International Standard

ISO 6829

Flowchart symbols and their use in micrographics

Symboles d'organigramme employés en micrographie

First edition — 1983-09-15

Ref. No. ISO 6829-1983 (E)

ISO 6829-1983 (E)

Price based on 14 pages

Preisgruppe H

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6829 was developed by Technical Committee ISO/TC 171, *Micrographics*, and was circulated to the member bodies in February 1982.

It has been approved by the member bodies of the following countries :

Australia	Germany, F. R.	South Africa, Rep. of
Canada	Ireland	Spain
Denmark	Italy	Sweden
Egypt, Arab Rep. of	Japan	Switzerland
France	Poland	USA

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Austria
Czechoslovakia

Contents

This page intentionally left blank

Flowchart symbols and their use in micrographics

0 Introduction

As micrographic systems grow in capability and complexity, increasing interface occurs with other information technologies. For example, computer output microfilm (COM) systems have blended optical, photographic, electronic, and digital technologies. In addition, magnetic image storage media are beginning to be used either separately or in conjunction with microform retrieval systems. Still further, systems are being developed using microforms as input to computers, as well as micro-photo-digital and graphic recording for computer memory systems. Words and symbols used in an information process flow should therefore be easily recognizable between and among the users and manufacturers of all information technologies.

The purpose of this International Standard is to establish symbols, symbolic language, and recommended flowcharting procedures to improve communications between and among users and manufacturers of micrographic technology and all information technologies.

Compatibility with ISO 1028, was of paramount consideration in the preparation of this International Standard. New symbols, their use, and recommendations were introduced only where considered essential for better communications. As a result, as will be evident in the actual flowcharting examples given herein, the ISO 1028 symbols with recommended flowcharting procedures and micrographic flowchart symbols given in this International Standard, complement each other in depicting information systems flow.

Flowchart symbols, terminology, and procedures were designed for use and compatibility with existing International Standards for flowchart information processing. These symbols are defined in ISO 1028.

1 Scope and field of application

This International Standard specifies symbols for microfilm operations and symbolic language for labelling these symbols in order to delineate specific operations, functions, and features.

This International Standard also presents guidelines and recommendations for flowcharting management systems (level 1) and operational systems (level 2).

The annotations covered in this International Standard are those generally required for detailing to the second level of flowcharting. It is not practical to include all possible annotations that may be necessary for flowcharting in greater detail.

2 References

ISO 1028, *Information processing — Flowchart symbols.*

ISO 6196, *Micrographics — Vocabulary*

- — Section 01 : *General terms.*
- — Section 02 : *Image positions and methods of recording.*
- — Section 03 : *Film processing.*[1]

3 Definitions

The definitions of technical terms contained in ISO 6196 shall apply.

4 Symbols for representing microfilm operations

4.1 Levels of flowcharting and systems design

In the requirements for flowcharting micrographic systems three distinct levels of detail are generally depicted, namely :

4.1.1 Management systems — level 1

Here the designer is concerned only with a broad picture, one which describes the process flow.

---

1) At present at the stage of draft.

4.1.2 Operational systems — level 2

The process flow is looked at in greater depth, resulting in a more detailed systems flow than would be required for the management level.

4.1.3 In-depth operational systems flow — level 3

The operational systems flow at the third level goes into great depths of detail and normally would be of interest only to those who specialize in a specific section of the system depicted in an operational systems flowchart.

NOTE — Symbolic notations and the sequence of order in which they appear is established through level 2 in this International Standard. Where all options for annotations within each symbol are not utilized, space need not be allocated.

Due to the number of variables inherent in the many sections of a detail systems flow, it is neither practical to establish standard notations nor to include illustrations for all possible conditions within level 3.

4.2 Basic microform symbols

The four new microform symbols (see figures 1 to 4), when used in conjunction with ISO 1028 symbols, are sufficient to depict the flow for a microfilm-oriented system. Details, form and dimensional ratios, of the four new symbols together with the ISO 1028 storage and retrieval symbols (see figure 5), frequently used within the flowcharting of micrographic systems, are given below :

4.2.1 All microforms
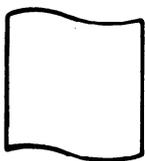
Dimensional ratio

$$\frac{\text{width}}{\text{height}} = \frac{1}{1}$$
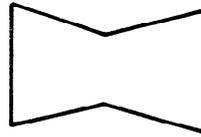
Figure 1

4.2.2 Microform recording

Dimensional ratio

$$\frac{\text{width}}{\text{height}} = \frac{1}{0,5}$$
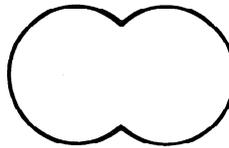
Figure 2

4.2.3 Processing

Dimensional ratio

$$\frac{\text{width}}{\text{height}} = \frac{1}{0,5}$$

Figure 3

4.2.4 Duplicating

Dimensional ratio

$$\frac{\text{width}}{\text{height}} = \frac{1}{0,6}$$

Figure 4
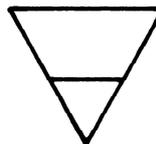
4.2.5 Storage/retrieval (ISO 1028 symbols)

On-line

Dimensional ratio

$$\frac{\text{width}}{\text{height}} = \frac{1}{0,67}$$

Off-line

Dimensional ratio

$$\frac{\text{width}}{\text{height}} = \frac{1}{0,87}$$

Figure 5

5 Methods for labelling symbols to define specific operations, functions, and features

This clause contains the general information normally required to identify microfilm operational symbols. Additional information required by users to identify in greater detail may be included as required.

5.1 Microform symbol
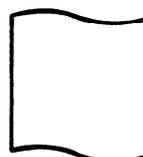
This symbol (see figure 1) represents any microform used in a micrographic systems flow. Symbolic notations within the symbol itself designate what specifically it represents.

5.1.1 Microform — Notations and sequence

Identifying notations within the symbol and the sequence in which they appear are as follows :

Film size	(millimetres)
Generation	(1, 2, etc.)
Polarity	(Negative, positive)
Medium	(Silver, diazo, etc.)
Form	(Roll, microfiche, etc.)

5.1.2 Microform — Symbolic notations and abbreviations

NOTE — The text appearing under each clause title "symbolic notations and abbreviations" when read horizontally across each line in no way implies a relationship, nor does one necessarily exist, between one notation and others on the same line.

Film size	Generation	Polarity (abbreviation)	Medium (abbreviation)	Form/ Container (abbreviation)
16 mm	1	Negative (N)	Silver (S)	Roll (Roll)
35 mm	|	Positive (P)	Diazo (D)	Microfiche (Fiche)
105 mm	2		Vesicular (V)	Aperture card (ApCd)
	|		Photo-chromic (Phc)	Jacket (Jckt)
	5			Strip (Strp)
				Chip (Chip)

5.1.3 Example of labelled "microform" symbol with notation in proper sequence

Figure 6

5.2 Microform recording

This symbol (see figure 2) represents the recording function of transferring information to an original microform master.

5.2.1 Microform recording — Notations and sequence

Indentifying notations within the symbol and the sequence in which they appear are as follows :

Method (Rotary, planetary, etc.)
Reduction (1/12, 1/24, etc.)

5.2.2 Microform recording — Symbolic notations and abbreviations

Method	(Abbreviation)	Reduction
Rotary	(Ro)	1/12
Planetary	(Pl)	—
Step/Repeat	(S/R)	—
Computer Output Microfilmer	(COM)	1/24
Scanner	(Scan)	—
Updatable	(Updt)	—

3

5.2.3 Example of labelled "microform recording" symbol and its use in a flow diagram

Method
Reduction

Ro
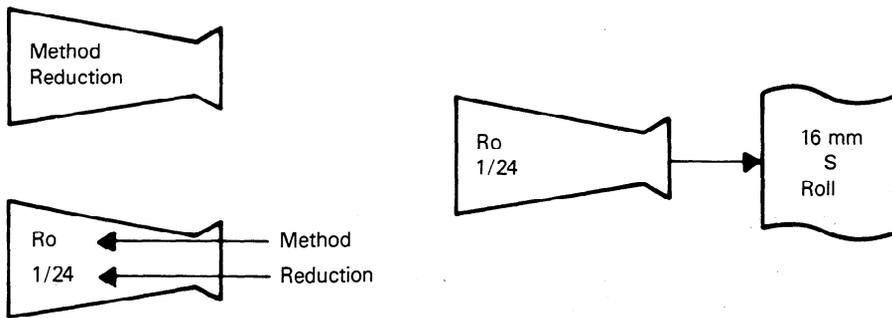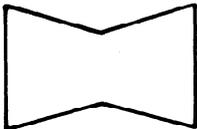1/24 — Method
— Reduction

Ro
1/24 → 16 mm
S
Roll

Figure 7

5.3 Processing

This symbol (see figure 3) represents the processing process for making information or a medium permanent and/or legible to the naked eye or an optical apparatus.

5.3.1 Processing — Notations and sequence

Identifying notations within the "processing" symbol and the sequence in which they appear are as follows :

Method (Chemical — conventional, chemical — reversal, heat)
Rate (Metres per minute, etc.)

5.3.2 Processing — Symbolic notations and abbreviations

Method (abbreviation)

Chemical (Chem-conv)
Heat (Chem-rev)

Rate (abbreviation)

Metres per minute (m/min)
Items per minute (Item/min)

5.3.3 Example of labelled "processing" symbol and its use in a flow diagram

Method
Rate

Chem-conv
3 m/min — Method
— Rate

Ro
1/24 → 16 mm
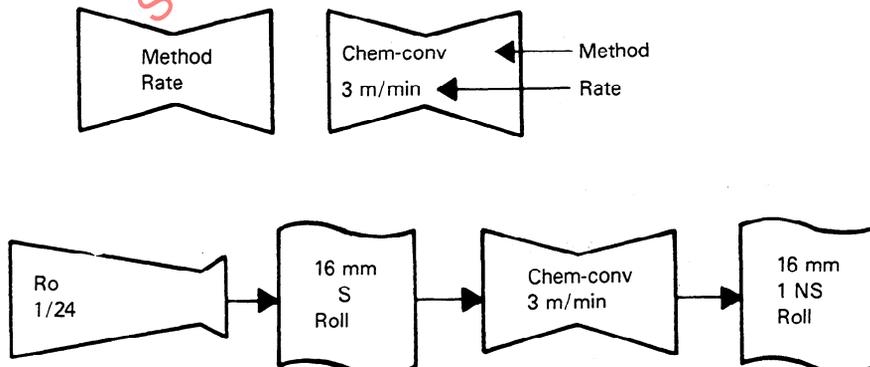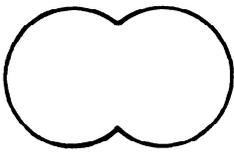S
Roll → Chem-conv
3 m/min → 16 mm
1 NS
Roll

Figure 8

4

5.4 Duplicating

This symbol (see figure 4) represents the reproduction of single or multiple copies of a document or microform, usually with the aid of a master or intermediate.

5.4.1 Duplicating — Notations and sequence

Identifying notations within the "duplication" symbol and the sequence in which they appear are as follows :

Method (Contact, optical)
Rate (Metres per minute, etc.)

5.4.2 Duplicating — Symbolic notations and abbreviations

Method (abbreviation)

Contact (Cont)
Optical (Opt)

Rate (abbreviation)

Metres per minute (m/min)
Items per minute (Item/min)

5.4.3 Example of labelled "duplicating" symbol and its use in a flow diagram

Method
Rate

Indicate number of duplicates made if more than one.

Cont
10 m/min

Method
Rate

Ro
1/24

16 mm
S
Roll

Chem-conv
3 m/min

16 mm
1 NS
Roll
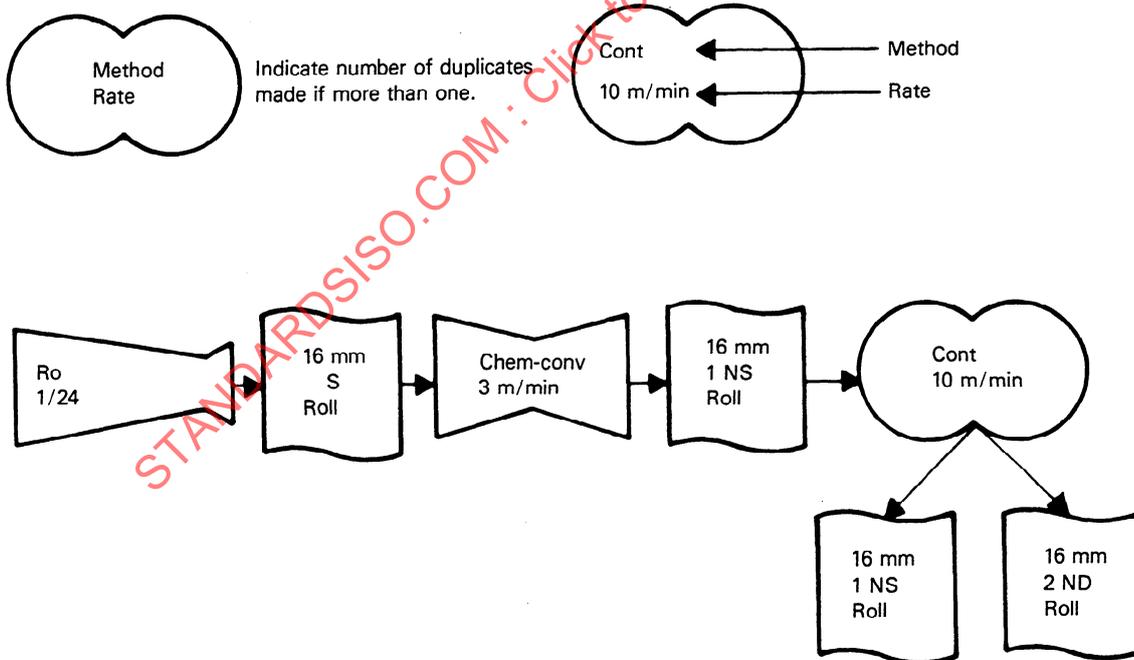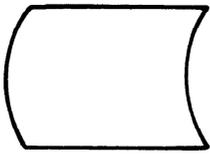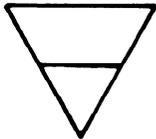
Cont
10 m/min

16 mm
1 NS
Roll

16 mm
2 ND
Roll

Figure 9

5.5 Storage/retrieval (Existing ISO symbols)

This symbol (see figure 5) represents an input/output operation utilizing any type of online storage.

This symbol (see figure 5) represents the storing of information off-line, regardless of the medium on which the information is recorded.

5.5.1 Storage/retrieval — Notations and sequence

Identifying notations within the "storage/retrieval" symbols and the sequence in which they appear are as follows :

Method (Manual, semi-automatic, etc.)
Rate (Items per unit of time)
Container (Cartridge, cassette, etc.)

5.5.2 Storage/retrieval — Symbolic notations and abbreviations

Method (abbreviation)

Manual (Man)
Semi-automatic (S-auto)
Automatic (Auto)

Rate

Items per unit of time

Container (abbreviation)

Cartridge (Cart)
Cassette (Cass)
Cell (Cell)
Magazine (Mag)
Reel (Reel)
Stick (Stk)
Tray (Tray)

5.5.3 Example of labelled "storage/retrieval" symbols

On-line
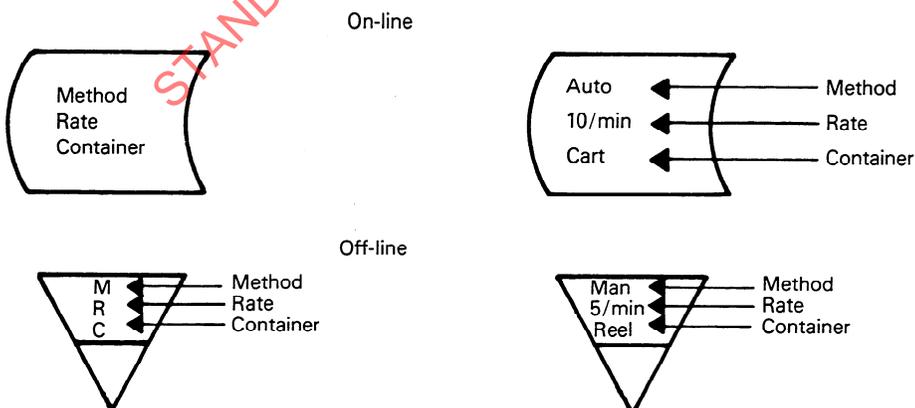
Method
Rate
Container

Auto ——— Method
10/min ——— Rate
Cart ——— Container

Off-line

M ——— Method
R ——— Rate
C ——— Container

Man ——— Method
5/min ——— Rate
Reel ——— Container

Figure 10

6

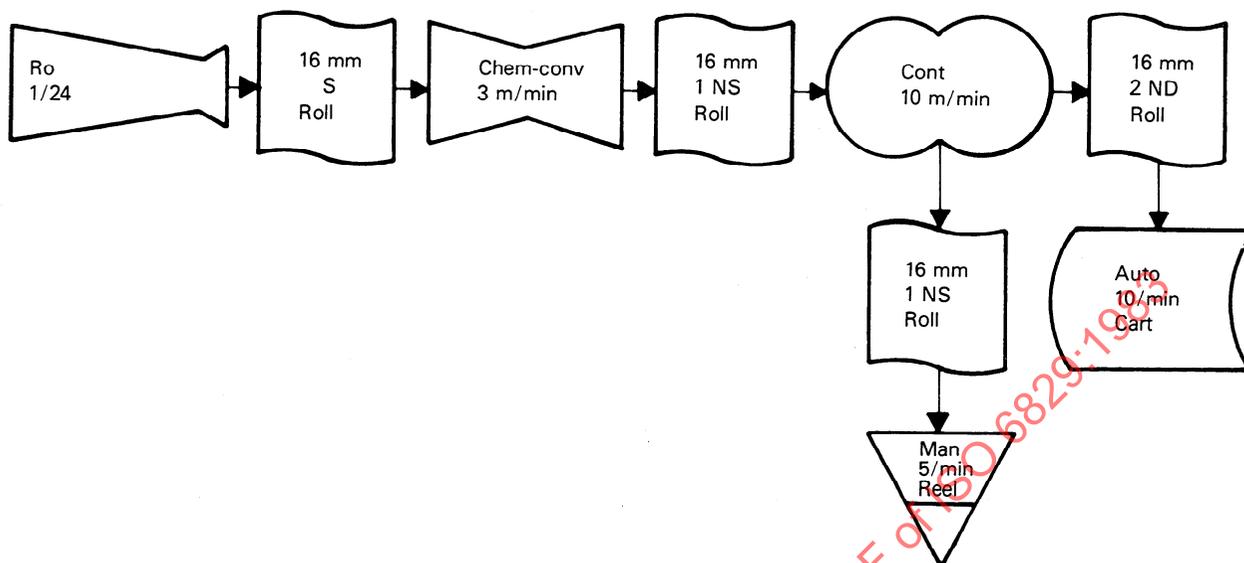**5.5.4 Example of micrographic flow diagram using all symbols**

Figure 11

6 Examples of flowchart symbols used in micrographic information systems

6.1 Use of symbols and their relationships

The flowcharts shown in figures 12 to 20 are typical examples of how the micrographic symbols and the conventional ISO symbols might be used in flowcharting micrographic systems. The ISO symbols used in these examples are described in the annex.

NOTE — Use of the "microform" symbol is optional between each step except when the medium or format is changed

Examples of an aperture card system, a microform information storage and retrieval system, an ultrafiche system, computer output microfilm (COM) system, and a computer input microfilm (CIM) system are given in figures 12 to 20.

6.2 Example of a flowchart for an aperture card system

This flowchart, see figures 12 to 14, illustrates a microrecording system for engineering drawings. It also illustrates several different methods of accomplishing the same task which may exist in a single system and shows how the symbols can be grouped and inter-connected.

The use of a circle with an identifier as a connector is in accordance with ISO practice. The use of an enclosing box illustrates a method for depicting several operations being performed at one station or by one piece of equipment. Further, it illustrates that some freedom is allowed for clarifying the flowchart by annotating the symbols. For example, in this application the reduction ratio of the camera, and consequently the images, will vary within a given system due to the different size documents being microfilmed. In this flowchart, the frequent use of the microform symbol after each process or operation seems necessary since the film and/or the image format was changed in all but one instance.

The use of the annotated open-ended box symbol (see ISO 1028) simplifies the flowchart by eliminating the need for return lines to be drawn to the point of input for either recording method.

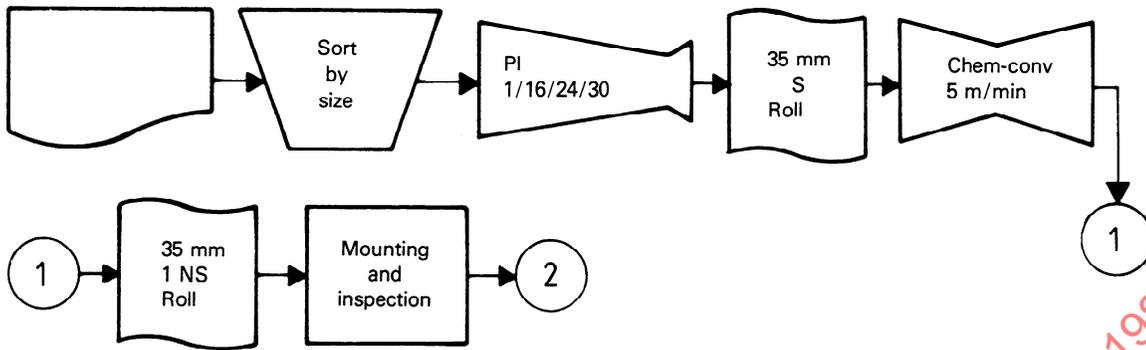### 6.2.1 Camera with separate microfilm processing

Figure 12

NOTE — There is no attempt to show the disposition of the original document in this and the other flowcharts shown hereafter. However, a line from the original document to a file, a destruct process, or some other distribution process would be in order for completeness.
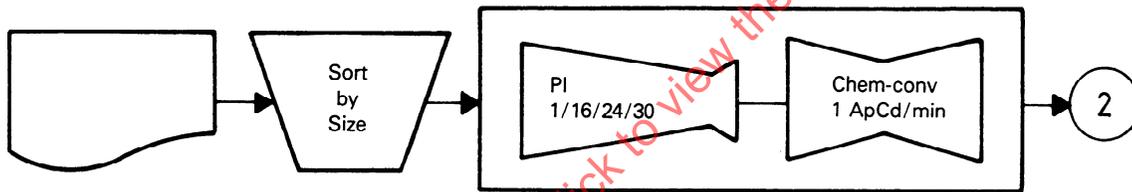
6.2.2 Camera internal microfilm processing

Figure 13

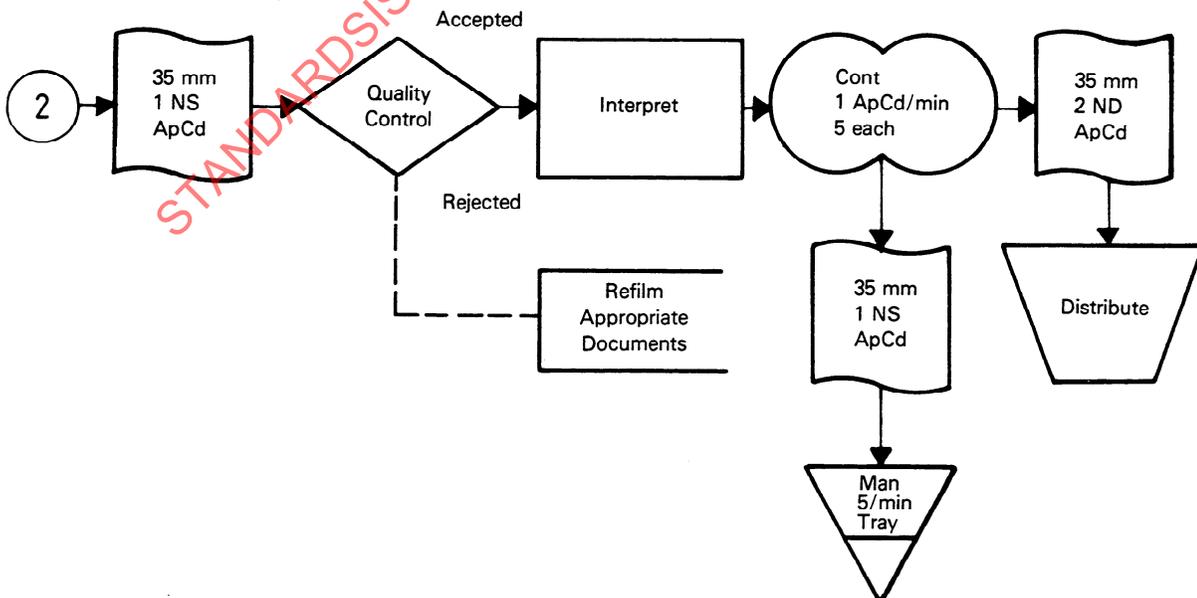### 6.2.3 Systems flow common to both separate and internal microfilm processing

Figure 14

6.3 Example of a flowchart for a micrographic information storage and retrieval system

This is a somewhat more complicated information system flowchart (see figure 15) and includes additional ISO symbols in conjunction with the micrographic symbols.

The last operation depicting the automatic on-line storage and retrieval device (connector 4) could have been diagrammed in one of several ways. For example, if could have been illustrated by treating the functions as a single device or as an operation all enclosed within a box. In most instances, the microform symbol needs to appear frequently due to changes in generation or format.
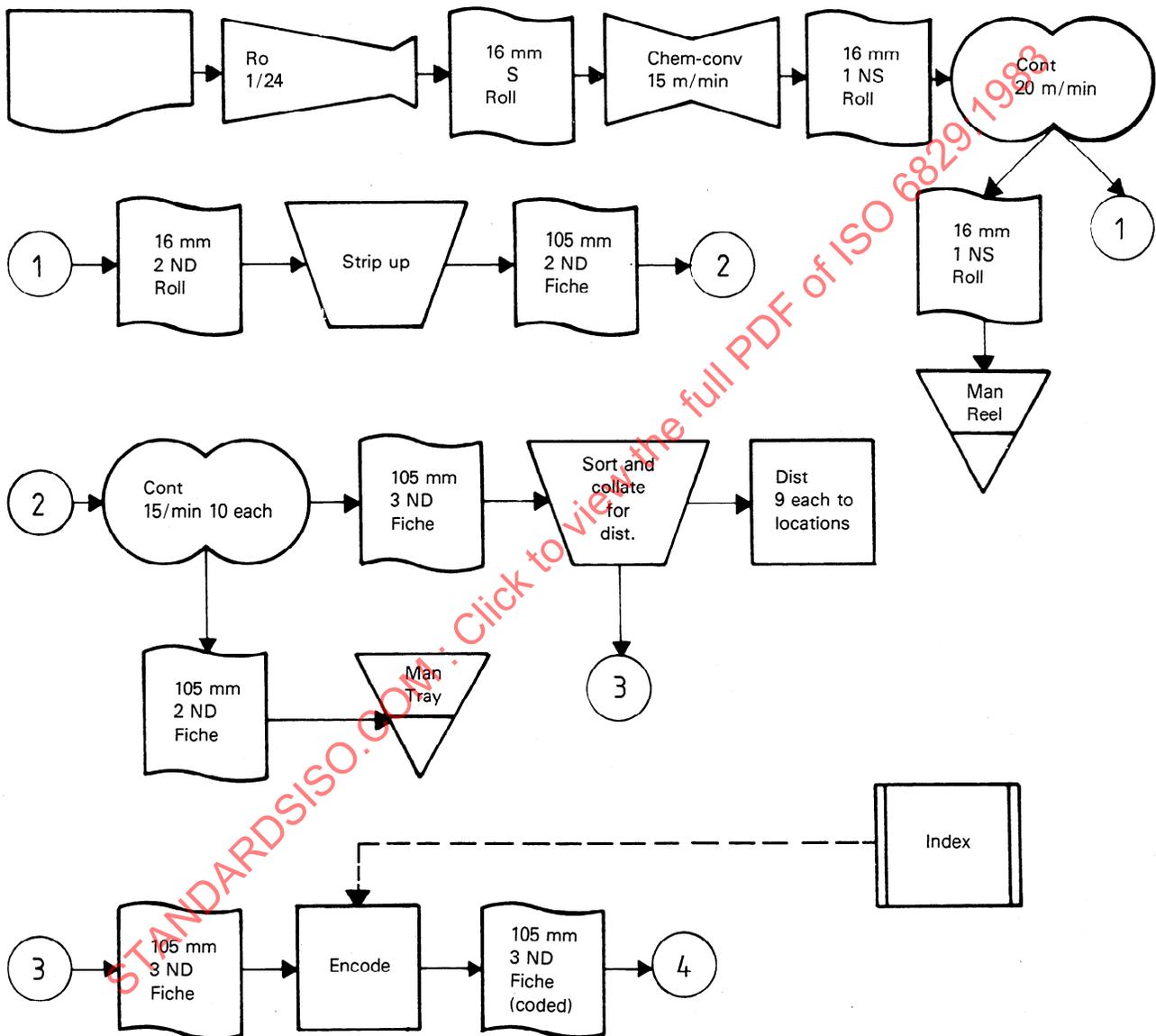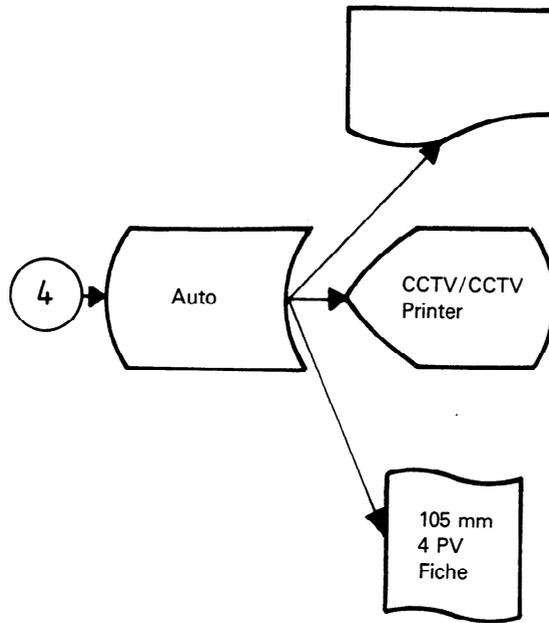
Figure 15

6.4 Example of a flowchart for an ultrafiche system

It is realized that this is a very special non-standardized micropublishing procedure. However, it was included to illustrate the compatibility of using the micrographic symbols along with conventional ISO symbols in a special systems flow (see figure 16).