LaTeX for ISO standards

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

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.

Annexes A and B are an integral part of this document. Annexes C, D, E, and F are for information only.

Introduction

This document describes the use of the isov2 LaTeX class file and some package files in preparing ISO standard documents.

Overview

This document describes a LaTeX class file, called isov2, for typesetting ISO standards. It also provides descriptions of some particular package files (e.g., isorot) that have been developed to support the writing of ISO standards. The electronic source of this document also provides an example of the use of these files.

The current set of files [2] have been developed by Peter Wilson (RPI, CUA and NIST, Boeing) from files written by Kent Reed (NIST). In turn, these were revisions of files originally created by Phil Spiby (CADDETC, UK), based on early work by Phil Kennicott (GE).1)

Documents produced with the LaTeX files have been reviewed by the ISO Editorial Board in Geneva for conformance to their typographical requirements. The first review was of a series of Draft International Standard documents. This review resulted in some changes to the style files. The second review was of a series of twelve International Standard documents (ISO 10303:1994). Likewise, this review led to changes in the style files to bring the documents into compliance.

With the publication of the ISO 10303:1994 standard, the opportunity was taken to provide a new baseline release of the package files. The new baseline release was also designed to address the fact that a major update of LaTeX to LaTeX2e took place during 1994. LaTeX2e is now the officially supported version. However, some users needed time to convert to using LaTeX2e. Consequently, although the facilities described in the original version of this document were common for both LaTeX v2.09 and LaTeX2e users, there were two different implementations.

Because ISO standard documents have a very structured layout, the class and package files have been designed to reflect the logical document structure to a much greater extent than the 'standard' LaTeX files. Further, ISO documents are published in more than one language. The files described here are written for the English language, but the language-specific elements have been parameterized for easy modification for publication in other official ISO languages, such as French.

In 1997 ISO produced a new version of their Directives on the requirements for the layout of ISO documents. These were not completely unambiguous as to their intent; the current version was released in 2001. Members of ISO TC184/SC4 have worked with the ISO Editorial Board and have reached an agreement that more precisely identifies the requirements. The current version of the LaTeX files implements that agreement.

NOTE 1 The original of this manual has been typeset using the `draft` option in order to display its effect of placing a black box at the end of each line that is longer than the normal width of the text.

NOTE 2 The author of this document may be contacted at `peter.r.wilson@boeing.com`.

1)In mid 1994 LaTeX was upgraded from version 2.09 to what is called LaTeX2e. The files described in earlier versions this document were compatible with both versions of LaTeX. Starting with the October 1997 release, support was withdrawn from any LaTeX v2.09 file versions.

LaTeX for ISO standards: User manual — Peter Wilson — August 2002

1 Scope

This manual describes a set of LaTeX files for typesetting documents according to the ISO Directives Part 3 (third edition, 1997), together with some elements from the ISO 10303 Supplementary Directives.

The following are within the scope of this manual:

— use of LaTeX for preparing ISO standard documents.

The following are outside the scope of this manual:

— use of LaTeX in general;

— use of other document preparation systems.

IMPORTANT: No matter whether or not there are copyright attributions to ISO, this document is *not* copyrighted by ISO. Any copyright markings are for illustrative purposes only. This document is released under the LaTeX Project Public Licence.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this manual. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this manual are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC Directives, Part 2, *Rules for the structure and drafting of International Standards. (Fourth edition, 2001)*

ISO TC 184/SC4 N1217:2001(E), *SC4 Supplementary directives — Rules for the structure and drafting of SC4 standards for industrial data. (2001–11–01).*

ISO/IEC 8824-1:1998, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation.*

ISO[2)], *Camera-ready copy (CRC) — Submission requirements and ISO type specification. (Version 1.0, 1996-04-26)*

3 Terms, definitions, and abbreviations

3.1 Terms and definitions

For the purposes of this manual, the following definitions apply.

3.1.1
boilerplate
text whose wording is fixed and has been agreed to be present in a specific type of document

3.1.2
style file
a set of LaTeX macros assembled into a single file with an extension .sty

3.1.3
package file
a style file for use with LaTeX2e

3.2 Abbreviations

For the purposes of this manual, the following abbreviations apply.

CD	Committee Draft
DIS	Draft International Standard
FDIS	Final Draft International Standard
IS	International Standard
IS-REVIEW	The documentation style accepted by the ISO Editorial Board review (September 1994) of twelve IS documents (the initial release of ISO 10303) for compliance with ISO typographical and layout requirements.
ISOD	ISO/IEC Directives, Part 2
PAS	Publicly Available Specification
SD	SC4 Supplementary directives
TR	Technical Report
TS	Technical Specification
WD	Working Draft
CRC	The ISO *Camera-ready copy (CRC)* document

[2)]To be published.

ToC table of contents

4 Conformance requirements

The LaTeX macro source files shall not be modified.

If there is a need to modify the macro definitions then the modifications shall be defined in a separate .sty file (or files), using the LaTeX `\renewcommand` and/or the `\renewenvironment` commands as appropriate. The resulting .sty file(s) shall then be called in within the preamble portion of the document to be typeset.

Author specified `\label{...}` commands shall not start with the characters `;i` (semicolon and 'i'); definition of labels starting with these characters is reserved for the maintainer of the facility files.

5 Fundamental concepts and assumptions

It is assumed that the reader of this document is familiar with the LaTeX document preparation system.

NOTE 1 Reference [1] in the bibliography describes the LaTeX system.

The reader is also assumed to be familiar with the ISO/IEC Directives Part 2 (ISOD). Agreements reached between the ISO Editorial Board and ISO TC184/SC4 are documented in the SC4 Supplementary Directives (SD).

If there are any discrepancies between the layout and wording of this document and the requirements of the ISO/IEC Directives Part 2, then the requirements in that document shall be followed for any ISO standard document.

The isov2 class requires the url package.

NOTE 2 Additional LaTeX facilities specifically designed for ISO 10303 are defined and described elsewhere [3].

Because of many revisions over the years to the files described herein, a naming convention has been adopted for them. The primary name of the file is suffixed by v# or #, where # is the version number of the file in question. All file primary names have been limited to a maximum of eight characters.

NOTE 3 Table 1 shows the versions of the files that were current at the time of publication.

NOTE 4 Starting with the October 1997 release, files that were specific to LaTeX v2.09 are no longer either supported or supplied.

NOTE 5 As of 1999, the uschyp package is no longer supported. It has been replaced by the hyphenat package.

EXAMPLE At the time of publication of this document, any references to iso.cls should be read as actually referring to isov2.cls, and similarly for references to other files.

Table 1 – Current file versions

Facility	File
iso	isov2.cls
9pt option	iso9.clo
10pt option	iso10.clo
11pt option	iso11.clo
isorot	isorot.sty
askinc	askincv1.sty
xtab	xtab.sty
hyphenat	hyphenat.sty

NOTE 6 This document is not intended for publication as a standard, although it has been laid out in a similar, but not necessarily identical, manner.

6 The iso class facility

The LaTeX isov2 class file is a general file for use in preparing ISO standard documents using the LaTeX document preparation system.

As usual, any LaTeX document has the following structure:

```
\documentclass[<list of options>]{isov2}
% preamble goes here
\begin{document}
% document body goes here
\end{document}
```

6.1 Options

The isov2 class file supports the following options:

— `draft` for a draft document where overfull horizontal boxes are marked, marginal notes are allowed, and ISO copyright text is not placed in the document;

— `final` the opposite of `draft` (this is the default);

— `letterpaper` for printing on US letter size paper;

— `a4paper` for printing on A4 size paper (this is the default);

— `twocolumn` for two column formatting;

— `onecolumn` for single column printing (this is the default);

— One of `11pt`, `10pt`, `9pt` for 11pt, 10pt or 9pt printing respectively (the default is `11pt`);

— `notcopyright` for disabling the printing of copyright notices (this is the default);

— `copyright` enables printing of copyright notices;

Table 2 – Sectioning commands.

Level	Command
1	\clause, \normannex, \infannex, \repannex
2	\sclause
3	\ssclause
4	\sssclause
5	\ssssclause
6	\sssssclause

— is for International Standard documents;

— fdis for Final Draft International Standard documents;

— dis for Draft International Standard documents;

— cd for Committee Draft standard documents;

— wd for Working Draft standard documents;

— pas for Publicly Available Specification standard documents;

— techrep for Technical Report standard documents;

— techspec for Technical Spefication standard documents;

— otherdoc for documents that are not intended to become a standard (this is the default);

— Any other facilities that are available via packages.

When no options are specified, then the result is 11pt, single column printing on A4 size paper, without copyright notice and a running header. That is, by default, the options set are: final; a4paper; onecolumn; 11pt; notcopyright; and otherdoc.

NOTE 1 The user of the isov2 class is encouraged to process this document using different combinations of the options to gain experience with their effects. This printing of the document is typeset using the draft option.

NOTE 2 The otherdoc option was chosen as the default so that the current stage of ISO standardardization has to be explicitly declared as an option, and is therefore available to any software package that might process the document source (e.g., a LaTeX to SGML translator).

6.2 Sectioning commands

Table 2 gives the sectioning commands defined for isov2 class documents.

The \clause commands are similar to the normal LaTeX \sectioning commands. There are also starred versions of these commands (e.g., \clause*).

Three varieties of annex commands are available:

— \normannex{<*title*>} for a normative annex;

— `\infannex{<`*title*`>}` for an informative annex;

— `\repannex{<`*title*`>}` for an annex that is neither normative or informative (e.g. an annex in a technical report).

Only `\sclause` and lower level sectioning commands can be used after an annex command.

EXAMPLE 1 The command `\infannex{Technical discussion}`, assuming that this is the first annex in the document, produces:

Annex A
(informative)

Technical discussion

EXAMPLE 2 The command `\repannex{Title of annex}`, assuming that this is the second annex in the document, produces:

Annex B

Title of annex

6.2.1 The use of `tocdepth` and `secnumdepth`

In the standard LaTeX classes the `tocdepth` and `secnumdepth` counters are set in the preamble to respectively control the level at which clause titles are inserted into a table of contents (ToC) and at which clause numbering ceases.

In the isov2 class, the values of these can be changed at any point in the document. The change lasts until another change is made to the value.

EXAMPLE 1 Assume that in the preamble we have

```
\setcounter{secnumdepth}{3}  % number ssclauses and above
\setcounter{tocdepth}{3}     % ToC includes ssclauses and above
```

and that a certain subclause has subsubclauses that should be numbered but not put into the table of contents, then we could do:

```
...
\sclause{The certain subclause}
\setcounter{tocdepth}{2}
...
\ssclause{Numbered but not in ToC}
...
...
\setcounter{tocdepth}{3}
\sclause{Following subclause}
```

It can sometimes be difficult to remember which level number corresponds to which kind of clause. Accordingly, a set of commands are provided to ease this task. These commands can only be used after the preamble.

— `\maxsecnumdepth{<`*sec*`>}` sets the level at which clauses will be numbered. This command should be used before the first sectioning command.

— \maxtocdepth{<*sec*>} sets the level at which clauses will be put into the ToC. This command should be used before the \tableofcontents command.

— \setsecnumdepth{<*sec*>} sets the current level at which clauses will be numbered. This command can be used anywhere after the preamble.

— \settocdepth{<*sec*>} sets the current level at which clauses will put into the ToC. This command can be used anywhere after the preamble.

The value of the argument <*sec*> can be any of the following: clause, sclause, . . . , ssssclause.

EXAMPLE 2 Using these commands, the previous example can also be coded as:

```
...
\begin{document}
\maxsecnumdepth{ssclause}
\maxtocdepth{ssclause}
...
\sclause{The certain subclause}
\settocdepth{sclause}
...
\ssclause{Numbered but not in ToC}
...
...
\settocdepth{ssclause}
\sclause{Following subclause}
```

6.3 LaTeX environments and commands

Many of the standard LaTeX environments and commands are available. In particular, all the normal mathematical typesetting capabilities are present. However, there are some additional environments and commands defined.

6.3.1 Lists

The standard LaTeX itemize, enumerate and description environments are provided. The labels in these lists, though, differ from those normally provided by LaTeX.

NOTE 1 The ISOD describes only a single level for an itemized list, being marked with either an em-dash or a bullet. The SD deprecates the bullet but provides four levels, each being marked with an em-dash. These are provided in the isov2 class.

NOTE 2 The ISOD allows for two levels of enumerated lists. The SD extends this to four levels, and these are provided in the isov2 class.

EXAMPLE 1 The list environments provided are shown below as:

```
\begin{itemize}
\item First level itemized element;
  \begin{itemize}
  \item Second level itemized element;
    \begin{itemize}
    \item Third level itemized element;
      \begin{itemize}
      \item Fourth level itemized element.
      \end{itemize}
```

```
    \end{itemize}
  \end{itemize}
\end{itemize}

\begin{enumerate}
\item First level enumerated element;
  \begin{enumerate}
  \item Second level enumerated element;
    \begin{enumerate}
    \item Third level enumerated element;
      \begin{enumerate}
      \item Fourth level enumerated element.
      \end{enumerate}
    \end{enumerate}
  \end{enumerate}
\end{enumerate}

\begin{description}
\item[Description] a description element. Note that a colon is
                   automatically added to the item label.
\end{description}
```

and they produce

— First level itemized element;

    — Second level itemized element;

        — Third level itemized element;

            — Fourth level itemized element.

a) First level enumerated element;

    1) Second level enumerated element;

        i) Third level enumerated element;

            I) Fourth level enumerated element.

Description: a description element. Note that a colon is automatically added to the item label.

EXAMPLE 2 Here is a more complex set of lists:

— First level itemization

    a) First level enumeration

        — Second level itemization

            1) Second level enumeration

                — Third level itemization

                — 3rd level itemization

            2) 2nd level enumeration

        — 2nd level itemization

b) 1st level enumeration

— 1st level itemization

NOTE 3 On occasion, LaTeX objects to a well formed list. Typically, this happens when a list has only one entry. The LaTeX error message is of the form:

```
! Something's wrong--perhaps a missing \item.
```

Hitting the `<return>` key usually gets LaTeX to run on happily.

NOTE 4 Similarly, you may get the message

```
! Too deeply nested
```

Again, hit `<return>` and processing should continue. However, the indentation of later lists may not be correct.

6.3.2 Notes

Two different kinds of environments are provided for typesetting notes.

6.3.2.1 Numbered notes

The environment `\begin{note}` <*text*> `\end{note}` produces a numbered note whose body consists of <*text*>.

EXAMPLE The commands

```
\begin{note}Numbered note.\end{note}
```

produce

NOTE 1 Numbered note.

6.3.2.2 Isolated notes

The environment `\begin{anote}` <*text*> `\end{anote}` produces an un-numbered note whose body consists of <*text*>.

EXAMPLE The commands

```
\begin{anote}Plain note.\end{anote}
```

produce

NOTE Plain note.

6.3.3 Examples

Two different kinds of environments are provided for typesetting examples.

6.3.3.1 Numbered examples

The environment `\begin{example}` <*text*> `\end{example}` produces a numbered example whose body consists of <*text*>.

EXAMPLE The commands

```
\begin{example}Numbered example. \label{ex:exref} \end{example}
```

produce

EXAMPLE 1 Numbered example.

NOTE Numbered examples (and numbered notes) may be identified using the `\label{...}` command, as exhibited in example 1 in 6.3.3.1, and then referred to by the `\ref{...}` command.

6.3.3.2 Isolated examples

The environment `\begin{anexample}` <*text*> `\end{anexample}` produces an un-numbered example whose body consists of <*text*>.

EXAMPLE The commands

```
\begin{anexample}Isolated example.\end{anexample}
```

produce

EXAMPLE Isolated example.

6.3.4 Bibliographic references

Two different kinds of environments are provided for bibliographic references. It should be noted that neither of these has anything to do with BibTeX.

6.3.4.1 Normative references

Normative references are listed in the `nreferences` environment.

In this environment, bibliographic entries are denoted by either `\isref{`<*ref*>`}{`<*title*>`}` or by `\disref{`<*ref*>`}{`<*title*>`}`. The <*ref*> parameter is the number of the standard document and the <*title*> parameter is the title of the standard.

Use the `\isref` command for published standards and the `\disref` command for documents that have not yet been finally approved as a standard. This latter command automatically adds a footnote to the effect that the document is to be published.

EXAMPLE 1 The LaTeX source for the references in clause 2 of this document is:

```
\begin{nreferences}
\isref{ISO/IEC Directives, Part 2}{Rules for the structure and drafting of
       International Standards. (Fourth edition, 2001)}
...
...
\disref{ISO}{Camera-ready copy (CRC) ---
       Submission requirements and ISO type specification.
```



```
        (Version 1.0, 1996-04-26)}
\end{nreferences}
```

6.3.4.2 Informative references

Informative bibliography elements are listed in the `references` environment. Each element in the list is specified as `\reference{<`*author*`>}{<`*title*`>}{<`*publisher*`>}`.

EXAMPLE 1 The LaTeX source for the bibliography in one version of this document was:

```
\infannex{Bibliography}
\begin{references}
\reference{LAMPORT, L.,}{\latex\/ A Document Preparation System,}%
           {Addison-Wesley Publishing Co., 1986} \label{lamport}
\reference{GOOSSENS, M., MITTELBACH, F. and SAMARIN, A.,}{%
           The \latex\/ Companion,}
           Addison-Wesley Publishing Co., 1994} \label{goosens}
\reference{CHEN, P. and HARRISON, M.A.,}{Index preparation and
           processing,}{Software--Practice and Experience, 19(9):897--915,
           September 1988.} \label{chen}
....
\end{references}
```

Informative references may be cited in the text via the LaTeX `\label` and `\ref` mechanism. Note that `\cite` is not available for references to bibliographic items. For the purposes of ISO documents, the command `\bref{<`*ref*`>}` is supplied which properly formats a bibliographic reference.

6.3.5 Listing of scope items

The `inscope` and `outofscope` environments are provided for itemized listing of elements that are within and outside the scope of the standard. Each list element is introduced via the `\item` command. Some boilerplate text is also printed that introduces the scope list.

The environments take one parameter, `<`*text*`>`, that must read naturally in a sentence of the form: 'The following are within/outside the scope of this `<`*text*`>`:'. The non-parameterized part of this sentence is specified by the commands —`\inscopename` and `\outofscopename` respectively for 'within' and 'outside'.

EXAMPLE 1 The following text was printed by the commands shown at the end of the example.

The following are within the scope of this part of ISO 10303:

— use of LaTeX for preparing ISO standard documents;

— use of LaTeX for preparing ISO 10303 documents.

The following are outside the scope of this part of ISO 10303:

— use of LaTeX in general;

— use of other document preparation systems.

```
\begin{inscope}{part of ISO~10303}
\item use of \latex{} for preparing ISO standard documents;
```



```
\item use of \latex{} for preparing ISO~10303 documents.
\end{inscope}

\begin{outofscope}{part of ISO~10303}
\item use of \latex{} in general;
\item use of other document preparation systems.
\end{outofscope}
```

6.3.6 Listing of definitions

The `\begin{olddefinitions}` ... `\end{olddefinitions}` environment is provided for listing terms that have been defined within the normatively referenced documents. Each term in the list is specified as:
`\olddefinition{<`*phrase*`>}{<`*supplement*`>}`.

The `\begin{definitions}` ... `\end{definitions}` environment is provided for listing the definitions of terms specific to the document being written. Each term in the list is specified as:
`\definition{<`*phrase*`>}{<`*definition text*`>}`.

EXAMPLE 1 A listing of terms defined elsewhere could be specified as:

```
\begin{olddefinitions}
\olddefinition{application protocol (AP)}{}
\olddefinition{integrated resource}{}
\end{olddefinitions}
```

EXAMPLE 2 The definition listing earlier in this document was produced by:

```
\begin{definitions}
\definition{boilerplate}{text whose wording is fixed ...}
\definition{style file}{a set of \latex{} macros assembled
                        into a single file}
...
\end{definitions}
```

6.3.7 Listing of abbreviations

The `\begin{symbols}` ... `\end{symbols}` environment is provided for listing symbols and abbreviations. Each term (either symbol or abbreviation) in the list is specified as:
`\symboldef{<`*symbol*`>}{<`*definition text*`>}`.

EXAMPLE 1 The list of abbreviations earlier in this document was specified as:

```
\begin{symbols}
\symboldef{DIS}{Draft International Standard}
\symboldef{IS}{International Standard}
...
\end{symbols}
```

6.4 Floating bodies

LaTeX provides the `figure` and `table` environments. Captions (produced by the `\caption` command) increment the figure or table number and add the caption to the relevant contents listing file.

Table 3 – Example table in three parts

Col 1	**Col 2**
A	1
B	2

Table 3 – (continued)

Col 1	**Col 2**
C	3
D	4

The command `\contcaption{<`*text*`>}` may be used instead. This command neither increments the number nor adds anything to the listing files.

EXAMPLE 1 The following code:

```
\begin{table}[tbp]
\centering
\caption{Example table in three parts} \label{tab:cont}
\begin{tabular}{|c|c|} \hline
\textbf{Col 1} & \textbf{Col 2} \\ \hline\hline
A & 1 \\
B & 2 \\ \hline
\end{tabular}
\end{table}

\begin{table}[tbp]
\centering
\contcaption{(continued)}
\begin{tabular}{|c|c|} \hline
\textbf{Col 1} & \textbf{Col 2} \\ \hline\hline
C & 3 \\
D & 4 \\ \hline
\end{tabular}
\end{table}

\begin{table}[tbp]
\centering
\contcaption{(concluded)}
\begin{tabular}{|c|c|} \hline
\textbf{Col 1} & \textbf{Col 2} \\ \hline\hline
E & 5 \\
F & 6 \\ \hline
\end{tabular}
\end{table}
```

produces the three-part Table 3.

6.5 Title command

The command to produce the title of the standard is `\title{<`*intro*`>}{<`*main*`>}{<`*compl*`>}`. The command takes three parameters according to the three elements of the title as specified in the ISO directives.

Table 3 – (concluded)

Col 1	Col 2
E	5
F	6

a) <*intro*> The introductory element of the title. This may be empty.

b) <*main*> The main element of the title.

c) <*compl*> The complementary element of the title. This may be empty.

EXAMPLE 1 If this were actually meant to be an ISO standard, then the LaTeX source for the title of this document might be:

```
\title{Industrial automation systems and integration}%
{Product data representation and exchange}%
{Part 3456 : Documentation methods: The LaTeX style
file reference manual}
```

NOTE There must be a space on either side of the colon separating the part number and the final part of the title.

Three other commands are used for setting the running header throughout the document. These shall be placed in the preamble.

The command `\standard{<number of standard>}` is used to identify the standard.

The command `\yearofedition{<year>}` is used to identify the year of the edition.

The command `\languageofedition{<code>}` is used to identify the language of the edition.

EXAMPLE 2 This document is identified by:

```
\standard{LaTeX for standards}
\yearofedition{1997}
\languageofedition{(E)}
```

As a convenience the vacuous command `\extrahead` is supplied which will add it's contents, if any, to the header. It may be used, for example, to add a document number to the header by `\renewcommand{\extrahead}{Doc number}`. If `\extrahead` is modified it must be done in the preamble.

The `\title` command sets the page numbering style to be arabic, starts a new page, numbered 1, and puts the title at the start of the page. It also puts the appropriate header at the top of the page, dependending on the particular combination of selected options.

NOTE Remember that you have to use the `copyright` option to enable printing of copyright symbols and notices.

6.5.1 The cover

For publication, ISO want to be supplied with a document starting on page iii with the ToC. They supply the cover (page i) and page ii.

It can often be useful to have a cover page for documents while they are in the process of being prepared for submittal to ISO. The `cover` environment is provided for that purpose. The contents of the environment must not exceed one page and the contents must have a `\clearpage` immediately before the end. The `cover` environment also prints page ii, which has a copyright notice on it if the document is copyrighted.

For example, this document starts with:

```
\begin{cover}
\vspace*{4in}
\begin{center}
\Huge\bfseries LaTeX for standards
\end{center}
\begin{center}
\bfseries 2001/07/06
\end{center}
\begin{center}
Peter Wilson \\
\texttt{peter.r.wilson@boeing.com}
\end{center}
\clearpage
\end{cover}
```

6.6 Cross referencing commands

The usual LaTeX `\label` and `\ref` commands are supported. The class also provides some formatted referencing commands in addition to `\ref`.

The following commands are useful for referring to figures, clauses etc. Each takes a parameter that is the parameter of a LaTeX `\label{}` command.

— The command '`\aref{anx:lord}`' prints 'annex B' while '`\ref{anx:lord}`' prints 'B'

— The command '`\bref{lamport}`' prints '[1]' while '`\ref{lamport}`' prints '1'

— The command '`\cref{sec:nrefs}`' prints 'clause 2' while '`\ref{sec:nrefs}`' prints '2'

— The command '`\eref{sec:nrefs}`' prints 'example 2' while '`\ref{sec:nrefs}`' prints '2'

— The command '`\fref{sec:nrefs}`' prints 'Figure 2' while '`\ref{sec:nrefs}`' prints '2'

— The command '`\nref{sec:nrefs}`' prints 'note 2' while '`\ref{sec:nrefs}`' prints '2'

— The command '`\tref{sec:nrefs}`' prints 'Table 2' while '`\ref{sec:nrefs}`' prints '2'

— The command '`\pref{sec:nrefs}`' prints 'page 1'.

6.7 Heading commands

6.7.1 Foreword

The `foreword` environment specifies that a table of contents, list of figures and list of tables be produced, and starts a new unnumbered clause called Foreword. Formatting is one column style only and roman page numbering is set. The table of contents starts on page iii.

More precisely, the title of the clause is given by the value of `\forewordname` (see annex A).

NOTE 1 The default style only lists level 1 clauses in the table of contents. If you need a more detailed listing, then put the command `\setcounter{tocdepth}{<level #>}` in the preamble. For example `\setcounter{tocdepth}{3}` will produce a contents listing down to the level of `\ssclause` (see Table 2 for the definitions of clause levels).

The command `\fwdbp` prints the ISO specified boilerplate for the initial paragraphs of a foreword.

The boilerplate for a Technical Specification (ISO/TS) or a Publicly Available Specification (ISO/PAS) differs from that for a standard. The command `\tspasfwdbp` prints some of this boilerplate.

EXAMPLE 1 In this document, `\tspasfwdbp` prints:

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50% of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed every three years with a view to deciding whether it can be transformed into an International Standard.

NOTE 2 The required paragraph immediately following this boilerplate is:

ISO/PAS [or ISO/TS] . . . was prepared by Technical Committee ISO/TC . . .

The `\fwdnopatents` prints out the Foreword boilerplate paragraph concerning potential patent rights.

EXAMPLE 2 In this document, `\fwdnopatents` prints:

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.

6.7.2 Introduction

The `introduction` environment starts a new unnumbered clause called 'Introduction' with one column formatting.

More precisely, the title of the clause is given by the value of `\introductionname` (see annex A).

The `\intropatents` prints some of the patent boilerplate that may be required in the Introduction.

EXAMPLE In this document, `\intropatents` prints:

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.

6.7.3 Scope clause

The `\scopeclause` command starts a new numbered clause called 'Scope', which is given the label `;i1`.

More precisely, the title of the clause is given by the value of `\scopename` (see annex A).

6.7.4 Normative references clause

The `\normrefsclause` command starts a new numbered clause called 'Normative references', which is given the label `;i2`.

More precisely, the title of the clause is given by the value of `\normrefsname` (see annex A).

The command `\normrefbp{<`*document identifier*`>}` prints the ISO required text for the introduction to the listing of normative references. The `<`*document identifier*`>` parameter must be such that it reads sensibly in a sentence of the form '... constitute provisions of this `<`*document identifier*`>`.'.

EXAMPLE 1 Clause 2 in this document was started by the commands:

```
\normrefsclause \label{sec:nrefs}

\normrefbp{manual}
\begin{nreferences}
...
```

6.7.5 Definitions, symbols and abbreviations

A variety of commands are provided that initiate new numbered clauses for definitions, symbols and abbreviations. Depending on the amount of material in these respective categories, one or more clauses may be used. The commands and clause titles are listed in Table 4. The clause

Table 4 – Definition, symbol and abbreviation clause commands

Command	Clause	Title	Default text
\defclause	C	\defname	Terms and definitions
\symclause	C	\symname	Symbols
\abbclause	C	\abbname	Abbreviations
\defsymclause	C	\defsymname	Terms, definitions, and symbols
\defabbclause	C	\defabbname	Terms, definitions, and abbreviations
\symabbclause	C	\symabbname	Symbols and abbreviations
\defsymabbclause	C	\defsymabbname	Terms, definitions, abbreviations, and symbols
\defsubclause	SC	\defname	Terms and definitions
\symsubclause	SC	\symname	Symbols
\abbsubclause	SC	\abbname	Abbreviations
\defsymsubclause	SC	\defsymname	Terms, definitions, and symbols
\defabbsubclause	SC	\defabbname	Terms, definitions, and abbreviations
\symabbsubclause	SC	\symabbname	Symbols and abbreviations
NOTE - In the table, C = clause, SC = subclause.			

Table 5 – Defined clause headings with labels

Command	Label
\scopeclause	;i1
\normrefsclause	;i2
\defclause	;i3
\symclause	;i3
\abbclause	;i3
\defsymclause	;i3
\defabbclause	;i3
\symabbclause	;i3
\defsymabbclause	;i3

level headings are each given the label `;i3`; one and only one of these headings should appear in a standard document.

6.7.5.1 Heading labels

Some of the defined clauses have associated `\label`s. These heading commands and their `\label` values are listed in Table 5.

6.7.6 Bibliography

The command `\bibannex` starts an informative section of the document entitled 'Bibliography'. Or, more precisely, by the value of the `\bibname` command.

6.8 Urls, etc

The command `\url{<`*text*`>}` can be used for typesetting `<`*text*`>` as an email address.

The command `\isourl{<`*text*`>}` can be used for typesetting `<`*text*`>` as an URL address.

EXAMPLE 1 The following code


```
The Email address is \url{joe@fred.mik} or the homepage is at
\isourl{http://fred.mik/home/}.
```

will be typeset as:
The Email address is `joe@fred.mik` or the homepage is at `<http://fred.mik/home/>`.

6.9 Version control commands

A set of commands are provided to assist when revising a document. For these commands to flag the changes in the printed document the command `\changemarkstrue` must be put in the preamble.

In the commands described below, the <*number*> parameter can be used to correlate changes in a document to some external (numbered) requirement for the change.

6.9.1 Editorial

The command `\editorial{`<*number*>`}` flags an editorial change to the document text with ED^{number}.

EXAMPLE Just to start things off, this is an original sentence, which should take up about a line. This example sentence contains an editorial change. The command `\editorial{37}` was included in the previous sentence. This sentence, though, has no changes marked in it and may be assumed to be unaltered from a prior version.

6.9.2 Added

The command `\added{`<*text*>`}{`<*number*>`}` flags the position of the additional <*text*> and highlights it.

EXAMPLE Just to start things off, this is an original sentence, which should take up about a line. This example sentence contains *some added text* in the middle of it. The command `\added{some added text}{27}` was included in the previous sentence. This sentence, though, has no changes marked in it and may be assumed to be unaltered from a prior version.

6.9.3 Deleted

The command `\deleted{`<*number*>`}` flags the position of deleted text.

EXAMPLE Just to start things off, this is an original sentence, which should take up about a line. Some text was deleted from the middle of this sentence. The command `\deleted{34}` was included in the previous sentence. This sentence, though, has no changes marked in it and may be assumed to be unaltered from a prior version.

6.9.4 Moved

The command `\moved{`<*text*>`}{`<*number*>`}` flags the position of moved <*text*> and highlights it.

EXAMPLE Just to start things off, this is an original sentence, which should take up about a line. This sentence contains some *moved* text in the middle of it. The command `\moved{moved}{81}` was included in the previous sentence. This sentence, though, has no changes marked in it and may be assumed to be unaltered from a prior version.

6.10 PDF

The class provides a command, `\ifpdf`, to test whether or not the document is being processed by LaTeX or by pdfLaTeX. LaTeX processing produces a .dvi file which needs further processing, usually by dvips, to generate PostScript for printing. pdfLaTeX, however, directly generates a .pdf file which can then be printed.

EXAMPLE A document for processing by either LaTeX or pdfLaTeX could be started like:

```
\documentclass{iso}
\usepackage{times}
\ifpdf
  \pdfoutput=1
  \usepackage[pdftex]{graphicx}
\else
  \usepackage{graphicx}
\fi
....
```

The times package is used in this example as PDF printers tend to handle PostScript fonts better than other kinds of fonts.

The class also supports the use of the hyperref package in conjunction with pdfLaTeX. Typically bookmark processing would be specifed by:

```
\ifpdf
  \pdfoutput=1
  \usepackage[plainpages=false,
              pdfpagelabels,
              bookmarksnumbered,
              hyperindex=true
             ]{hyperref}
  ...
\else
  ...
\fi
....
```

If the `hyperindex=true` option to the hyperref package is used the the index has to be processed via the MakeIndex program.

7 The isorot package facility

The isorot facility enables the rotation of document elements on a page. It uses the LaTeX `\special` command to perform its effects, and thus can only be used with a limited number of dvi to postscript programs. The facilities available are summarized in Table 6.

isorot is a modification of the rotation.sty file created by Rahtz and Barroca [4]. Further examples of the usage of their style are given in Goosens *et al* [5].

NOTE 1 Several examples of the effects of the commands described herein are shown. In many cases the results are not pretty. This should act as a warning that using rotational elements requires more care than most other document elements.

Table 6 – The rotation facilities

Facility	Effect
Commands	
\rotdriver{<driver>}	declare the name of the dvi to Postscript translator (default `dvips`)
\clockwise	sets rotation direction clockwise for positive angles (the default)
\counterclockwise	sets rotation direction counterclockwise for positive angles
\figuresright	sets rotation direction for sideways floats counterclockwise (the default)
\figuresleft	sets rotation direction for sideways floats clockwise
\rotcaption	like the `caption` command, but rotates the caption through 90 degrees
\controtcaption	like the `contcaption` command, but rotates the caption through 90 degrees
Environments	
sideways	rotates the contents through 90 degrees counterclockwise
turn	rotates the contents through the given angle
rotate	rotates the contents through the given angle, but no space allowed for the result
sidewaystable	like the `table` environment, but rotated 90 degrees
sidewaystable*	twocolumn version of `sidewaystable`
sidewaysfigure	like the `figure` environment, but rotated 90 degrees
sidewaysfigure*	twocolumn version of `sidewaysfigure`
landscape	prints all enclosed pages in landscape mode

7.1 Options

The isorot facility has one option, namely `debugshow`. Calling this option produces messages on the screen and in the log file regarding the actions being taken.

NOTE This option is principally of interest to the maintainer of the facility.

7.2 DVI drivers

The isorot facility supports only a limited number of dvi to postscript translators. The default translator is *dvips*. The following command must be put in the preamble of the document if *dvips* is not being used: `\rotdriver{<drivername>}`, where `<drivername>` is one of the following:[3)]

a) `dvipdf` for the *dvipdf* translator;

b) `dvips` for Tom Rockicki's *dvips* translator;

c) `dvipsone` for Y&Y's *dvipsone* translator;

d) `dvitops` for James Clark's *dvitops* translator;

e) `dviwindo` for Y&Y's *dviwindo* translator;

f) `pctex32` for Personal TeX's PC TeX for 32 bit Windows (*pctex32*) translator;

g) `pctexps` for Personal TeX's PC PTI Laser/PS (*pctexps*) translator;

h) `pubps` for the Arbortext's *pubps* translator.

i) `textures` for Blue Sky's *Textures* translator;

7.3 Rotational directions

isorot enables the textual and other elements of a document to be rotated from their normal horizontal layout. In some cases elements can be rotated through arbitrary angles, whereas in others only 90 degree rotation is possible.

By default, a rotation through a positive number of degrees corresponds to a clockwise rotation. The command `\counterclockwise` sets the following rotations to be counterclockwise for positive angles. The command `\clockwise` sets the following rotations to be clockwise for positive angles. These commands can be used to toggle the rotational behavior.

Rotated floating environments are normally rotated so that they are printed with a counterclockwise rotation (i.e. the original bottom of the float is placed at the right hand side of the paper), which is what is normally required. This behavior can be altered by the command `\figuresleft`, which will give the reverse effect. The command `\figuresright` will set the behavior to the default. These commands can be used to toggle the rotational behavior of floats.

[3)] I have been able to try the `dvips` driver but not the others. If anyone has experience with the other drivers, or has extended the range of drivers, I would like to be given the results.

7.4 Rotation of text

The sideways environment rotates the contents of the environment by 90 degrees counterclockwise, and leaves space for the result.

The \begin{turn}{<*angle*>} environment rotates the contents by the given number of degrees in the direction specified by the most recent of the \clockwise or \counterclockwise commands, leaving space for the result.

The \begin{rotate}{<*angle*>} environment rotates the contents by the given number of degrees in the direction specified by the most recent of the \clockwise or \counterclockwise commands, but no arrangements are made for leaving space for the result.

EXAMPLE 1 Some simple rotations:

This code

```
Default rotation direction: \\
A
\begin{sideways}%
B C
\end{sideways}
D E F G H I J K L M
\begin{turn}{-90}%
Minus 90 turn
\end{turn}
N O P
\begin{rotate}{90}%
Plus 90 rotate
\end{rotate}
Q \\
and continue on with another line after rotations.
```

produces the following (note how space is allowed for the turned text, whereas the rotated text runs into the text below).

Default rotation direction:
A B C D E F G H I J K L M Minus 90 turn N O P Plus 90 rotate Q
and continue on with another line after rotations.

EXAMPLE 2 This example shows the effect of using the \counterclockwise command.

This code

```
Flip rotation direction: \\
\counterclockwise
A
\begin{sideways}%
B C
\end{sideways}
D E F G H I J K L M
\begin{turn}{-90}%
```



```
Minus 90 turn
\end{turn}
N O P
\begin{rotate}{90}%
Plus 90 rotate
\end{rotate}
Q \\
Set rotation direction back to default value.
\clockwise
```

produces the following, which should be compared with example 1.

Flip rotation direction:

A B C D E F G H I J K L M Minus 90 turn N O P Plus 90 rotate Q

Set rotation direction back to default value.

Although the examples so far have only shown the rotation of text, boxes can also be rotated.

EXAMPLE 3 Rotating a box.

This code

```
\newsavebox{\foo}
\newlength{\fool}
\settowidth{\fool}{Hurrah for ISO.}
\savebox{\foo}{\parbox{\fool}{Hurrah for ISO. Hurrah for ISO.
                              Hurrah for ISO. Hurrah for ISO.}}
Start
\usebox{\foo}
\&
\begin{turn}{-45}\usebox{\foo}\end{turn}
\&
\begin{turn}{45}\usebox{\foo}\end{turn}
End
```

produces:

Start Hurrah for ISO. Hurrah for ISO. Hurrah for ISO. Hurrah for ISO. & Hurrah for ISO. Hurrah for ISO. Hurrah for ISO. Hurrah for ISO. & Hurrah for ISO. Hurrah for ISO. Hurrah for ISO. Hurrah for ISO. End

Elements can be rotated through arbitrary angles, and also rotated elements can be nested inside other rotated elements.

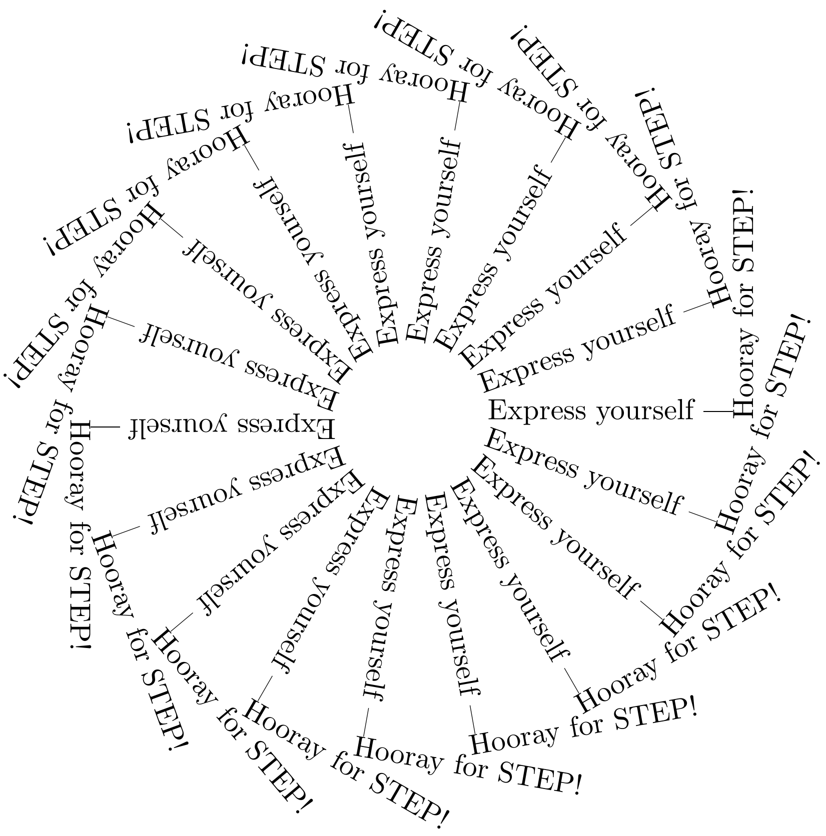


Figure 1 – Example rotation through multiple angles

EXAMPLE 4 Repeated rotation:

The following example code shows that text can be rotated through any angle. The result is shown in Figure 1.

```
\newcount\prwc
\newsavebox{\prwtext}
\newdimen\prwspace
\def\wheel#1#2{%
  \savebox{\prwtext}{#1\begin{sideways}#2\end{sideways}}%
  \prwspace\wd\prwtext%
  \advance\prwspace by 1cm%
  \centerline{%
  \rule{0pt}{\prwspace}%
  \rule[-\prwspace]{0pt}{\prwspace}%
  \prwc=-180\loop\ifnum\prwc<180
  \rlap{\begin{rotate}{\the\prwc}%
  \rule{1cm}{0pt}\usebox{\prwtext}\end{rotate}}%
  \advance\prwc by 20\repeat}}
\begin{figure}
\wheel{Express yourself ---}{Hooray for STEP!}
\caption{Example rotation through multiple angles}
\label{fig:wheel}
\end{figure}
```

Figures 4 and 5 also show rotations through a range of angles, both positive and negative.

EXAMPLE 5 Nested rotations.

This code

```
    Here is some text before a \verb|sideways| environment.
And some more, and more and more garble gobble cluck
click clack clock cluck and so on and on and on.
\begin{center}
\begin{sideways}
\rule{1in}{0pt}
\begin{tabular}{|lr|}
\begin{rotate}{-45}\emph{Word}\end{rotate} & \begin{rotate}{-90}%
Occurrences\end{rotate}
\\
\hline
hello & 33 \\
goodbye & 34 \\
\hline
\end{tabular}
\end{sideways}
\end{center}
    Here is some text after a \verb|sideways| environment.
 And some more, and more and more garble gobble cluck
click clack clock cluck and so on and on and on.
```

produces:

Here is some text before a `sideways` environment. And some more, and more and more garble gobble cluck click clack clock cluck and so on and on and on.

Word	Occurrences
hello	33
goodbye	34

Here is some text after a `sideways` environment. And some more, and more and more garble gobble cluck click clack clock cluck and so on and on and on.

7.5 Rotations of tables and figures

The previous examples have demonstrated the rotation of textual elements. For instance, example 5 shows that tabular material can be rotated using the `sideways` environment. (Actually, any of the previously mentioned environments may be used.) Two further environments are provided which rotate a LaTeX float through 90 degrees. These are:

— `sidewaystable`, which corresponds to the standard LaTeX `table` environment; and

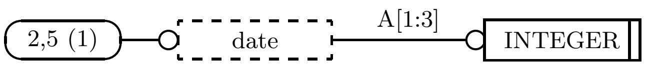
— `sidewaysfigure`, which corresponds to the standard LaTeX `figure` environment.

There are also starred versions of these, namely `sidewaystable*` and `sidewaysfigure*`, for use in twocolumn mode. However, the correspondence with the standard environments is not strictly complete as a sideways float is alway placed on a page by itself.

The direction of rotation may be controlled by the `\figuresright` and `\figuresleft` commands.

EXAMPLE 1 Table 6 is produced by the code below:

Figure 2 – Example figure with a standard caption.




```
\begin{sidewaystable}
\centering
\caption{The rotation facilities} \label{tab4}
\begin{tabular}{|l|l|} \hline
\textbf{Facility} & \textbf{Effect} \\ \hline
\multicolumn{2}{|c|}{\textbf{Commands}} \\ \hline
\verb|\rotdriver{<driver>}| &
declare the name of the dvi to Postscript translator (default {\tt dvips}) \\
......
\verb|sidewaysfigure| &
like the \verb|figure| environment, but rotated 90 degrees \\ \hline
\end{tabular}
\end{sidewaystable}
```

7.6 Rotation of float captions and bodies

Sometimes it may be useful to rotate a caption independently of the rotation of a figure or table. The command `\rotcaption` is analogous to the normal `\caption` command, and inserts the caption rotated by 90 degrees. There is also the companion command `\controtcaption`, analagous to the `\contcaption` command, for continuation captions.

EXAMPLE 1 Float with a regular caption.

Figure 2 is produced by the code below:

```
\begin{figure}
\centering
\caption{Example figure with a standard caption.} \label{fig:nocrot}
\setlength{\unitlength}{0.2in}
\footnotesize
\begin{picture}(17,2)
\thicklines
\put(0,0){\begin{picture}(4,1)
  \put(1.5,0.5){\oval(3,1)}
  \put(1.5,0.5){\makebox(0,0){2,5 (1)}}
  \put(3,0.5){\line(1,0){1.0}}
  \put(4.25,0.5){\circle{0.5}}
  \end{picture}}
\put(4.5,0){\begin{picture}(8,1)
  \put(0,0){\dashbox{0.25}(4,1){date}}
  \put(4,0.5){\line(1,0){3.5}}
  \put(7.75,0.5){\circle{0.5}}
  \put(6,1){\makebox(0,0){A[1:3]}}
  \end{picture}}
\put(12.5,0){\begin{picture}(4,1)
  \put(0,0){\framebox(4,1){INTEGER}}
  \put(3.75,0){\line(0,1){1}}
  \end{picture}}
\end{picture}
\normalsize
\setlength{\unitlength}{1pt}
```

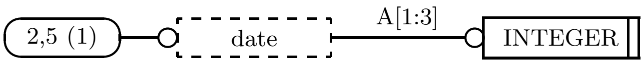



Figure 3 — Figure 2 with a rotated caption.

```
\end{figure}
```

EXAMPLE 2 Float with a rotated caption.

Figure 3 is produced by the code below:

```
\begin{figure}
\centering
\rotcaption{Figure~\protect\ref{fig:nocrot} with a rotated caption.}
 \label{fig:crot}
\setlength{\unitlength}{0.2in}
\footnotesize
\begin{picture}(17,2)
...
\end{picture}
\normalsize
\setlength{\unitlength}{1pt}
\end{figure}
```

As can be seen from Figure 3 the advisability of rotating a caption depends on the size of the body of the float. It may be better in certain cases to leave the caption in its regular position and rotate the body of the float instead.

EXAMPLE 3 Regular caption and float.

Figure 4 is a regular figure and caption. It is produced by the following code:

```
\def\prwrot#1{%
\settowidth{\fool}{ISOROT}
\savebox{\foo}{\parbox{\fool}{ISOROT ISOROT ISOROT ISOROT}}%
\framebox{---\begin{turn}{#1}\framebox{\usebox{\foo}}\end{turn}---}}%
\def\degrees{{\small$^{o}$}}

\begin{figure}
\centering
\begin{tabular}{|c|c|c|} \hline
```

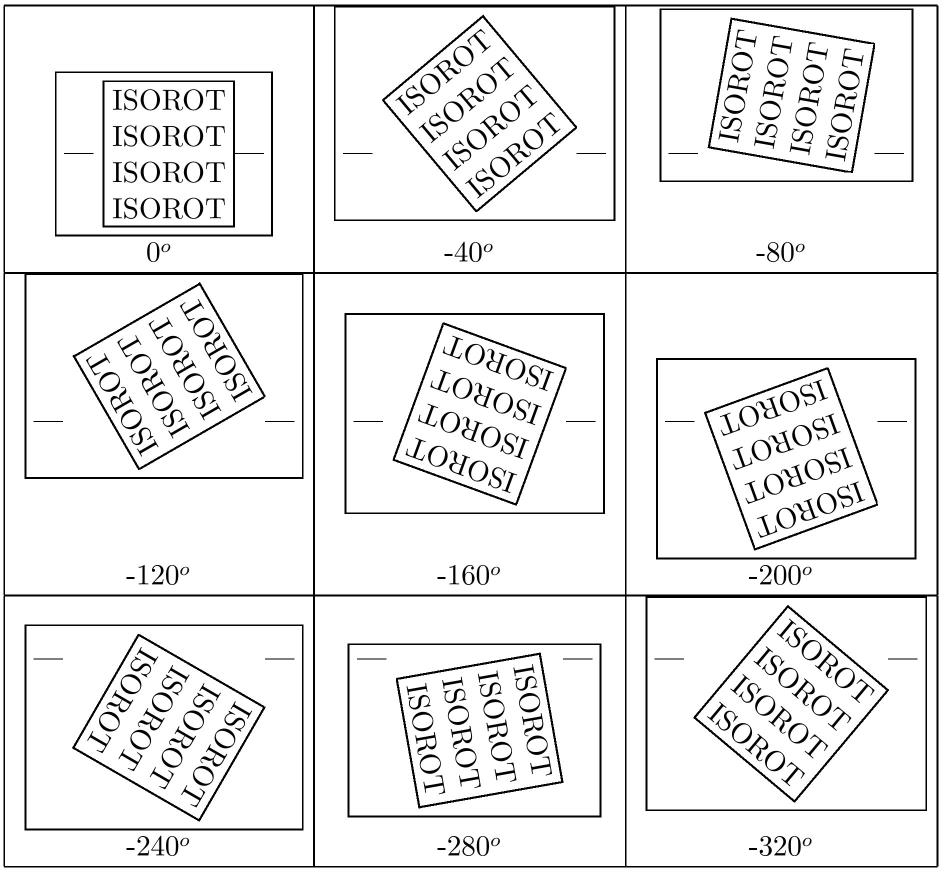



Figure 4 – Rotation of paragraphs between 0 and -320 degrees

```
\prwrot{0} &\prwrot{-40}&\prwrot{-80}\\
0\degrees & -40\degrees & -80\degrees \\ \hline
\prwrot{-120}&\prwrot{-160}&\prwrot{-200}\\
-120\degrees & -160\degrees & -200\degrees \\ \hline
\prwrot{-240}&\prwrot{-280}&\prwrot{-320}\\
-240\degrees & -280\degrees & -320\degrees \\ \hline
\end{tabular}
\caption{Rotation of paragraphs between 0 and -320 degrees} \label{fig:angles1}
\end{figure}
```

EXAMPLE 4 Regular caption and rotated float body.

Figure 5 is a regular figure and caption where the figure contents have been rotated. It was produced by the following code.

```
\begin{figure}
\centering
\begin{sideways}
\begin{tabular}{|c|c|c|} \hline
\prwrot{0} &\prwrot{40}&\prwrot{80}\\
0\degrees & 40\degrees & 80\degrees \\ \hline
\prwrot{120}&\prwrot{160}&\prwrot{200}\\
120\degrees & 160\degrees & 200\degrees \\ \hline
\prwrot{240}&\prwrot{280}&\prwrot{320}\\
240\degrees & 280\degrees & 320\degrees \\ \hline
\end{tabular}
\end{sideways}
\caption[Rotation of paragraphs between 0 and 320 degrees]%
```

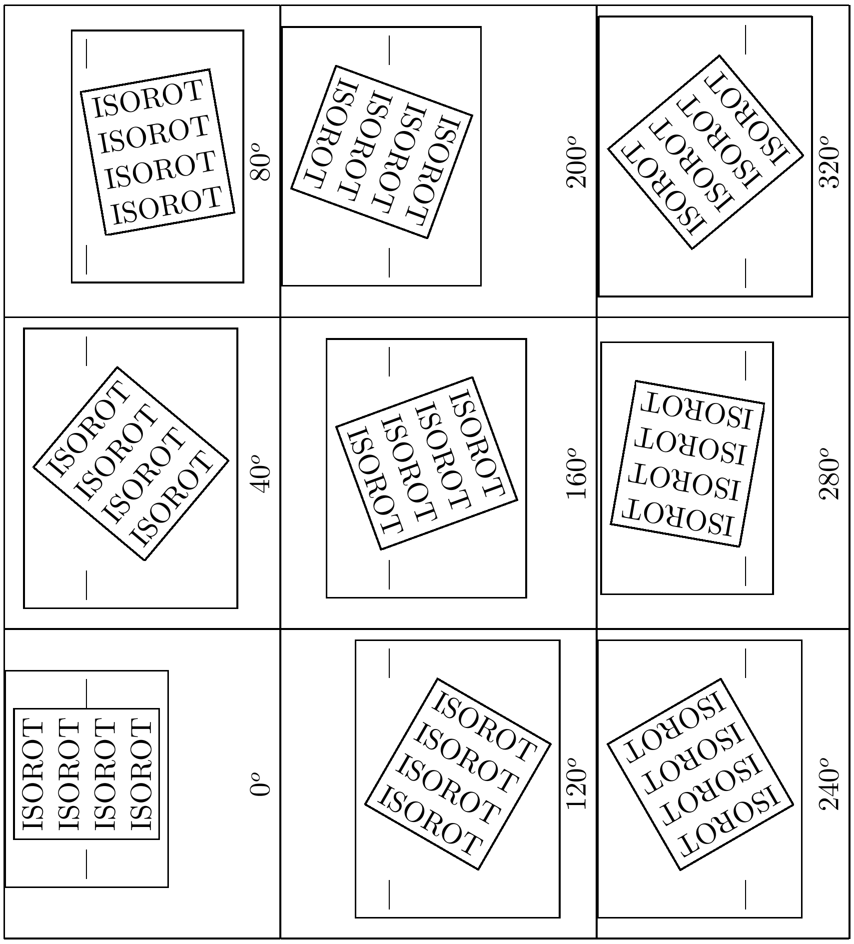


Figure 5 – Rotation of paragraphs between 0 and 320 degrees (with figure body turned sideways)

```
        {Rotation of paragraphs between 0 and 320 degrees (with figure
         body turned sideways)}\label{fig:angles2}
\end{figure}
```


7.7 Landscaping

LaTeX normally prints in portrait mode. The `landscape` environment prints all the enclosed stuff in landscape mode, except for headers and footers which are not rotated.

EXAMPLE 1 Landscaping

The source for this part of the document is:

```
\begin{landscape}
\sclause{Landscaping}

    \latex{} normally prints in portrait mode. The ...
...
... long, wide tables.
\end{landscape}
```

The environment starts by clearing the current page and then switches to portrait mode. At the end of the environment the current page is cleared and the next page is back to normal portrait mode.

All the other rotation commands and environments produce boxes and LaTeX will not break a box across a page. The `landscape` environemt does not produce a box and so many pages can be printed in landscape mode with LaTeX taking care of the page breaking for you.

Landscape mode is not particularly useful for normal text as the lines are far too long for comfortable reading. Where it can be useful is where you have a table that is too wide to fit on a portrait page, so needs to be rotated, yet is also too long to fit on the page when it is rotated. The supertabular, the longtable, and the xtab packages provide facilities for automatically breaking long tables across pages. Any of these can be used in conjunction with landscaping to both rotate and automatically page break long, wide tables.

8 The xtab package facility

The xtab package is fully documented in [14]. This clause provides an overview of the package.

The xtab package facility is an extension of the supertabular package originally developed by Johannes Braams and Theo Jurriens. The extension provides for the specification of a header to go on the last page of a long table.

The principal commands available are given in Table 7.

Table 7 – The principal xtab package commands

Command	**Effect**
`\begin{xtabular}{...}`	This is equivalent to the normal `\begin{tabular}{...}` environment. You supply the specification of the columns just as for the normal tabular environment. All commands that can be used within a tabular environment can also be used within the xtabular environment. Unlike the tabular environment which prevents page breaking within the tabular, the xtabular allows page breaking, so that tabulars can extend automatically across several pages. Xtabular starts off with a tabular environment and checks the amount of space left on the page as it adds each row to the tabular. If the space left on the page is too short for another row, then it ends the current tabular, performs a page break and starts another tabular on the following page. This process is repeated until all the rows have been output. There are special commands for captioning a xtabular as a table, and also elements can be automatically inserted after each (internal) `\begin{tabular}` and immediately before each `\end{tabular}`. Do not put a xtabular in a table environment, as the table environment keeps its contents on a single page (presumably you are using xtabular because its contents are longer than one page).
`\end{xtabular}`	End the xtabular environment.
`\begin{mpxtabular}`	Like the xtabular environment except that each ‘page’ is put into a `minipage` first. Thus it is possible to have footnotes inside an `mpxtabular`. The footnote text is printed at the end of each page.
	Continued on next page

Table 7 – continued from previous page

Command	Effect
\end{mpxtabular}	End the mpxtabular environment.
	Note: If any of the following commands are used, then they should be placed before the particular xtabular environment that they apply to.
\topcaption{...}	A command to provide a caption for the table. The caption is placed at the top of the table.
\bottomcaption{...}	A command to provide a caption for the table. The caption is placed at the bottom of the table.
\tablecaption{...}	A command to provide a caption for the table. The caption is placed at the default position, which is at the top of the table. **Notes:** You cannot use the `caption` command but you can put a label after any of these captioning commands. If you want captioning, the command must be specified before the start of the xtabular environment. The `\...caption{}` command(s) remain in effect until changed by another `\...caption` command.
\tablefirsthead{...}	Defines the contents of the first occurence of the tabular head. The tabular head is some special treatment of the first row in the table. This command is optional. If used, the header must be closed by the end of line command for tabulars (e.g., \\).
\tablehead{...}	Defines the contents of the table head on subsequent pages. For example, you might want to note that this is a continuation of the table on the previous page, as well as repeating any column headings that were given at the start of the xtabular by `\tablefirsthead`.
\tablelasthead{...}	Defines the contents of the table head on the last page of the table. This works by writing to the `.aux` file the number of pages that the xtabular extends over. When the xtabular comes to the last tabular (which it calculates from the information it reads from the `.aux` file) it replaces the contents of `\tablehead` by the contents of `\tablelasthead`.

Continued on next page

Table 7 – concluded from previous page

Command	**Effect**
	It makes no attempt to measure the amount of space used by the last table head, so if this is more than for `tablehead` then the tabular might be a litle too long. In any case, when using this command, the document has to be LaTeXed at least twice, just as it has to be to resolve references and so on.
`\notablelasthead`	Switches off the last `\tablelasthead`. A `tablelasthead` stays in effect until overwritten by a new `\tablelasthead` or cancelled by this command.
`\tabletail{...}`	The contents of this command are inserted before the `\end{tabular}` on each page except for the last page of the table. For example, you might want to note that the table is continued on the next page.
`\tablelasttail{...}`	The contents of this command are inserted before the final `\end{tabular}` of the table. For example, you might want to note that this is where the table ends.

As well as the `xtabular` and `mpxtabular` environments there are the corresponding starred versions (i.e., `xtabular*` and `mpxtabular*`) for use in two column mode where the table is meant to span both columns.

EXAMPLE 1 Table 7 was produced by the following code:

```
\topcaption{The principal xtab package commands} \label{tab:xtab}
\tablefirsthead{\hline \multicolumn{1}{|c|}{\textbf{Command}} &
                       \multicolumn{1}{c|}{\textbf{Effect}} \\ \hline }
\tablehead{\multicolumn{2}{c}%
           {{\captionsize\bfseries \tablename\ \thetable{} --
             continued from previous page}} \\
  \hline   \multicolumn{1}{|c|}{\textbf{Command}} &
           \multicolumn{1}{c|}{\textbf{Effect}} \\ \hline }
\tablelasthead{\multicolumn{2}{c}%
           {{\captionsize\bfseries \tablename\ \thetable{} --
             concluded from previous page}} \\
  \hline   \multicolumn{1}{|c|}{\textbf{Command}} &
           \multicolumn{1}{c|}{\textbf{Effect}} \\ \hline }
\tabletail{\hline \multicolumn{2}{|r|}{{Continued on next page}} \\ \hline}
\tablelasttail{\\ \hline \hline}

\begin{center}
\begin{xtabular}{|l|p{0.5\textwidth}|}
\verb|\begin{xtabular}{...}| & This is equivalent to the normal
                         \verb|\begin{tabular}{...}| environment.
                         You supply the specification of the columns
                         just as for the normal tabular environment.
                         All commands that can be used within a tabular
                         environment can also be used within
                         the xtabular environment.
 \\
 &
```



```
    Unlike the tabular environment which prevents page breaking
within the tabular, the xtabular allows page breaking, so that
tabulars can extend automatically across several pages. Xtabular
... ... ...
\verb|\tablelasttail{...}| & The contents of this command are inserted before
                         the final \verb|\end{tabular}| of the table.
 \\
 &
    For example, you might want to note that  this is where
the table ends.
\end{xtabular}
\end{center}
```

The table is only broken between rows — a row will not be split across pages. This can lead to some bad page breaks, especially if there are rows with a large vertical height (like some in Table 7). It is best to keep rows not too tall.

The command `\shrinkheight{<`*length*`>}` may be used after the first `\\` in the table to modify the allowed height of the table on each page. A positive <*length*> decreases the allowed space per page and a negative <*length*> increases the allowed space.

EXAMPLE 2 This example illustrates changing the natural height of the pages in a `xtabular` and its relatives.

`\shrinkheight{2\baselineskip}` decreases the space per page by two lines.

`\shrinkheight{-\baselineskip}` increases the space per page by one line.

You have to specify the font used for the `\tablehead` and `tablelasthead` yourself. Within ISO documents, captions shall be in bold font. The iso class also provides a command for setting the size of the font used in captions, namely `\captionsize`. Note that this is used in example 1. The value of `\captionsize` is set by the class.

8.1 Options

The xtab package has three options which control the amount of information that is written to the .log file. The options are:

a) The option `errorshow` (the default) does not write any extra information;

b) The option `pageshow` writes information about when and why `xtabular` decides to produce a new page;

c) The option `debugshow`, which also includes `pageshow`, additionally writes information about each line that is added to the table.

Under normal circumstances `xtab` is used without invoking any option. The `pageshow` option may be useful when attempting to cure a bad page break. The `debugshow` option, as its name implies, is principally of use to the `xtab` developer.

Independently of the options, the command `\sstraceon` may be used at any point in the document to turn on printing of `debugshow` data. This can be turned off later by the `\sstraceoff` command, which will stop all `...show` printing.

8.2 Caveats

The authors of the original supertabular package note that it has the following weaknesses:

— Sometimes the body of the first page of a table gets moved to the following, leaving the caption behind;

— Sometimes the last page of a table consists of just the head and foot with no contents.

The weaknesses are caused by trying to guess where TeX will put a page break. The package has to guesstimate how long the next entry will be in the table and, if it is too long for the available space, it puts in its own page break. If its guess is off too much in one direction, TeX will break the page unexpectadly; if its off in the other direction supertabular will put in an unnecessary page break.

The xtab package has reduced, but perhaps not entirely eliminated, these weaknesses. Some hand tuning may still be required.

9 The askinc package facility

The askinc package facility contains LaTeX code to enable the interactive input of files. This functionality is a cross between the LaTeX \include and \includeonly commands, and the \input command.

In the body of the root source document, use the command \infile{<*file*>} for each <*file*> that comprises the document. That is, the command \infile is similar to the \input and \include commands.

When LaTeXing the root document, you will be asked to provide a comma-separated list of the \infiles to be processed (similar to the argument to the \includeonly command). If you want all the files to be processed, just hit the <RETURN> key (or its equivalent).

Like \included files, a file that is \infiled into a document shall not itself contain another \infiled file.

EXAMPLE 1 The following root file has three files that are \infiled.

```
\documentclass[...]{...}
\usepackage{askincv}
% other preamble stuff
\begin{document}
% perhaps some stuff
\infile{file1}
\infile{file2}
\infile{file3}
% perhaps more stuff
\end{document}
```


10 The hyphenat package facility

The hyphenat package is fully described in [13]. This clause provides an overview of the portions of the package that are most relevant to typesetting ISO standards.

In LaTeX if you need to use the underscore (`_`) character in normal text, for example when documenting identifiers in a programming language code, you have to use the `\_` command, as in `a\_multiword\_identifier`. LaTeX normally treats `_` as a math mode subscript command. Further, if you want the possibility of hyphenation at the position of an underscore you have to use the command pairing `\_\-`; this has the side effect of disabling normal hyphenation in any succeeding 'word' in the identifier.

The hyphenat package facility redefines the `\_` command so that hyphenationen is automatically enabled at the position of the underscore and in all succeeding words in the identifier.

NOTE 1 Using the command pair `\_\-` in conjunction with this facility disables automatic hyphenation of succeeding words, so don't do it.

EXAMPLE 1 This set of LaTeX source

```
Amazingly An\_excessively\_long\_multiword\_identifier%
\_demonstrating\_hyphenation

\begin{minipage}{3cm}
\begin{itemize}
\item An\_excessively\_long\_multiword\_identifier%
\_demonstrating\_hyphenation
\item Underscore in math mode: $A_n$
\item \verb|\_| command in math mode: $A\_n$
\end{itemize}
\end{minipage}
```

prints as:

Amazingly An_excessively_long_multiword_identifier_demonstrating_hyphenation

— An_exces-
sively_long_-
multiword_-
identifier_-
demonstrat-
ing_hyphen-
ation

— Underscore
in math mode:
A_n

— `\_` com-
mand in math
mode: *A_n*

EXAMPLE 2 Contrast this example with example 1. This set of LaTeX source

```
Amazingly An\_\-excessively\_\-long\_\-multiword\_\-identifier%
\_\-demonstrating\_\-hyphenation\_\-disabling

\begin{minipage}{3cm}
```


Table 8 – Commands producing breakable characters

Command	Character
`\_`	_
`\bshyp`	\
`\colonhyp`	:
`\dothyp`	.
`\fshyp`	/

```
\begin{itemize}
\item An\_\-excessively\_\-long\_\-multiword\_\-identifier%
\_\-demonstrating\_\-hyphenation\_\-disabling
\item Underscore in math mode: $A_n$
\item \verb|\_| command in math mode: $A\_n$
\end{itemize}
\end{minipage}
```

prints as:

Amazingly An_excessively_long_multiword_identifier_demonstrating_hyphenation_disabling

— An_-
excessively_-
long_-
multiword_-
identifier_-
demonstrating_-
hyphenation_-
disabling

— Underscore in math mode: A_n

— `\_` command in math mode: A_n

The hyphenat package also provides some other commands for enabling hyphenation of words that include analphabetic[4)] characters. In this context, the phrase 'breakable character' is used to describe an analphabetic character that enables hyphenation immediately after it and does not prevent further hyphenation in the 'word' in which it occurs. The `\_` command produces a breakable underscore. Table 8 lists all the commands that generate breakable characters.

The `\bshyp` command prodes a breakable backslash (\), `\fshyp` produces a breakable forward slash (/), the `\dothyp` command produces a breakable full stop (.), also known in some countries as a period, and the `\colonhyp` command produces a breakable colon (:).

EXAMPLE 3 This is similar to example 1 except that it demonstrates other breakable characters.

This set of LaTeX source

```
Analphabetically an\bshyp{}excessively\fshyp{}long\dothyp{}multiword\bshyp{}identifier%
\fshyp{}demonstrating\dothyp{}hyphenation
```

4) An *analphabetic* character is any character that is not alphabetic. Typically it refers to punctuation characters.


```
\begin{minipage}{3cm}
Analphabetically an\bshyp{}excessively\fshyp{}long\dothyp{}multiword\bshyp{}identifier%
\fshyp{}demonstrating\dothyp{}hyphenation
\end{minipage}
```

prints as:

Analphabetically an\excessively/long.multiword\identifier/demonstrating.hyphenation

Analphabetically
an\excessively/-
long.multiword\-
identifier/demon-
strating.hyphen-
ation

NOTE 2 LaTeX will not hyphenate the first word in a paragraph.

Just as with the `\_` command, the discretionary hyphen command (i.e., `\-`) should not be used in conjunction with any of the breakable character commands as it will then inhibit any further potential hyphenation points. In general, any analphabetic character in a word will inhibit further hyphenation.

Annex A
(normative)
Additional commands

A.1 Language configuration commands

There is an additional set of commands in the iso class facility that are specified here. This set has been provided to enable the style to be easily configured for a non-English language.

The modified commands may be put in the document preamble or, preferably, placed in a separate .sty file and called as a package. This latter option improves reuseability.

A.1.1 Words and phrases

To produce a non-English version of the iso class the relevant commands from the following list may require re-definition together with the heading commands in Table 4.

NOTE 1 In the listing, the default values are printed *in this font* to distinguish them from the explanatory text.

— `\annexname`: Header for an annex. Default value is: *Annex*

— `\contentsname`: Header for table of contents listing. Default value is: *Contents*

— `\copyrightname`: The copyright owner. Default value is: *ISO*

— `\examplename`: Identification of an example. Default value is: *EXAMPLE*

— `\figurename`: Start of the caption for a figure. Default value is: *Figure*

— `\forewordname`: Title of the Foreword. Default value is: *Foreword*

— `\indexname`: Header for the index. Default value is: *Index*

— `\informativename`: Identification of an informative annex. Default value is: *informative*

— `\inscopename`: Introduction to in-scope listing. Default value is: *The following are within the scope of this*

— `\ISname`: 'INTERNATIONAL STANDARD' as used in the header for an IS title page. Default value is: *WORKING DRAFT*

— `\introductionname`: Title of the Introduction. Default value is: *Introduction*

— `\listannexname`: Header for list of annexes listing. Default value is: *Annexes*

— `\listfigurename`: Header for list of figures listing. Default value is: *Figures*

— `\listtablename`: Header for list of tables listing. Default value is: *Tables*

— `\normativename`: Identification of a normative annex. Default value is: *normative*

— `\normrefsname`: Title of normative references clause. Default value is: *Normative references*

— `\notename`: Identification of a note. Default value is: *NOTE*

— `\outofscopename`: Introduction to out-of-scope listing. Default value is: *The following are outside the scope of this*

— `\pagename`: The word for the page header in the table of contents. Default value is: *Page*

— `\scopename`: Title of the Scope. Default value is: *Scope*

— `\tablename`: Start of the caption for a table. Default value is: *Table*

— `\tbpname`: Footnote text for 'to be published.'. Default value is: *To be published.*

The following commands provide the names for referenced document elements.

— `\annexrefname`: Reference to an annex. Default value is: *annex*

— `\clauserefname`: Reference to a clause. Default value is: *clause*

— `\examplerefname`: Reference to an example. Default value is: *example*

— `\figurerefname`: Reference to a figure. Default value is: *Figure*

— `\noterefname`: Reference to a note. Default value is: *note*

— `\tablerefname`: Reference to a table. Default value is: *Table*

— `\pagerefname`: Reference to a page. Default value is: *page*

NOTE 2 The above commands, may be changed via the LaTeX `\renewcommand`.

NOTE 3 The LaTeX command `\today` will probably also require modification. This is not something for the casual user to attempt.

EXAMPLE 1 The following is a partial list of the commands to convert to a French language style.

```
\renewcommand{\annexname}{Annexe}
\renewcommand{\contentsname}{Sommaire}
\renewcommand{\examplename}{EXEMPLE}
%\renewcommand{\examplesname}{EXEMPLES}
\renewcommand{\forewordname}{Avant-propos}
\renewcommand{\ISname}{NORME INTERNATIONALE}
\renewcommand{\listtablename}{Tableaux}
\renewcommand{\scopename}{Domaine d'application}
\renewcommand{\tablename}{Tableau}
```

A.1.2 Boilerplate

Some commands print boilerplate text; again, the default text is in English. For iso there are several such commands. The first is `\copyrightnotice` which contains the text of the copyright notice for an International Standard. This can be changed via the `\renewcommand` command.

The second is `\normrefbp` which prints the boilerplate for the introduction to the Normative references clause. Like the `\copyrightnotice` command, this can be redefined using the `\renewcommand`.

Another is the `\fwdbp` command which `\input`s the boilerplate text from a file called isofwdbp.tex. For non-English text either modify the contents of this file or create a new file and modify the `\fwdbp` command to call in the new file.

EXAMPLE 1 This is how `\normrefbp` could be written for the French language and in accordance with the second edition of the ISO Directives.

```
\renewcommand{\normrefbp}[1]{%
    Les normes suivantes contiennent des dispositions qui, par
suite de la r\'{e}f\'{e}nce qui en est faite, constituent des
dispositions valables pour la pr\'{e}sente #1.
Au moment de la publication, les \'{e}ditions indiqu\'{e}es
\'{e}taient en viguer. Toute norms est sujette \`{a} r\'{e}vision et
les parties prenantes des accords fond\'{e}s sur la pr\'{e}sente #1
sont invit\'{e}es \`{a} rechercher la possibilit\'{e} d'appliquer
les \'{e}ditions les plus r\'{e}centes des normes indiqu\'{e}es
ci-apr\`{e}s. Les membres de la CEI et de l'ISO poss\`{e}dent
le registre des Normes Internationales en vigueur \`{a} un
moment donn\'{e}.
}% end renewcommand
```

EXAMPLE 2 Given that `\normrefbp` has been redefined as in example 1, then the command `\normrefbp{norme internationale}` will print:

Les normes suivantes contiennent des dispositions qui, par suite de la réfénce qui en est faite, constituent des dispositions valables pour la présente norme internationale. Au moment de la publication, les éditions indiquées étaient en viguer. Toute norms est sujette à révision et les parties prenantes des accords fondés sur la présente norme internationale sont invitées à rechercher la possibilité d'appliquer les éditions les plus récentes des normes indiquées ci-après. Les membres de la CEI et de l'ISO possèdent le registre des Normes Internationales en vigueur à un moment donné.

The `\tspasfwdbp` also maintains boilerplate text in the file tspasfwdbp.tex.

A.2 Caption text size

The size of the font used for typestting the captions of figures and tables is defined within the iso class.

The size of the captioning font is controlled by the value of the `\captionsize` command. The default definition of `\captionsize` is similar to: `\captionsize{\normalsize}`
You can reset the `\captionsize` at any point in your document to change the size of captions from then onwards.

All the normal LaTeX font size commands are available.

EXAMPLE 1 The following shows the effects of the font size commands.
`{\tiny tiny text}` prints: tiny text
`{\scriptsize scriptsize text}` prints: scriptsize text
`{\footnotesize footnotesize text}` prints: footnotesize text
`{\small small text}` prints: small text
`{\normalsize normalsize text}` prints: normalsize text
`{\large large text}` prints: large text

`{\Large Large text}` prints Large text
`{\LARGE LARGE text}` prints: LARGE text
`{\huge huge text}` prints: huge text
`{\Huge Huge text}` prints: Huge text

Annex B
(normative)
Ordering of LaTeX commands

The LaTeX commands for the logical structuring of an ISO standard document are:

```
\documentclass[<options>]{isov2}          % for LaTeX 2e
\usepackage{<name>}                       % additional packages (LaTeX 2e)
\standard{<standard identification>}
\yearofedition{<year>}
\languageofedition{<parenthesized code letter>}
  % other preamble commands
\begin{document}
\begin{foreword}                     % start Foreword
  \fwdbp                             % boilerplate
  % other text and perhaps \fwdnopatents
\end{foreword}
\begin{introduction}                 % start Introduction
  % text and perhaps \intropatents
\end{introduction}
\title{<intro>}{<main>}{<compl>}     % the title
\scopeclause                         % The Scope clause
   \begin{inscope}{<document>}       % in scope boilerplate
   % \item list
   \end{inscope}
   % text
   \begin{outofscope}{<document>}    % out of scope boilerplate
   % \item list
   \end{outofscope}
   % text
\normrefsclause                      % The Normative references clause
  \normrefbp{<document identifier>}  % boilerplate
  \begin{nreferences}
    % \isref{<p1>}{<p2>} and/or \disref{<p1>}{<p2>} commands
  \end{nreferences}
% definitions, symbols, abbreviation clause as appropriate
\clause{<Clause title>}
% THE BODY OF THE DOCUMENT
% ...
% \normannex{<Normative annex title>}
% ...
% \infannex{<Infomative annex title>}
% ...
\bibannex                            % optional bibliography
  % bibliography listing
% the index
\end{document}
```


Annex C
(informative)
Creating an index

LaTeX, although providing some assistance in preparing the data for an index, only does part of the job. Providing the command `\makeindex` is put in the document's preamble the LaTeX command `\index{text}` writes out `text` to an .idx file in the following format:

```
\indexentry{text}{pg}
```

where `pg` is the page number in the document where the `\index` command occurred.

The `theindex` environment is used for printing an index. The format of this is:

```
\begin{theindex}
\item <text and page numbers>
  \subitem <text and page numbers>
    \subsubitem <text and page numbers>
.
.
\end{theindex}
```

where `\item` is a major topic entry, `\subitem` is a sub-topic entry, and `\subsubitem` is a sub-subtopic entry. The command `\indexspace` can be used to add space between the entries. Other text and commands can also occur within the environment.

LaTeX provides no help in going from an .idx file to the `theindex` environment [1]. The data in the file has to be sorted, duplicate page numbers deleted, etc, and then re-written in the desired environment format.

The typical process for producing a document with an index is:

a) Prepare the source file, say fred.tex, with the command `\makeindex` in the preamble, and `\index` commands within the body of the text.

b) Run LaTeX. As well as producing the usual output files, it will also produce the file fred.idx.

c) By some means produce a file, let's call it fredidx.tex, from the data in fred.idx that contains the appropriate `theindex` formatted data.

d) Run LaTeX again on fred.tex which now has to contain (either via `\input` or `\include`) the file fredidx.tex.

Chen and Harrison [7] discuss the problems of creating an index in their paper *Index preparation and processing* and also describe the MakeIndex program. Goosens, Mittelbach and Samarin [5] also describe how to use the MakeIndex program for producing indexes for LaTeX documents. For users of MakeIndex a style file called iso.ist is provided as part of this distribution.

C.1 The index command

The \index command is one of the standard LaTeX commands. The command format is \index{<*str*>}, where <*str*> is any string of characters, and it writes an entry to the .idx file in the form \indexentry{<str>}{pg}, where pg is the page number in the document where the command is called.

Some points to note:

— The \index command is, in LaTeX terminology, *fragile*. That is, if it appears in a moving argument (like the caption to a table or figure) it must be preceded by the LaTeX \protect command.

— Any of the ten LaTeX special characters (i.e., #, $, %, &, ~, _, ^, \, { and }) may appear within the argument, with the proviso that it must have no unmatched braces (the braces in \{ and \} are counted in the matching process).

— The \index command must not appear inside another command's argument (e.g., within a \footnote or \clause command) unless the argument of the \index command contains only letters, digits, and/or punctuation characters. In particular, it should not contain any of the special characters.

  NOTE 1 This means that the argument of the \ix command should not contain any special characters. Remember that the \ix command prints its argument in the body of the text and also calls \index to place its argument into the .idx file.

NOTE 2 Under some circumstances, an \index command appearing in another command's argument may contain special characters, provided they are \protected. Determination of when this is satisfactory is a process of trial and error.

EXAMPLE 1 The command \ix{an\protect_underscore} will print the characters *an_undescore* in the text and also write the following to the .idx file:

```
\indexentry{an\_ underscore}{pg}
```

Notice that there is a space between the underscore character and the word 'underscore' in the .idx file (but there is no space in the printed body of the document text). This extraneous space may have to be edited out from the final index.

Annex D
(informative)
LaTeX, the Web, and *ML

ISO are becoming more interested in electronic sources for their standards as well as the traditional camera-ready copy. Acronyms like PDF, HTML, SGML and XML have been bandied about. Fortunately documents written using LaTeX are well placed to be provided in a variety of electronic formats. A comprehensive treatment of LaTeX with respect to this topic is provided by Goossens and Rahtz [6].

SGML (Standard Generalized Markup Language) is a document tagging language that is described in ISO 8879 [8] and whose usage is described in [10], among others. The principal mover behind SGML is Charles Goldfarb from IBM, who has authored a detailed handbook [9] on the SGML standard.

The concepts lying behind both LaTeX and SGML are similar, but on the face of it they are distinctly different in both syntax and capabilities. ISO is migrating towards electronic versions of its standard documents and, naturally, would prefer these to be SGML tagged. Like LaTeX, SGML has a concept of style files, which are termed DTDs, and both systems support powerful macro-like capabilities. SGML provides for logical document markup and not typesetting — commercial SGML systems often use TeX or LaTeX as their printing engine, as does the NIST SGML environment for ISO 10303 [11].

NIST have SGML tagged some ISO 10303 documents using manual methods, which are time consuming and expensive. About 1997 there was a NIST effort underway to develop an auto-tagger that would (semi-) automatically convert a LaTeX tagged document to one with SGML tags. This tool assumed a fixed set of LaTeX macros and a fixed DTD. The design of an auto-tagger essentially boils down to being able to convert from a source document tagged according to a LaTeX style file to one which is tagged according to an SGML DTD. Fully automatic conversion is really only possible if the authors' of the documents to be translated avoid using any 'non-standard' macros within their documents. There is a program called ltx2x available from SOLIS, which replaces LaTeX commands within a document with user-defined text strings [12]. This can be used as a basis for a LaTeX to whatever auto-tagger, provided the LaTeX commands are not too exotic.

HTML is a simple markup language, based on SGML, and is used for the publication of many documents on the Web. XML is a subset of SGML and appears to being taken up by every man and his dog as *the* document markup language. HTML is being recast in terms of XML instead of SGML. PDF is a page description language that is a popular format for display of documents on the Web.

LaTeX documents can be output in PDF by using pdfLaTeX. Instead of a .dvi file being produced a .pdf file is output directly. The best results are obtained when PostScript fonts rather than Knuth's cm fonts are used. Noting that the iso class provides an `\ifpdf` command, a general form for documents to be processed by either LaTeX or pdfLaTeX is

```
\documentclass{isov2}
\usepackage{times}     % PostScript fonts Times, Courier, Helvetica
\ifpdf
  \pdfoutput=1         % request PDF output
  \usepackage[pdftex]{graphicx}
\else
```



```
  \usepackage{graphicx}
\fi
...
```

There are several converters available to transform a LaTeX document into an HTML document, but like ltx2x they generally do their own parsing of the source file, and unlike ltx2x are typically limited to only generating HTML. Eitan Gurari's TeX4ht suite is a notable exception (see Chapter 4 and Appendix B of [6]). It uses the .dvi file as input, so that all the parsing is done by TEX, and can be configured to generate a wide variety of output formats. A set of TeX4ht configuration files are available for converting ISO LaTeX documents into HTML[5)].

Some points to watch when writing LaTeX documents that will assist in translations into *ML are given below. Typically, attention to these points will make it easier to parse the LaTeX source.

— Avoid using the `\label` command within clause headings or captions. It can just as easily be placed immediately after these constructs.

— Avoid using the `\index` command within clause headings or captions. It can just as easily be placed immediately after these constructs.

[5)]Later, configuration files for XML output will be developed.

Annex E
(informative)
Obtaining LaTeX and friends

LaTeX is a freely available document typesetting system. There are many public domain additions to the basic system. The information below gives pointers to where you can obtain LaTeX etc., from the Internet.

LaTeX runs on a wide variety of hardware, from PCs to Crays. Source to build a LaTeX system is freely available via anonymous ftp from what is called CTAN (Comprehensive TeX Archive Network). There are three sites; pick the one nearest to you.

— `ftp.dante.de` CTAN in Germany;

— `ftp.tex.ac.uk` CTAN in the UK;

— `ctan.tug.org` CTAN in the USA;

The top level CTAN directory for LaTeX and friends is `/tex-archive`. CTAN contains a wide variety of (La)TeX sources, style files, and software tools and scripts to assist in document processing.

NOTE CTAN is maintained by the TeX Users Group (TUG). Their homepage `<http://www.tug.org>` should be consulted for the current list of CTAN sites and mirrors.

Annex F
(informative)
Changes in this release

Many of the commands and environments have been redefined in order to match the change in requirements from the the third to the fourth edition of the ISO Directives. Usage of these is unaffected.

The following changes have been made in this release:

— The `cover` environment has been added;

— The boolean test `\ifpdf` has been added;

— The command `\fwdnopatents` has been added for patent boilerplate in the Foreword.

— The command `\tpasfwdbp` has been added for TS/PAS Foreword boilerplate.

— The command `\intropatents` has been added for patent boilerplate in the Introduction.

— The commands `\pref` and `\pagerefname` have been added.

— The command `\trwfwdbpi` for Foreword boilerplate in a Technical Report has been deleted.

— The `notes` and `examples` environments have been deleted.

— Support is provided for the hyperref package.

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