
**Micrographics — Single-core cartridge
for 16 mm processed microfilm —
Dimensions and operational constraints**

*Micrographie — Cartouche à noyau unique pour microfilm de 16 mm
traité — Dimensions et contraintes opérationnelles*

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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.

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Introduction

With the acceptance of this International Standard, future readers and reader-printers will be designed to accept cartridges used for storing and viewing processed 16 mm microfilm over a full range of specified tolerances.

Figure 4 provides the dimensions for a reel that provides additional clearance between the flanges of the reel and the inner walls of the enclosed cartridge described in Figure 2. Reels made to the specification in Figure 4 are suitable for all applications. Reels made to the upper limit of dimension B (see Figure 3) may rub the inside wall of the enclosed cartridge. Figure 2 includes dimensions $2S$ and $2T$. The addition of the $2S$ dimension reduces the clearance of the flanges of the reel with the sides of the enclosed cartridge. The $2S$ and $2T$ dimensions are only necessary when an M-style cartridge reel (metal insert drive) is housed in the ISO 7761 standard enclosed case. These dimensions are necessary to control the wide leader in the M-style cartridge.

This International Standard also specifies the winding of the processed microfilm on the reel and the physical characteristics of the leading end of the film to ensure proper interfacing of the cartridges with automatic threading readers and reader-printers of different makes.

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Micrographics — Single-core cartridge for 16 mm processed microfilm — Dimensions and operational constraints

1 Scope

This International Standard specifies the dimensions of, and gives guidance on, the physical and performance characteristics of cartridges used for storing and viewing active-use 16 mm microfilm.

It includes physical and optical compatibility requirements as well as test procedures.

This International Standard does not apply to cartridges used for storing microfilm for archival purposes.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6148:2001, *Photography — Micrographic films, spools, and cores — Dimensions*

ISO 6196-1:1993, *Micrographics — Vocabulary — Part 1: General terms*

ISO 6196-2:1993, *Micrographics — Vocabulary — Part 2: Image positions and methods of recording*

ISO 6196-3:1997, *Micrographics — Vocabulary — Part 3: Film processing*

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

ISO 6196-5:1987, *Micrographics — Vocabulary — Part 5: Quality of images, legibility, inspection*

ISO 6196-6:1992, *Micrographics — Vocabulary — Part 6: Equipment*

ISO 6196-7:1992, *Micrographics — Vocabulary — Part 7: Computer micrographics*

ISO 6196-8:1998, *Micrographics — Vocabulary — Part 8: Use*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6196 apply.

4 Requirements for cartridge assembly

4.1 Dimensions

The following requirements pertain to the cartridge assembly, which is composed of the outer enclosure section (see Figures 1 and 2) and a reel (see Figures 3 and 4) assembled thereto and which is to be referred to as “the cartridge”.

The cartridges shall be in conformity with the dimensions given in either Figure 1 or Figure 2.

4.1.1 Open cartridge

The following requirements pertain to the cartridge in Figure 1, assembled with a reel (see Figures 3 and 4).

The cartridge clip (outer piece) shall conform to the dimensions given in Figure 1 and Table 1.

4.1.1.1 Dimensional tolerances

For fillet radii: 0,40 mm minimum, 1,60 mm maximum.

For outside corner radii: 0,40 mm minimum, 0,80 mm maximum.

4.1.1.2 Moulding tolerances

For general dimensions up to 25,4 mm \pm 0,10 mm.

For each additional 25,4 mm \pm 0,03 mm.

For parting-line dimensions up to 25,4 mm \pm 0,10 mm.

For each additional 25,4 mm \pm 0,03 mm.

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4.1.1.3 Wall thickness

General wall thickness: 2,0 mm unless otherwise noted.

4.1.1.4 Ejector pins

Ejector pin marks acceptable: 0,00 raised 0,25 mm depressed.

4.1.1.5 Recessed gate

Recessed gate acceptable if below surface.

4.1.1.6 Contaminants

Parts shall be free of oil, wax, etc.

4.1.1.7 Acceptable draft

Draft: 1° maximum per side. The dimensions shown on Figure 1 include draft.

4.1.2 Enclosed cartridge

The following requirements pertain to the enclosed cartridge in Figure 2, assembled with a reel (see Figures 3 and 4). The cartridge clip (outer piece) shall conform to the dimensions given in Figure 2. The dimensions in Table 2 shall be adhered to. The dimensions in Table 3 may be changed or eliminated to separately allow a lesser material section only.

Table 1 — Cartridge dimensions (open type)

Dimensions in millimetres

<i>A</i>	96,52
<i>B</i>	88,90
<i>C</i>	11,68
<i>D</i>	5,97
<i>E</i>	13,46
<i>F</i>	6,99
<i>G</i>	11,43
<i>H</i>	101,60
<i>J</i>	50,80
<i>K</i>	73,03
<i>L</i>	36,53
<i>M</i>	60,33
<i>N</i>	2,03
<i>P</i>	60,33
<i>Q</i>	25,40
<i>R</i>	2,03
<i>S</i>	25,40
<i>T</i>	25,40
<i>U</i>	25,04
<i>V</i>	92,20
<i>W</i>	21,84
<i>X</i>	10,51
<i>Y</i>	2,54
<i>Z</i>	3,05
<i>AA</i>	13,21
<i>BB</i>	4,83
<i>CC</i>	1,40
<i>DD</i>	3,68
<i>EE</i>	74,32
<i>FF</i>	14,83
<i>GG</i>	4,95
<i>HH</i>	3,56
<i>JJ</i>	15,49
<i>KK</i>	12,70
<i>LL</i>	39,62
<i>MM</i>	7,93
<i>NN</i>	2,54
<i>PP</i>	2,03
<i>QQ</i>	33,32
<i>RR</i>	30,17
<i>SS</i>	0,76
<i>TT</i>	73,03
<i>UU</i>	1,52
<i>VV</i>	30,18
<i>WW</i>	3,18
<i>XX</i>	15,24
<i>YY</i>	15,88
<i>ZZ</i>	1,02

Table 2 — Cartridge dimensions (enclosed type) — Non-varying dimensions

Dimensions in millimetres

A_1	101,60
B_1	50,80
C_1	25,40
D_1	11,43
E_1	14,83
F_1	74,32
G_1	2,03
H_1	39,62
J_1	1,40
K_1	3,68
L_1	3,56
M_1	2,54
N_1	3,05
P_1	2,03 radius
Q_1	96,52 diameter
R_1	7,92
S_1	4,83
T_1	4,95
U_1	25,40
V_1	6,98
W_1	1,02 radius
X_1	35,56
Y_1	92,07
Z_1	50,29
$(AA)_1$	47,09
$(BB)_1$	19,61
$(CC)_1$	38,10 diameter
$(DD)_1$	35,56 diameter

Table 3 — Cartridge dimensions (enclosed type) — Dimensions with range

Dimensions in millimetres

A_2	13,46	max.
B_2	46,02 radius	max.
C_2	14,27	max.
D_2	29,97	max.
E_2	1,78	min.
F_2	5,08	max.
G_2	32,26	min.
H_2	8,64	min.
J_2	2,34	min.
K_2	2,03	max.
L_2	2,79	max.
M_2	12,45	min.
N_2	21,84	max.
P_2	27,69	max.
Q_2	21,59	min.
R_2	44,65	min.
S_2	21,08	min.
T_2	90,04 diameter	min.

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4.2 Test at maximum speed

When used, the cartridge shall not damage the contained film to a degree that information contained in microimages is obliterated or becomes capable of ambiguity. The following test shall be made to ensure that the cartridge is finished correctly: unthread a 3 m strip of film at the maximum speed of the reader or other testing device; run the film backward and forward for 25 cycles; and check to see that it does not show any image deterioration. The film strip may be compared with reference prints made prior to the test.