
**Photography — 135-size film and
magazine — Specifications**

Photographie — Film et cartouche de format 135 — Spécifications

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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 1007 was prepared by Technical Committee ISO/TC 42, *Photography*.

This third edition cancels and replaces the second edition (ISO 1007:1995) which has been technically revised.

This revision of ISO 1007 includes the following significant additions and changes:

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- a) A clause for definitions has been added in order to assist the reader of this International Standard in the proper interpretation of the information presented. [ISO 1007:2000](#)
 - b) A specification has been added for the single-track frame-number bar-codes, specifically the relationship of the eye-readable frame-number to its bar-code. <https://standards.iteh.ai/catalog/standards/sist/49c631d0-c653-408e-bec7-eb28cf205d25/iso-1007-2000>
 - c) In the dual-track frame-number bar-code system, encoding of frame numbers greater than 36A has been incorporated.
 - d) The element width for the dual-track frame-number bar-code has been changed to allow element widths to be “narrower” than in the previous edition of this International Standard.
 - e) The magazine bar-code system has been modified to allow for additional film lengths (digit 6), as well as a change to digit 1 for additional flexibility.
 - f) Since part of 9.3 (DC electrical characteristics) was judged to apply to the test device (as opposed to the magazine itself), it has been moved to informative annex B. It is now consistent with the philosophy that test methods generally be documented only in informative annexes.
 - g) The text regarding how manufacturers shall be assigned DX numbers has been improved significantly. A new method of using the magazine bar codes has been added to allow additional flexibility.
 - h) Several issues that were included in the informative annexes of the second edition of this International Standard were judged to be obsolete. They have been removed in the interest of simplifying this revision, for example, measurements and calculations for estimating the location of film edges and measurement of velvet stiffness.

Annex A forms a normative part of this International Standard. Annexes B and C are for information only.

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Photography — 135-size film and magazine — Specifications

1 Scope

This International Standard specifies the following:

- dimensions of film lengths;
- latent-image frame numbering;
- latent-image digital bar-codes to identify the film DX number;
- dimensions of daylight-loading film magazines for use with 135-size cameras;
- a magazine bar-code that identifies the film's DX number as well as the number of exposures;
- camera auto-sensing areas, which provide an electrically readable encodement of film speed, number of exposures, and recommended exposure latitude for use with appropriately designed cameras;
- an information panel on which the film identification, speed and number of exposures are visible through a window in the back of appropriately designed cameras;
- film pull-out force specification,
- film-spool attachment strength specification.

This International Standard is not intended to apply to "bulk" 35-mm film used for reloading into 135-size magazines, nor to the reloadable magazines themselves. Also, this standard does not apply to 135-size film and magazines that are used in single-use camera applications.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard 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 1:1975, *Standard reference temperature for industrial length measurements*.

ISO 554:1976, *Standard atmospheres for conditioning and/or testing — Specifications*.

3 Terms and definitions

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

NOTE Several terms (e.g. leader, trailer and tongue) have been defined in the text of this International Standard.

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3.1

135-size

name of the film format that uses 35 mm film, perforated on both edges, cut to standard lengths, and loaded into a specific size magazine for loading into 135-size cameras

3.2

aim dimension

preferred dimension at which the manufacturing process will be aimed or designed

3.3

bar-code

array of parallel rectangular bars and spaces that together represent data elements or characters in a particular symbology

NOTE 1 Bars and spaces are arranged in a predetermined pattern following unambiguous rules defined by the symbology.

NOTE 2 For more information on symbology and definitions related to bar-codes, refer to [1] in the bibliography.

3.4

basic dimension

numerical value used to describe the theoretically exact size, profile, orientation, or location of a feature or a datum target

NOTE It is the basis from which permissible variations are established by tolerances on other dimensions, in notes, or in feature-control frames.

3.5

colour-negative process

chemistry used to convert appropriately designed film into colour negatives for the purpose of creating colour prints

EXAMPLE C-41, CN-16, etc.

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3.6

DX

term that describes a system of encoding information on 135-size film and magazines that is useful in the operation of cameras and photofinishing equipment

NOTE This includes camera autosensing code, latent-image bar-codes, magazine bar-code and the magazine information panel.

3.7

DX number

two-part number used to identify specific 135-size products

NOTE Part 1 is assigned by the Photographic & Imaging Manufacturers Association (PIMA) to the sensitizer. Part 2 is assigned by the sensitizer to each product.

3.8

exposure latitude

range of exposures that yield satisfactory results

3.9

film

flexible plastic material (usually transparent triacetate or polyester), coated with a sensitized gelatin layer (an emulsion) that can produce stable images upon exposure to light followed by chemical processing

3.10

film speed

quantitative measure of the response of the photographic film to radiant energy for the specified conditions of exposure, processing, image density measurement, and analysis

3.11**magazine**

light-tight chamber for film, made of metal and designed to fit into certain sizes of cameras

3.12**perforations**

series of specified holes punched in the film near both edges for the purpose of film transport and locating

3.13**spool**

cylindrical device that has a rim or edge at each end and an axial hole for a pin or spindle on which a roll of film is wound

3.14**tolerances**

dimensions that define the boundaries of product conformance to this International Standard

NOTE When tolerances are expressed as "±", the reference is to the aim dimension.

4 Conditions for measurement of dimensions

The dimensions and tolerances specified in this International Standard shall apply at the time of manufacture (except where specifically stated otherwise), when measured under atmospheric conditions of $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \%$ relative humidity as specified in ISO 554.

All measuring instrument calibrations shall be conducted at a temperature of $20 ^\circ\text{C}$, as specified in ISO 1, and a relative humidity of 50 %.

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5 Film cutting and perforation dimensions

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5.1 Film dimensions

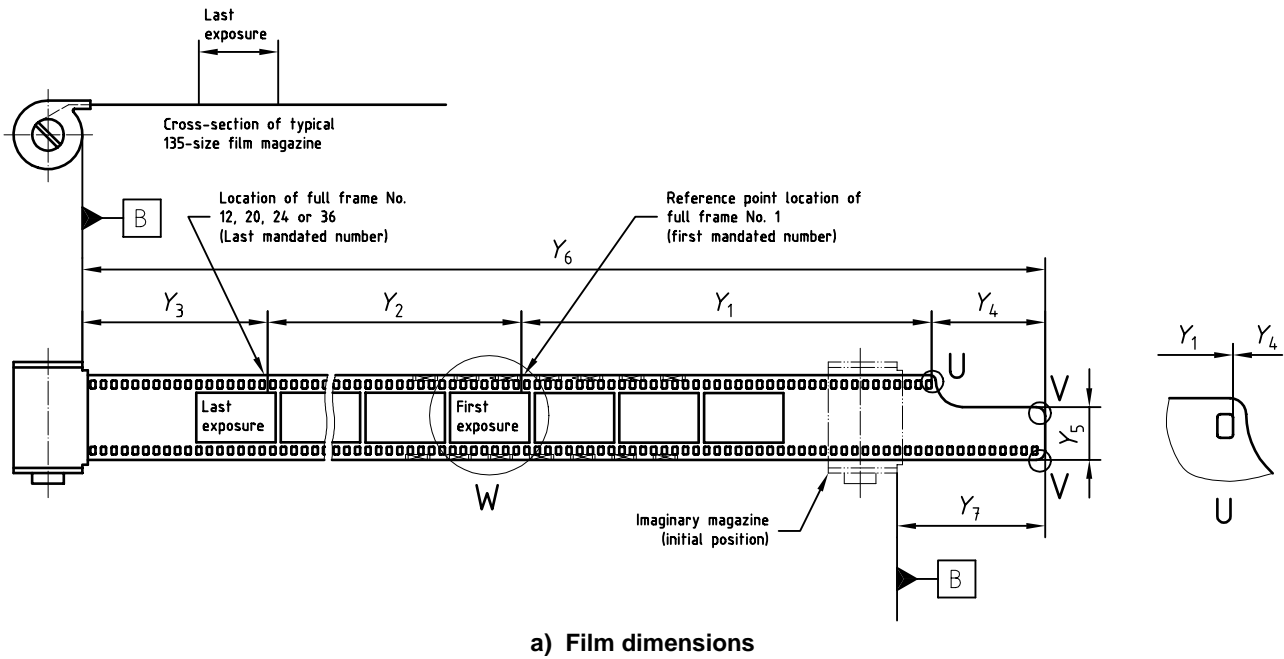
The film shall conform to the dimensions shown in Figure 1 and given in Table 1, as well as those in Figure 2 and Table 2.

Dimension G in Figure 2 and Table 2 is the offset of any given side-to-side perforation pair.

CAUTION — These dimensions apply at the time of cutting and may change over time.

5.1.1 Leader

The leader length dimension ($Y_1 + Y_4$) is that part of the film that precedes full-frame number 1 and includes the tongue. It is used for threading the camera and protecting the picture area from unintentional exposure. The film manufacturer may utilize the portion of the leader extending from the magazine for identification purposes.



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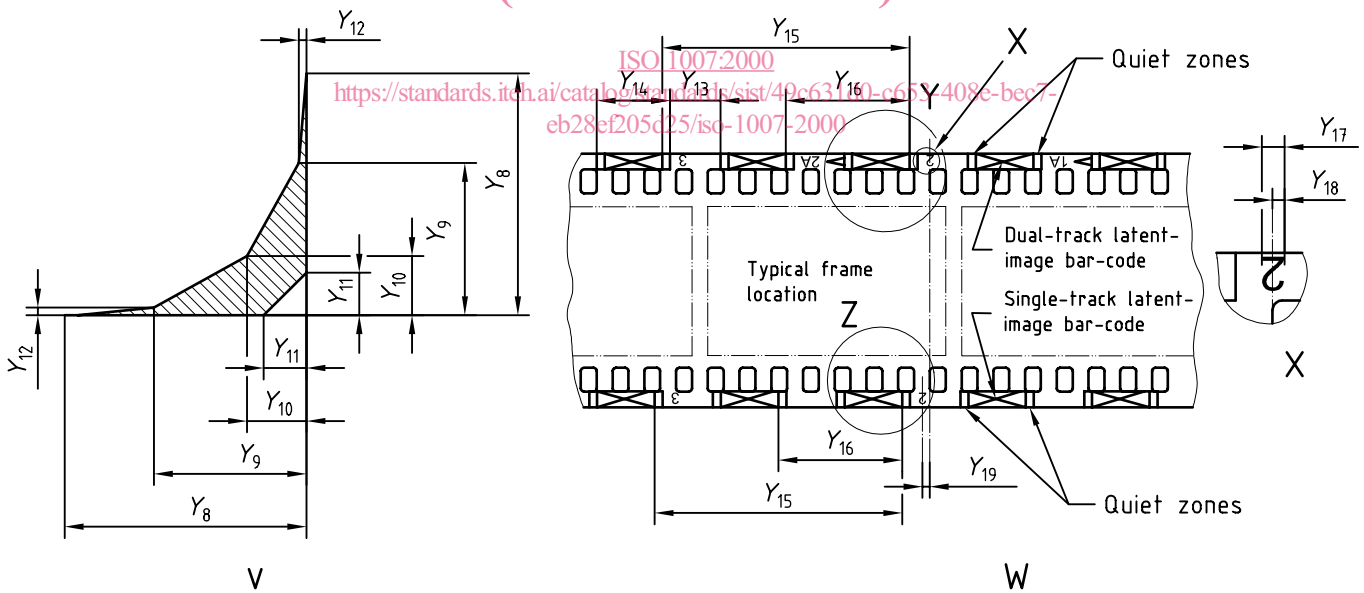
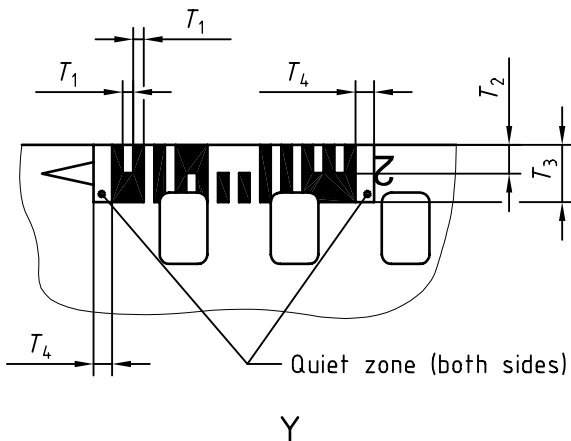
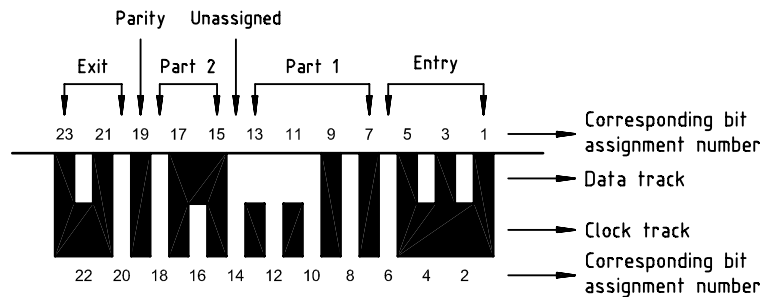


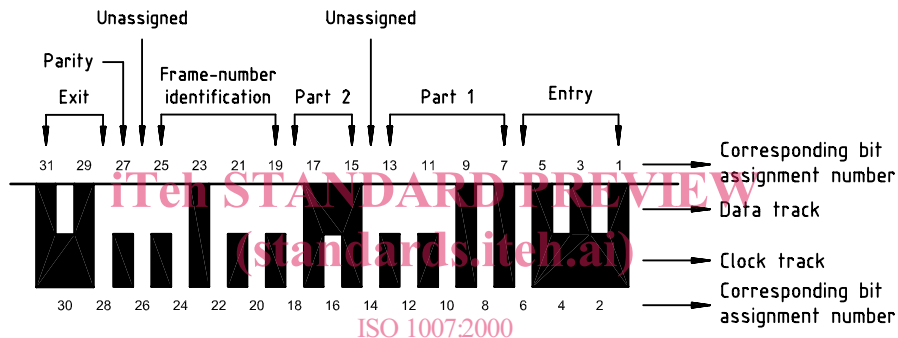
Figure 1 — 135-size film and latent-image bar codes



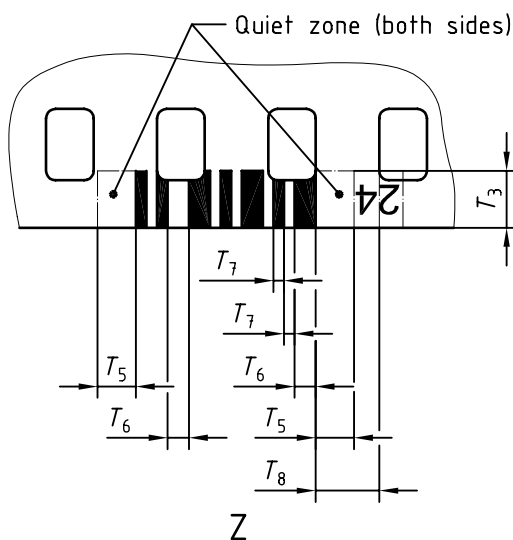
d) Dual-track bar-code dimensions



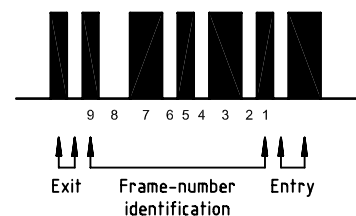
e) Latent-image dual-track bar-code



f) Latent-image dual-track bar-code with optional frame number ^a



g) Optional single-track bar-code dimensions



h) Optional latent-image single-track bar-code

NOTE Film shown with image-bearing side away from observer (see Table 1). For more information on the image-bearing side, refer to [2] in the bibliography.

^a Bar-code dimensions are specified in d) by T_1 , T_2 , T_3 and T_4 .

Figure 1 (continued)

5.1.2 Tongue

The tongue is the narrow part of the leader, dimension Y_5 in width and Y_4 in length, shaped to facilitate camera loading and winding. The profile at the corners of the extreme leading end of the film tongue shall be rounded within the limits shown in Figure 1b) and given in Table 1. The corners shall have no stepped or sharp features. The cut across the end of the tongue shall not have steps that exceed 1,3 mm.

5.1.3 Trailer

The trailer, dimension Y_3 in length, is that part of the film that extends from the last full-frame number to the B datum plane when the film has been pulled as far as possible out of the magazine. The trailer shall be composed entirely of full-width film to assure proper rewinding into the magazine.

Table 1 — Dimensions of 135-size film and latent-image identification (see Figure 1)

Dimensions in millimetres

Symbol	Minimum	Basic	Maximum	Remarks
Y_1	161,5	—	185,25	See note 1
Y_2	—	—	—	See note 2
Y_3	72,41	—	—	See note 3
Y_4	38,10	—	40,77	See note 4
Y_5	—	—	23	See note 5
Y_6	—	—	—	See note 6
	689,91	—	—	12 exposures
	1145,91	—	—	24 exposures
	1601,91	—	—	36 exposures
Y_7	43,91	—	71,76	See note 7
Y_8	—	—	5	
Y_9	—	3	—	
Y_{10}	—	—	1,3	
Y_{11}	0,8	—	—	
Y_{12}	—	—	0,2	
Y_{13}	6,35	—	—	See note 8
Y_{14}	—	11,61	—	See note 8
Y_{15}	—	38	—	See note 9
Y_{16}	—	19	—	See note 9
Y_{17}	—	—	—	See note 10
Y_{18}	—	—	—	See note 10
Y_{19}	—	—	0,5	See note 11
T_1	0,35	—	0,53	See note 12
T_2	0,75	—	1,26	
T_3	2,06	—	2,60	

Table 1 (continued)

Dimensions in millimetres

Symbol	Minimum	Basic	Maximum	Remarks
T_4	0,38	—	—	Quiet zone
T_5	1,5	—	—	Quiet zone
T_6	0,95	—	1,11	Wide element
T_7	0,38	—	0,54	Narrow element
T_8	2,60	3,10	3,60	See note 13

NOTE 1 Reference point for the dimensions is the full-frame number 1 (see clause 6).

NOTE 2 Distance from the first designated full-frame number to the last designated full-frame number. Y_2 was given as a basic dimension in the 1995 edition of ISO 1007, but has been judged unnecessary for listing in this edition.

NOTE 3 Distance from the last designated full-frame number to the B datum plane.

NOTE 4 Distance from the end of the film to the leading edge of the first perforation in the full-width portion of the film.

NOTE 5 The measurement of tongue width is made at the extreme end. The shape of the rest of the tongue is optional.

NOTE 6 Minimum total film length from the end of the tongue to the B datum plane when the film is fully extended from the magazine.

NOTE 7 Distance from the end of the tongue to the B datum plane when the film is in its initial position.

NOTE 8 Dimensions Y_{13} and Y_{14} refer to dual-track latent-image bar-codes. Y_{14} includes quiet zones. Y_{13} is not specified under the optional frame-number bar-code system.

NOTE 9 Full-frame (Y_{15}) and half-frame (Y_{16}) pitch are basic dimensions.

NOTE 10 Y_{17} and Y_{18} are used to define the centreline of the eye-readable frame number.

NOTE 11 Y_{19} is always a positive number.

NOTE 12 T_1 is the width of any element (exposed or unexposed) in the clock track, data track, or both tracks. In order to enhance the effectiveness of some bar-code readers, the edge of any bar in the data track should be linear with an edge of a bar in the clock track.

NOTE 13 The distance from the centreline of the numerical frame-number to the nearest end of the corresponding frame-number bar-code. In cases where the numerical frame-number is 10 or more, the centreline is that for the numeral as a whole (see Figure 1).