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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2709 was drawn up by Technical Committee ISO/TC 46, *Documentation*, and circulated to the Member Bodies in April 1972.

It has been approved by the Member Bodies of the following countries :

Austria	Germany	Romania
Belgium	India	South Africa, Rep. of
Brazil	Ireland	Sweden
Canada	Israel	Switzerland
Denmark	Italy	Thailand
Egypt, Arab Rep. of	Netherlands	Turkey
Finland	New Zealand	United Kingdom
France	Portugal	U.S.A.

The Member body of the following country expressed disapproval of the document on technical grounds :

Czechoslovakia

Documentation — Format for bibliographic information interchange on magnetic tape

1 SCOPE

This International Standard specifies the requirements for a generalized machine format which will hold any type of bibliographic record. It does not define the content of individual records or the meanings assigned to tags, indicators or identifiers; it only describes a generalized stucture, a framework designed specially for communications between data processing systems and not for use within systems.

2 FIELD OF APPLICATION

This International Standard describes a generalized structure which can be used to transmit, between data processing systems, records describing all forms of material capable of bibliographic description.

Although this International Standard is designed for magnetic tape, its structure may be used for other data carriers of bibliographic description, as well as related records such as authority records.

3 DEFINITIONS

For the purpose of this International Standard the following definitions apply. They are listed in the order corresponding to Figure 2.

3.1 bibliographic record : A collection of fields, including a record label, a directory and bibliographic data describing one or more bibliographic units treated as one entity.

3.2 datafield : A variable length portion of the bibliographic record containing a particular category of data, following the directory and associated with one entry of the directory.

NOTE — A datafield may contain one or more subfields.

3.3 (subfield) identifier : A data element, one or more characters immediately preceding and identifying a subfield. (See Note to 4.3.1.)

NOTE — Its first or only character must always be IS$_1$ of ISO 646.

3.4 indicator : The first data element, if present, associated with a datafield supplying further information about the contents of the field, about the relationship between the field and other fields in the record, or about the action required in certain data manipulation processes. (See Note to 4.3.2.)

3.5 record : See 3.1, bibliographic record.

3.6 directory : A table of entries giving the tag, length and location within the record of each datafield.

3.7 record label : A field occurring at the beginning of each bibliographic record providing parameters for the processing of the record.

3.8 separating character : A control character used to separate and qualify units of data logically, and in some cases hierarchically.

3.9 subfield : A part of a field containing a defined unit of information.

3.10 subrecord : A group of fields within a record which may be treated as an entity.

3.11 structure : An arrangement of the parts constituting a bibliographic record.

3.12 (field) tag : Three characters associated with a field and used to identify it.

4 STRUCTURE OF COMMUNICATION FORMAT FOR BIBLIOGRAPHIC RECORD

The general structure of a bibliographic record is shown schematically in Figure 1. A more detailed structure is shown schematically in Figure 2, which includes four alternatives for the bibliographic fields.
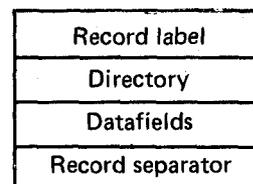
Record label
Directory
Datafields
Record separator

FIGURE 1 — **General structure**

A bibliographic record includes the items defined in section 3 and contains the following fixed and variable length fields in the sequence shown in Figure 2 :

— a record label   fixed field

— a directory   variable field

— record identifier   variable fields

— reserved fields   variable fields

— bibliographic fields   variable fields

— field separators

— a record separator

The field separator shall be character IS_2 of ISO 646.

The record separator shall be character IS_3 of ISO 646.

4.1 RECORD LABEL

The record label shown in Figure 2 consists of a number of sections defined as follows :

4.1.1 record length (character positions 0 to 4) : The number of character positions in the record including the record label and the record separator. The length is a 5-digit decimal number justified right with zero fill if necessary.

NOTE — For practical reasons relating to machine processing of data, the information may have to be divided into blocks usually of a length of 2 048 characters. This International Standard assumes a standardized technique for spanning such blocks.[1]

4.1.2 record status (character position 5) : A single character, to be defined in an implementation International Standard, describing the status of a record, for example new, amended.

4.1.3 implementation codes (character positions 6 to 9) : Codes, to be defined in an implementation International Standard describing, for example, record type (a book, a journal, an article, a map, a picture, etc.) and bibliographic level (analytical, monographic, serial, etc.).

4.1.4 indicator length (character position 10) : One decimal digit giving the number of character positions of the indicators. If indicators are not used, the indicator length is set to zero.

4.1.5 identifier length (character position 11) : One decimal digit giving the number of character positions of the identifier. The first or only character of this identifier must always be IS_1 of ISO 646.

If the identifier is not used, the identifier length is set to zero.

4.1.6 base address of data (character positions 12 to 16) : Five decimal digits justified right with zero fill if necessary, and equal to the combined length in characters of the record label, the directory and the field separator at the end of the directory.

4.1.7 directory map

(character position 20) : One decimal digit equal to the length in characters of the "length of field" part of each entry in the directory.

(character position 21) : One decimal digit equal to the length in characters of the "starting character position" part of each entry in the directory.

The arithmetic sum of these two decimal digits shall be 9.

4.2 DIRECTORY

The directory consists of a variable number of entries each corresponding to its respective datafield (record identifier, reserved and bibliographic fields). The directory ends with a field separator (fs).

4.2.1 directory entry : An entry consists of a "tag", a "length of datafield" and "starting character position" in that sequence.

The length of the "tag" is three characters and the combined length of "length of datafield" and "starting character position" is nine characters. Consequently, the length of an entry is twelve characters.

4.2.2 tag : Three characters, which, according to definition in an implementation International Standard specify the name of any associated datafield.

4.2.3 length of datafield : The length is either :

1) the total number of characters (including indicator(s) and field separator) in the datafield indicated by the preceding tag; or

2) zero, implying that the directory entry refers to a datafield whose total length is greater than the largest decimal number (n) which can be stored in the "length" of a directory entry. In this case, the datafield is regarded as being divided into a number of parts of which all but the last are of equal length (n). Each part has a corresponding directory entry containing the tag for the datafield and the starting character position of the part to which the directory entry refers. A length "zero" indicates that the directory entry refers to part of a datafield which is not the final part and that the length of this part is to be taken as (n); or

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1) The responsibility for standardizing block spanning lies, however, with ISO/TC 97, *Computers and information processing.* When such a technique has been agreed upon, the reference of the corresponding International Standard will be added in section 5.

Additionally, the definition of the record length may be revised accordingly.

3) the number of characters (including field separator) in the final part of a datafield which has been treated as described in 2).

In the cases described in 2) and 3), all directory entries which refer to parts of the same datafield must be adjacent and in sequence.

4.2.4 starting character position : A decimal number giving the position of the first character of the datafield identified by the preceding tag, relative to the base address of data (i.e. the starting character position of the first datafield following the directory is ϕ).

4.3 DATAFIELDS

All datafields shall end with a field separator.

There are three types of field :

— record identifier field : tag 001;

— reserved fields : tags 002 to 009 as required;

— bibliographic field : tags 010 to 999 as required.

4.3.1 record identifier[1] field : Characters uniquely associated with the record and assigned by the organization creating the bibliographic record.

4.3.2 reserved fields[1] : A reserved datafield supplies parameters which may be required for the processing of the bibliographic record.

When, for bibliographic reasons, it is necessary to divide bibliographic records into subrecords, tag 002 shall be used for a subrecord directory constructed in the same way as the directory and referring to the directory.

4.3.3 bibliographic fields : Each bibliographic field consists of an indicator (optional), identifer(s) (optional), data and a field separator. The presence and length of the indicator(s) or identifier(s) are determined by the indicator length and identifier length as defined in the record label and must be used consistently within each bibliographic field of the record.

Each bibliographic field in a record must therefore be constructed according to one of the following alternatives :

1) data — In this case, the indicator length and the identifier length in the record label are set to zero. See Figure 2, alternative 1.

2) identifier(s) and data — In this case, the indicator length in the record label is set to zero and the identifier length is set to 1 or more. See Figure 2, alternative 2.

3) indicator(s) and data — In this case, the indicator length in the record label is set to 1 or more and the identifier length is set to zero. See Figure 2, alternative 3.

4) indicator(s), identifier(s) and data — In this case, the indicator length and the identifier length in the record label are set to 1 or more. See Figure 2, alternative 4.

5 REFERENCES

5.1 ISO 646, *7-bit coded character set for information processing interchange.*

This document describes a character set for general usage, including letters, figures, punctuation marks, other symbols and control characters, with their coded representation.

NOTE — In ISO 646 the separators used below are specified under IS_1, IS_2 and IS_3.

5.2 ISO/R 962, *Implementation of the 7-bit coded character set on 9-track 12,7 mm (1/2 in) magnetic tape.*

This document describes how the codes for the characters in the 7-bit code are represented on 9-track magnetic tape.

5.3 ISO/R 1001, *Magnetic tape labelling and file structure for information interchange.*[2]

This document relates to information interchange utilizing magnetic tape, by providing magnetically recorded labels to identify and structure files, and by providing a standard structure for the blocks containing the records that constitute a file.

5.4 ISO/R 1863, *9-track 32 RP mm (800 RPI) magnetic tape for information interchange.*

This document provides a format and recording standard for 9-track 12,7 mm (1/2 in) wide magnetic tape and reels to be used for information interchange among information processing systems, communication systems, and associated equipment utilizing the 7-bit coded character set specified in ISO 646.

5.5 ISO 2022, *Code extension techniques for the use of the 7-bit coded character set.*

This document describes the use of combinations of characters from the 7-bit set to provide characters not included in that set.

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1) Record identifier field and reserved datafields do not contain indicator(s) or identifier(s).
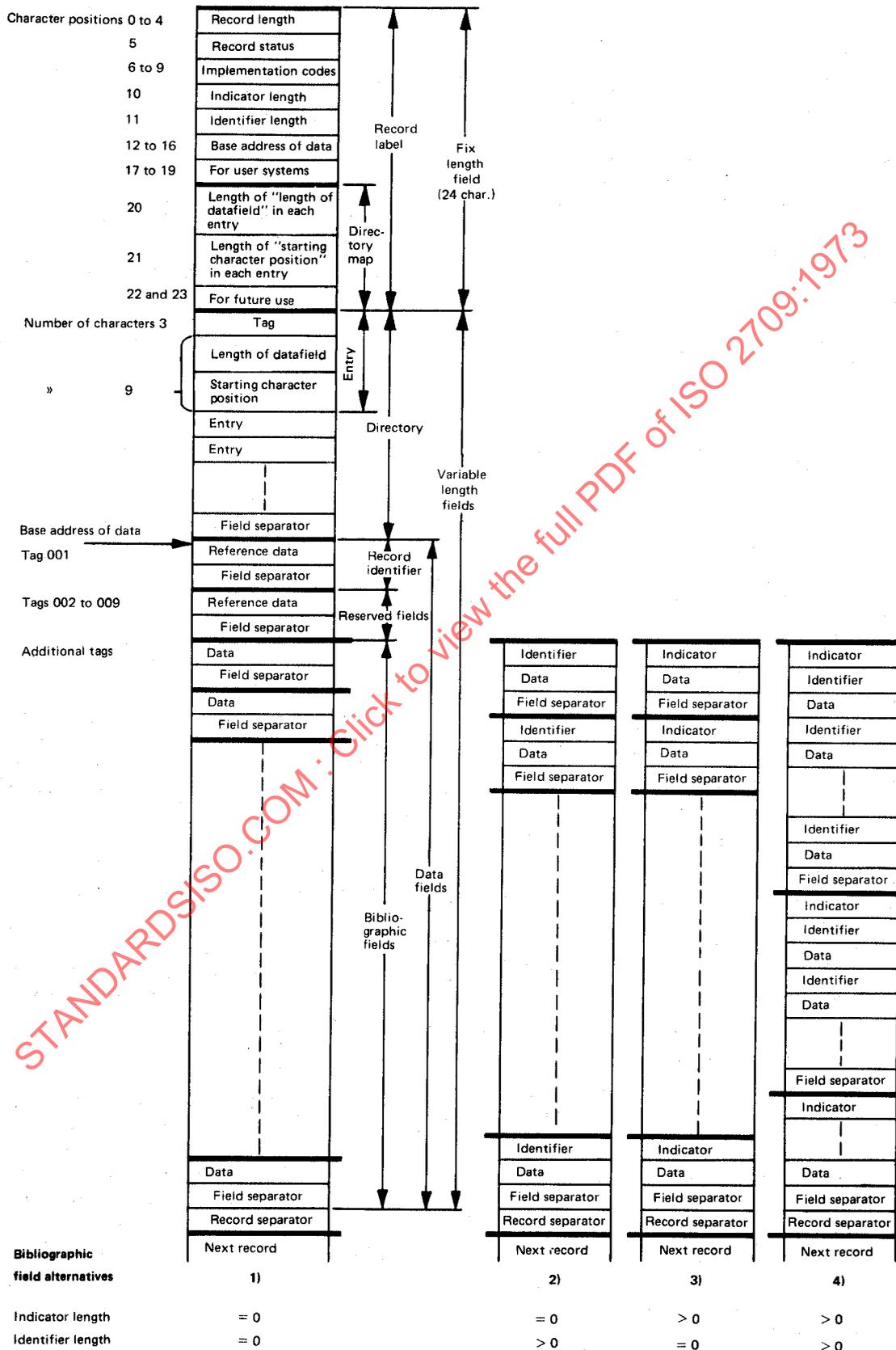
2) At present under revision.

FIGURE 2 — Detailed structure