



STANDARD ST.7/C

RECOMMENDED STANDARD FOR 35 MM ROLL MICROFILM IN 8-UP CONFIGURATION
FOR EXCHANGE BETWEEN PATENT OFFICES

INTRODUCTION

1. This Standard relates to 35 mm roll microfilm in 8-up configuration when used as a medium for exchange of patent documents between patent offices. Its purpose is to provide a basis of mutual satisfaction in the utility of exchanged microfilm by establishing minimum acceptable quality criteria for both the photographic film and the document images, and by establishing criteria for the manner of supplying exchange microfilms.

2. This Standard is based on the assumption that camera negative film would not be offered for exchange, but, rather, some subsequent negative generation of film, most likely not more than 3rd generation. It is recognized, accordingly, that attainment of the specified minimum quality in the image generation which is offered for exchange requires commensurate quality in the earlier generation(s), having due regard to the nominal losses which occur in image transfer processes.

DOCUMENT AND IMAGE APPEARANCE

Arrangement of documents in numerical microfilm files

3. Documents shall appear on the film sequentially according to the numbering of the documents.

4. Where a continuous series of consecutive document numbers (closed series) is represented on the film, a target shall appear in place of any number which is not, in fact, represented by a document. When a document is known not to exist, a target shall so indicate. Where documents are microfilmed in a series of non-consecutive numbers, a target representing each missing number is not necessarily required, unless a document is known in fact not to exist.

Arrangement of documents in non-numerical microfilm file (i.e., classified files or random numerical files)

5. No specific provision is made in this recommendation with regard to the arrangement of documents in non-numerical microfilm files.

Image arrangement and reduction ratio

6. The image area rectangle shall be subdivided and arranged according to the layout and dimensions given in WIPO Standard ST.7/A. The reduction ratio shall be such as to fill the image area, and shall be uniform throughout the microfilm. Appendix I contains a diagram for determining the optimum value.

7. It shall be positioned with its center to coincide with the center of the frame of the 35 mm film. The frame dimensions should be as follows:

$$\begin{array}{ccc} 0 & & 0 \\ 32 & \times & 45 \text{ mm} \\ -0,5 & & -0,5 \end{array}$$

With regard to the generation to be mounted in cards, the blank space between the images shall be sufficient to cut the film and mount the image in cards without loss of information. The step length for taking 8 pages in one step has to comply with the standard dimension of $52^{+0}_{-1,2}$ mm order to avoid trouble when mounting the image in the card.

Full dimensional requirements are set forth in Appendix II.



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Targets

8. The first frame on any roll of film shall be a label containing a target with a pictogram which denotes the beginning of the film, but not to the exclusion of the word "START." The last frame shall be a target containing a pictogram which denotes the end of the film, but not to the exclusion of the word "END," preferably with the instruction "PLEASE REWIND FILM." All characters and pictograms appearing in these targets shall be at least 2 mm high on the film.

9. The above-mentioned pictograms denoting the beginning and the end of the film shall be in accordance with ISO recommendations (see Appendix II).

10. In the labels on the first and last frames, there shall appear also one or more targets which show at least the following information in characters at least 2 mm high on the film:

Country of publication of the documents
Kind of documents
Number of the first document on the film.

Note: See also in this respect the Recommendation for a Standardized Method of Identifying Roll Microfilm Files of Patent and Patent-Related Documents (WIPO Standard ST.7/D), and in particular paragraphs 7 and 9 thereof.

11. In addition the following optional targets are recommended:

Number of the last document on the film
Reel or series number
Reduction ratio
Resolution test target*
50% and 6% reflection targets
A section of a centimeter scale (to facilitate accurate reconstruction of original size paper copies)
Year of the filming.

12. When a microfilm is exchanged as a master film intended for use for production of copies, which will be the normal case, a resolution test target, filmed with the same equipment and at the same time as the documents, should appear on this microfilm.

13. Targets, e.g., pictograms, shall be used as a warning of any condition within the content of the film that constitutes an exception, e.g., if more than one camera is used for filming the different frames on the microfilm. Reference is also made, with respect to the use of such pictograms, to ISO recommendations (see Appendix V).

14. Appearance of targets on a reel of film for the purpose of controlling quality, production, or for other reasons is acceptable.

Splices

15. Exchange microfilms should preferably be free of splices.

16. If for any reason splices are necessary, heatweld butt-end splices are preferred because they are generally stronger and less bulky than other types of splices and less likely to cause trouble.

17. If cemented splices are used, the cement shall not contain acetic acid or other chemicals which may adversely affect the longevity of the film.

18. Splices shall be checked to assure that there is good adherence; that no detrimental air bubbles or foreign particles are trapped; and, that no part of an image or document mark (blip) is made illegible.

* Examples of test targets are given in Appendix III. These test targets apply only to documents in A4 size.



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Workmanship

19. Microfilm produced in accordance with this recommendation shall be free of scratches, holes in the emulsion or base, finger marks, or any other defect that might adversely affect the quality of reproduction made from microfilm.

Document marks (blips) for use in image retrieval systems

20. Microfilm containing document marks (blips) is acceptable as exchange microfilm if it conforms with the recommendation herein.

FILM SPECIFICATIONS AND PROCESSING

Film type

21. Exchange microfilm shall be safety photographic film as defined in International Standard ISO 543-1974, "Definition and Marking of Safety Film for Motion Picture Uses," or the applicable national standard for the producing office (e.g., ANS PHL.25-1965, "Specification for Safety Photographic Film"). Safety film ordinarily bears a legend to this effect along its outer edges.

22. Microfilm intended for permanent preservation shall be made with a cellulose ester (triacetate) or polyester base film stock which meets an applicable national standard for such products as, for example, respectively, ANS PHL.28-1973, "Specifications for Photographic Film for Archival Records, Silver-Gelatin Type on Cellulose Ester Base," or ANS PH1.41-1973, "Specification for Photographic Film for Archival Records, Silver-Gelatin Type on Polyester Base."

23. Unperforated film shall be used.

24. Dimensions of the film, processed and unprocessed, shall meet the specifications set forth for 35 mm film in applicable national standards as, for example, ANS PH5.3-1973, "Specifications for 16 mm and 35 mm Silver-Gelatin Microfilms for Reel Applications," Section 4.

Processing

25. Exposed film should be processed in accordance with the film manufacturer's recommendations.

26. In the case of silver halide films, developers designed to produce stained or colored images and hypo-eliminators shall not be used. Hypo-clearing agents which do not contain oxidizing agents may be used.

27. Film exchanged as a permanent record shall not contain residual thiosulphate in any concentration exceeding 1.0 microgram per cm², as measured in accordance with the Methylene Blue method of analysis.

28. Microfilm which is not a permanent record, but is expected to be serviceable for a limited period, e.g., 25 years, shall not contain residual thiosulphate in excess of 4 micrograms per cm², or exceed a density difference of 0.08 in the Silver Densitometric method. These test methods and the meaning of their measurement results are described in ANS PH4.8-1971, "Methylene Blue Method for Measuring Thiosulphate and Silver Densitometric Method for Measuring Residual Chemicals in Films, Plates and Papers."

29. The older so-called Ross-Crabtree measurement method is acceptable as specified in International Standard ISO 417-1977, "Method for Determining Thiosulphate and Tetrathionate in Processed Black and White Photographic Film, Plates and Papers."



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PHOTOGRAPHIC CHARACTERISTICS

30. The quality of images in exchange microfilms should be such as to permit the derivation of at least two subsequent generations of useful images in logical sequence, i.e., film-to-film or film-to-paper.

Image quality

31. Exchange 35 mm roll microfilm should have a legibility index quality ("q" value) of at least 8 in accordance with the Quality Index Equation

$$R = \frac{qr}{e}, \text{ where}$$

R = the resolving power in lines per millimeter on the film determined in accordance with, International ISO Standard 3334-1976 ("ISO Test Chart No.2 – Description and use in photographic documentary reproduction");

e = the height in millimeters of the lower case "e" in the type copied;

r = the reduction ratio; and

q = an arbitrary "quality index."

32. The diagram reproduced in Appendix IV may also be used for determining the quality characteristics desirable for the camera negative or subsequent generation thereof up to the generation used for exchange purposes.

Density

33. The density difference in the micro-image between the image areas of the background paper and the ink shall be such that two subsequent generation contact, reduction film copies and enlargement paper prints can be made without appreciable loss of information.

34. This condition shall be considered fulfilled in exchange microfilm if the density difference between the image and background areas of documents of good paper and ink is at least 1.1 ± 0.2 where the density of the base plus fog of unexposed areas is no greater than 0.15.

35. These values may not be attainable in cases where the contrast between the paper and ink images of the documents originally microfilmed is substantially diminished due to aging, discoloration, or other effects of deterioration or inherent toning of the paper, or transparency of the paper. In such event, a declaration to that effect and a showing of the quality of the subsequent generations may comprise the basis for representing the quality of microfilm offered for exchange, in lieu of conformity with this Standard.

36. Density values shall be determined by measuring with a properly calibrated densitometer the amount of diffused light transmitted through the film. A method for taking such measurements is described in ANS PH2.19-1959, "Diffuse Transmission Density" (ISO 5-1974).

MANNER OF SUPPLYING EXCHANGE MICROFILM

37. Exchange microfilm shall be provided on metal or plastic reels which meet the applicable national standard of the producing office, or, in the absence thereof, a standard such as ANS PH5.6-1968 "Dimensions for 100-Foot Reels for Processed 16 mm and 35 mm Microfilm." Reels of film shall be supplied in containers of appropriate size which provide reasonable protection of the film against ambient atmospheric hazards (e.g., dirt, dust, fumes, etc.) and afford convenience in handling.

38. Containers shall open easily and shall be made of material free from chemicals harmful to the film. Each container shall be labelled in accordance with WIPO Standard ST.12. If the reel is part of a set, the label shall also give the reel number and an indication of the bibliographic contents of the particular reel (inclusive dates, patent numbers, etc.).



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39. The image-containing portion of a reel of film should nominally be within the range of 28-30 meters. An office which issues its patent documents monthly or weekly on reels of film may use a shorter length than the above range.
40. A minimum of 45 cm of image-free shall be provided, respectively, at the beginning (leader) and end (trailer) of each reel of film.
41. Film, including leader and trailer, shall be wound on reels so as to leave at least 10 mm of the radius of the reel flange free of film. Care shall be taken not to wind the film too tightly on the reel.
42. Film shall be wound as shown in Appendix VI to this Standard, so that the image F appears in the correct position (upright, and not inverted) when read by the eye (see in this respect International Standard ISO 1116-1975).
43. Rubber bands containing sulfur compounds shall not be used on microfilm reels. Strips of paper free of chemicals harmful to the film, and furnished with strong string ties, are suggested for holding the microfilm on the reels, if needed.
44. No provision is made herein respecting the exchange of 35 mm microfilm in self-contained units, e.g., cassettes, cartridges, magazines, etc., designated to be inserted into readers, reader-printers, or image retrieval devices.

[Appendices I to VI follow]



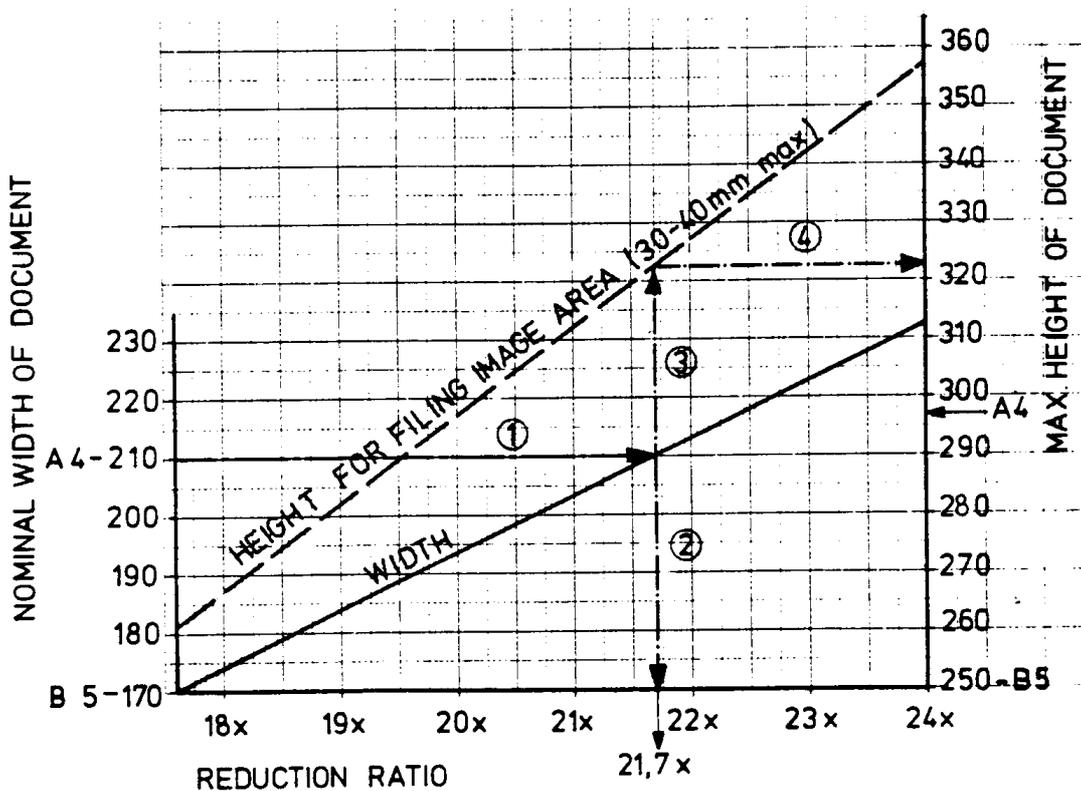
APPENDIX I

DIAGRAM FOR DETERMINING THE REDUCTION RATIO

The reduction ratio, which is required to fill the image area, can be reduced from the following diagram.

In most cases the width of the document is decisive for filling the image area, so the diagram should be used from left to right. The example given is for the standard patent document size A4.

To the nominal dimensions of the document are added 2 mm for paper tolerances and 5 mm for the rules, which are used for dividing the billboard of the camera.



[Appendix II follows]



APPENDIX II

IMAGE ARRANGEMENT AND DIMENSIONS OF 35 MM FILM IN 8-UP CONFIGURATION

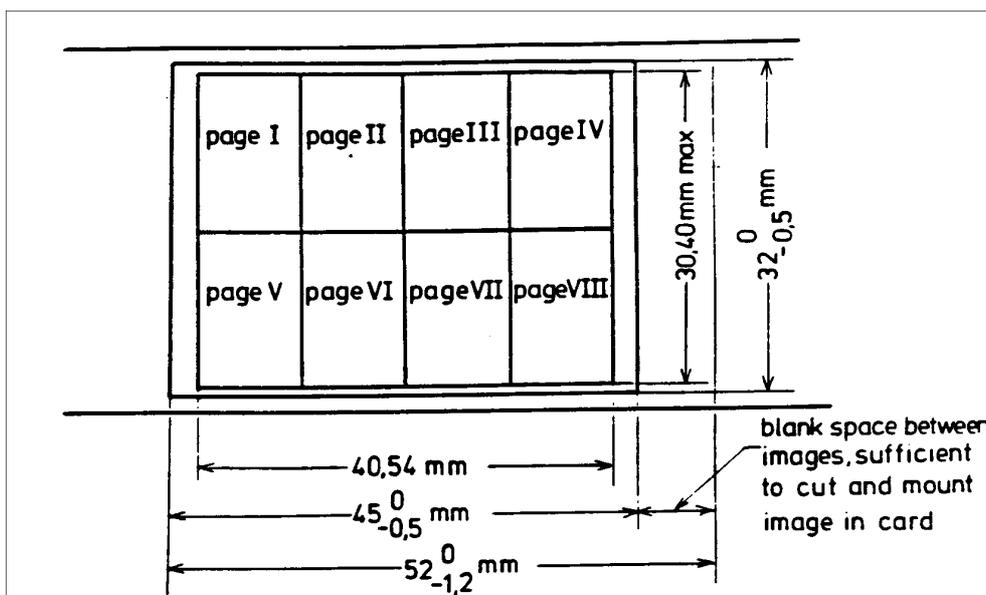


FIG.1 8 pages taken in one step

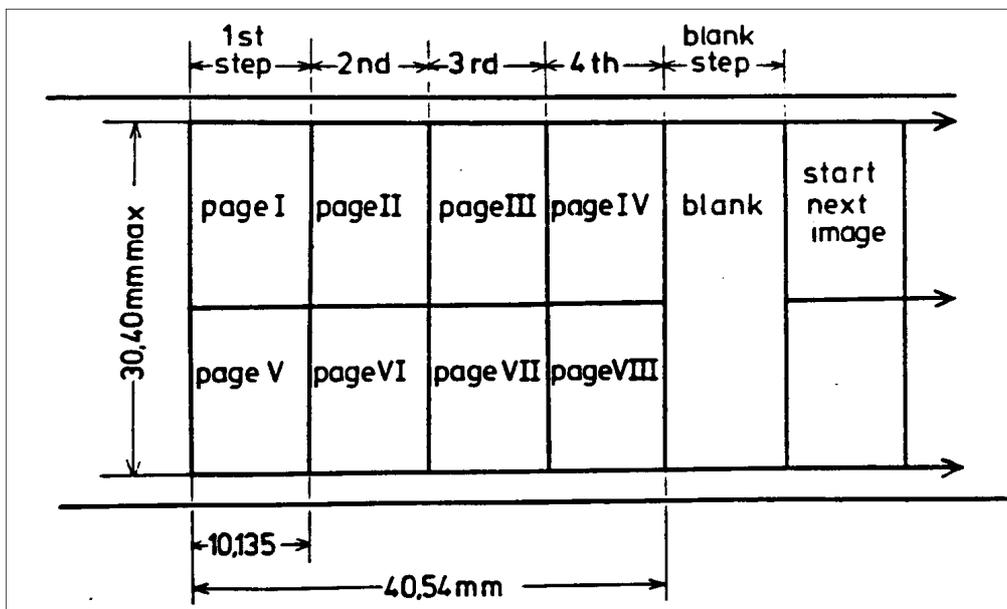


FIG.2 8 pages taken in 4 steps+one step

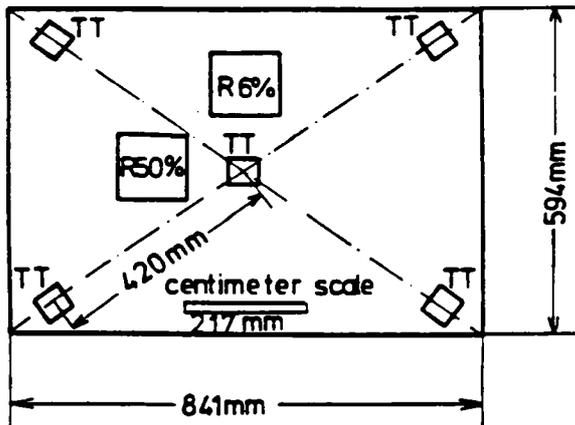
[Appendix III follows]



APPENDIX III

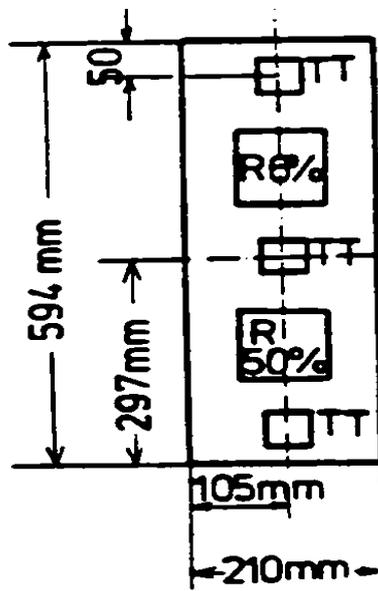
TEST TARGETS FOR 35 MM MICROFILM IN 8-UP CONFIGURATION

Test target 1, for use in taking 8 pages in one step



TT = Resolution test chart
NBS 1010A
R 6% Reflectance test chart
R 50% Reflectance test chart

Test target 2, for use in taking 8 pages in 4 steps



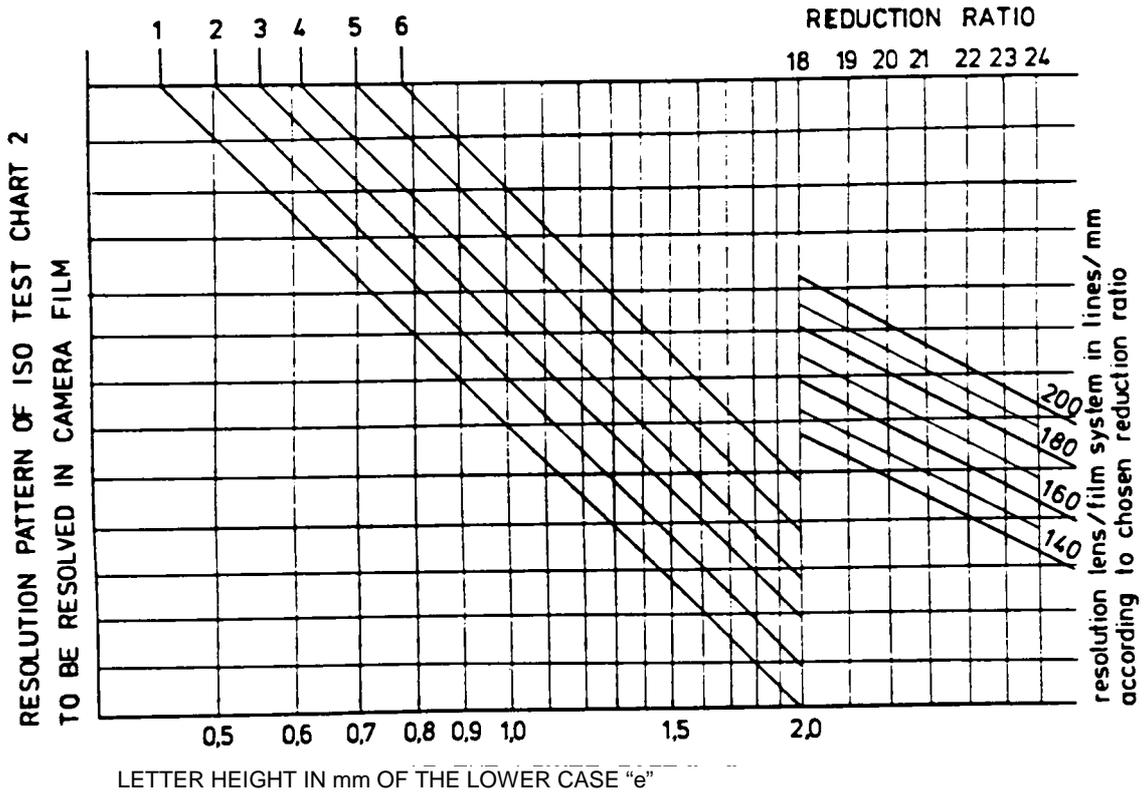
[Appendix IV follows]



APPENDIX IV

LEGIBILITY INDEX QUALITY (q value) 8

GENERATION USED FOR EXCHANGE PURPOSES



[Appendix V follows]

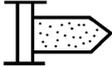
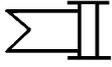
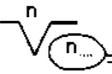


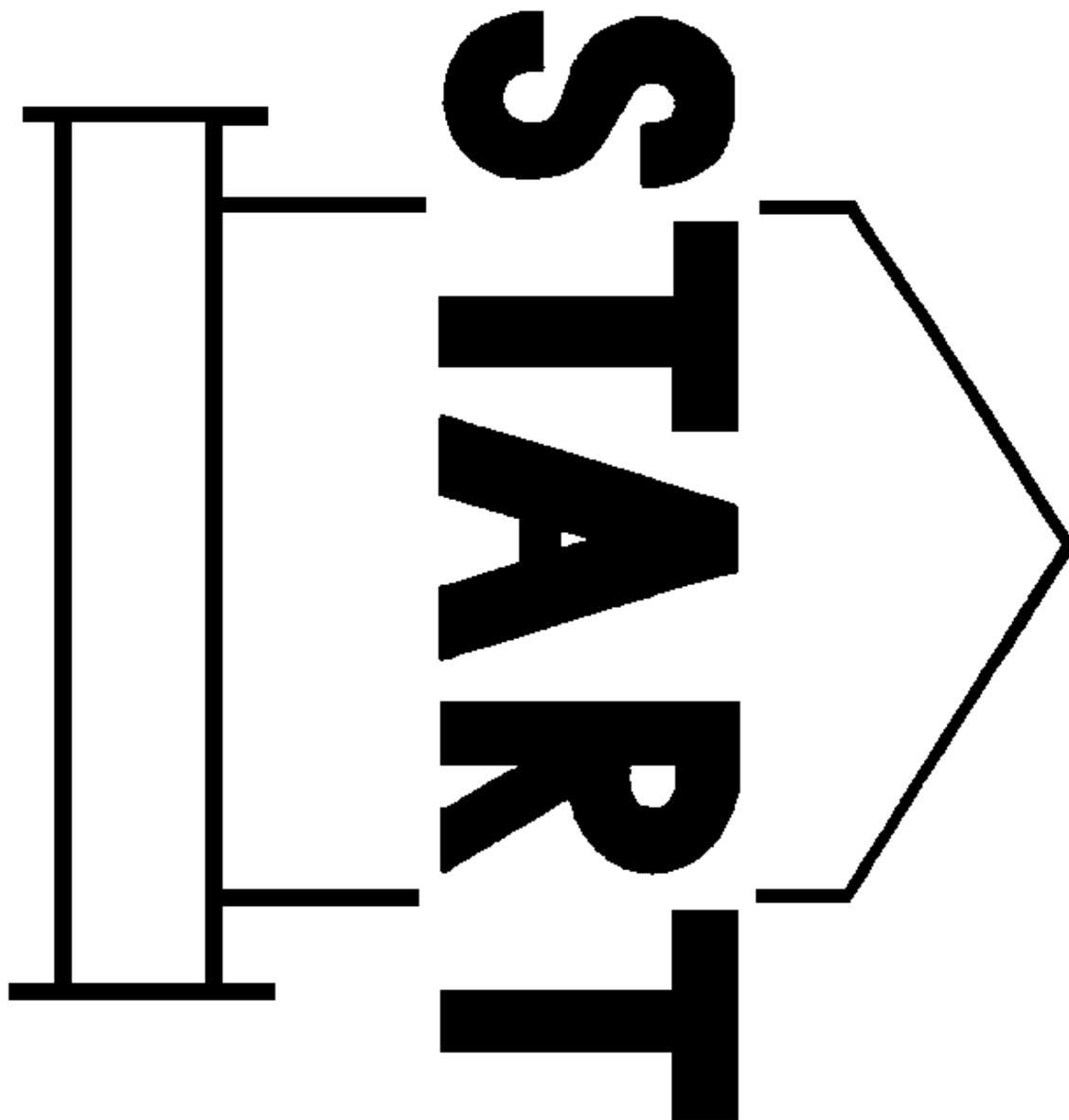
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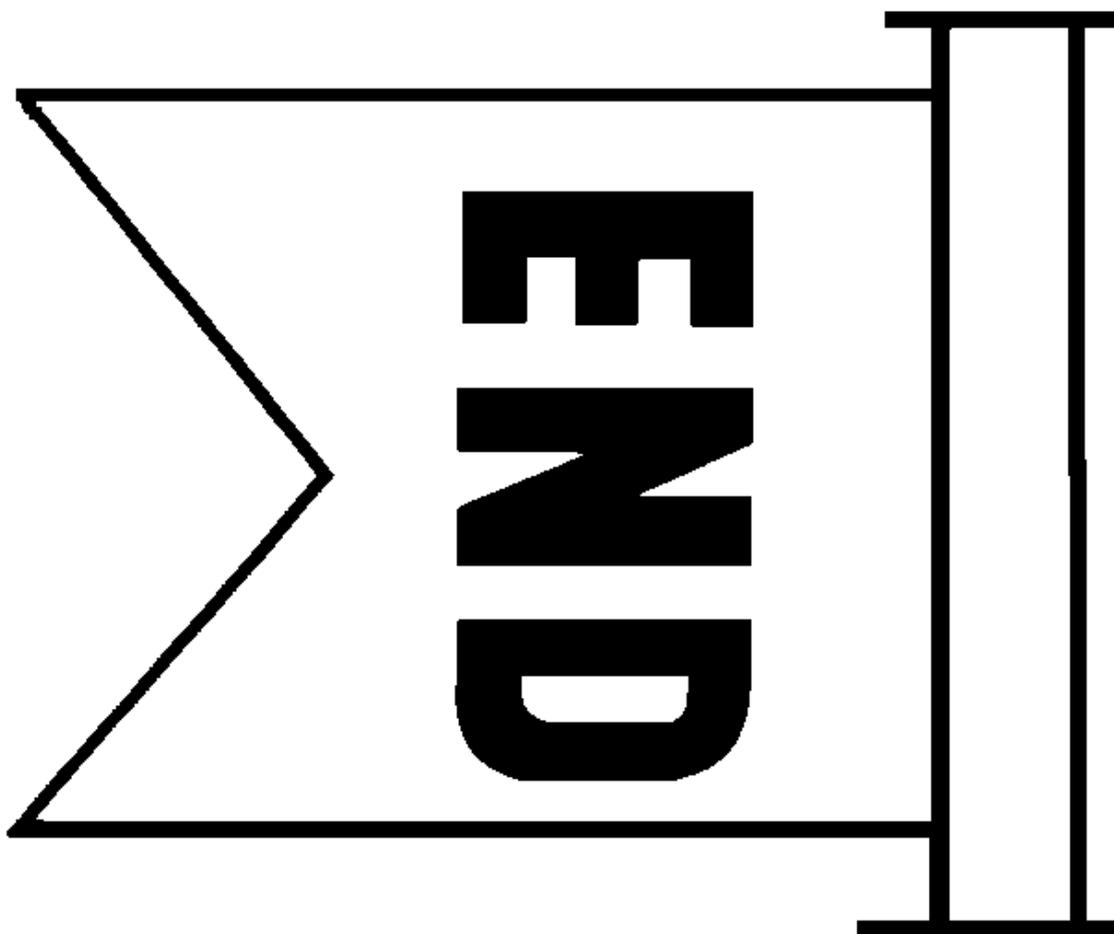
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APPENDIX V

Symbolic information	means
	Beginning of film  Position of the symbol on the film
	End of film  Position on the symbol on the film
	Original difficult to read
	Damaged document 
	Photographic ratio changes from this point
 <i>Alternative</i>	 Colored original
	Size of series of documents changes from this point
	Supplement
	Wrong information
	"n" pages are missing in document
	Wrong exposure (possibly punched with punch pliers)

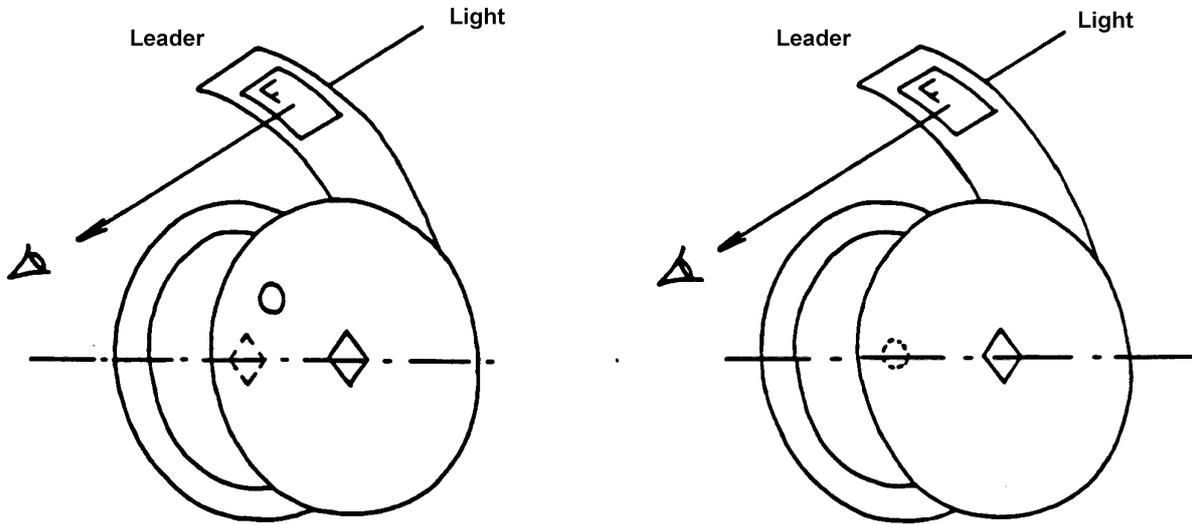




[Appendix VI follows]



APPENDIX VI



(a) Winding on the reversible reel with its two square holes and one reference mark.

(b) Winding on the non-reversible reel.

Diagram showing the winding of the film on the reel

[Standard ST.7/D follows]