

ECMA

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

CONTINUOUS
SPROCKET-PUNCHED STATIONERY
PART I

RECOMMENDED SIZES

December 1973

Free copies of this document are available from ECMA,
European Computer Manufacturers Association
114 Rue du Rhône - 1204 Geneva (Switzerland)

ECMA

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

CONTINUOUS
SPROCKET-PUNCHED STATIONERY
PART I

RECOMMENDED SIZES

December 1973

BRIEF HISTORY

A Technical Committee, TC14, was formed by ECMA in September 1967 to study paper sizes. The first task of this Committee was to consider sizes of continuous sprocket-punched forms. A survey of existing practice indicated that a wide variety of both form depths and widths were in use and that rationalization to an acceptable range would be of economic advantage.

The second task of this Committee was to consider the physical properties, fastening, packaging and storage of the sprocket-punched continuous forms.

Part I of this recommendation is published in the hope that it will provide the necessary lead to the industry in the choice of sizes of continuous forms.

Part II identifies the requirements for satisfactory performance over output printers.

The work in preparing this document has been closely coordinated with the activity in ISO and several national bodies. ISO/TC95/SC9 has adopted a similar recommendation for form sizes.

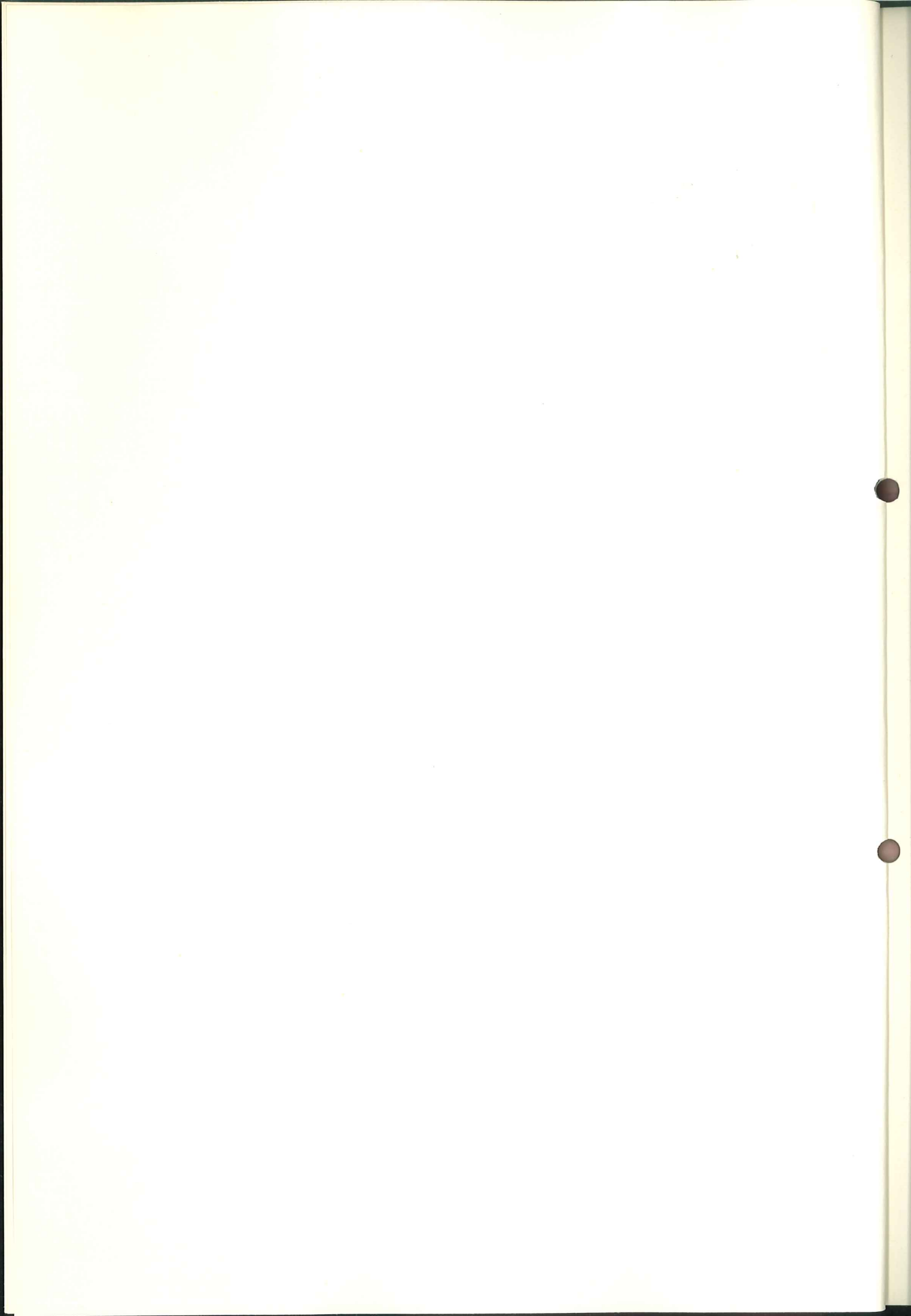


TABLE OF CONTENTS

1. SCOPE
 2. BASIS FOR THE STANDARD
 - 2.1 ISO R 216
 - 2.2 Predominant dimensions for ADP Printers
 3. DEPTH SIZES
 - 3.1 Recommended depths
 - 3.2 Special cases
 - 3.3 Alternate sizes
 4. WIDTH SIZES
 - 4.1 Adjustable pin feed mechanism
 - 4.2 Data teleprinters
 5. SPROCKET HOLES
 - 5.1 Distance from sprocket holes to margins
 - 5.2 Diameter of the sprocket holes
 - 5.3 Distance between consecutive sprocket holes
 - 5.4 Cumulative tolerance
 - 5.5 Deviation from centreline
 - 5.6 Correspondence of sprocket holes
 - 5.7 Parallelism of centrelines
 - 5.8 Carbon paper
- NOTE 1 Data Processing equipment and Data teleprinters
 with non-adjustable Pin Feed Mechanism
- NOTE 2 Larger sprocket holes
- NOTE 3 Serrated sprocket holes on large forms
- APPENDIX A

1. SCOPE

This document applies to paper in continuous lengths intended for use with automatic data processing (ADP) equipment for print-out of documents for administrative, commercial and technical use. It is an interim Recommendation pending the creation of a module-based, interrelated measurement system for the office techniques field.

2. BASIS FOR THE STANDARD

2.1 ISO R 216

It is recognized that ISO R 216 "Trimmed Sizes of Writing Paper and Certain Classes of Printed Matter" (A sizes) is the international Recommendation already adopted by many countries as a Standard, and that it is desirable to take into account that Recommendation in relation to sprocket-punched continuous forms.

2.2 Predominant dimensions for ADP printers

It is also recognized that the predominant line spacing for ADP machines is $\frac{1}{6}$ in (4,23... mm), the width-spacing is $\frac{1}{10}$ in (2,54 mm), and the sprocket holes distances are $\frac{1}{2}$ in (12,7 mm), and that these measurements are widely used in other office machines as well.

3. DEPTH SIZES

3.1 Recommended depths

The guideline for the maximum depth of separated forms is the depth of A4 upright (297 mm).

Table I indicates the recommended depth sizes expressed in inch and the A sizes considered equivalent.

TABLE I

3 in	76,2 mm	(\approx A8, A7L)
4 in	101,6 mm	(\approx A7, A6L)
6 in	152,4 mm	(\approx A6, A5L)
8 in	203,2 mm	(\approx A5, A4L)
12 in	304,8 mm	(\approx A4, A3L)

3.2 Special cases

The depth of 12 in (304,8 mm) should be accepted in lieu of the depth of A4 in all cases where continuous forms are not to be separated. In other cases the depth of 12 in should be regarded as an untrimmed size which could - if so desired - be trimmed to the depth of A4.

3.3 Alternate sizes

In order to arrive more directly at sizes equivalent to those of the A-series, as given in ISO R 216, the following sizes may be used:

TABLE II

4 7/6 in	105,83... mm	(\approx A7, A6L)
5 5/6 in	148,16... mm	(\approx A6, A5L)
8 2/6 in	211,66... mm	(\approx A5, A4L)
11 4/6 in	296,33... mm	(\approx A4, A3L)

4. WIDTH SIZES

4.1 Adjustable pin feed mechanisms

4.1.1 The width sizes as set out in ISO R 216 should be observed as width sizes for continuous forms after removal of sprocket holes margins.

4.1.2 Table III indicates the recommended gross width sizes, i.e. sizes including sprocket holes margins ("overall widths, W"). See Appendix.

TABLE III

180 mm	(\approx 7,1 in)
250 mm	(\approx 9,9 in)
340 mm	(\approx 13,4 in)
375 mm	(\approx 14,8 in)
400 mm	(\approx 15,7 in)
450 mm	(\approx 17,7 in)

For special applications other gross widths may be required.

4.2 Data Teleprinters

A de facto standard width is recognized internationally for on-line character by character teleprinters having a text length of 69 characters (CCITT Recommendation). Similar on-line data printers are available for 72, 80, 100 and 120 characters per line with related overall paper widths.

Table IV indicates the recommended paper widths with basic letter spacing of $\frac{1}{10}$ (2,54 mm). See A2 in the Appendix.

TABLE IV

216 mm	8,5 in
250 mm	9,9 in
297 mm	11,7 in
327 mm	12,9 in
340 mm	13,4 in

5. SPROCKET HOLES

Sprocket feed holes are punched in both left and right hand margins of the continuous forms (see Fig. 1).

5.1 Distance from sprocket holes to margins

The centreline of the holes is parallel to the edges at a distance A

$$A = 6,0 \pm 0,7 \text{ mm } (0,236 \pm 0,028 \text{ in})$$

5.2 Diameter of the sprocket holes

5.2.1 The circular holes shall have a diameter

$$D = 4,0 \pm 0,1 \text{ mm } (0,156 \pm 0,004 \text{ in})$$

5.2.2 The serrated holes shall have a minor diameter of

$$4 \pm 0,1 \text{ mm } (0,156 \pm 0,004 \text{ in})$$

and a major diameter of

$$4,4 \pm 0,1 \text{ mm } (0,173 \pm 0,004 \text{ in})$$

with no more than 24 equal serrations.

5.3 Distance between consecutive sprocket holes

The distance B between the centres of two consecutive holes is

$$B = 12,7 \pm 0,05 \text{ mm } (0,500 \pm 0,002 \text{ in}).$$

5.4 Cumulative tolerance

The cumulative tolerance on the distance between the centres of any two holes within a distance of 254 mm (10 in) shall not exceed $\pm 0,3$ mm (0,012 in).

5.5 Deviation from centreline

The maximum permissible deviation C of the holes from their centreline is

$$C = \text{max. } 0,1 \text{ mm (0,004 in).}$$

5.6 Correspondence of sprocket holes

The maximum permissible deviation E of the corresponding left and right hand holes from a line drawn perpendicular to the left hand centreline is

$$E = \text{max. } 0,15 \text{ mm (0,006 in).}$$

5.7 Parallelism of centrelines

The right hand centreline shall be parallel to the left hand centreline within 0,125 mm in any 250 mm length (0,005 inch in any 10 inches length).

5.8 Carbon paper

Where carbon paper with sprocket hole edges is used with continuous webs, the sprocket hole edges of the carbon paper may have a diameter of more than 4,1 mm (0,161 in).

NOTE 1 Data Processing Equipment and Data Teleprinters with non-adjustable Pin Feed Mechanisms.

With such equipment the distance L between the centres of the left and right sprocket holes is of prime importance. The tolerance of this dimension is indicated in Fig. 2 in mm. The width of forms will vary depending upon application but the overall widths in Tables III and IV are preferred.

NOTE 2 Occasional larger sprocket holes not greater in diameter than 6,35 mm (0,25 in) are permitted provided they have a minimum vertical separation of 200 mm (7,98 in).

NOTE 3 For certain High Speed Line Printers serrated sprocket holes may cause unsatisfactory performance when large width and low strength paper is used.

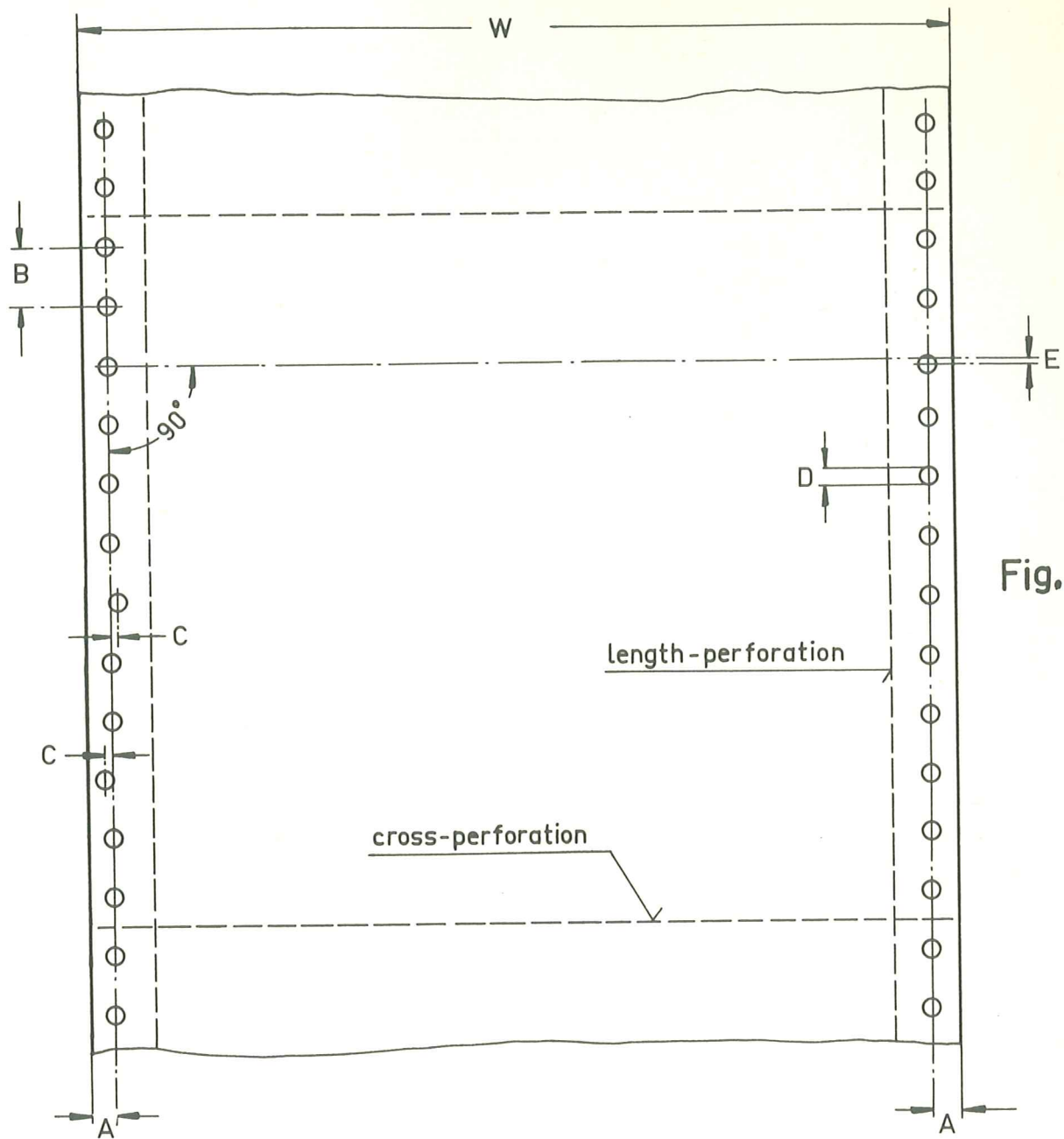


Fig. 1

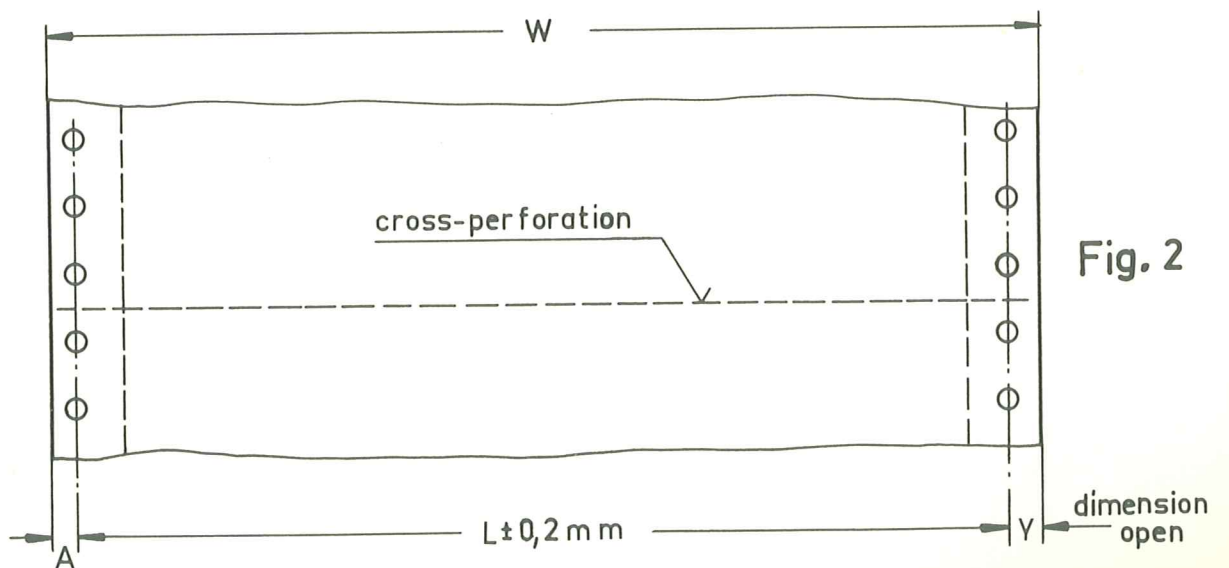
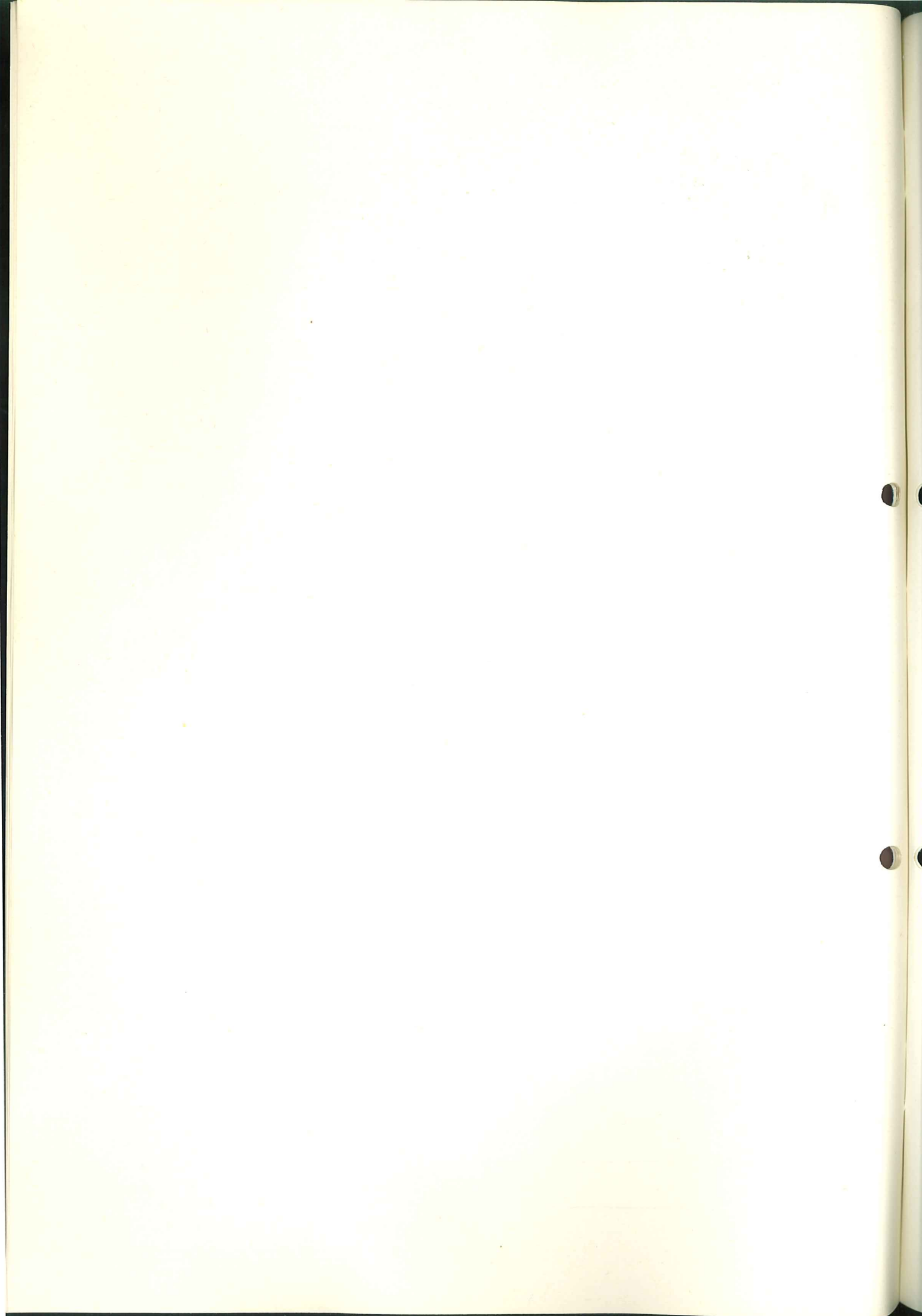


Fig. 2



APPENDIX A

A.1 During the investigations into this subject it was necessary to consider two factors in arriving at a practical solution for a range of preferred form widths:

- ISO/R 216 "Trimmed sizes of writing paper and certain classes of printed matter".
- The number of characters per line of certain data processing line printers.

TABLE A.1

Overall Width W mm	ISO A sizes		Printer Capacity	
	Trimmed Width mm	Total Margin mm	Number of printed positions (pitch: 2,54 mm)	Width mm
180	A5/A6L: 148	32	-	-
250	A4/A5L: 210	40	-	-
340	A3/A4L: 297	43	120	304,8
375	- -	-	132	335,3
400	- -	-	144	365,8
450	A3L : 420	30	160	406,4

It was considered that as a general principle the overall width should be rounded off to the nearest five millimeters. Secondly, account was taken of the widespread practice of continuous form production where the fastening of multipart sets sometimes requires a larger margin. For example:

- The untrimmed form width of 250 mm has a total margin of 40 mm over the A4 trimmed width of 210 mm. The 20 mm

margin on each side provides the space to join the large number of copies frequently used in this form width.

- The untrimmed form width of 450 mm has a total margin of 30 mm over the A3 trimmed width of 420 mm. The 15 mm margin on each side is sufficient for the lesser number of copies usually used for this form width.

It will be observed that there is an interrelation between the various considerations as shown in the table. The recommendation for widths in the main document takes into account as far as possible these considerations to arrive at a practical solution which inevitably does not reflect any true mathematical progression.

A.2 The preferred widths in Table A.2 are based upon the number of characters per line, the dimension between left and right sprocket holes and the related ISO/R 216 sizes.

TABLE A.2

Overall Width W mm	Width L between sprocket pins on platens mm	ISO A Sizes		Printer Capacity	
		Trimmed Width mm	Total Margin mm	Number of printed positions (pitch: 2,54 mm)	Width mm
216	203 ± 0,2	-	-	69	175,3
216	203 ± 0,2	-	-	72	182,9
250	238 ± 0,2	A4/A5L: 210	40	80	203,2
297	285 ± 0,2	-	-	100	254
327	315 ± 0,2	A3/A4L: 297	30	100	254
340	328 ± 0,2	-	-	120	304,8

