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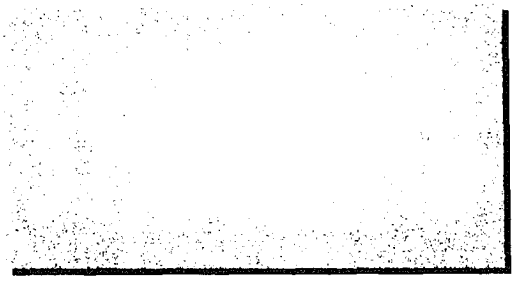

Standard Recommended Practice — Specifications for 16mm and 35mm Roll Microfilm

Approved As

American National Standards Institute (ANSI) Standard

August 8, 1996

ANSI/AIIM MS14–1996

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Standard for Information and Image Management —

Standard Recommended Practice — Specifications for 16 mm and 35 mm Roll Microfilm

Association for Information and Image Management International

Abstract:

This standard specifies physical characteristics, formats, placement, and orientation of 16 mm and 35 mm roll microfilm produced as a result of source document and computer-output microfilming.

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Foreword This foreword is not part of the *American National Standard for Information and Image Management — Specifications for 16 mm and 35 mm roll microfilm, ANSI/AIIM MS14-1996*).

For a number of years, separate standards have existed for source document and computer-output microforms. With increasing documentation requirements and advances in COM technology, computer-output microforms have become commonplace. This increased use of COM resulted in a need for compatibility and interchangeability of the same type of microform, no matter how produced. Therefore, as standards were being revised, a standard was prepared for microfiche produced by either source document or computer-output microfilming (ANSI/AIIM MS5-1985). To parallel that standard, the roll microfilm portion of the *Standard for Format and Coding for COM, ANSI/AIIM MS2-1978*, was combined with the *Specifications for 16 mm and 35 mm Microfilm, ANSI/AIIM MS14-1978*, to produce this document.

From a historical perspective, note that in 1938, standardization efforts in the field of still photography were first initiated under the procedures of the (then) American Standards Association (ASA) (subsequently renamed the United States of America Standards Institute and now the American National Standards Institute). The committee organized to carry on this work was designated as the ASA Clauseal Committee on Standardization in the Field of Photography, Z38. This committee continued in operation for over 10 years under the sponsorship of the Optical Society of America and was responsible for the development of over 100 American standards in the photographic field.

By 1950, it was no longer feasible for one committee to handle such a large assignment. Consequently, on November 30, 1950, ASA Committee Z38 was disbanded, and new committees were organized to replace it. Among those committees was PH5, subsequently sponsored by the American Library Association until 1973.

In April 1969, a request was made by the National Micrographics Association subcommittee dealing with computer-output microfilm formats and coding to review film thickness ranges. (This information can now be found in ANSI PH1.51.) During compliance, the simplex format was also reviewed because of reported differences with general industry practice. Because of the advancement of technology and applications, the need for additional formats was recognized, and these were included in the documents. The National Micrographics Association was given the draft for completion and assumed the sponsorship of PH5 in 1973.

In the meantime, work had been progressing on a *Standard for Format and Coding of Computer-Output Microfilm.* This standard, also prepared by the NMA Standards Committee of the same name, was published in 1971 (ANSI PH5.18/NMA MS2-1971) and revised in 1976 and in 1978. Also in 1978, the NMA Information Storage and Retrieval Standards Committee was directed to review and revise *ANSI PH5.3-1967, Specifications for 16 mm and 35 mm Silver-Gelatin Microfilms for Reel Applications.* A draft was prepared by the subcommittee PH5.1 of the clauseal committee PH5 on Photographic Reproduction of Documents, and the final result was the *Specifications for 16 mm and 35 mm Microfilms in Roll Film.* In 1979, NMA streamlined its standards committees and, in the process, expanded the role of the C3 committee by including in its scope the responsibility for all microform formats and renaming it the Microform Formats Standards Committee. As noted earlier, this committee then produced the *Standard for Microfiche* and, subsequently, this standard.

Suggestions for improving this standard are welcome. They should be sent to the Chair, AIIM Standards Board, Association for Information and Image Management International, 1100 Wayne Avenue, Suite 1100, Silver Spring, MD 20910-5603.

The AIIM Standards Board had the following members at the time it approved this standard:

Name of Representative	Organization Represented
Judith A. Kilpatrick, *Chair*	Association for Information and Image Management International
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Roy Pierce	Xerox Corporation
Fernando L. Podio	National Institute of Standards and Technology
Shahzad S. Qazi	Eastman Kodak Company
Michael L. Thomas	MSTC, Inc.
Stephen Urban	Delta Information Systems

This standard was originally developed by the AIIM Committee C3 in 1988. C3 has since been combined with C4, C11, and C7 to form C23, Micrographics Technologies. C23 had the following members at the time it developed this revision:

Name of Representative	Organization Represented
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Steve M. Stucki	Genealogical Society of Utah

American National Standard for Information and Image Management —

Standard Recommended Practice — Specifications for 16 mm and 35 mm Roll Microfilm, ANSI/AIIM MS14-1996

1 Audience, scope, and purpose

1.1 Audience

This document is intended for managers and designers of document imaging systems who require information regarding the arrangement of document images on microfilm.

1.2 Scope

This standard applies to 16 mm and 35 mm roll microfilm produced as a result of source document and/or computer-output microfilming. This standard does not preclude the use of other standards for roll microfilm. This standard specifies physical characteristics, formats, placement, and orientation.

1.3 Purpose

The purpose of the standard is to present a listing of film sizes, types, and formats currently in use in micrographics to allow users to make the best use of this media in their applications.

2 Normative references

All standards are subject to revision. When the following documents are superseded by an approved revision, that revision may apply.

2.1 Referenced American national standards

ANSI PH1.51:1990, Photography (Film) — Micrographic sheet and roll film — Dimensions.

ANSI/AIIM MS1:1996, Information and image management — Practice for inspection and quality control for alphanumeric computer-output microforms.

ANSI/AIIM MS5:1992, Micrographics — Microfiche.

ANSI/AIIM MS8:1988, Information and image management — Image mark (blip) used in image mark retrieval systems.

ANSI/AIIM MS19:1993, Information and image management — Recommended practice for identification of microforms.

ANSI/AIIM MS23:1991, Information and image management — Practice for operational procedures/inspection and quality control of first generation silver gelatin microfilm of documents.

ANSI/AIIM MS35:1990, Information and image management — Requirements and characteristics of original documents that may be microfilmed.

ANSI/AIIM MS38:1995, Information and image management — Microrecording of engineering graphics — Computer-output microfilm.

ANSI/AIIM MS39:1987, Information and image management — Recommended practice for operational procedures, quality control and inspection of graphic computer-output microforms.

2.2 Related Publications

ANSI/AIIM TR2:1992, Association for information and image management — Glossary of imaging technology.

3 Definitions

The following definitions apply to terms that appear in this standard. Other terms may be defined in *ANSI/AIIM TR2, Association for information and image management — Glossary of imaging technology.*

3.1 horizontal mode The arrangement of microimages on roll microfilm where the lines of print or writing are parallel to the length of the microfilm for horizontal script and perpendicular for vertical script (see figure 1). Also referred to as B orientation or comic mode (since the frames have the same orientation as those on a comic strip).

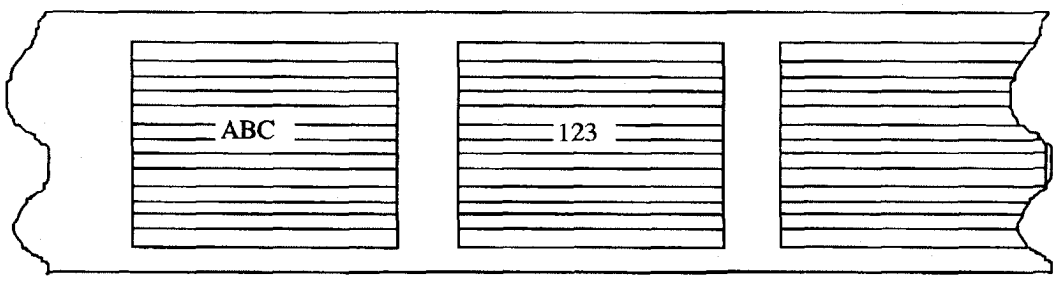


Figure 1 — Horizontal mode (B or comic orientation)

3.2 imaginary document A document of the appropriate size that would have existed if the COM-generated microimage had been produced by source document microfilming.

3.3 right reading Orientation of text or images in normal sequence for reading, even if the material is rotated from an upright position. Right reading is the opposite of reverse reading, which describes a mirror image (see figures 2 and 3).

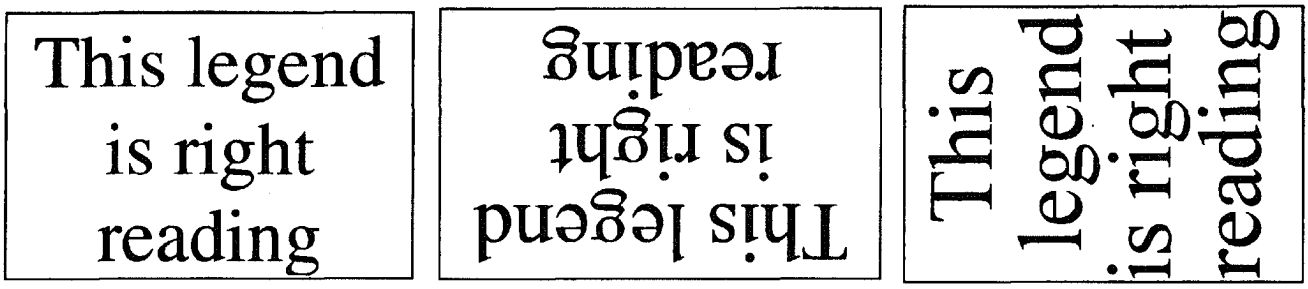


Figure 2 — Examples of right reading

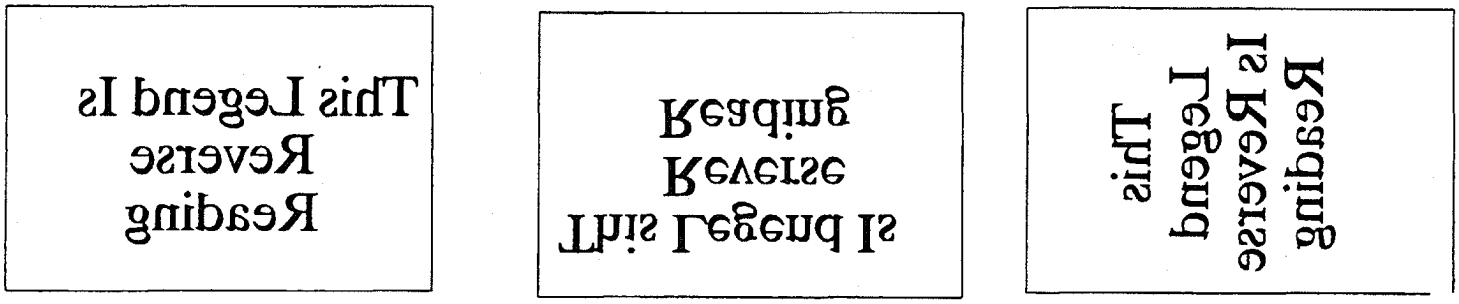


Figure 3 — Examples of reverse reading

3.4 source document microfilming The conversion of documents, usually paper, to microimages.

3.5 vertical mode The arrangement of microimages on roll microfilm where the lines of print or writing are perpendicular to the length of the microfilm for horizontal script and parallel for vertical script (see figure 4). Also referred to as A orientation or cine mode (since the frames have the same orientation as those on a movie film).

Leading end of film

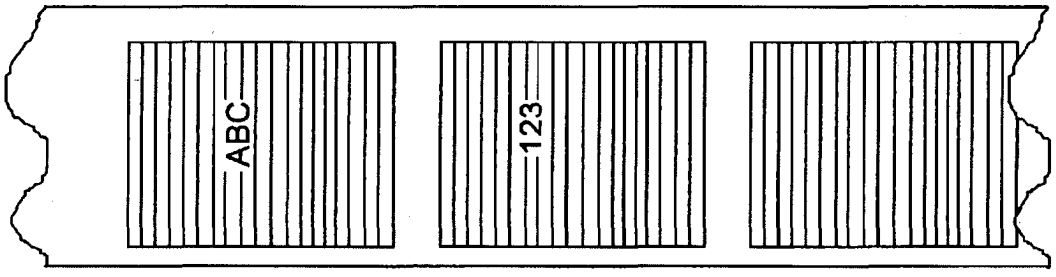


Figure 4 — Vertical mode (A or cine orientation)

4 Physical characteristics: Width and thickness

The width and thickness of roll microfilm shall be as specified in ANSI PH1.51. (See also 6.6).

5 Roll microfilm formats

5.1 Simplex format

The simplex format is a microimage positioning sequence where a single row of microimages is photographed across the width of the microfilm. As illustrated in figure 5, this format allows the following microimage positioning:

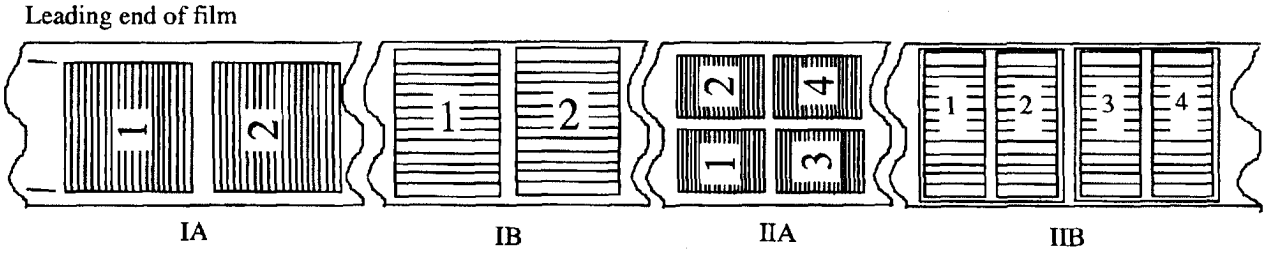


Figure 5 — Simplex format

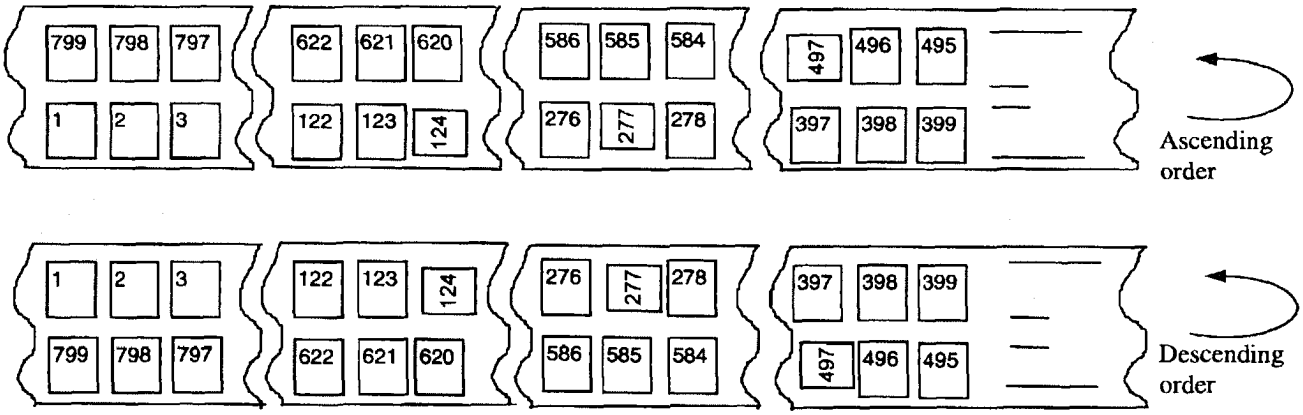


Figure 6 — Duo format

5.1.1 Illustration IA

A single page of a document arranged so that its microimage appears lengthwise on the microfilm with the lines of print perpendicular to the length of the microfilm (i.e., in the vertical mode).

5.1.2 Illustration IB

A single page of a document arranged so that its microimage appears on the microfilm with the lines of print parallel to the length of the microfilm (i.e., in a horizontal mode).

5.1.3 Illustration IIA

Two pages of a document arranged side by side so that a single microimage of the two pages appears lengthwise on the microfilm with the lines of print perpendicular to the length of the microfilm (i.e., in the vertical mode).

5.1.4 Illustration IIB

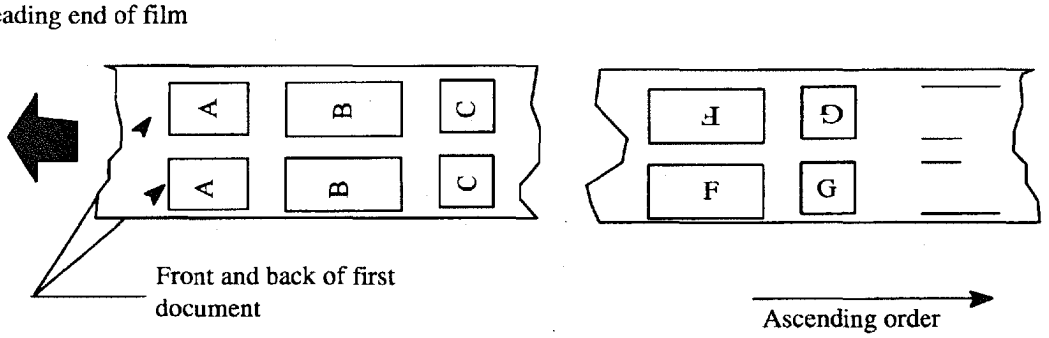
Two pages of a document arranged side by side so that a single microimage of the two pages appears on the microfilm with the lines of print parallel to the length of the microfilm (i.e., in a horizontal mode).

5.2 Duo format

The duo format is a microimage positioning sequence in which one half of the microfilm is masked and microimages are photographed across the unmasked half of the film width. When the full length of the microfilm has passed through the camera, it is reloaded so that a second series of images is photographed on the half previously left unexposed. This results in one series of microimages running from left to right and the other from right to left. Figure 6 illustrates the two types of duo formats, resulting from microfilming in an ascending or a descending order.

5.3 Duplex format

The duplex format is an image-positioning sequence where, through the use of mirrors or prisms, an image of the front side of the document is photographed on one half of the film, while an image of the back side of the same document is photographed simultaneously on the other half of the microfilm, as illustrated in figure 7.



The image orientation is controlled by the orientation of the text on the original page and the orientation selected for the image in the opposite row.

Figure 7 — Duplex format

5.4 Duo-duplex format

The duo-duplex format is a combination of the duo and duplex formats where, through the use of mirrors or prisms, images of both the front and back sides of documents are photographed simultaneously on one half of the width of the microfilm (the other half of the microfilm being masked). When the full length of the microfilm has passed through the camera, it is reloaded so that a second set of images can be photographed on the half previously left unexposed, as illustrated in figure 8.

5.5 Multiplex format

The multiplex format is a microimage positioning sequence in which the microfilm contains two or more rows of microimages across the width of the microfilm.

In this format, the first image in one row is opposite the first image in the other row or rows, as illustrated in figure 9.

6 Microimage placement and orientation

6.1 Orientation on microfilm

The information content of microimages on rolls of odd generation microfilm, including the first generation camera film, shall be right reading when viewed through the base (non-sensitized) side of the microfilm. Even generation microfilm is right reading through the emulsion (sensitized) side. For all generations, microimage orientation and arrangement of microimages shall be illustrated in figures 5 through 9. The orientation and sequence of microimages in these formats (figures 5 through 9), are indicated by the placement of the alpha or numeric character shown within each microimage. While each figure illustrates various potential microimage orientations, it is preferable to maintain one consistent orientation within a given roll of microfilm.

6.2 Orientation on reels

Processed microfilm shall be wound on reels in such a manner that the microimages are right reading when viewed with the microfilm reel held in the right hand, the film unwound from the bottom of the reel and pulled to the left to read in horizontal mode as illustrated in figure 10a, or upwards to read in vertical mode as illustrated in figure 10b.

6.3 Sequence of microimages

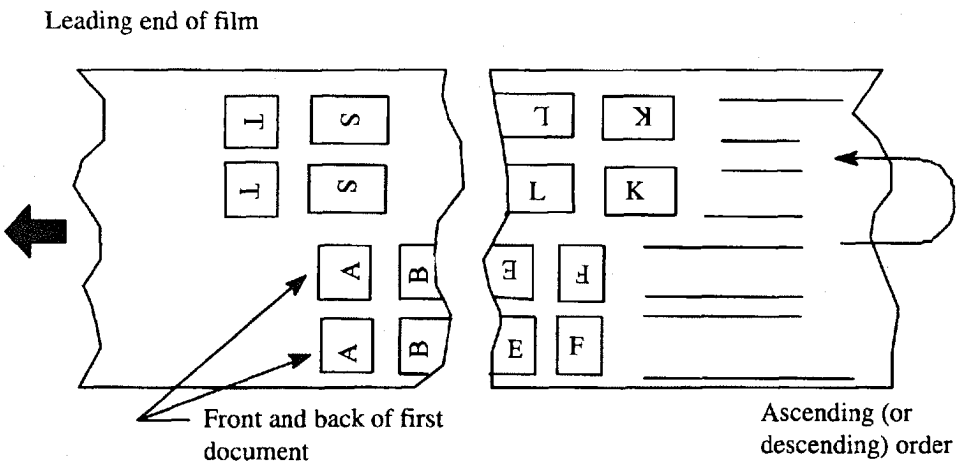
The positioning of various targets and of material being microfilmed shall be in the sequence as illustrated in figure 11.

6.4 Leader and trailer

In addition to any fogged film, which may be removed, a minimum length of 500 mm (20 in) for 35 mm microfilm shall be left at the beginning and at the end of each roll. To accommodate readers for 16 mm film with automatic threading a minimum length of 700 mm (28 in) shall be left at the beginning and at the end of each roll.

6.5 Clauseal microfilming

If a document is too large to be microfilmed in a simplex format (see figure 5), it shall be microfilmed in clauses with a minimum of 25 mm (1 in) overlap of the original material in accordance with figure 12. For special application to engineering drawings see ANSI/AIIM MS32.



The image orientation is controlled by the orientation of the text on the original page and the orientation selected for the image in the opposite row.

Figure 8 — Duo duplex format

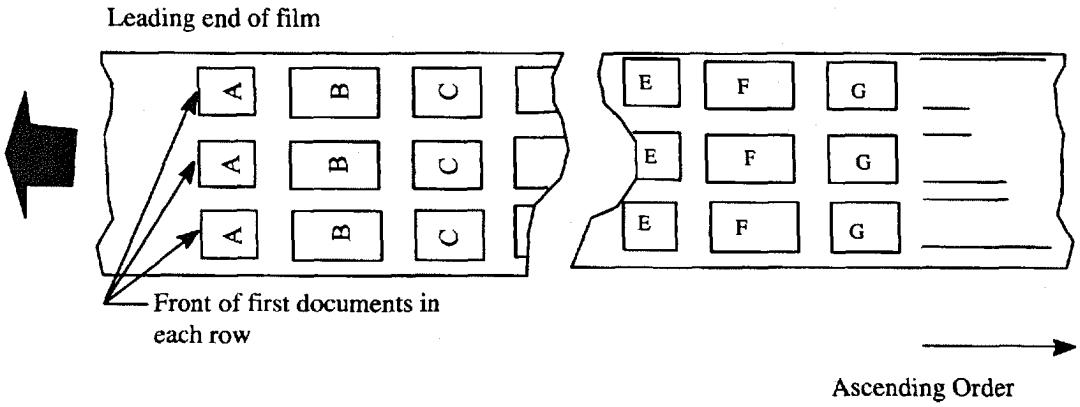
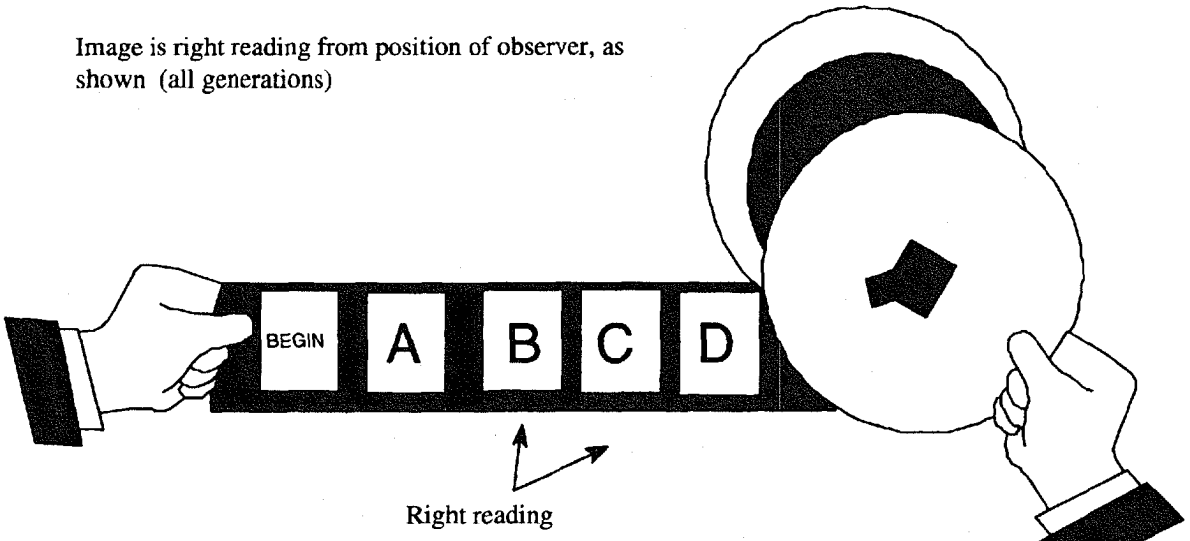
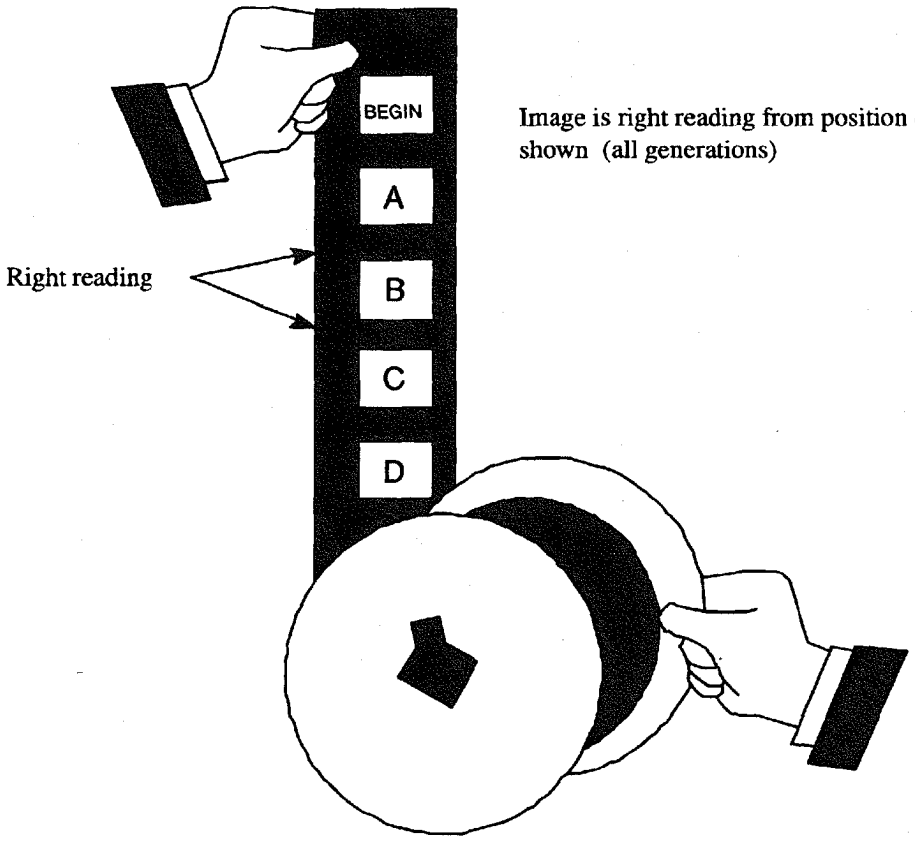


Figure 9 — Multiplex format — Two or more rows



Sensitized side (emulsion) wound out for first-generation camera film and all odd generations. Sensitized side (emulsion) wound in for second-generation duplicate film and all even generations.

Figure 10a — Orientation of microimages on a reel (comic mode)



Sensitized side (emulsion) wound out for first-generation camera film and all odd generations. Sensitized side (emulsion) wound in for second-generation duplicate film and all even generations.

Figure 10b — Orientation of microimages on a reel (cine mode)

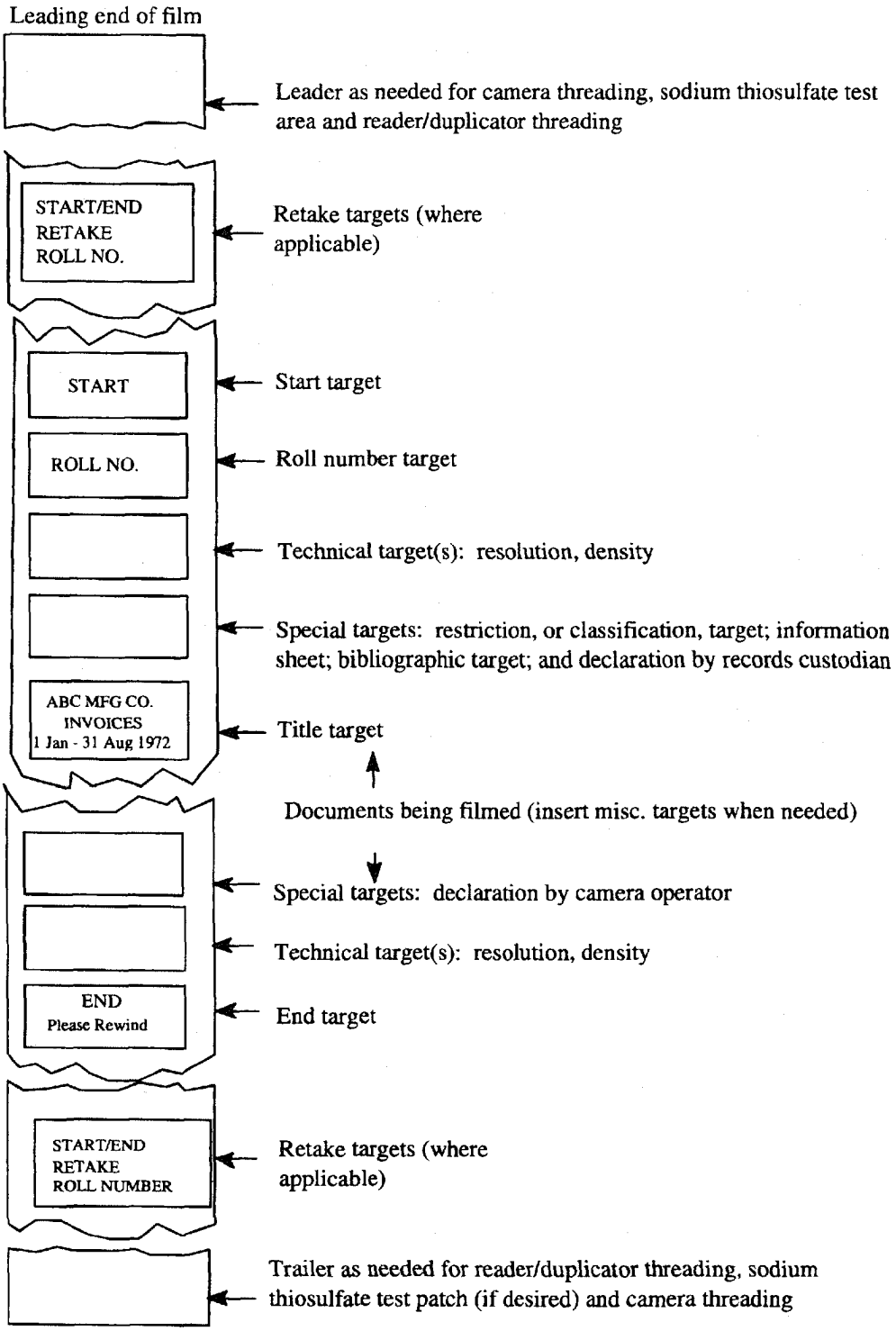


Figure 11 — Sequence of microimages

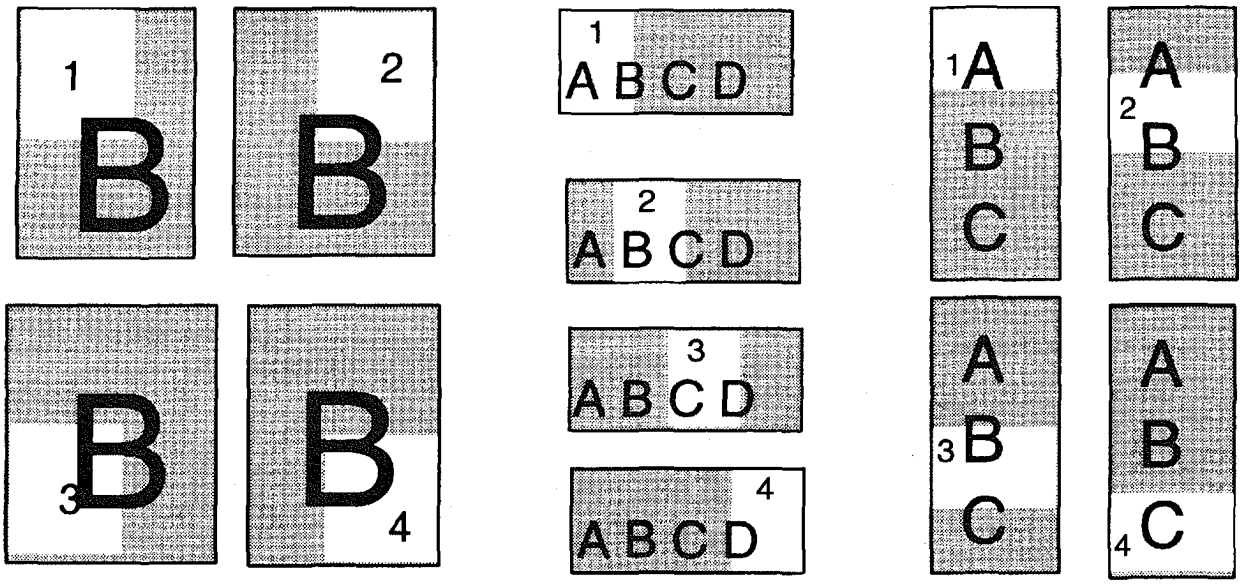


Figure 12 — Sectional microfilming of source documents

6.6 Microimage placement

Microimages should not be placed in certain reserved areas on roll microfilm as described in 6.6.1 to 6.6.3. Additional microimage placement specifications are applicable to certain COM applications.

6.6.1 Reserved areas of roll microfilm

Edges of roll microfilm are reserved to allow for film tracking and edge marking, to minimize the effects of edge fogging during microfilming (see figures 13a and 13b), or for coding (see figures 13b and 13c.) The area reserved for coding shall contain information for locating and counting microimages, microimage identification codes, or image marks (see ANSI/AIIM MS8). Dimensions are specified in tables 1 and 2.

6.6.2 Imaging area

The area not reserved under 6.6.1 is available for microimage placement, for applicable technical and other targets, for spacing between microimages, and for other coding techniques (e.g., bar coding or photo-optical coding located transversely across the microfilm between microimages). See figures 13a and 13b and tables 1 and 2.

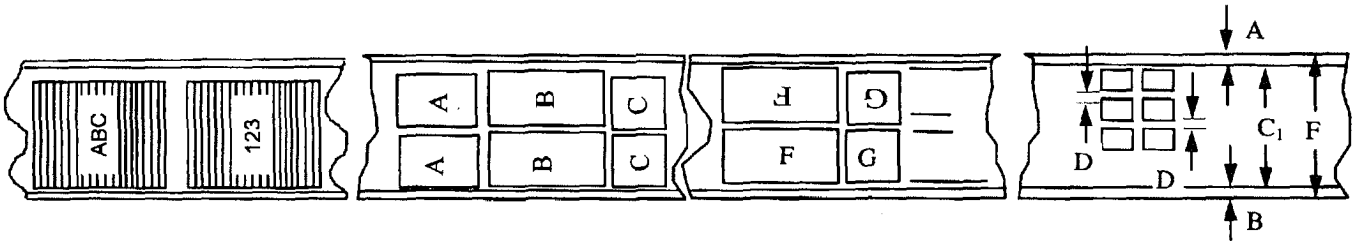


Figure 13a — All roll microfilm format dimensions (without reserved area for identification and coding)

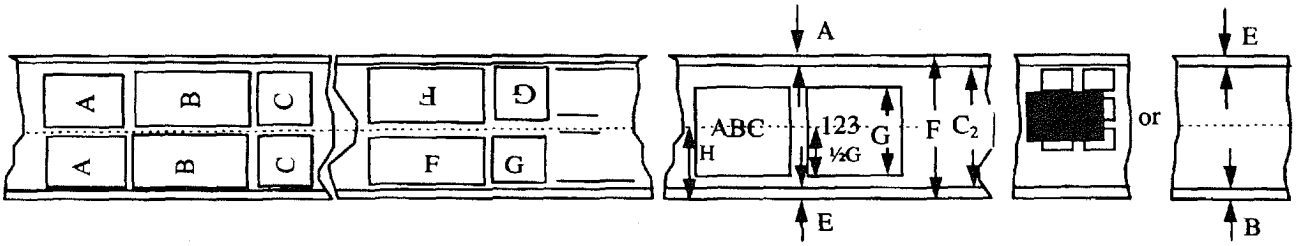


Figure 13b — Simplex, duplex, and multiplex roll microfilm format dimensions (area E may be located on either edge of the microfilm)

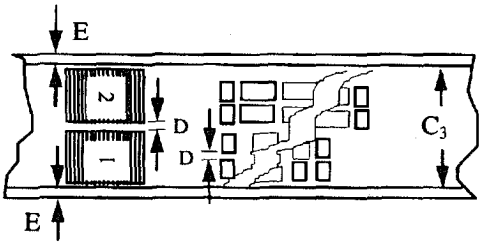


Figure 13c —Duo and duo duplex roll microfilm formats (area E located on both edges of the microfilm)

For values of following dimensions, see tables 1 and 2:
A and B: Areas for film tracking, edge marking and fogging
C: Area for microimages, targets, and certain coding
D: Area between microimages
E: Area for identification and coding
F: Full width of microfilm
G and H: Area for microimage placement for COM (see table 1)

Figures 13 a, b, and c — Reserved areas and microimage locations on roll microfilm

Dimensions	16 mm Microfilm*	35 mm Microfilm*
A or B minimum	0.51 (0.020)	0.97 (0.038)
C_1 maximum	14.90 (0.587)	33.01 (1.300)
C_2 maximum	13.25 (0.522)	31.82 (1.253)
C_3 maximum	11.60 (0.457)	30.63 (1.206)
D minimum	0.51 (0.020)	0.97 (0.038)
E minimum†	2.16 (0.085)	2.16 (0.085)
F maximum‡	15.98 (0.629)	35.00 (1.378)
F aim	15.95 (0.628)	34.98 (1.377)
F minimum	15.92 (0.627)	34.95 (1.376)
G maximum §	12.70 (0.500)	
H §	8.79±0.08 (0.346 ± 0.003)	

*Dimensions are in mm; figures in parentheses are in inches
†See ANSI/AIIM MS8
‡See ANSI PH1.51
§For 16 mm COM only

Table 1 — Dimensions for reserved areas on roll microfilm (Refer to figures 13a, b, and c)

	16 mm Microfilm		35 mm Microfilm
	Perforated		Perforated
Dimensions*	One Edge†	Both Edges*	Both Edges*
A minimum	2.79 (0.110)	2.79 (0.110)	5.48 (0.216)
B minimum	0.51 (0.020)	2.79 (0.110)	5.48 (0.216)
C maximum	12.62 (0.497)	10.34 (0.407)	24.00 (0.944)

*Dimensions are in mm; figures in parentheses are in inches
†Dimension A applies to the perforated edge

Table 2 — Dimensions for perforated microfilm (Refer to figure 13a)

6.6.3 16 mm computer output

For alphanumeric COM applications using 16 mm microfilm, table 1 as referenced in figure 13b specifies additional microimage size and placement dimensions.

6.7 Reduction

The reduction ratio shall be determined by the quality of the originals, the size of the characters within the document, the quality index (QI) level required, the microfilm format chosen, and the size of the documents to be microfilmed.

6.7.1 Source document microfilming

Due to the variety in the sizes and types of documents that are microfilmed, it is not practical to always specify reductions to be used. However, any reduction selected shall result in producing the legibility and quality requirements of 7.1. If the reduction ratio is changed within a reel it should be indicated by filming a target showing the new reduction.

6.7.2 Computer-output microfilming

Reduction ratios for COM are listed in tables 3 and 4. For 16 mm microfilm business applications, reduction ratios are based on a standard 8 1/2 in × 11 in document and 14 in × 11 in computer paper.

Nominal Reduction	Imaginary Document Size	Image Size (Nominal)	Permissible Range
1:24	216 × 279 (8.5 × 11)	9.00 × 11.63 (0.354 × 0.458)	1:23 to 1:25.5
	356 × 279 (14 × 11)	14.83 × 11.63 (0.584 × 0.458)	1:23 to 1:25.5
1:42	216 × 279 (8.5 × 11)	5.14 × 6.64 (0.202 × 0.261)	1:41 to 1:44
	356 × 279 (14 × 11)	8.48 × 6.64 (0.334 × 0.261)	1:41 to 1:44
1:48	216 × 279 (8.5 × 11)	4.50 × 5.81 (0.177 × 0.229)	1:47 to 1:50
	356 × 279 (14 × 11)	7.42 × 5.81 (0.292 × 0.229)	1:47 to 1:50

All dimensions are given in mm, figures in parentheses are inch equivalent. See annex A for 1:28.

Table 3 — Reductions for 16 mm COM

Class	Standard drawing size †	Nominal reduction ±0.25 percent	Microimage dimensions border to border (height times width)*	Approximate 14.5 magnification*	Original imaginary document size‡*
1	A	1:16	16.271 × 12.700 (0.6406 × 0.5000)	235.90 × 184.20 (9.30 × 7.25)	260.35 × 203.20 (10.25 × 8.00)
2	D	1:30	17.780 × 27.940 (0.7000 × 1.1000)	257.80 × 405.10 (10.15 × 16.00)	533.40 × 838.20 (21.00 × 33.00)
3	D	1:24	22.225 × 34.925 (0.8750 × 1.3750)	322.30 × 506.40 (12.70 × 19.94)	533.40 × 838.20 (21.00 × 33.00)
4	E	1:30	27.940 × 36.406 (1.1000 × 1.4333)	405.10 × 527.90 (16.00 × 20.78)	838.20 × 1.092.20 (33.00 × 43.00)

*All dimensions are given in mm; figures in parentheses are inch equivalents.

†Standard B- and C-sized images are implied by above capabilities; for example, a B-sized information area (10¼- × 16¼-inch, border-to-border original reduced 16:1) has dimensions of 16.271 × 25.769 mm (0.6406 × 1.0145 in), which approximates the D-size (30:1) image. Similarly, the C-sized image approximates the E-sized (30:1) image, and the F-sized drawing is equivalent to an E-sized (30:1) image.

‡Border-to-border dimensions for standard drawings.

Table 4 — Reductions for 35 mm COM

7 Quality control

7.1 Quality requirements

The required legibility of the microimage of a source document shall be determined in accordance with the quality index method outlined and illustrated in ANSI/AIIM MS23.

The legibility of the microimage of an imaginary COM document shall be determined in accordance with the quality index method outlined and illustrated in ANSI/AIM MS1.

Annex A
(Informative)
COM 16 mm, 1:28 reduction

(This annex is not part of *American National Standard for Information and Image Management — Specifications for 16 mm and 35 mm roll microfilm, ANSI/AIIM MS14-1996.*)

A1 Reduction

It is recognized that, for certain applications, a 1:28 reduction may be appropriate in the vertical mode. The permissible reduction range should be from 1:27 to 1:30.

A2 Information density and document size

The information density and document size should be as shown in table A1. All other applicable requirements of this standard remain in effect.

Imaginary document size†	Image size (nominal)†	Maximum characters per line:	Maximum lines per page:
216 × 279 (8½ × 11)	7.710 × 9.980 (0.304 × 0.393)	70‡	64
356 × 279 (14 × 11)	12.700 × 9.980 (0.500 × 0.393)	132	64

†All dimensions are given in mm; figures in parentheses are inch equivalents.
‡Based on a 7-inch line, allowing for left and right margins totaling 1½ in.

Table A1 — Document size and information density

Annex B
(Informative)
Alphanumeric character parameters for COM

(This annex is not part of *American National Standard for Information and Image Management — Specifications for 16 mm and 35 mm roll microfilm, ANSI/AIIM MS14-1996.*)

B1 Character dimensional standards

The dimensions for the prescribed four sizes, sizes 1 through 4, are shown in figure B1 and table B1.

Character size designations	Nominal reduction for original character height (imaginary)			Approx. character ht. at 14.5 magnification	Microimage dimensions†				
					A	B	C	D	E
	1:16	1:24	1:30		Minimum height	Minimum space between successive lines	Successive line position*‡	Minimum distance between adjacent characters	Horizontal distance between character centers*§
1	1.7000 (0.0669)	2.6000 (0.1024)	3.2000 (0.1260)	1.6000 (0.0630)	0.1070 (0.0042)	0.0460 (0.0018)	0.1700 (0.0067)	0.0200 (0.0008)	0.1060 (0.0042)
2	2.6000 (0.1024)	3.9000 (0.1535)	4.9000 (0.1929)	2.4000 (0.0945)	0.1630 (0.0064)	0.0690 (0.0027)	0.2490 (0.0098)	0.0300 (0.0012)	0.1590 (0.0063)
3	3.5000 (0.1378)	5.2000 (0.2047)	6.5000 (0.2559)	3.1000 (0.1220)	0.2160 (0.0085)	0.0940 (0.0037)	0.3280 (0.0129)	0.0410 (0.0016)	0.2120 (0.0083)
4	5.2000 (0.2047)	7.8000 (0.3071)	9.8000 (0.3858)	4.7000 (0.1850)	0.3250 (0.0128)	0.1400 (0.0055)	0.4830 (0.0190)	0.0610 (0.0024)	0.3190 (0.0125)

*All character sizes and dimensions are given in mm; figures in parentheses are inch equivalents (rounded off to the nearest ten-thousands of an inch). Figures given for dimensions *C* and *E* are used as multiplication factors. Physical measurements are made to the micron (ten-thousandth of an inch) after appropriately rounding off the calculated value. For example, if one were measuring the required horizontal distance between 99 size 1 characters, the following calculations would be used: 99 characters × 0.106 mm = 10.494 mm (99 characters × 0.0042 in = 0.4131 in). The requirement is met if the values measured agree with that calculated within the specified tolerance.

†Accurate positional locations (horizontal and vertical) of characters guarantee separation of characters to insure reproducibility and legibility of subsequent blowbacks from the film image. Tolerances may be tightened where the requirements of an application dictate. For example, an application anticipating that alphanumeric information be confined between lines of a forms overlay or the eventual use of OCR would require consideration of more stringent limits.

‡Tolerance on dimension *C* (distance between uppermost edges of successive lines of characters) is +0, -0.018 mm (+0, -0.0007 in). This tolerance is noncumulative; that is, it is applied to the distance from the uppermost edge of any line to any and all successive lines.

§Tolerance on dimension *E* is ±0.010 mm (±0.0004 in). This tolerance is noncumulative; that is, it is applied to the distance from the center of any character on a line to any and all other characters on that line.

Table B1 — Character size and dimensional standards*

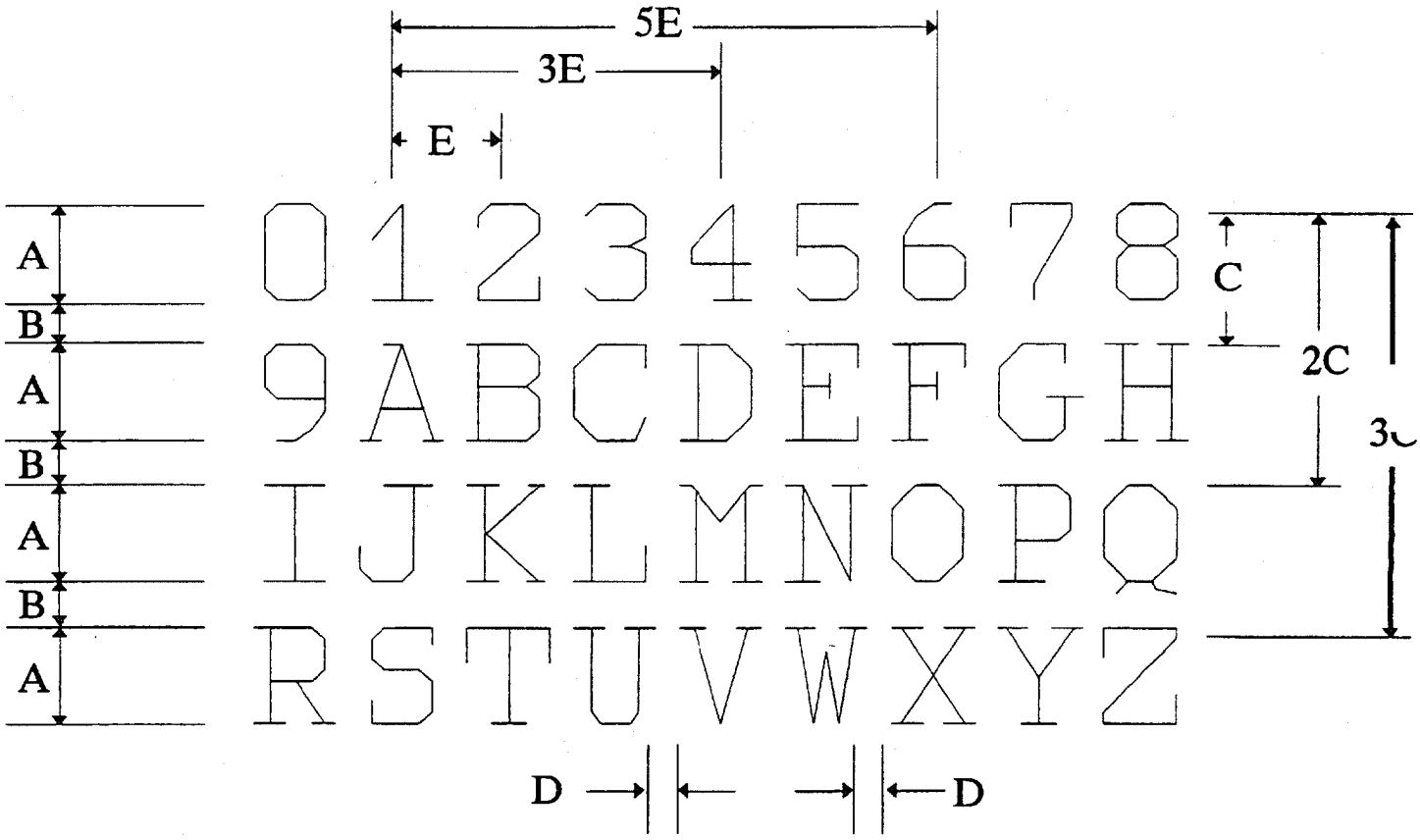


Figure B1 — Alphanumeric characters (refer to table B1)

B2 Parameters for 16 mm COM

For 16 mm COM alphanumeric (business) applications, only character size 1 should apply. Additional parameters for this type of application are shown in table B2.

Dimension nomenclature	Dimension*
Character height, maximum numeric†	2.750 (0.108)
Character height, maximum alpha†	2.700 (0.106)
Character width, maximum numeric	1.750 (0.069)
Character width, maximum alpha	1.750 (0.069)
Lowest descender *p* below base line	0.620 (0.024)
Stroke width	0.350 (0.014)
Stroke width *X* tolerance full set	±0.080 (±0.003)
Stroke width *Y* tolerance (uppercase)	±0.150 (±0.006)
Center line character spacing ¾ constant pitch minimum or vertical stroke width separation between all character edges	2.540 (0.100)
Maximum adjacent character spacing	4.570 (0.180)
Line spacing minimum (between average base lines)	4.000 (0.157)
Line separation ¾ lowest descender to highest ascender	0.640 (0.025)
Misalignment from adjacent character	0.690 (0.027)
Misalignment from a line	1.370 (0.054)
Character skew‡	--

*All dimensions are given in mm; figures in parentheses are inch equivalents.
†Includes 0.040 mm below base line.
‡Three degrees from reference edge of document.

Table B2 — 16 mm COM character parameters

Normal Characters per line		Normal lines per page	
Vertical	Horizontal	Vertical	Horizontal
70‡	70‡	64	64
110§	132	64	64

‡Based on a 7-inch line, allowing for left and right margins totaling 1½ in.
§Based on a maximum 11-inch usable width without margins.

Table B3 — 16 mm COM information density
(Refer to table 3 for corresponding document/image sizes)

Character size designations	Number of lines per cm (per in)	Number of characters per cm (per in)	Approximate density per square cm (square in)	Image capacity (lines times characters per line)			
				Class 1*	Class 2†	Class 3‡	Class 4§
1	58.7 (149.0)	94.5 (240.0)	5,547 (35,760)	94 × 119	103 × 263	129 × 329	163 × 343
2	40.2 (102.0)	63.0 (160.0)	2,532 (16,320)	64 × 79	70 × 175	33 × 219	111 × 228
3	30.3 (77.0)	47.2 (120.0)	1,430 (9,940)	49 × 59	53 × 131	67 × 164	84 × 171
4	20.5 (52.0)	35.4 (90.0)	725 (4,160)	33 × 39	36 × 87	45 × 109	57 × 114

*Class 1 is the image equivalent of an A-size drawing reduced 16:1
†Class 2 is the image equivalent of a D-size drawing reduced 30:1
‡Class 3 is the image equivalent of a D-size drawing reduced 23:1
§Class 4 is the image equivalent of an E-size drawing reduced 30:1

Table B4 — 35 mm COM information density

Annex C
(Informative)
105 mm roll microfilm

(This annex is not part of *American National Standard for Information and Image Management — 16 mm and 35 mm roll microfilm, ANSI/AIIM MS14-1996.*)

C1 Production and use

A number of COM recorders and source document microfilm cameras are currently preparing 105 mm roll microfilm. It is often used for very large data files using automated retrieval to access information.

C2 Format

The format of 105 mm roll microfilm should be a microfiche format which consists of a series of contiguous microfiche, as illustrated in figure C1. The microimages within each microfiche should be in one of the formats prescribed in ANSI/AIIM MS5. All the microfiche in any one roll of 105 mm microfilm should be produced in the same format.

C3 Orientation

Information orientation of microimages should be the same as described in 6.1.

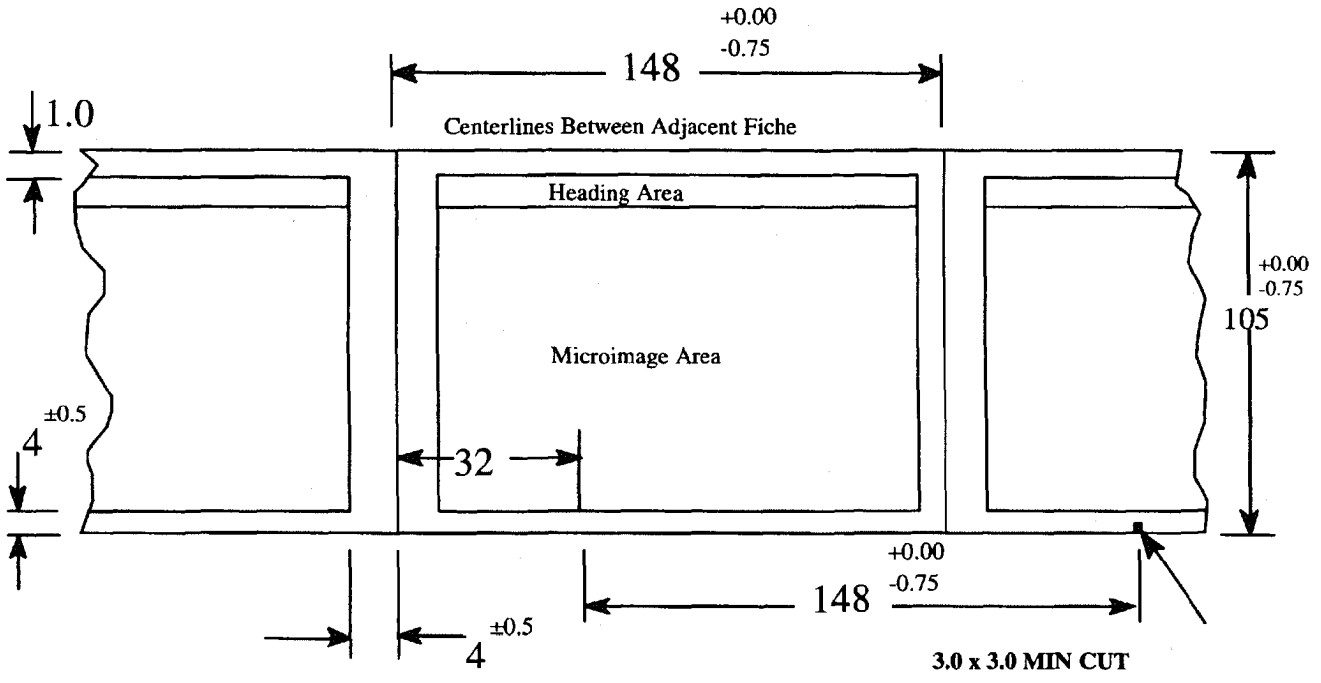


Figure C1 —Format of 105 mm roll (Dimensions shown are in mm)

Annex D

(Informative)

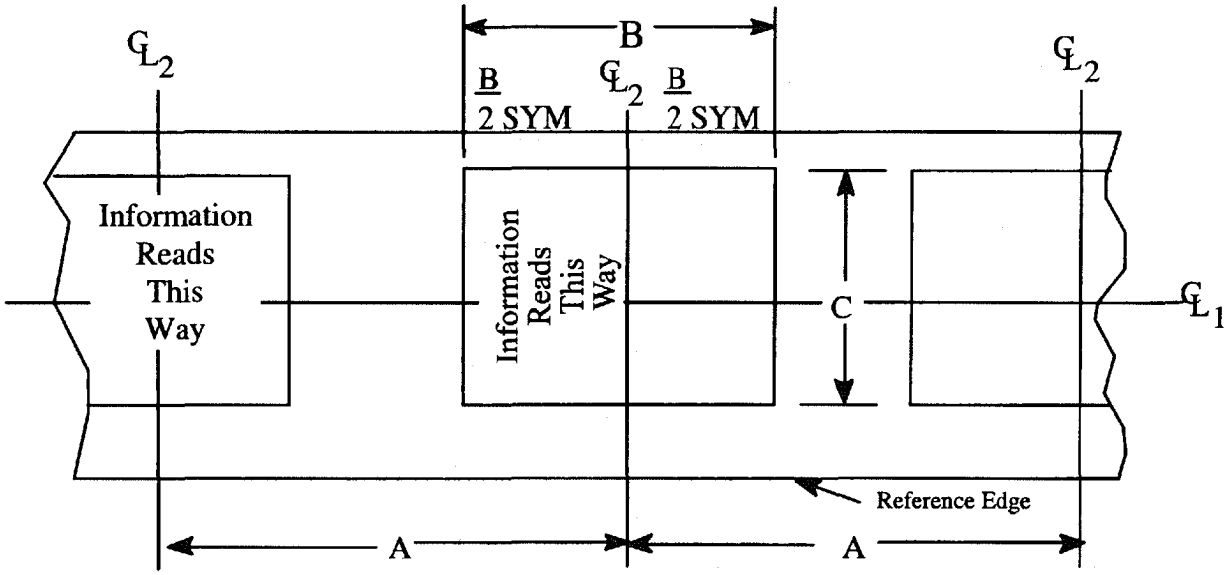
35 mm computer output

(This annex is not part of *American National Standard for Information and Image Management — 16 mm and 35 mm roll microfilm, ANSI/AIIM MS14-1996.*)

For graphic COM applications using 35 mm microfilm, figure D1 specifies additional microimage size and placement dimensions. These specifications are primarily based on engineering drawing applications and allow the use of such micro-images in aperture cards (see ANSI/AIIM MS38).

For 35 mm microfilm graphic applications, reduction ratios are based on standard size A4 through AO engineering drawings.

For 35 mm graphic and engineering documentation applications, the information densities and frame capacities should be as specified in table B4, annex B.



A = 50.80 + 1.59mm, - 0.00mm (2.000 inch + 0.062 inch, - 0.000 inch)
B = 41.02mm (1.615 inch) maximum
C = 30.40mm (1.197 inch) maximum
$\mathfrak{L}_1$ = Image centerline shall be within 0.20mm (0.008 inch) of film width centerline
$\mathfrak{L}_2$ = Image centerline (symmetrical)

Figure D1 — Microimage placement for 35 mm COM