INTERNATIONAL STANDARD

**ISO 1116**

Second edition
1999-07-15

# Micrographics — 16 mm and 35 mm microfilm spools and reels — Specifications

*Micrographie — Bobines d'approvisionnement et de lecture pour microfilms de* 16 mm *et* 35 mm *— Spécifications*



Reference number
ISO 1116:1999(E)

## Contents







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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.

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.

International Standard ISO 1116 was prepared by Technical Committee ISO/TC 171, *Document imaging applications*, Subcommittee SC 2, *Application issues*.

This second edition cancels and replaces the first edition (ISO 1116:1975). Specifications relating to unexposed and to imaged microfilms have been excluded in this edition, since they are now dealt with in other specific standards. Minor technical changes have been made to take into account the spools and reels now on the market.

# Micrographics — 16 mm and 35 mm microfilm spools and reels — Specifications

## 1 Scope

This International Standard specifies the dimensions of 16 mm and 35 mm microfilm supply spools and reader reels.

Spools and reels that are an integral component of a cartridge, cassette, or magazine used in microfilm-recording or microfilm-reading equipment are not covered by this standard.

## 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 1019:1982, *Cinematography — Spools, daylight loading type, for 16 mm motion-picture cameras — Dimensions.*

ISO 3042:1992, *Cinematography — Labelling of containers for raw-stock motion-picture films and magnetic films — Minimum information specifications.*

ISO 3047:1982, *Cinematography — Spool, daylight loading type, for 35 mm motion-picture cameras (capacity 30 m - 100 ft) — Dimensions.*

ISO 6148:1993, *Photography — Film dimensions — Micrographics.*

ISO 6196-4:1998, *Micrographics — Vocabulary — Part 4: Materials and packaging.*

ISO 6199:1991, *Micrographics — Microfilming of documents on 16 mm and 35 mm silver-gelatin type microfilm — Operating procedures.*

ISO 7761-1:—[1)], *Micrographics — Single-core cartridge for 16 mm processed microfilm — Dimensions and operational constraints — Part 1: Open-type cartridge*.

ISO 10214:1991, *Photography — Processed photographic materials — Filing enclosures for storage.*

## 3 Definitions

For the purposes of this International Standard, the definitions given in ISO 6196-4 apply.

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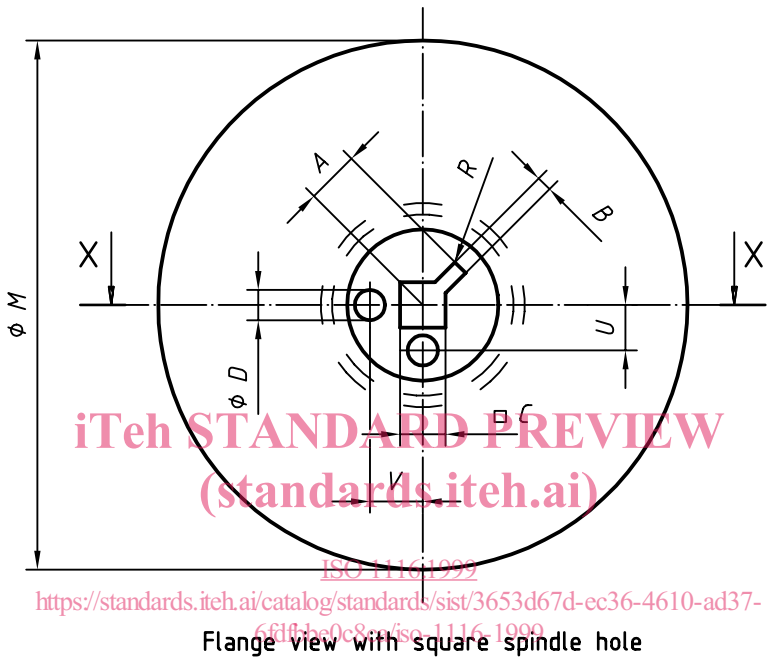
1) To be published.

# 4 Specifications

## 4.1 Supply spool

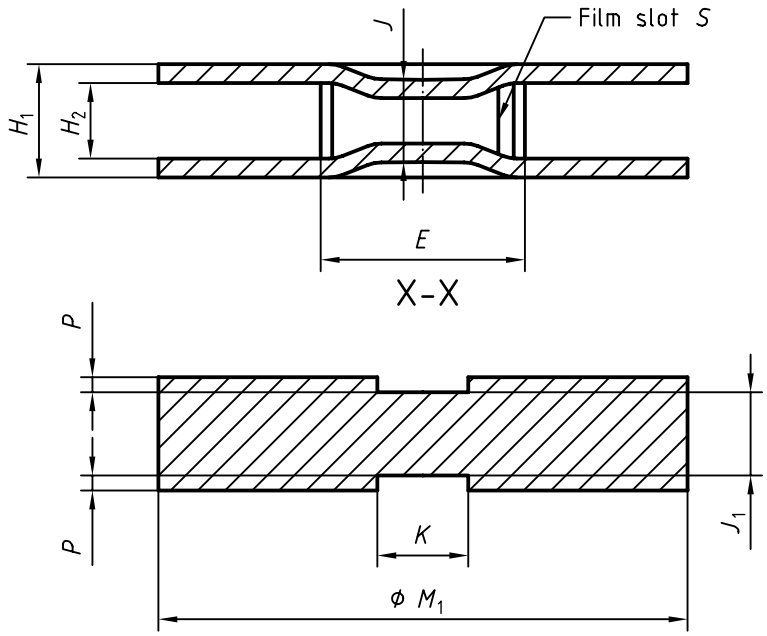
### 4.1.1 Dimensions

The dimensions of the supply spool shall conform to the values in Figures 1 and 2 and Tables 1, 2, and 3.






Flange view with square spindle hole




Volume of rotation diagram

**Figure 1 — Metal spool**

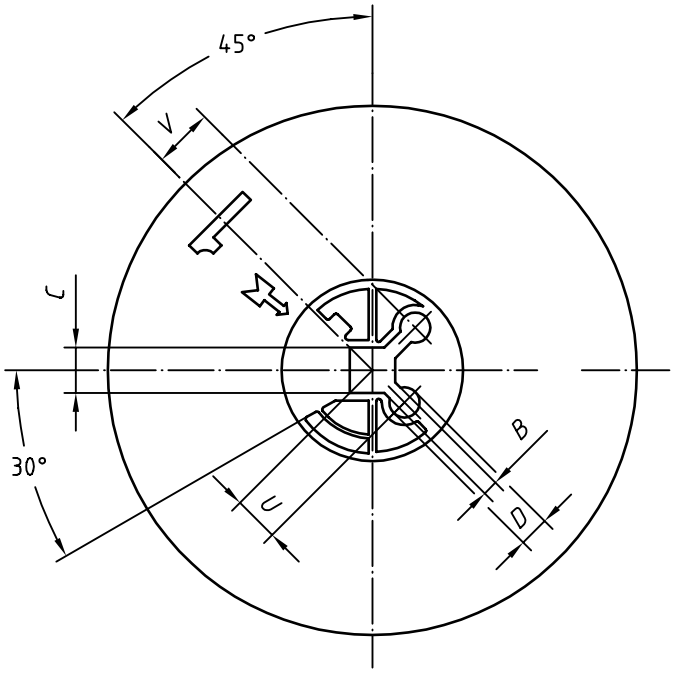



**Figure 2 — Plastic spool**



**Table 1 — Dimensions common to 16 mm and 35 mm spools**

Dimensions in millimetres



| Dimension [a] | |
|---|---|
| *A* | $7{,}60^{+1{,}00}_{0}$ |
| *B* | $3{,}10^{+0{,}40}_{0}$ |
| *C* | $8{,}05^{+0{,}05}_{0}$ |
| *D* | 5,46 min. |
| *E* | 32,00 ± 0,50 |
| *K* | 25,40 min. |
| *P* | 0,50 max. |
| *S* | 0,75 min. (width x H (length)) |
| *U* | 8,15 ± 0,15 |
| *V* | $11{,}20\ ^{0}_{-0{,}20}$ |

[a] See Figure 1 and Figure 2.

**Table 2 — Dimensions common to 16 mm spools only**

Dimensions in millimetres

| Dimension [a] | |
|---|---|
| $H_1$ [b] | 16,23 ± 0,18 |
| $H_2$ | 16,00 min. |
| $J$ and $J_1$ | $18{,}50^{0}_{-0{,}40}$ |
| $M$ and $M_1$ | $92{,}00^{0}_{-1{,}00}$ |

[a] See Figure 1 and Figure 2.

[b] It is recognized that many existing spools do not meet this narrow tolerance range. Such spools are recognized temporarily, but for future design the specified dimensions are recommended.

**Table 3 — Dimensions common to 35 mm spools only**

Dimensions in millimetres

| Dimension [a] | |
|---|---|
| $H_1$ [b] | $35{,}10^{+0{,}40}_{0}$ |
| $H_2$ | 35,05 min. |
| $J$ and $J_1$ | $37{,}90^{0}_{-0{,}80}$ |
| $M$ and $M_1$ | $92{,}00^{0}_{-1{,}00}$ |

[a] See Figure 1 and Figure 2.

[b] It is recognized that many existing spools do not meet this narrow tolerance range. Such spools are recognized temporarily, but for future design the specified dimensions are recommended.



### 4.1.2 Capacity

The standardized supply spools for unexposed film are the so-called “30 m spools” for 16 mm and 35 mm film on which a film length of 30 m with a nominal thickness of 0,13 mm can be wound. Other film lengths commonly wound on these spools are found in ISO 6148:1993.

### 4.1.3 Affixing to the core

Means shall be provided for affixing a standard straight-cut film to the core of the spool without requiring any special preparation of the film.

### 4.1.4 Holes, keyways, and slots

On each flange, the spindle hole is square. On one flange, there is a keyway in a corner of the square; on the other flange, the keyway is optional. If there are keyways on both flanges (one on each), their alignment is parallel to the spindle. Construction materials may be either metal or plastic.

For metal spools, the two offset drive holes are optional for both flanges of 16 mm and 35 mm microfilm spools. These drive holes ensure correct film orientation during loading in hardware that uses two drive pins (see Figure 1).

The two offset drive holes are mandatory for plastic spools. Because of plastic moulding techniques in use, the offset holes may be rotated from the position shown in Figure 1 to those shown in Figure 2. However, in spite of their appearance, these drive holes shall be functionally the same.

It should be noted that if two drive pins are used by hardware manufacturers, a round spindle is required for the duo microfilm format to accept both metal and plastic spools.

The shapes and dimension of the spindle holes, keyways, optional holes, and slots shall conform to either Figure 1 or Figure 2 and Tables 1, 2, and 3.

#### 4.1.5 Winding

The unexposed rawstock film shall be wound with emulsion in, unless otherwise explicitly specified in the order, in which case the words “emulsion out” shall appear on the packaging. In the case of film perforated on one edge, the type of winding shall be indicated by “A” or “B” in accordance with ISO 3042 (also see ISO 6148).

#### 4.1.6 Finish

The spool shall be free of any flashing or moulding lines that would interfere with the film transport or cause damage to the film.

### 4.2 Reader reel

It is recommended that microfilms intended for reader use be stored on reels known as “storage reels”.

The resistance of the reels to destructive agents shall be at least equal to that of the film itself. The reels shall not contain or release any chemical agent likely to damage the microfilm. (See ISO 10214.)



#### 4.2.1 Dimensions

The reel dimensions shall conform to Figures 3 and 4 and Table 4.



#### 4.2.2 Capacity

Reader reels are usually made for 30 m lengths of film with a nominal thickness of 0,13 mm.

Non-standardized reels of smaller capacity may be necessary. In no case shall the outside diameter be greater than those specified for 30 m reels; in no case shall the core diameter be smaller than those specified for 30 m reels.

#### 4.2.3 Affixing to the core

Means shall be provided for affixing a standard straight-cut film to the core of the reels without requiring any special preparation of the film.

#### 4.2.4 Holes and keyways

##### 4.2.4.1 Reversible reels

The use of so-called “reversible reels” is recommended. They have a square spindle hole with one keyway on each flange (see Figure 3).

The square spindle hole and keyway on one flange shall be in line with the corresponding spindle hole and keyway on the opposite flange.

A reference mark, such as an embossed mark or a paint mark, shall be placed on one flange to permit the identification of one flange and to assist correct loading.