section 7.

5.7.3 **Numbering of figures and tables**

Figures, tables, and other non-textual material should be cross-referenced to the corresponding text to

A CAUTION — Full power steering is not immediately available when the tractor is started in cold conditions (below 0 °C). In these conditions, allow the engine to run for a minimum of 3 min before driving the tractor.

Figure 14 — Example of a “WARNING” or “CAUTION” instruction

IMPORTANT — When operating by foot throttle only, the hand throttle shall be fully closed.

Figure 15 — Example of an “IMPORTANT” instruction

NOTE — Operating the tractor in 4-wheel drive while on the road will lead to
- Premature front tyre wear
- Excessive fuel consumption

Figure 16 — Example of a “NOTE” instruction

eliminate confusion. If such cross-referencing cannot be achieved, figures and tables should be numbered consecutively in the same manner as pages. In other words, if each section is page-numbered separately, the first figure in section 1 should be "Figure l-l ", the third figure in section 2 should be "Figure 2–3", and so on. Figure and table numbers should have a prefix ("Figure" or "Table") to distinguish them from page numbers.

5.8 References and index

5.8.1 References

Different sequences of numbering should be used for footnotes and for references cited in the text: for example, letters or symbols for one and numerals for the other. Reference numbers, letters, and symbols should be printed as superscripts or, if on the line, in parentheses or square brackets immediately following the relevant word or phrase in the text.

5.8.2 Index

The index should include all major topics covered by the manual and indicate the page number where the indexed information is located.

Annex A
(informative)

Bibliography

[1] ISO 216:1975, **Writing paper** *and certain classes of printed* **matter** — *Trimmed sizes -- A* **and** *B* **series**

[2] ISO 5681:1992, **Equipment** *for crop protection — Vocabulary.*

[3] ISO 3339-0:1986, *Tractors and machinery for agriculture and forestry — Classification and terminology — Part 0: Classification system and classification.*

[4] ISO **53951990,** *Power lawn-mowers, lawn tractors, lawn and garden tractors, professional mowers, and lawn and garden tractors with mowing attachments — Definitions, safety requirements, and test procedures.*

[5] ISO 7000:1989, *Graphical symbols for use on equipment — Index and synopsis.*

[6] **IEC** 417:1973, *Graphical symbols for use on equipment. Index, survey a compilation of the single sheets,* **and its** supplements (IEC 417A:1974, **IEC** 417B:1975, **IEC** 417C:1977 IEC 41 **iD.1978, IEC** 417E:1980, **IEC** 417F:1982, IEC 417G:1985, **IEC** 417H:1987, **IEC** 417J:1990, IEC 417K:1991, **IEC** 417L:1993, **IEC** 417M:1994).

171 **IEC** 617:1983, *Graphical symbols for diagrams* (published **in 13 parts)**

[8] ISO 31-0:1992, *Quantities and units — Parr 0: Genera/ principles*

[9] ISO 31-1:1992, *Quantities and units — Part 1: Space and time.*

[IO] ISO **31-2:** *1992, Quantifies and units — Part 2: Periodic and related phenomena.*

[11] ISO 31-3:1992, **Quantities and units — Part 3:** *Mechanics.*

[12] ISO **31-4: 1992,** *Quantities and units — Part* **4:** *Heat.*

I131 ISO 31-5:1992, *Quantities and units — Part 5: Electricity and* **magnetism.**

[14] ISO 1000:1992, *SI units and recommendations for the use of their mu/tip/es and of certain other units*

(Continued *from second cover*)

International Standard	*Indian Standard*	*Degree of Correspondence*
ISO *3767-l* : 1991 Tractors and machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 1 : Common symbols	IS 6283 (Part 1) : 1997 Tractors and machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays : Part 1 Common symbols *(first revision)*	Identical
ISO 3767-2 : 1991 Tractors and 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	IS 6283 (Part 2) : 1991 Tractors and 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	do
ISO 5681 : 1992 Equipment for crop protection -Vocabulary	IS 8480 : 1997 Glossary of terms relating to crop protection equipment	Related

The technical committee responsible for the preparation cf this standard reviewed the provisions of the following ISO/IEC standards and decided that these would be acceptable for use in conjunction with this standard:

ISO 216: 1975	Writing paper and certain classes of printed matter — Trimmed sizes — A and B series
ISO 999 : 1975	Documentation — Index of a publication
ISO 3767-3 : 1995	Tractors, machinery for agriculture and forestory, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 3 : Symbols for lawn and garden equipment
ISO 3767-4 : 1993	Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 4 : Symbols for forestry machinery
ISO 3767-5 : 1992	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 5395 : 1990	Power lawn-mowers, lawn tractors, lawn and garden tractors, professional mowers, and lawn and garden tractors with mowing attachments — Definitions, safety requirements and test procedures
ISO 7000 : 1989	Graphical symbols for use on equipment — Index and synopsis
ISO 11684 : 1995	Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles
IEC 417 : 1973	Graphical symbols for use on equipment — Index, survey and compilation of the single sheets and its supplements (IEC 417A : 1974, IEC 417B : 1975, IEC 417C : 1977, IEC 417D : 1978, IEC 417E : 1980, IEC 417F : 1982, IEC 417G : 1985, IEC 417H : 1987, IEC 417J : 1990, IEC 417K, 1991, IEC 417L : 1993, IEC 417M: 1994)

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This Indian Standard has been developed from Doc: ***No.*** FAD 32 (901).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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