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Systems

Form Design Reference Guide for Printers

IBM

Preface

This publication contains information to be considered by personnel designing, ordering, or using forms for the printers listed below.

This manual has two sections: general forms-design information applicable to these printers, and specific information (Appendix) for particular printers. The general information relates to items such as form length, width, weight, fastenings, and other forms-related items that must be considered and/or met when forms are designed for printers. Form sets should comply with national standards specifications and ISO Recommendation No. 2784. The specifications are not intended to be restrictive, but to permit the customer to purchase continuous forms from the manufacturer of his choice.

For detailed information on forms feeding and operating procedures, see the appropriate component description and operating procedures manuals for the particular printer or system.

Companion publications useful in designing forms are:

American National Standard Character Set and Print Quality for Optical Character Recognition (OCR-A) ANSI X3.17-1974

Print Chart (Six Lines per Inch), GX20-1816

Print Chart (Eight Lines per Inch), GX20-1818

Form Design Reference Guide for the IBM 3800 Printing Subsystem, GA26-1633.

Another publication which is not an IBM publication but may be helpful in designing forms and for comparison purposes is *International Standard ISO,* 2784. Dimensions in this manual are to this standard.

IBM printers included are:

1132	3211	3610	3736	4710	5211
1403	3213	3611	3767	4973	5225
1404	3215	3612	3771	4974	5241
1443	3262	3615	3773	4975	5242
2203	3268	3616	3774	5024	5256
2213	3284	3618	3775	5103	5320
2222	3286	3642	3776	5203	7436
2780	3287	3645	3780	5211	
3102	3288	3713	3784	5213	
3203	3289	3715	4245	5222	
3210	3608	3717	4248	5224	

Line Printer Feature (155 lpm maximum) for 3791 and 3792

Line Printer Feature (410 lpm maximum) for 3791

Note: *Use the index to locate page numbers of the above printers.*

Nineteenth Edition, November 1983

This is a major revision of, and obsoletes, GA24-3488-16, GA24-3488-17 and Technical Newsletters GN24-0941 (31 Oct 1982), GN24-0948 (31 May 1983), and GN24-0954 (30 June 1983). Technical changes to text or illustrations are indicated by a line to the left of the change.

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Contents

Forms Design Considerations

Paper Quality

Paper for continuous forms must be of sufficient weight and strength to prevent the margin holes from tearing out during form-feeding, skipping, and ejecting operations. This is important, particularly for single-part forms.

The form when removed from the carton must be flat, and the edges and folds must not be damaged. The assembly of multiple-part forms must be even and the perforations intact when forms are stacked before feeding.

The paper must not be so stiff as to cause improper feeding or excessive bulging, particularly at the outfold, and should be free of paper dust and lint.

Generally, optical character reading applications require high-grade stock and tighter control of paper qualities than paper for other applications. If a prepared document is to be read by an OCR reader, refer to the appropriate reader literature for the proper paper and ink qualities necessary in the form design. Generally, a minimum weight and type of 75 g/m^2 OCR form (20-lb bond) with a smoothness within a range of 65 to 130 Sheffield units (as measured with a Sheffield Tester*) maximum is recommended. Additional references for OCR specifications are: *American National Standard Character Set and Print Quality for Optical Character Recognition (OCR-A)* ANSI X3.17-1974, and *ANS Character Set for Optical Character Recognition (OCR-B),* ANSI X3.49-1975.

* A product of Sheffield Corporation.

Form Width

Figure 1 shows the common form widths which printers are normally capable of handling. Refer to the "Appendix" to determine the print format capability of any particular printers.

Note: *Narrow width forms contribute to instability of stacker height and may require operator stacker attention. Therefore, wider base forms are recommended.*

Overall Width		Hole-to-Hole Width	
mm	in	mm	in
120.7	4.75	108.0	4.25
146.1	5.75	133.4	5.25
165.1	6.50	152.4	6.00
203.2	8.00	190.5	7.50
215.9	8.50	203.2	8.00
241.3	9.50	228.6	9.00
250.8	9.875	238.1	9.375
263.5	10.375	250.8	9.875
266.7	10.50	254.0	10.00
269.9	10.625	257.0	10.125
279.4	11.00	266.7	10.50
298.5	11.75	285.8	11.25
304.8	12.00	292.1	11.50
326.2	12.844	313.5	12.344
330.2	13.00	317.5	12.50
346.1	13.625	333.4	13.125
365.1	14.375	352.4	13.875
377.8	14.875	365.2	14.375
393.7	15.50	381.0	15.00
406.4	16.00	393.7	15.50
425.5	16.75	412.8	16.25
451.6	17.78	438.9	17.28

Figure 1. Generally Available Form Widths

Form Length

The forms-control method determines the forms-length capability of a printer. See "Appendix" for form-length specifications for each printer. Before ordering a nonstandard form length, consult your IBM sales representative and your forms supplier. Common form lengths are shown in Figure 2.

For printing six lines to the inch, the length of the form or document must be evenly divisible by 4.24 mm (.167 in) for single-spacing. Similarly, printing eight lines to the inch requires the length of the form to be evenly divisible by 3.18 mm (.125 in) for single-spacing.

Because all characters can be printed in every position, form length can be reduced and ribbon life extended by printing information side by side.

Length	
mm	in
76.2	3.00
88.9	3.50
93.2	3.67
101.2	4.00
108.0	4.25
127.0	5.00
139.7	5.50
152.4	6.00
177.8	7.00
203.2	8.00
215.9	8.50
254.0	10.00
279.4	11.00
304.8	12.00
355.6	14.00
406.4	16.00
431.8	17.00

For stacking efficiency, these form lengths should be fanfolded in two- or three-up multiples.

Figure 2. Recommended Form Lengths

Vertical Lines

When preprinted vertical lines are required, ruling on the form can split adjacent print positions for assigning particular positions in a columnar field. However, for best results, a vertical line should occupy at least one character space. Preprinted vertical lines should be parallel to the vertical centerline through the margin holes, spaced in multiples of 2.54 ± 0.13 mm (.1 ± .005 in).

Horizontal Lines

Preprinted horizontal lines should always be perpendicular to the centerline of the margin holes.

Margins

The distance from the form edge to the margin tear strip is normally 12.7 mm (.5 in). See Figure 3. However, this dimension may vary for special applications. In such instances, the minimum dimension of the first and last print position carriage translation (see "Appendix") should be adjusted accordingly.

For a form without a margin perforation, the first (or last) character of a print line should be at least 11.1 mm (.438 in) from the edge of the form. With a friction-feed platen, printing can take place to the edge of the form, except as noted for specific printers in the appendix.

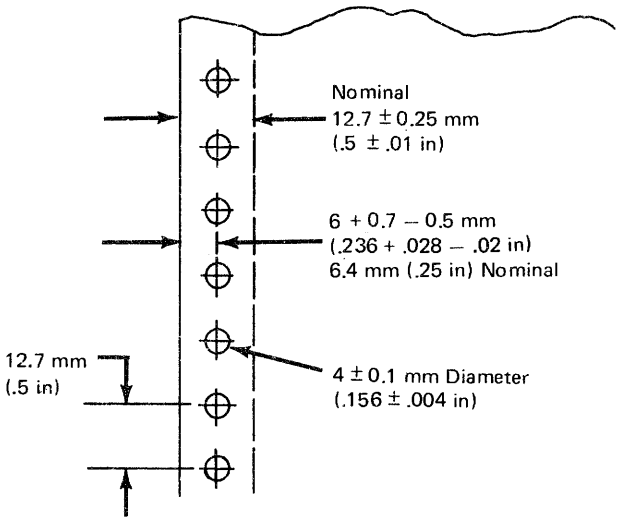


Figure 3. Margin Dimensions

Margin Holes

Continuous forms having feed holes (margin holes) 4 ± 0.1 mm (.156 ± .004 in) in diameter (see Figure 4) in both the right and left margins are preferred. Serrated margin holes 4 mm inside diameter (ID) and 4.4 mm outside diameter (OD) (.156 in ID and .172 in OD) are also permissible. Spacing between holes, center to center, must be nominally 12.7 mm (.5 in). The margin holes should be free of chads. Presence of chads on the print line can cause loss of printed characters.

To ensure proper feeding, the two vertical rows of margin holes must be parallel. The recommended distance from the edges of the form to the centerlines of the margin holes is 6 + 0.7 - 0.5 mm (.236 + .028 - .02 in). For calculation purposes, 6 mm (.236 in) should be treated nominally as 6.4 mm (.25 in). See Figure 3.

To allow for carbon shrinkage and processing tolerances, margin holes in the carbon paper may be greater than 4 mm (.156 in) in diameter.

Perforations

Perforations should permit easy separation, but should not tear or catch in ordinary handling or feeding through the printer. Perforations should be uniform in length and spacing to ensure proper and efficient tearing.

Margin Perforations: The distance from the edge of the form to the margin perforations is usually 12.7 mm (.5 in); however, this width may vary.

Forms Perforations: Horizontal perforations between forms should be perpendicular to the centerline of the margin holes.

Forms Stacking

Stacking efficiency diminishes for form lengths less than 203 mm (8 in) or greater than 305 mm (12 in). Test such forms to ensure individual stacking requirements are met. Forms over 432 mm (17 in) long usually require manual assistance to assure proper stacking, and, for some printers, may extend beyond the limits of the machine. When a forms stand is used, the dimensions of the form should not exceed the dimensions of the stacking tray.

Preconditioning Forms

Forms stacking and feeding are affected by relative humidity, number of plies, and form length. For best operation, forms should be preconditioned, not less than 48 hours (preferably in an open box) in the environment of the printer. If the printer is located in an environment subject to extremes of relative humidity, it may be necessary to store the forms in a controlled environment and withdraw them on an as-required basis to minimize feeding and stacking problems.

Multiple-Part Forms

The number of legible copies needed is a factor in determining the weight of the paper and carbon to be used in multiple-part sets. Single-part forms of less than 56 g/m^2 (15-lb) or more than 90 g/m^2 (24-lb) stock should be tested prior to batch ordering of forms.

Multiple-part forms are generally composed of sheets, 45 to 49 g/m^2 (12- to 13-lb stock, 17 x 22 inch—500 sheets) or less. For special applications, carbonized paper or carbonless forms can be used to obtain extra legible copies.

The carbon paper used in multiple-part forms should be medium carbon, 30 to 34 g/m^2 (8 to 9 lb) or less. Multiple-part forms consisting of more than four parts, and forms with the first part of more than 49 g/m^2 (13-lb) paper should be tested under operating conditions to determine the suitability of feeding and legibility.

Registration

In some printers, because of the bend of the form over a platen, a small dimensional difference may occur between printed lines on successive parts of a multiple-part form. This difference, more noticeable on loosely fastened forms, is proportional to the thickness of the form. Because of this, the assembly of multiple-part forms should ensure that all punching and printing is in registration within 0.38 mm (.015 in).

Single-space, eight-lines-per-inch printing is not recommended with 2.41 mm (.095 in) type when the registration between lines is critical. Eight-lines-per-inch printing should be adequately tested for character overlap, especially when printing underscores and when performing paper skips with multiple-part forms.

Fastening

The width, length, and number of copies of the form determine the fastening requirements for satisfactory feeding through a printer. If the construction of the form is such that the parts are of different widths, the necessity for, and the method of, fastening the form should be determined by the weight of paper, the width of the parts, and the length of the form (Figure 4). For forms over 432 mm (17 in) in length, the maximum distance between fastenings should be determined by actual test.

Form Length		Maximum Distance Between Fastenings	
mm	in	mm	in
25.4 to 127.0	1 to 5	127.0	5
139.7 to 279.4	5.5 to 11	279.4	11
279.4 to 355.6	11 to 14	177.8	7
355.6 to 431.8	14 to 17	215.9	8.5

Figure 4. Fastening Requirements for Multiple-Part Forms

For maximum efficiency, forms should be tightly fastened on both sides to prevent copies from shifting. Print quality and forms feeding are adversely affected by loosely applied plies.

The security of the fastening becomes more important as the number of parts, width of form, or the humidity increases. For relative humidity near 80 percent, both margins should be fastened by a method unaffected by high humidity, such as gluing or stitching.

Forms should be fastened only in the margins. Avoid using metallic staples or any hard fasteners with multiple-part forms. In no case should metal or hard fasteners be located so that they pass the printing unit.

Fastening of forms on the horizontal perforations between margins is not recommended. If a fastening medium is inserted on the perforated line, no printing should be within 6.4 mm (.25 in) above and below the perforated line.

Multiple-part forms in which individual parts vary in width should be tested before quantity-ordering. If multiple-part forms are not fastened, print quality may deteriorate.

The carbon paper must be kept in line with the form by some acceptable method.

One-time carbon paper or carbon-backed paper can also be used. The selection of proper carbon paper or coating is a prime factor in determining the required number of legible copies without excessive smudging. Determine this by making test runs with sample sets of forms containing different qualities of carbon papers, known as *write test carriers.* Use these carriers with caution to avoid damage to the printer or form.

Print Legibility

The number of legible copies produced depends on the weight of the paper used and the carbon coating.

For multiple-part forms beyond the original and three copies, the paper and carbon should be tested with the proper machine settings to determine the suitability of each combination. Some printers have forms-thickness and/or print-density adjustments to accommodate multiple copies and provide optimum legibility within a range of settings.

Forms sets used on one printer (or model of a printer) may not produce acceptable results when used on another printer (or model of the same printer). Tests should be made under actual operating conditions.

Paper (and ribbon) for applications, such as optical character reading, ditto, photo-offset, multilith, heat transfer, or similar processes, must be tested to ensure that its use satisfactorily meets individual requirements.

Print legibility on multiple-part forms may vary within a box due to tolerances of the paper and the carbon, temperature, and age of the carbon.

Card Forms

Card forms should be selected from card stock not exceeding 0.23-mm (.009-in) thickness. Preferably, card seams or scores should be lapped so that the upper card overlaps the lower card to provide a smooth feeding surface on the front of the form.

Folding specifications recommended for continuous card forms for some printers are three or four up for optimum stacking. See "Appendix" for any deviation of this for specific printers. Operator attention is normally required to assure efficient stacking on all printers. Long-grain stock is recommended.

Special card forms should be tested to ensure that they satisfactorily meet individual requirements.

Graphics

Graphics specified by the USA and ISO Standard Codes for Information Exchange are available for most system printers. All characters and symbols installed can be printed at every print position. Because of this, form depth can be reduced by using side-by-side printing. For example, ordered-by and ship-to names can be printed on the same line, one on the left side of the form and the other on the right.

In many instances, oblique lines, dashes, and so forth can be used instead of preprinting margin enclosures and separators. However, long vertical lines should be avoided as repeated impact in a single print column can cause ribbon damage when using line printers. The dollar symbol need not be preprinted on a check form because this symbol can be programmed to print immediately to the left of a significant digit.

Special type fonts for plotting and unique symbols can be ordered through an IBM sales representative.

Spacing Chart

A basic tool for forms design is the six-lines-per-inch spacing chart (order no. GX20-1816) shown in Figure 5. Numbers across the top and bottom of the chart represent the print-position locations.

For printers using a carriage-control tape, the facsimile tape (shown at the left of the chart in Figure 5) is for marking the tape-control punches for a specific form.

A printer spacing chart (GX20-1818) is also available with eight lines per inch for use in designing forms for printers with eight-line-per-inch capability.

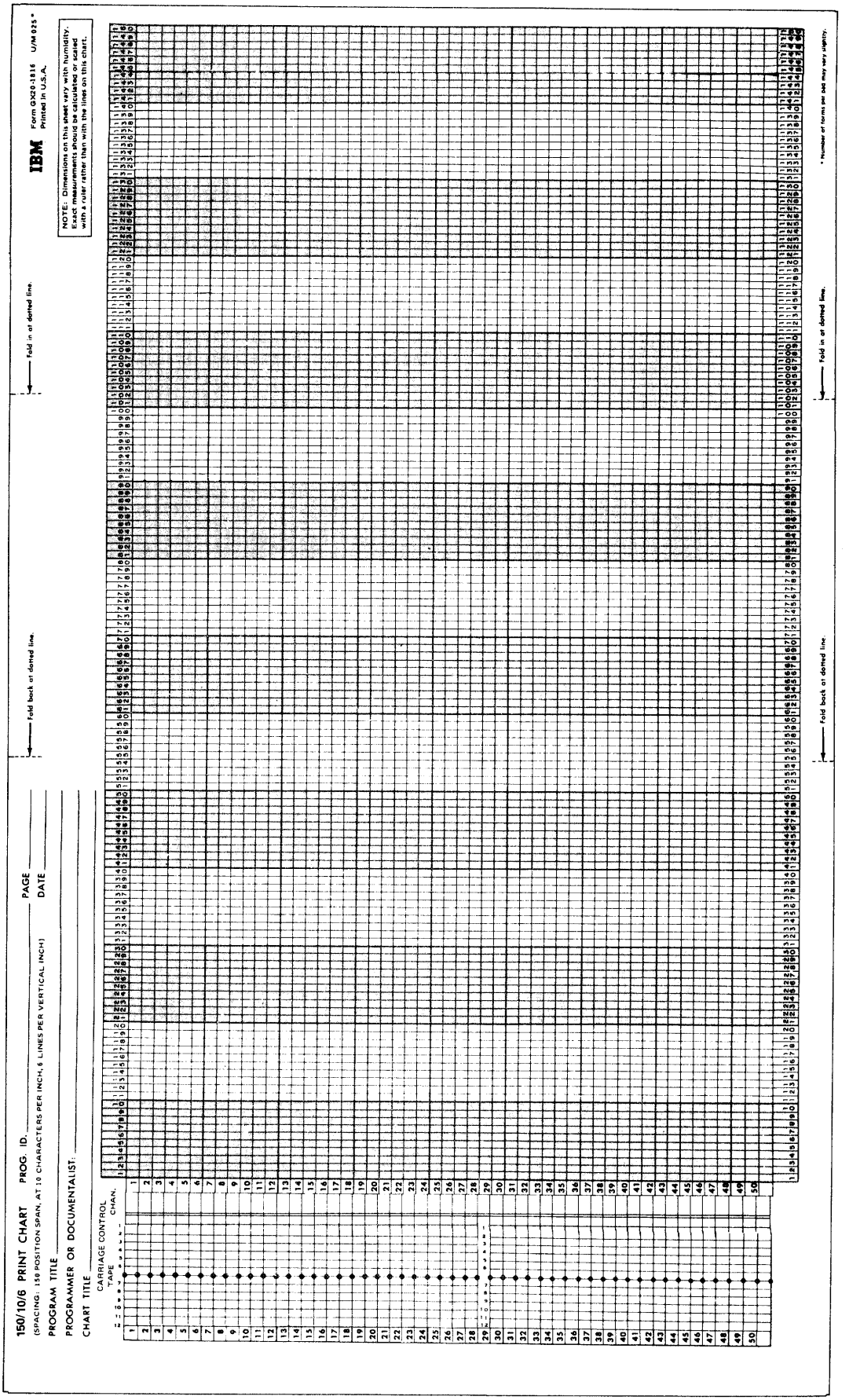
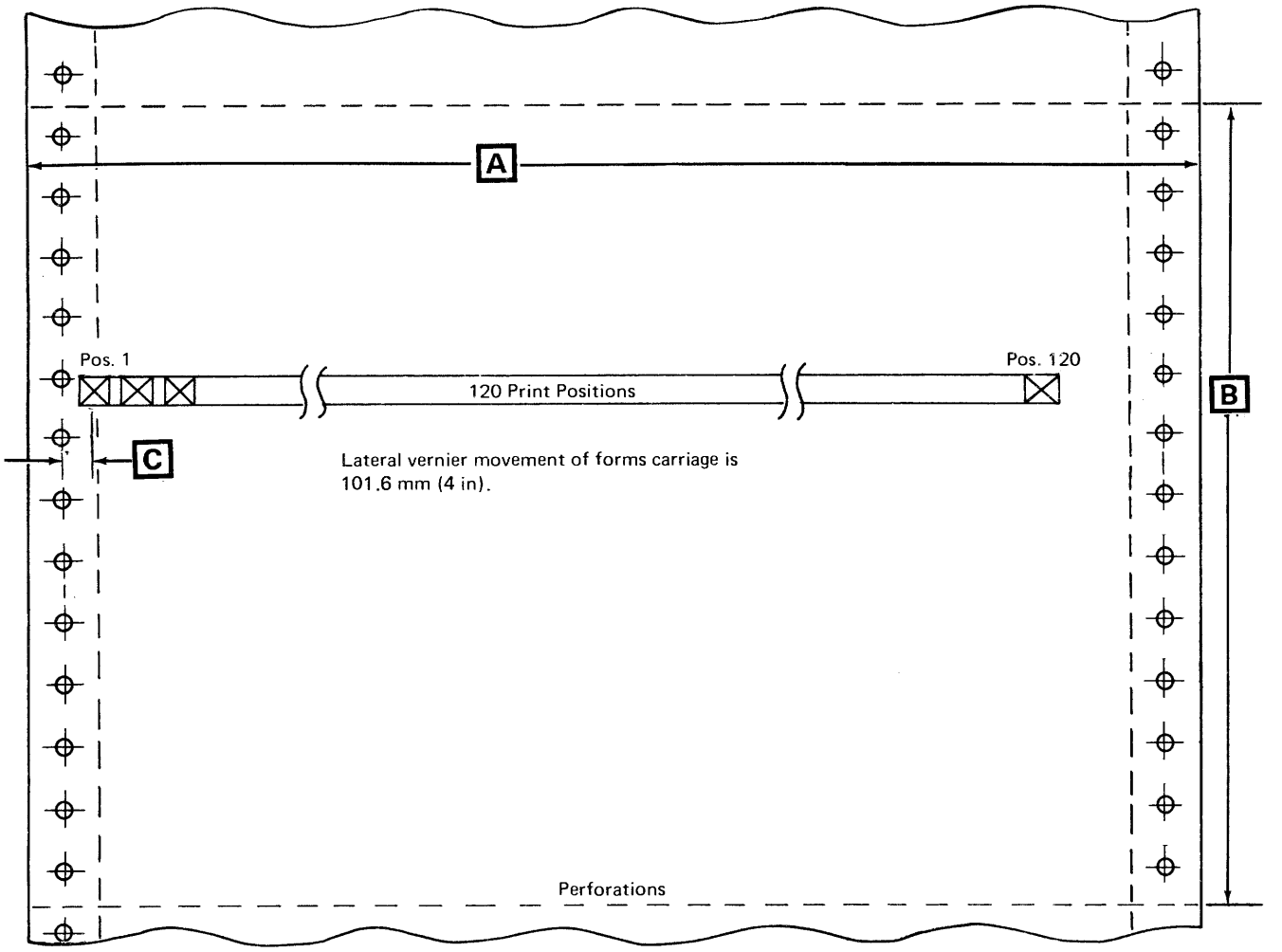


Figure 5. Printer Spacing Chart

1132 Form Specifications

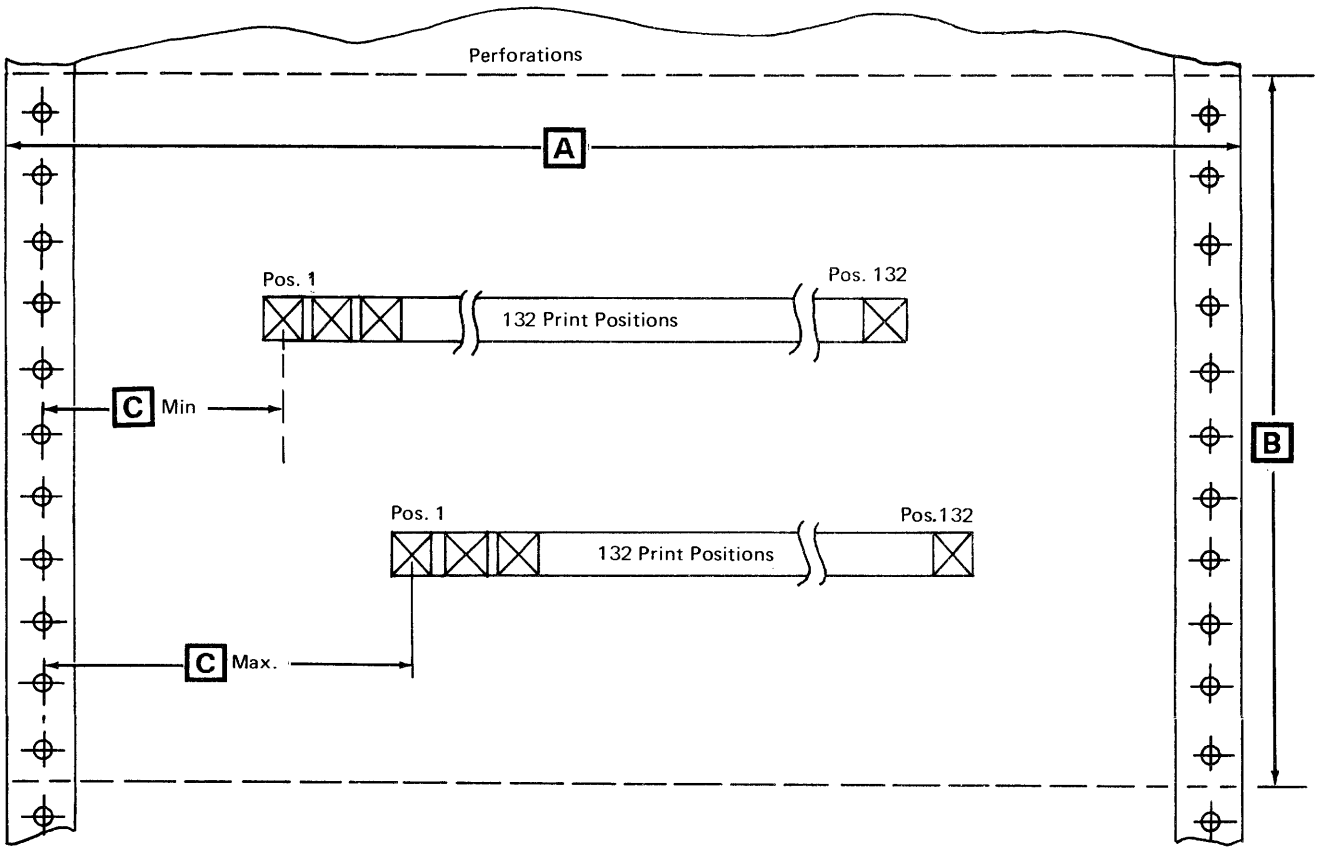


		Maximum	*Minimum*
A	**Form Width**	425.5 mm (16.75 in)	120.7 mm (4.75 in)
B	**Form Length**	558.8 mm (22 in) 6 lpi 419.1 mm (16.5 in) 8 lpi	

C If form has no tear strip, centerline of the first and last positions should be at least 4.8 mm (.188 in) from the centerline of the margin holes.

For general forms design considerations, see pages 5 to 10.

1403, 1404 Form Specifications



A Form Width

	C *Maximum*	C *Minimum*	*Comment*
476.3 mm (18.75 in)	69.9 mm (2.75 in) for all widths	60.3 mm (2.375 in)	Maximum form width; minimum tractor movement
425.5 mm (16.75 in)		7.6 mm (.3 in) for this width and all smaller width forms	Allows full translator movement for printing 132 positions
88.9 mm (3.5 in)			Minimum form width; full range of movement

B Form Length

Tape-Controlled Carriage

a. Maximum for lengths at 6 lpi is 558.8 mm (22 in); 8 lpi is 419.1 mm (16.5 in). The recommended minimum form length is 76.2 mm (3 in).

b. Stacking efficiency decreases when form lengths exceed 355.6 mm (14 in).

Notes:

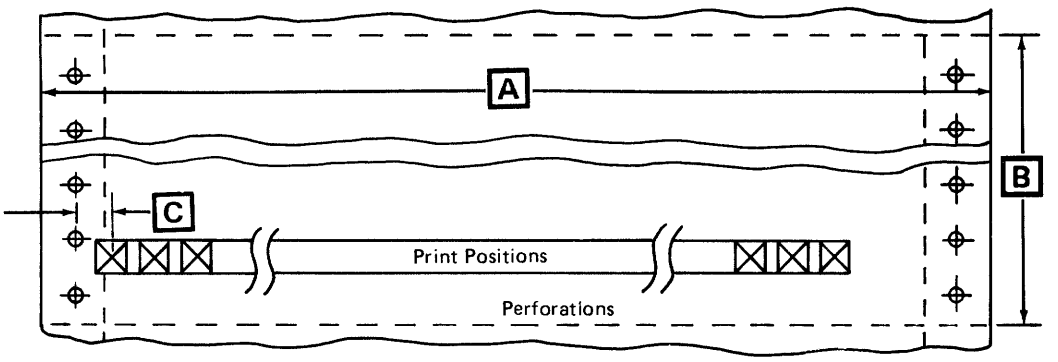
1. Form lengths over 431.8 mm (17 in) cannot be used in Model N1.
2. The 1404 handles continuous forms similar to the 1403 printer. In addition, cut card stock may be fed and printed as an auxiliary feature.

Recommendations

1. Leaders for alignment of prenumbered documents.
2. Multiple Copies
   a. Preferably, forms should be securely fastened on both edges.
   b. Composite form set thickness 0.51 mm (.02 in) maximum. Ribbon smudging may occur as form set approaches maximum thickness.

For general forms design considerations, see pages 5 to 10.

1443, 2203, 2780, 3780 Form Specifications



		Maximum	*Recommended*	*Minimum*
A	**Form Width**	469.9 mm (18.5 in)	425.5 mm (16.75 in)	88.9 mm (3.5 in)
	Dual-Feed Carriage	425.5 mm (16.75 in)		101.6 mm (4 in)
B	**Form Length**	558.8 mm (22 in) 6 lpi 419.1 mm (16.5 in) 8 lpi		
	Dual-Feed Carriage			
	Upper Form	330.2 mm (13 in) 6 lpi 254 mm (10 in) 8 lpi		
	Lower Form	558.8 mm (22 in) 6 lpi 419.1 mm (16.5 in) 8 lpi		

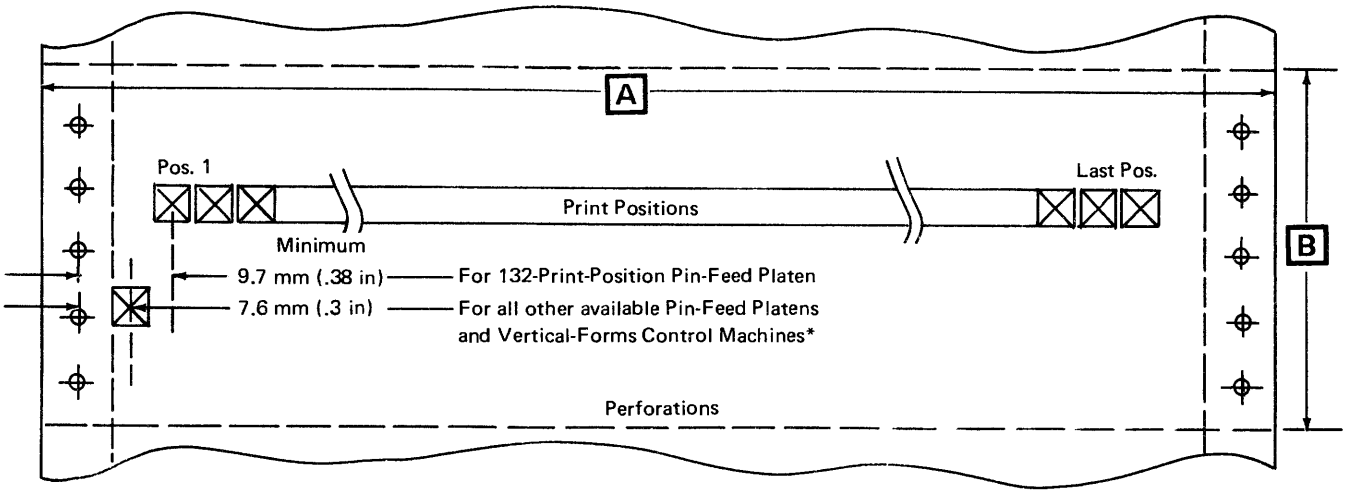
C Centerline of first and last print positions should be at least 4.8 mm (.188 in) from the centerline of the margin holes.

Notes:

1. Number of available print positions: 120 or 144.
2. To assure that print quality is acceptable, multiple form sets should be tested prior to batch ordering of forms.

For general forms design considerations, see pages 5 to 10.

2213, 3213, 3215, 3284, 3286, 3713, 5213 Form Specifications (Part 1 of 2)



A Form Width

Model	Maximum Width		Minimum Width	
	Print Positions	Overall	Print Positions	Overall
2213-1 Friction Feed	132	381 mm (15 in)		
2213-1 Pin-Feed	132	365.1 mm (14.375 in)	70	203.2 mm (8 in)
2213-2 (VFC)*	132	377.8 mm (14.875 in)	20	76.2 mm (3 in)
3213, 3215	126	346.1 mm (13.625 in)	120	330.2 mm (13 in)
3284, 3286	132	365.1 mm (14.375 in)	120	330.2 mm (13 in)
3713**	132	365.1 mm (14.375 in)	120	330.2 mm (13 in)
5213-1	132	365.1 mm (14.375 in)		
5213-2,3 (VFC)*	132	377.8 mm (14.875 in)	20	76.2 mm (3 in)

* Vertical Forms Control (VFC)—Machines with tractors that feed paper vertically through the printer and permits single/double/triple space, and skip operations. Lateral movement of forms carriage is 9.7 mm (.38 in). In contrast to pin-feed platens, VFC machines can use any width form between the maximum and minimum widths shown above. If forms do not have a tear strip, first and last positions may be located immediately adjacent to the feed holes.

** With adjustable margin feature and shorter platen, width is 203.2 mm (8 in) overall, 190.5 mm (7.5 in) hole to hole. The 3713 maximum print line is 128 characters, despite 132-position form width.

B Form Length 279.4 mm (11 in) recommended for optimum stacking

Maximum	355.6 mm (14 in)	279.4 mm (11 in) on 2213-2 with 8 lpi
Minimum	76.2 mm (3 in)	

For general forms design considerations, see pages 5 to 10.

2213, 3213, 3215, 3284, 3286, 3713, 5213 Form Specifications (Part 2 of 2)

Multiple copies: Up to six-part form can be printed.

- Front form of multiple copy must be a full form width.
- No hard fasteners.
- Maximum thickness depends on model.

Pin-Feed	Thickness 0.46 mm (.018 in) maximum. For optimum feeding and stacking no more than three-part forms are recommended. Card stock not recommended.
Friction Feed	Limited to 45 g/m^2 (12-lb), single-part paper. Card stock not recommended.
VFC	Thickness 0.64 mm (.025 in) maximum with multiple-part forms. Card stock thickness 0.191 mm (.0075 in) maximum

Single-ply Roll Paper (2213-1)

- Width: up to 381 mm (15 in)
- Outside Diameter: 101.6 mm (4 in)
- Inside Diameter: 9.5 mm (.365 in)

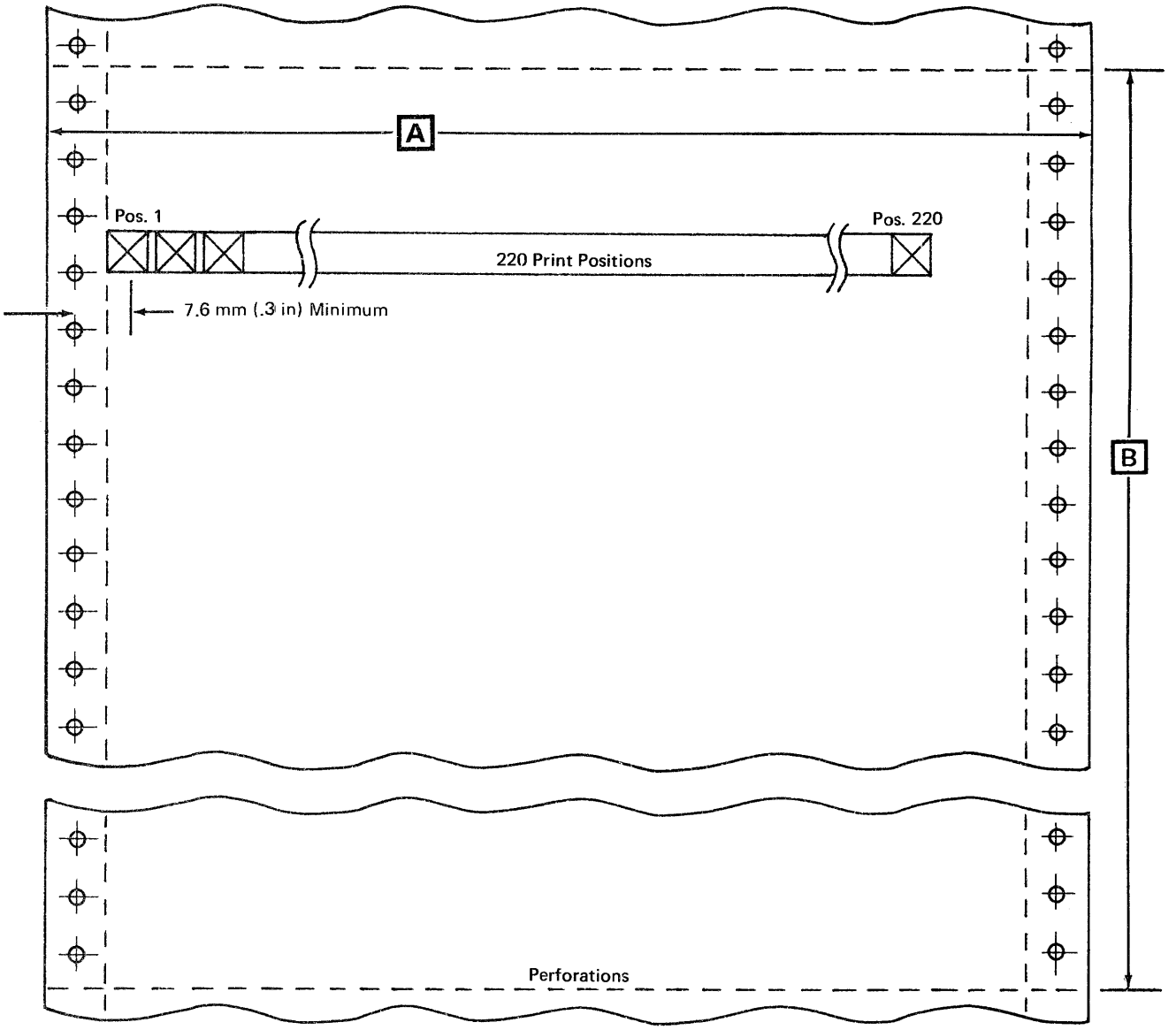
Platen Length Pin to Pin		Maximum Number of Print Positions
mm	in	
190.5	7.50	70
203.2	8.00	75
228.6	9.00	85
238.1	9.375	88
250.8	9.875	93
254.0	10.00	95
257.0	10.125	96
285.8	11.25	107
292.1	11.50	110
317.5	12.50	120
333.4	13.125	126
352.4	13.875	132

Platens for 2213 and 3713 Printers

For general forms design considerations, see pages 5 to 10.

2222 Form Specifications

Continuous Forms



		Maximum	*Minimum*
A	**Form Width**	584.2 mm (23 in)	88.9 mm (3.5 in)

Continuous form width overall—1 or 2 form sets (not overlapped)
Overlapping of dual fed forms is not permitted.

B	**Form Length**	355.6 mm (14 in)	58.8 mm (2.31 in)

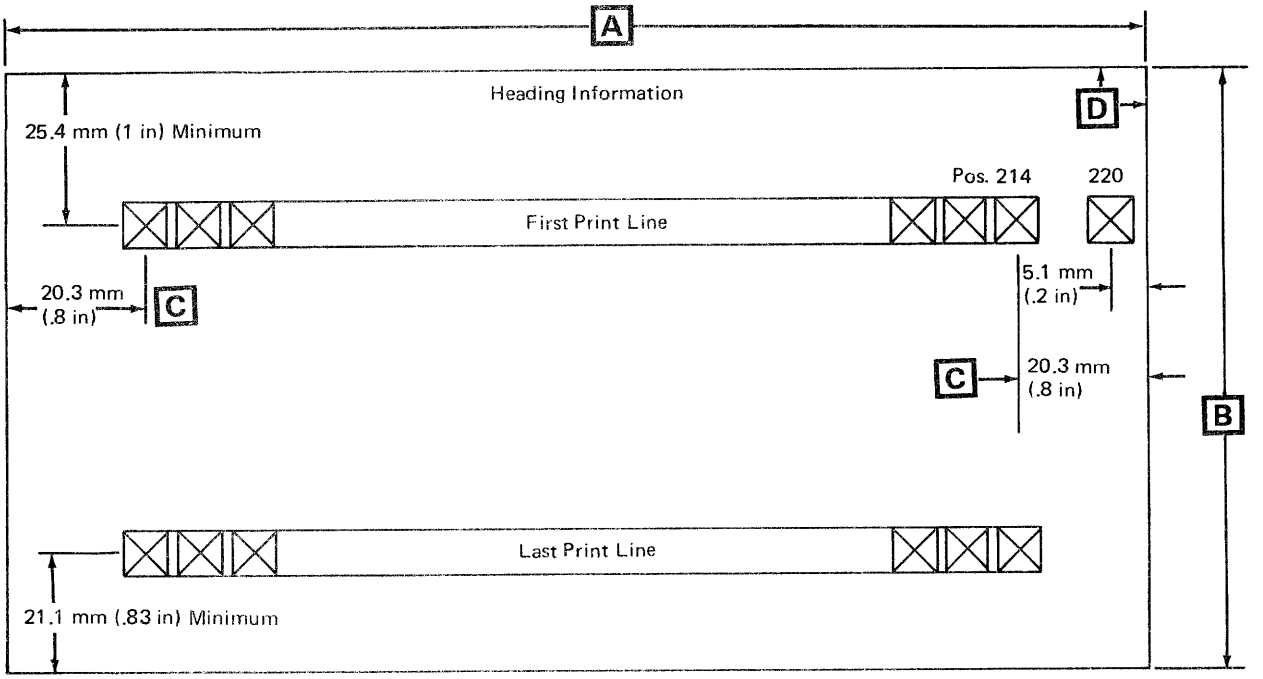
Up to 304.8 mm (12 in) recommended for efficient stacking.

Multiple copies: Up to six-part form on primary tractors; up to five-part form on secondary tractors
Thickness: 0.64 mm (.025 in) maximum (including ledger card)
Maximum difference in thickness between form sets (including ledger card) is 0.25 mm (.01 in).
Fastening: No staples.

For general forms design considerations, see pages 5 to 10.

2222 Form Specifications

Ledger Card



		Maximum	*Minimum*
A	**Card Width**	355.6 mm (14 in)	152.4 mm (6 in)
	Recommended widths for optimum alignment:		
	355.6 mm (14 in) — 125 Print Positions		
	279.4 mm (11 in) — 95 Print Positions		
	215.9 mm (8.5 in) — 70 Print Positions		
	152.4 mm (6 in) — 45 Print Positions		
B	**Card Length**	297.4 mm (11 in)	203.2 mm (8 in)
	Available Data Lines	56	38

C If line-finding marks and BCD coding are to be sensed, a strip 19.1 mm (.75 in) along both right and left margins (front and back of forms) must be clear of preprinting, data printing, blemishes, and extraneous marks. If only one side of the card is to be printed, the restrictions apply to both front and back of the right margin only.

D Squareness of ledger card (sides to leading edge, except for permitted radius on corners) must be within 0.25 mm (.01 in). The leading edge of the ledger card must be straight within 0.13 mm (.005 in). An excessively frayed edge above and below the 0.13 mm (.005 in) limit is unacceptable.

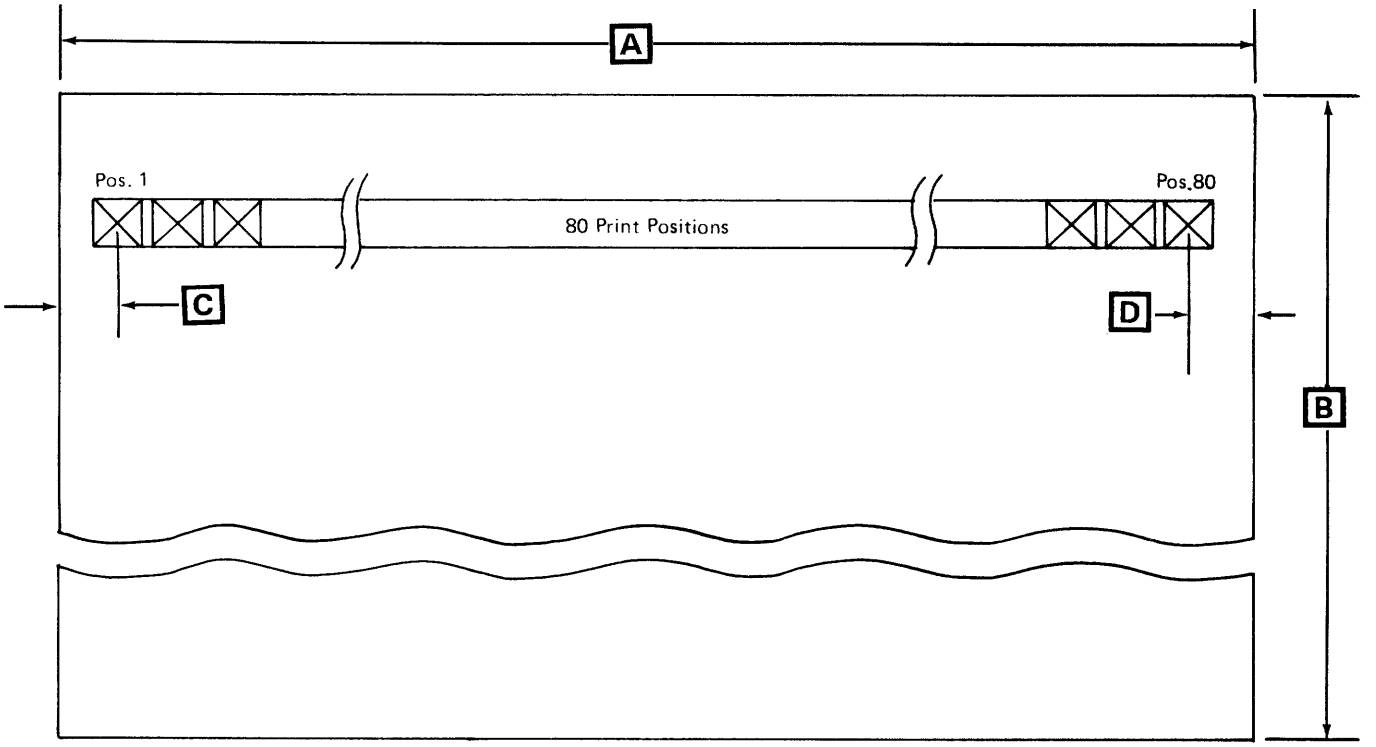
Other Specifications:

1. Thickness 0.178 ± 0.010 mm (.007 ± .0004 in)
2. No multiple-part card forms.
3. Card must be fed with the long grain in a vertical direction. In order to identify direction of long grain, blank (not preprinted) square cards must have the feeding direction indicated for the operator. For this purpose, it is recommended that a 6.4 mm (.25 in) hole to be punched 6.4 mm (.25 in) from the bottom and midway between margins.
4. Rounded corners permitted up to 4.8 mm (.188 in) radius.
5. Ledger card material must be 100% chemical wood fiber. Refer to ANSI X3.11-1969 standard by Business Equipment Manufacturers Association.
6. Ledger-card colors vary in reflectivity for sensing the line-finding mark:
   White, pink, yellow and buff are recommended.
   Red, orange, brown, and green are acceptable.
   Blue cannot be used.

For general forms design considerations, see pages 5 to 10.

3102 Form Specifications

Thermal/Roll Forms

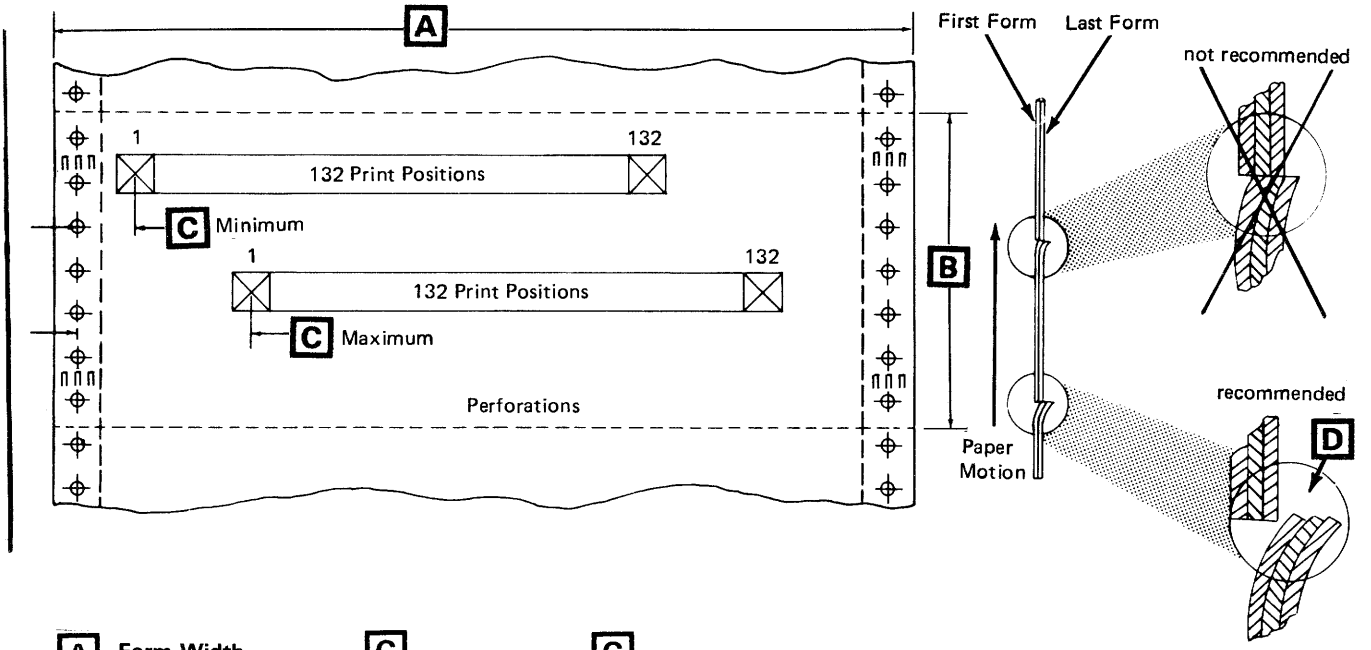


		Maximum	*Minimum*
A	**Form Width**	216.7 mm (8.53 in)	215.3 mm (8.48 in)
B	**Thermal/Roll Length**	Approximately 50 m (165 ft)	
C	Edge of roll to first available print position:	9.9 mm (.39 in)	4.7 mm (.19 in)
D	Edge of roll to last available print position:	10.6 mm (.42 in)	5.4 mm (.21 in)

Notes:

1. Maximum roll diameter 70 mm (2.76 in).
2. Thermal printer paper may be ordered from IBM using IRD part number 7035670.
3. Paper thickness: 0.065 ± 0.008 mm (.0026 ± .0003 in).
4. Printable surface is on the exterior of the roll.
5. Roll form edges should be overprinted in red to indicate the last 600 to 300 mm (23.6 to 11.8 in).
6. All forms should be tested to ensure acceptable thermal printer processing and print quality.
7. Initial roll up should be free ended against the core of the roll.

3203 Form Specifications



A Form Width

	C *Maximum*	C *Minimum*	*Comment*
508 mm (20 in)	88.9 mm (3.5 in)	31.8 mm (1.25 in)	Maximum form width; minimum tractor movement
451.6 mm (17.78 in)	88.9 mm (3.5 in)	7.6 mm (.3 in)	Full flexibility and range of line location.
88.9 mm (3.5 in)		7.6 mm (.3 in)	Minimum form width; full range of tractor movement.

	Maximum	*Minimum*
B Form Length	609.6 mm (24 in)	76.2 mm (3 in)

D Crimping

Crimping must be in the direction of paper motion as shown. The crimp of the first form must extend behind the last form.

Other methods of crimping may result in forms separation and stacking problems and should be tested for satisfactory performance.

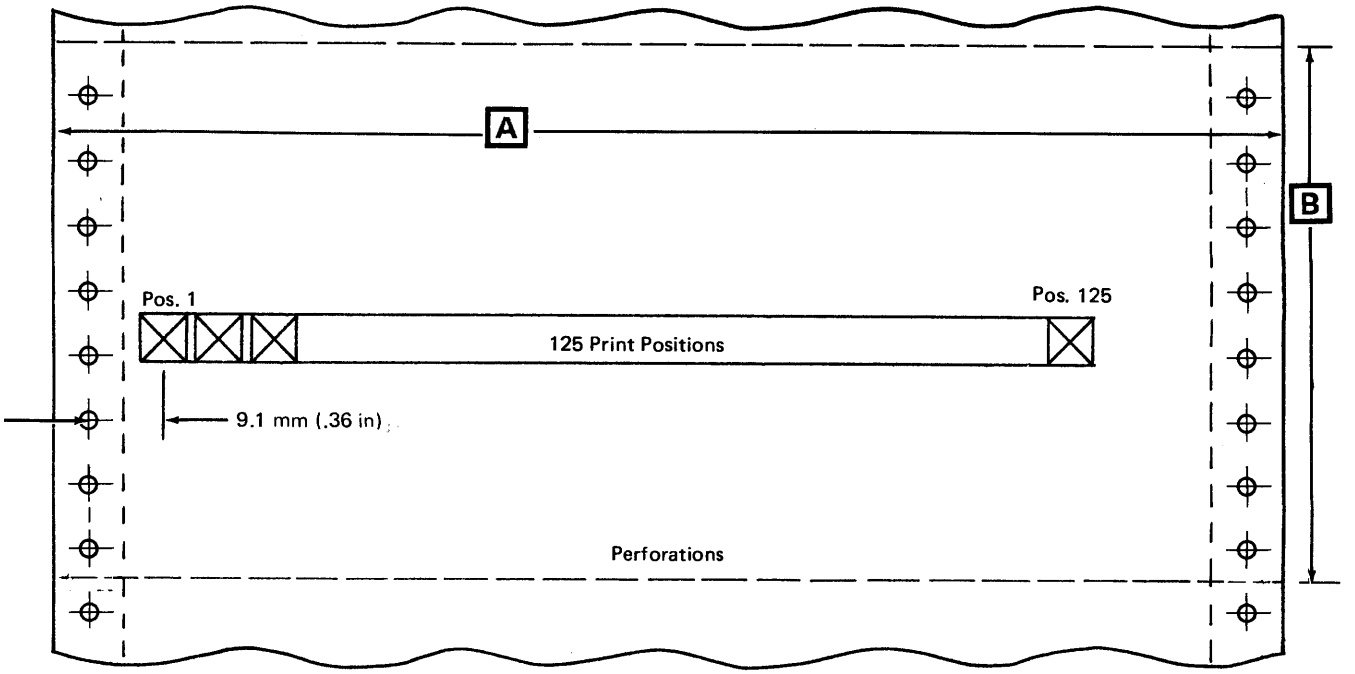
Form Feeding

1. Form lengths greater than 356 mm (14 in) require that the acoustic enclosure remain open.
2. Form lengths which exceed 432 mm (17 in) require that the front door remain open.
3. For effective stacking, the recommended flat-fold length is 203 to 356 mm (8 to 14 in). Short forms should be grouped to improve stacking efficiency.
4. The printer is program-controlled and can print at either 6 or 8 lines per inch.

General Requirements

1. Multiple-part forms should be fastened securely on both sides and only in the margin areas. Single-side fastening is not recommended. However, if this method is used, the fastening must be on the right side. Carbons must also be fastened on the right-hand side.
2. Forms should be free of margin-hole chads.
3. No hard or metallic fasteners are permitted.
4. Composite form set thickness should not exceed 0.51 mm (.02 in). The 3203 prints on continuous forms consisting of one to four parts (copies). Forms consisting of more than four parts should be tested under operating conditions to determine acceptability. Ribbon smudging may occur as form set approaches maximum thickness.
5. A leader is normally required for prenumbered forms.

For general forms design considerations, see pages 5 to 10.



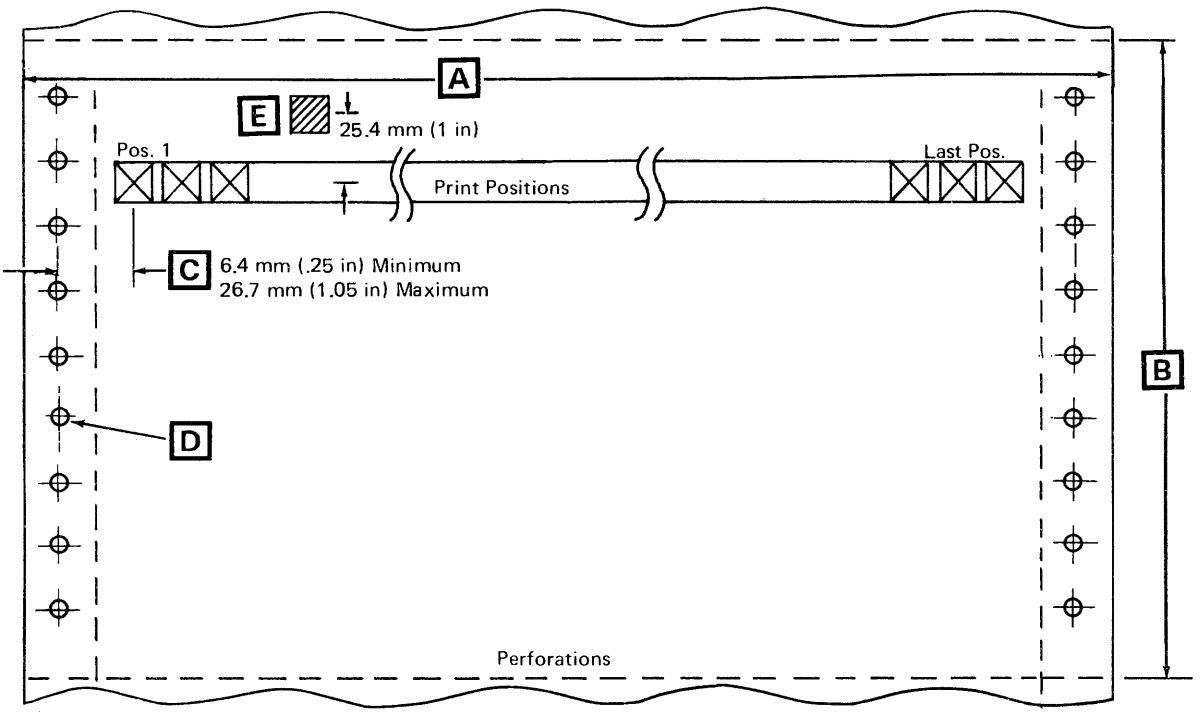
A **Fixed Width** 346.1 mm (13.625 in)

B **Form Length**

To accommodate the stacking shelf, the recommended maximum fold-to-fold length is 279.4 mm (11 in).

For general forms design considerations, see pages 5 to 10.

3211 Form Specifications



		Maximum	*Minimum*
A	**Form Width**	476.3 (18.75 in) Forms with widths over 358.1 mm (14.1 in) should be investigated to assure desired print positions are within the 20.3 mm (.8 in) lateral adjustment of the forms carriage.	88.9 mm (3.5 in)
B	**Form Length**	609.6 mm (24 in) 6 lpi or 571.5 mm (22.5 in) 8 lpi Lengths over 431.8 mm (17 in) may require manual stacking assistance.	76.2 mm (3 in)

C Indexing permits any print position from 1 to 31 to be selected as the first printed position. Thus, the maximum dimension from the left margin feed hole centerline extends from 26.7 to 102.9 mm (1.05 to 4.05 in) in 2.5-mm (.1-in) increments.

D The left margin holes should be free of chads to avoid false forms checks.

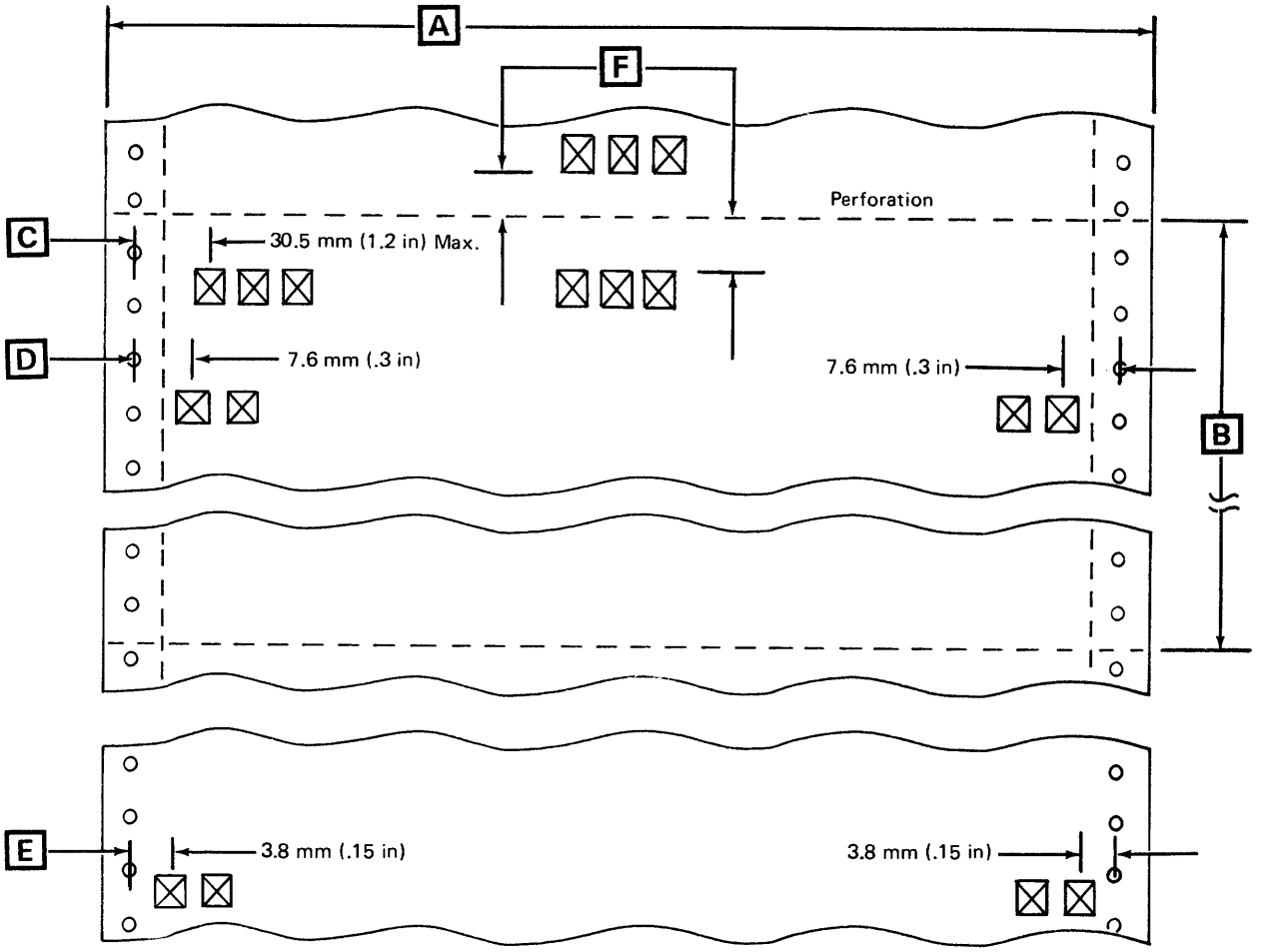
E **Forms Thickness (Sense Area):** Thickness of the form passing through the sensing area (just above positions 9 to 11) should not vary more than 0.076 mm (.003 in) from thickness in the area to be printed. However, horizontal and vertical fastening areas may exceed this thickness by 0.25 mm (.01 in). The right-hand fastening passing through the print area may exceed this thickness by only 0.13 mm (.005 in). Ribbon smudging may occur with greater thicknesses.

Recommendations

1. Leaders for alignment of prenumbered documents.
2. Multiple Parts
   a. Securely fastened on both edges. If a single edge fastening is used, it must be the left edge.
   b. Carbons fastened on left edge.
   c. No hard fasteners permitted.
   d. Form thickness 0.51 mm (.02 in) maximum. Ribbon smudging may occur as form set approaches maximum thickness.
3. It is recommended that forms be conditioned in an atmosphere similar to that of the intended working humidity for a minimum of 48 hours before use.
4. Paper colors vary in reflectivity and may reduce contrast to the feed holes. This contrast is required for a photosensitive forms motion detection device. Relatively nonreflective colors, such as dark gray, dark blue, etc., or markings or printing, must not be used on the back side of the left tear strip (or area around pin feed holes) or false forms checks may result.

For general forms design considerations, see pages 5 to 10.

3262 Form Specifications (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**	406.4 mm (16 in)	88.9 mm (3.5 in)
B	**Form Length**	355.6 mm (14 in)	76 mm (3 in)

C The distance from the center of the left margin hole to the centerline of print position No. 1 is 30.5 mm (1.2 in) maximum (left tractor in leftmost position).

D On forms with 12.7 mm (.5 in) tear strips, minimum distance between the center of the margin holes and the center of the first or last print position used is 7.6 mm (.3 in).

Note: *Tear strips may break as the minimum distance is approached.*

E On forms without tear strips, minimum distance between the center of the margin holes and the center of the first or last print position used is 3.8 mm (.15 in).

F No printing should occur within 12.7 mm (.5 in) of the horizontal perforation.

For general forms design considerations, see pages 5 to 10.

3262 Form Specifications (Part 2 of 2)

Forms Thickness Considerations

Composite form set thickness should not exceed 0.51 mm (.02 in). The 3262 prints on continuous forms consisting of one to four parts (copies). Forms consisting of more than four parts should be tested under operating conditions to determine acceptability. Ribbon smudging may occur as form set approaches maximum thickness.

Fastening Recommendations

1. Multiple crimp fastening on both edges of multiple ply forms is recommended. Crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fasteners are used, the following should be considered:
   a. Crimps should not project significantly above the surface of the first form to avoid ribbon interference.
   b. Crimps should not add significantly to the total form thickness.
   c. The protruding tail of the crimp should be opposite the direction of forms motion so that the forms motion tends to compress and tighten the crimp. The crimp should also be away from the surface of the forms where printing is occurring to avoid ribbon interference.
   d. Excessively hard or stiff crimps can interfere with proper ribbon and/or form processing operation.
2. No hard or metallic fasteners are permitted.

Card Stock Forms

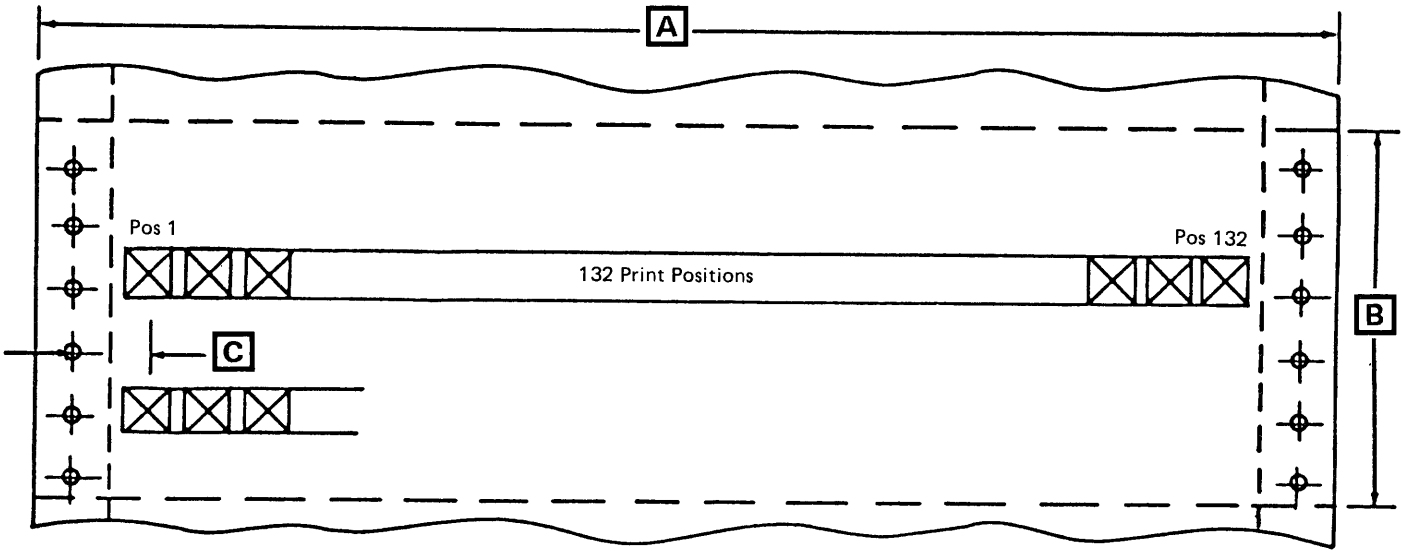
1. Single-part card forms may be used. Card forms should be tested to assure satisfactory feeding and print quality.
2. Card stock should not exceed 0.23 mm (.009 in) thickness.
3. For best stacking efficiency, the distance between folds should be 152.4 to 355.6 mm (6 to 14 in).
4. When feeding card forms, operator attention may be required to ensure correct stacking.

Notes:

1. Feed holes should be free of chads and crimps to avoid false-form jam checks.
2. Cutouts are not permitted from 69.9 to 82.6 mm (2.75 to 3.25 in) from the left edge of form with tractor in leftmost position. Cutouts in this area can cause a false end-of-forms indication.
3. A leader of at least 406 mm (16 in) is recommended for alignment of prenumbered documents. A narrow 76.2 mm (3 in) long trailer (trailer not to ride over end-of-forms switch) is required on the last form of the form set to maintain registration on the last form.
4. Left tractor must be in leftmost position when using maximum width forms.
5. Paper colors vary in reflectivity and may reduce contrast to the feed holes. This contrast is required for a photosensitive forms motion detection device. Relatively nonreflective colors, such as dark gray, dark blue, etc., or markings or printing, must not be used on the back side of the left tear strip (or area around pin-feed holes) or false forms checks may result.
6. Do not use partially separated forms.
7. Minimum weight for single-part forms is 56 g/m^2 (15 lb/ream 17" x 22").

For general forms design considerations, see pages 5 to 10.

3268 Form Specifications (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**		
	Single-Part	406.4 mm (16 in)	76.2 mm (3 in)*
	Multiple-Part	406.4 mm (16 in)	139.7mm (5.5 in)*
B	**Form Length**	355.6 mm (14 in)	76.2 mm (3 in)
C	**First Print Position:**		
	For form width 76.2 to 388.6 mm (3 to 15.3 in)	25.4 mm (1 in)	7.62 mm (0.3 in)
	For form width 388.6 to 406.4 mm (15.3 to 16 in)	25.4 mm (1 in)	7.62 mm (0.3 in) plus the amount the form width exceeds 388.6 mm (15.3 in).

* For minimum form thickness requirements, see item 5 under "Notes and Recommendations" on the following page.

For general forms design considerations, see pages 5 to 10.

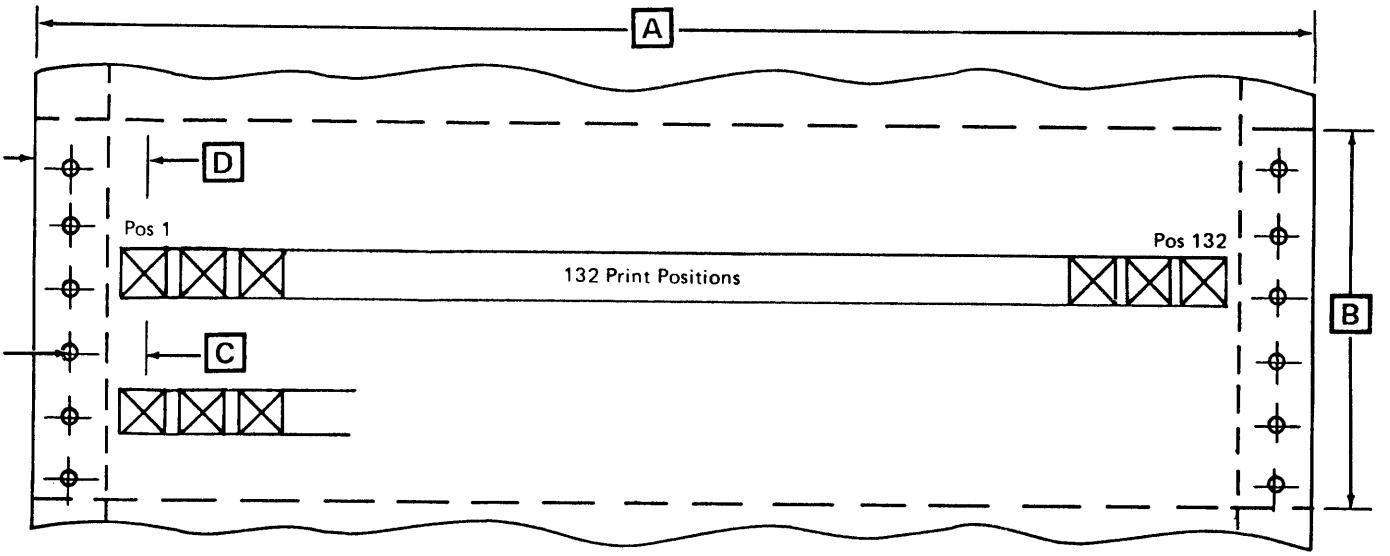
3268 Form Specifications (Part 2 of 2)

Notes and Recommendations

1. Except for horizontal dimensions of the first print position specified in Part 1 of 2, no printing should occur within 6.35 mm (.25 in) of any edge, perforation, or fold.
2. Printing must not occur across any holes, perforations, or edges of the form.
3. Continuous card stock forms are not recommended.
4. Narrow-width forms [less than 203.2 mm (8 in)] contribute to instability of stacking and may require operator attention; therefore, wider base forms are recommended. Optimum forms stacking is achieved when forms are 203.2 to 381 mm (8 to 15 in) wide and 203.2 to 304.8 mm (8 to 12 in) long.
5. The minimum single-part form thickness for form widths of 76.2 (3 in) through 137 mm (5.4 in) is 0.18 mm (.007 in). The minimum single-part form thickness for form widths exceeding 137 mm (5.4 in) is 0.08 mm (.003 in).
6. The maximum multiple-part forms thickness is 0.46 mm (.018 in). The minimum thickness for any sheet in a multiple-part form is 0.08 mm (.003 in).
7. No hard or metallic fasteners are permitted.
8. Gluing is the recommended method of fastening forms. The gluing must be adequate to prevent separation or shifting of the forms as they are fed through the printer.
9. Crimping is not recommended. If crimping is used, however, the crimps must be located no more than 50.8 mm (2 in) apart along the margins of the form length.
10. Partial forms separation is not permitted.
11. Carbon forms are recommended for multiple-part continuous forms. Self-contained carbonless (ink-impregnated) forms should be tested by the customer for satisfactory feeding registration and print quality.
12. Up to six-part continuous part forms may be used; however, for optimum feeding and stacking, a maximum of four parts is recommended. Five- or six-part forms should be tested by the customer for satisfactory feeding registration and print quality.
13. Forms should be designed such that no more than 152.4 mm (6 in) are skipped within or between forms on a continuous basis; otherwise, operator attention may be required to ensure correct stacking.
14. Feed holes should be free of chads and crimps.

For general forms design considerations, see pages 5 to 10.

3287 Form Specifications (Part 1 of 2)



		Tractor Drive		Friction Feed (Fan-Folded Documents)		Friction Feed (Continuous Roll)	
		Maximum	*Minimum*	*Maximum*	*Minimum*	*Maximum*	*Minimum*
A	**Form Width**	381 mm (15 in)	76.2 mm (3 in)	377.8 mm (14.875 in)	203.2 mm (8 in)	371.5 mm (14.623 in)	203.2 mm (8 in)
B	**Form Length**	419.1 mm (16.5 in)	76.2 mm (3 in)	419.1 mm (16.5 in)	76.2 mm (3 in)	-----	-----

C First print position for tractor driven documents is 13.9 mm (.55 in) maximum, 7.6 mm (.3 in) minimum. The minimum distance for 381 mm (15 in) forms is 10.8 mm (.425 in).

D First print position for friction-fed documents is nominally 17 mm (.67 in), with the left side of the document aligned with the white alignment line on the forms guide plate.

For general forms design considerations, see pages 5 to 10.

3287 Form Specifications (Part 2 of 2)

Notes and Recommendations

General

1. Except for the horizontal dimensions of the first print position specified above, no printing should occur within 2.54 mm (.1 in) of any edge, perforation or fold.
2. Printing must not occur across any holes, perforations, or edges of the form.
3. Continuous card stock forms are not recommended.
4. Narrow-width forms contribute to instability of stacking and may require operator attention; therefore, wider base forms are recommended.

Tractor-Fed Documents

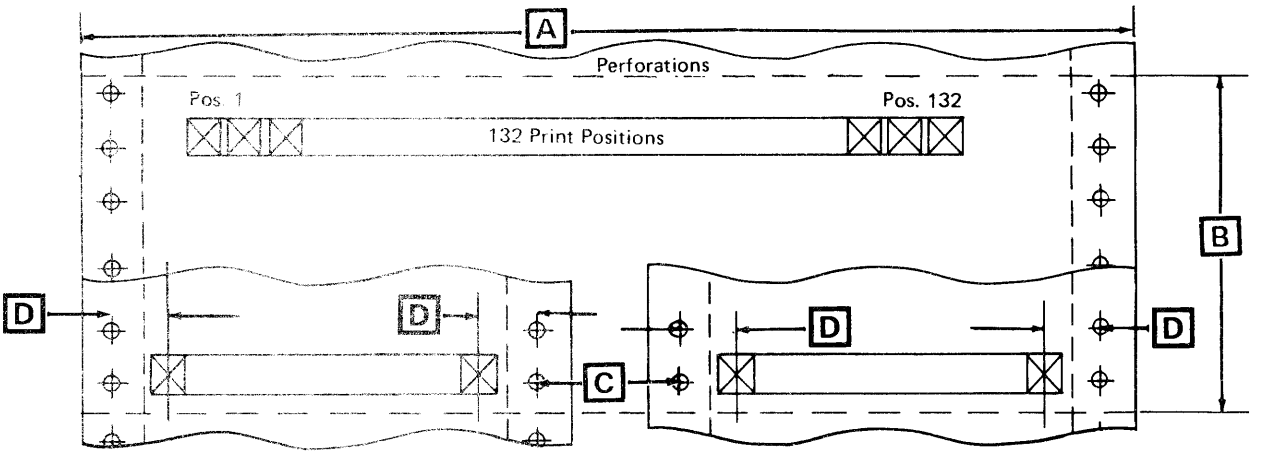
1. It is recommended that forms tractors be used for feeding multiple-part or preprinted forms.
2. The maximum multiple-part forms thickness is 0.46 mm (.018 in). The minimum thickness for any sheet in a multiple-part form is 0.08 mm (.003 in).
3. No hard or metallic fasteners are permitted.
4. Gluing is the recommended method of fastening forms. The gluing must be adequate to prevent separation or shifting of the forms as they are fed through the printer.
5. Crimping is not recommended. If crimping is used, however, the crimps must be located no more than 50.8 mm (2 in) apart, along the margins of the form length.
6. Partial forms separation is not permitted.
7. Carbon or self-contained carbonless (ink-impregnated) forms are recommended for multiple-part continuous forms.
8. Up to six-part continuous part forms may be used; however, for optimum feeding and stacking, a maximum of four parts is recommended. Five or six-part forms should be tested by the customer for satisfactory feeding registration, and print quality.

Friction-Fed Documents

1. Continuous single-part, nonpreprinted forms are recommended for use with the friction feed paper handling device. (These forms may require periodic operator attention.)
2. The maximum single-part form thickness is 0.165 mm (.0065 in).
3. The minimum single-part form thickness is 0.08 mm (.003 in).
4. Continuous roll paper must also conform to the following specifications:
   Paper Weight: 56 g/m^2 (15-lb)
   Inside Diameter: 11.1 ± 1.6 mm (.437 ± .062 in)
   Outside Diameter: 76.2 ± 3.2 mm (3 ± .125 in)

For general forms design considerations, see pages 5 to 10.

3288, 3289 Model 1, 3618, 3717, 3775, 3784, 4973 Model 1, 5024, 5320B and 3791, 3792 with Line Printer Feature (155 lpm Maximum) Form Specifications (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width** Single- or Dual-Feed Carriage	381 mm (15 in) See Note 10	88.9 mm (3.5 in)
B	**Form Length** Single- or Dual-Feed Carriage	355.6 mm (14 in)	76.2 mm (3 in)

C The fixed distance between the centerline of the paper feed points (dual-feed carriage) is 25.4 (1 in).

D The maximum distance from the centerline of the left margin hole to centerline of print position No. 1 is 13.9 mm (.55 in) with the left tractor in leftmost position.

A maximum of 12.7 mm (.5 in) if interchangeability with the 3715, 3771, 3773, 3774, or 5320 A Model printers is desired.

Forms with 12.7 mm (.5 in) Tear Strips (Single- or Dual-Feed Carriage)

The distance between the centerline of a margin hole and the centerline of the first available print position is:
7.6 mm (.3 in) minimum with odd print position and 10.2 mm (.4 in) minimum with even print position.

The distance between the centerline of a margin hole and the centerline of the last available print position is:
7.6 mm (.3 in) minimum with even print position and 10.2 mm (.4 in) minimum with odd print position.

[For a 132-print position printer, the maximum forms width for which these distances are obtainable is 365.1 mm (14.375 in) with left tractor in the leftmost position.]

Note: *Separation of the perforation may occur as the 7.6 mm (.3 in) minimum dimension above is approached.*

Forms without Tear Strips (Single- or Dual-Feed Carriage)

The distance between the centerline of a margin hole and the centerline of the first available print position is:
3.8 mm (.15 in) minimum with odd print position and 6.4 mm (.25 in) minimum with even print position.

The distance between the centerline of a margin hole and the centerline of the last available print position is:
3.8 mm (.15 in) minimum with even print position and 6.4 mm (.25 in) minimum with odd print position.

[For a 132-print position printer, the maximum forms width for which these distances are obtainable is 362 mm (14.25 in) with left tractor in the leftmost position.]

For general forms design considerations, see pages 5 to 10.

3288, 3289 Model 1, 3618, 3717, 3775, 3784, 4973 Model 1, 5024, 5320B and 3791, 3792 with Line Printer Feature (155 lpm Maximum) Form Specifications (Part 2 of 2)

Notes:

1. Over four-part forms should be tested to assure satisfactory feeding, print quality, and legibility. Modifications in forms fastening techniques, perforations, stiffness or paper quality can often overcome forms processing difficulties.
2. Up to six-part forms can be used; maximum thickness not to exceed 0.51 mm (.02 in). Ribbon smudging may occur as forms set approaches maximum thickness.
3. **5320 B Model only:**

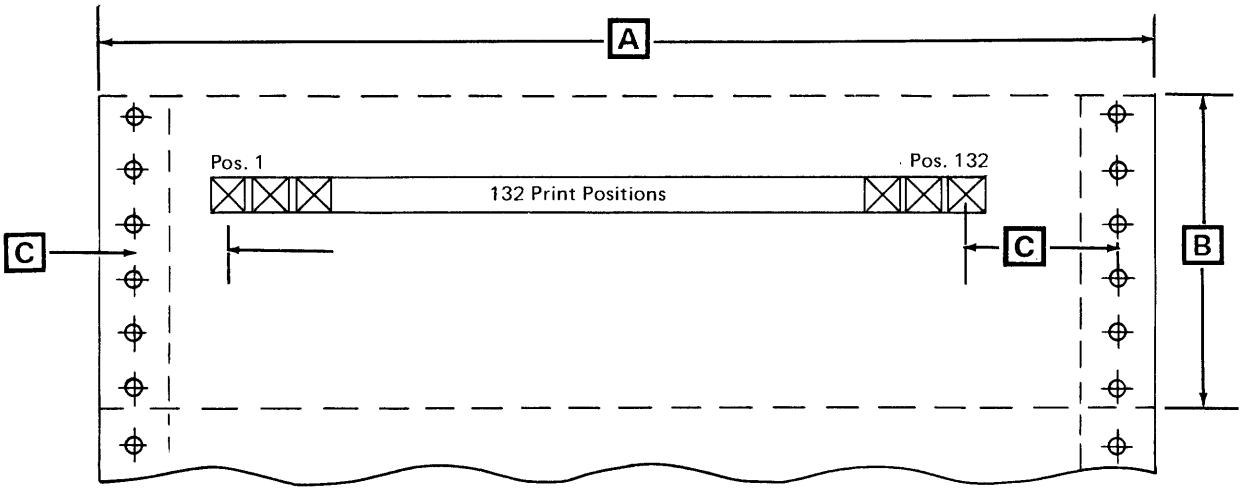
   Cut card stock is not permitted. Continuous card stock forms are generally not recommended. (See *IBM System/32 Membership and Mailing List System Design Objectives,* GH30-0012, or *Design Specifications,* GH30-0012 for card stock specifications approved for this Industry Application Program or other user applications with card stock requirements that meet such specifications.)

   All other printers:

   Continuous card stock forms are generally permitted. They should be tested to assure satisfactory feeding and smudge acceptability. Cut card stock is not permitted. Card stock should not exceed 0.23-mm (.009-in) thickness. Overlapped glue joints are not recommended.
4. Cutouts are not permitted from 69.9 to 82.6 mm (2.75 to 3.25 in) from left edge of form with tractor in leftmost position. Cutouts in this area may cause a false end-of-forms.
5. No hard or metallic fasteners are permitted.
6. Paper colors vary in reflectivity and may reduce contrast to the feed holes. This contrast is required for a photosensitive forms motion detection device. Relatively nonreflective colors, such as dark gray, dark blue, etc., or markings or printing, must not be used on the back side of the left tear strip (or area around pin feed holes) or false forms checks may result.
7. Fastening multiple set forms on both edges is recommended. The crimping method of fastening is recommended; however, crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fasteners are used, the crimps must not project significantly above the body of the form. Excessively hard or stiff crimps may interfere with proper ribbon and/or form processing operation. If a glue fastening is required, the forms should be tested for acceptable feeding.
8. Feed holes should remain free of chads and crimps to avoid false form jam checks.
9. Recommended that no printing occurs within 12.7 mm (.5 in) of the horizontal perforation.
10. Sixteen-inch leaders for alignment of prenumbered documents are recommended. A narrow 76.2-mm (3-in) long trailer (trailer not to ride over end-of-forms switch) is recommended on the last form of the form set to maintain registration on the last form.
11. When using dual-feed carriage, the maximum difference of form thickness between the left and right carriage cannot be more than 0.15 mm (.006 in).
12. Left tractor must be in the leftmost position when using maximum form width.
13. Stacking efficiency may diminish when using form widths less than 203 mm (8 in). Test such forms to ensure individual stacking requirements are met.

For general forms design considerations, see pages 5 to 10.

3289 (Models 2, 3, and 4), 3776, 4973 (Model 2), 5320C, and 3791 with Line Printer Feature (410 lpm Maximum) Form Specifications (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**	381 mm (15 in)	88.9 mm (3.5 in)
B	**Form Length**	355.6 mm (14 in)	76.2 mm (3 in)

C The maximum distance from the centerline of the left margin hole to centerline of print position No. 1 is 13.9 mm (.55 in) with the left tractor in the leftmost position.

A maximum of 12.7 mm (.5 in) if interchangeability with the 3715, 3771, 3773, 3774, or 5320 A Model printers is desired.

Forms with 12.7 mm (.5 in) Tear Strips

The minimum distance between the centerline of a margin hole and the centerline of the first or last available print position is 7.6 mm (.3 in). However, separation of the perforation may occur as the 7.6 mm (.3 in) dimension is approached. The maximum forms width for which this distance (margin hole to last print position) is obtainable is 365.1 mm (14.375 in) with left tractor in the leftmost position.

Forms without Tear Strips

The minimum distance between the centerline of a margin hole and the centerline of the first or last available print position is 3.8 mm (.15 in). The maximum forms width for which this distance (margin hole to last print position) is obtainable is 362 mm (14.25 in) with left tractor in the leftmost position.

For general forms design considerations, see pages 5 to 10.

3289 (Models 2, 3, and 4), 3776, 4973 (Model 2), 5320C, and 3791 with Line Printer Feature (410 lpm Maximum) Form Specifications (Part 2 of 2)

Notes:

1. Over four-part forms should be tested to assure satisfactory feeding, print quality, and legibility. Modifications in forms fastening techniques, perforations, stiffness, or paper quality can often overcome forms processing difficulties.
2. Up to six-part forms can be used; maximum thickness not to exceed 0.51 mm (.02 in). Ribbon smudging may occur as forms set approaches maximum thickness.
3. No hard or metallic fasteners are permitted.
4. Fastening multiple set forms on both edges is recommended. The crimping method of fastening is recommended; however, crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fastening is used, excessively stiff crimps, or crimps that project significantly above the body of the form may interfere with proper ribbon and/or form processing operation. If a glue fastening is required, the forms should be tested for acceptable feeding.
5. Feed holes should remain free of chads and crimps to avoid false form jam checks.
6. Paper colors vary in reflectivity and may reduce contrast to the feed holes. This contrast is required for a photosensitive forms motion detection device. Relatively nonreflective colors, such as dark gray, dark blue, etc., or markings or printing, must not be used on the back side of the left tear strip (or area around pin feed holes) or false forms checks may result.
7. Recommended that no printing occurs within 12.7 mm (.5 in) of the horizontal perforation.
8. Sixteen-inch leaders for alignment of prenumbered documents are recommended. A narrow 76.2-mm (3-in) long trailer (trailer not to ride over end-of-forms switch) is recommended on the last form of the form set to maintain registration on the last form.
9. Stacking efficiency may diminish when using form widths less than 203 mm (8 in). Test such forms to ensure individual stacking requirements are met.

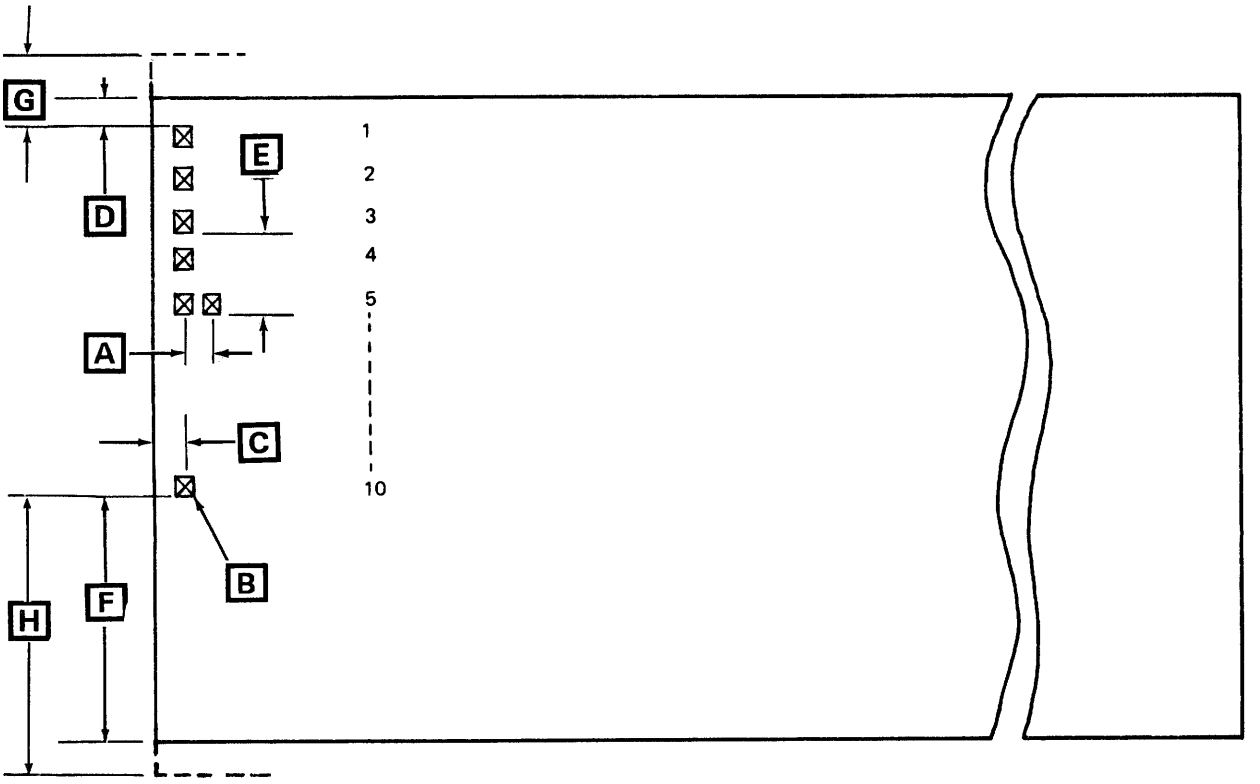
Card Stock

1. Continuous card stock forms are permitted. They should be tested to assure satisfactory feeding and smudge acceptability. Cut card stock is not permitted. Card stock should not exceed 0.23 mm (.009 in) thickness.
2. Overlapped glue joints are not permitted.
3. Cutouts not permitted from 69.9 to 82.6 mm (2.75 to 3.25 in) from left edge of form with tractor in leftmost position. Cutouts in this area cause a false end-of-form.
4. Cut card stock is not permitted. Continuous card stock forms are generally not recommended. (See *IBM System/32 Membership and Mailing List System Design Objectives,* GH30-0010, or *Design Specifications,* GH30-0012 for card stock specifications approved for this Industry Application Program or other user applications with card stock requirements that meet such specifications.)

For general forms design considerations, see pages 5 to 10.

3608 Form Specifications

Without OCR Feature (Part 1 of 2)



A Print pitch is 2.54 mm (.1 in) from vertical centerline to vertical centerline.

B 10-pitch characters are nominally 2.54 mm (.1 in) high and 1.7 mm (.067 in) wide.

C Location of vertical centerline of first print position is determined by program control. Minimum distance from the left edge of the form is 2.54 mm (.1 in).

Note: *Documents inserted skewed cause skewed printing or printing to run off the form.*

82.6 mm (3.25 in) Forms [See dimension **H** for 88.9 mm (3.5 in) forms.]

D With 82.6 mm (3.25 in) form height, the distance from the top of the first possible print line to the top of the form is 4.3 mm (.17 in).

E The minimum spacing between print lines is 10.2 mm (.4 in). The print wheel positions are set at the factory as specified by the customer's order. No two adjacent positions may be specified. The standard combinations of print-line positions are:

1, 4, and 10;
1, 5, and 10;
1, 3, and 6;
1, 7, and 10 or
4, 7, and 10

For general forms design considerations, see pages 5 to 10.

3608 Form Specifications

Without OCR Feature (Part 2 of 2)

F With 82.6 mm (3.25 in) form height, the distance from the bottom of the last print line to bottom edge of form without OCR feature is 30 mm (1.181 in). For nominal distance from the bottom edge of the form to a particular print line, refer to the following chart.

82.6 mm (3.25 in) Forms Print Line Positions	Distance from Bottom of Document to Bottom of Print Line	
1	75.72 mm	(2.981 in)
2	70.64 mm	(2.781 in)
3	65.56 mm	(2.581 in)
4	60.48 mm	(2.381 in)
5	55.40 mm	(2.181 in)
6	50.32 mm	(1.981 in)
7	45.24 mm	(1.781 in)
8	40.16 mm	(1.581 in)
9	35.08 mm	(1.381 in)
10	30 mm	(1.181 in)

G With 88.9 mm (3.5 in) form height, (Specify Feature 9701) the distance from the top of the first possible print line to the top of the form is 7.47 mm (.294 in).

H With 88.9 mm (3.5 in) form* height, the distance from the bottom of the last print line to bottom edge of form is 33.17 mm (1.306 in). The only print wheel positions available on the 88.9 mm (3.5 in) document feature are 4, 7, and 10. For nominal distance from the bottom edge of the form to a particular print line, refer to the following chart.

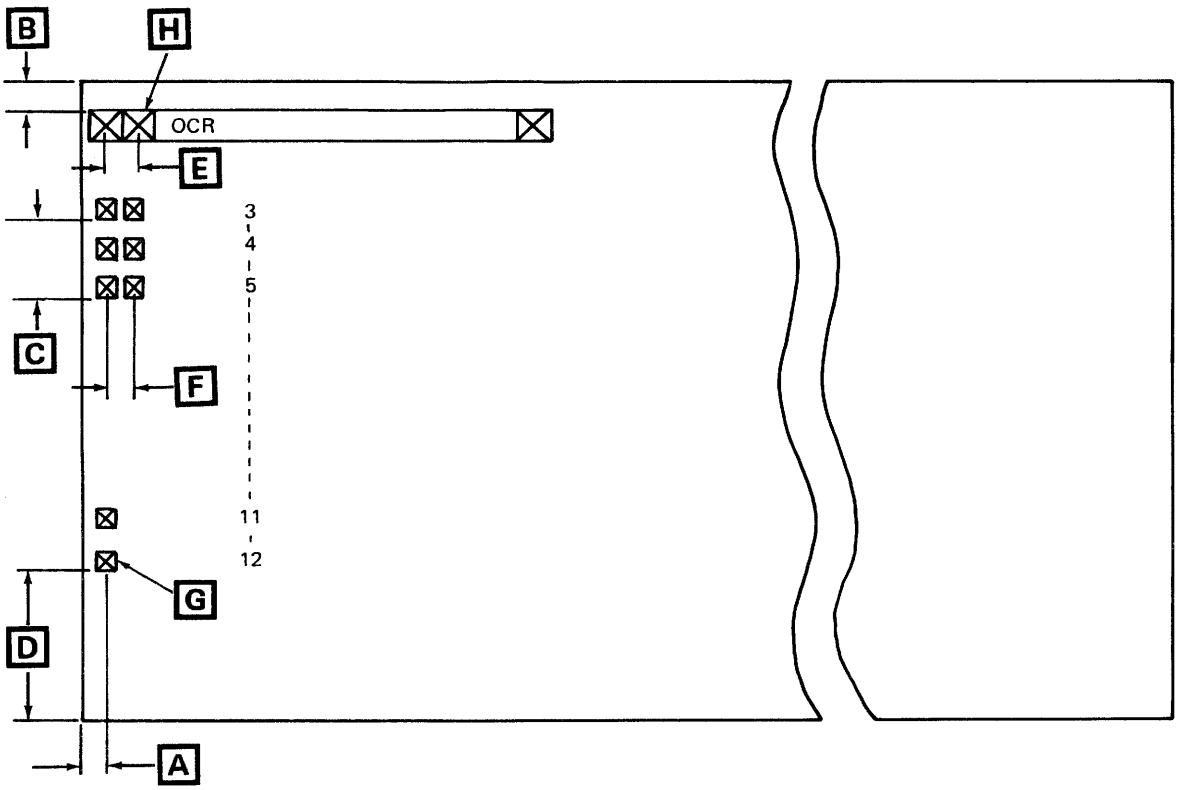
88.9 mm (3.5 in) Forms* Print Line Positions	Distance from Bottom of Document to Bottom of Print Line	
4	63.65 mm	(2.506 in)
7	48.41 mm	(1.906 in)
10	33.17 mm	(1.306 in)

*OCR Feature not available with 88.9 mm (3.5 in) form height.

For general forms design considerations, see pages 5 to 10.

3608 Form Specifications

With OCR Feature (Part 1 of 2)



For general forms design considerations, see pages 5 to 10.

3608 Form Specifications

With OCR Feature (Part 2 of 2)

A Location of vertical centerline of first print position is determined by program control. Minimum distance from the left edge of the form is 2.54 mm (.1 in).

B With 82.6 mm (3.25 in) form height, the distance from the top edge of the OCR print line to the top of the form is 3.4 mm (.134 in). Consider the print wheel positions if printing is done on forms less than 82.6 mm (3.25 in) in height. If a document less than 82.6 mm (3.25 in) in height is inserted skewed, the printing may be skewed or run off the form.

C The minimum spacing between print lines is 10.2 mm (.4 in). The standard print line locations are OCR, 3, and 5. No two adjacent positions may be specified. For example, the distance between positions 3 and 5 is 10.2 mm (.4 in).

D Distance from bottom of last print line to the bottom edge of form with OCR feature is 19.84 mm (.781 in). For nominal distance from the bottom edge of the form to a particular print line, refer to the following chart.

Print Line Positions	Distance from Bottom of Document to Bottom of Print Line	
OCR	74.83 mm	(2.946 in)
3	65.56 mm	(2.581 in)
4	60.48 mm	(2.381 in)
5	55.40 mm	(2.181 in)
6	50.32 mm	(1.981 in)
7	45.24 mm	(1.781 in)
8	40.16 mm	(1.581 in)
9	35.08 mm	(1.381 in)
10	30 mm	(1.181 in)
11	24.92 mm	(.981 in)
12	19.84 mm	(.781 in)

E Print pitch for OCR is 3.8 mm (.15 in) from vertical centerline to vertical centerline.

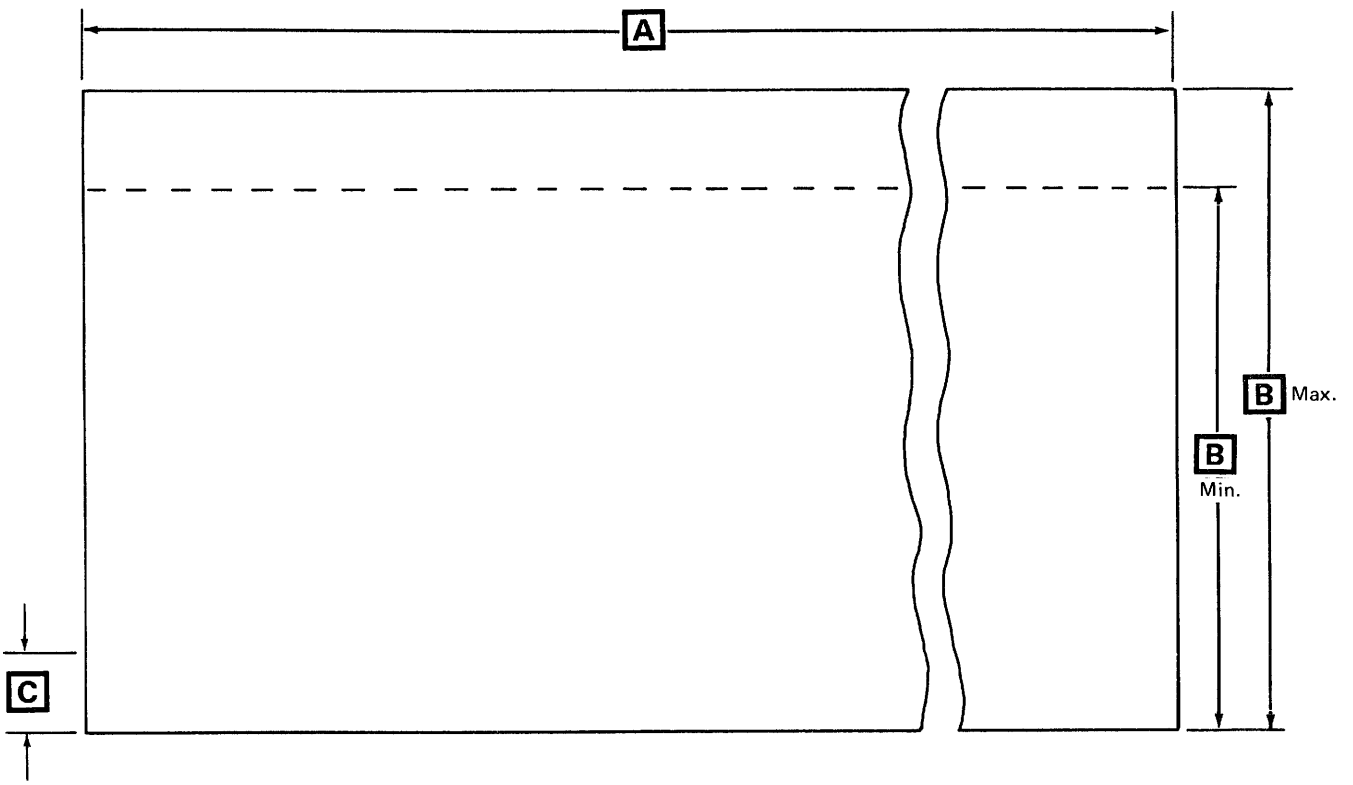
F Print pitch for lines 3 through 12 is 2.54 mm (.1 in) from vertical centerline to vertical centerline.

G 10-pitch characters are nominally 2.54 mm (.1 in) high and 1.7 mm (.067 in) wide.

H OCR-7B characters are nominally 4.32 mm (.17 in) high and 2.54 mm (.1 in) wide.

For general forms design considerations, see pages 5 to 10.

Single-Part Forms (Part 1 of 2)



A Form Width

Documents 88.9 mm (3.5 in) in height (Specify Feature 9701) or documents 82.6 mm (3.25 in) in height may range in width from 122 to 216 mm (4.8 to 8.5 in).

Documents 69.9 mm (2.75 in) or greater but less than 82.6 mm (3.25 in) in height may range in width from 148 to 216 mm (5.8 to 8.5 in).

	Maximum	*Minimum*
B Form Height	82.6 mm (3.25 in)	69.9 mm (2.75 in)
	88.9 mm (3.5 in) (Feature 9701)	

C Registration is controlled by the bottom 9.53 mm (.375 in) of the left edge of the document. The lower left corner of the document must be square for a minimum of 6.4 mm (.25 in) along the bottom edge. No discontinuities or cutouts should exist along the bottom edge from the first print column to the end of the document.

For general forms design considerations, see pages 5 to 10.

3608 Form Specifications

Single-Part Forms (Part 2 of 2)

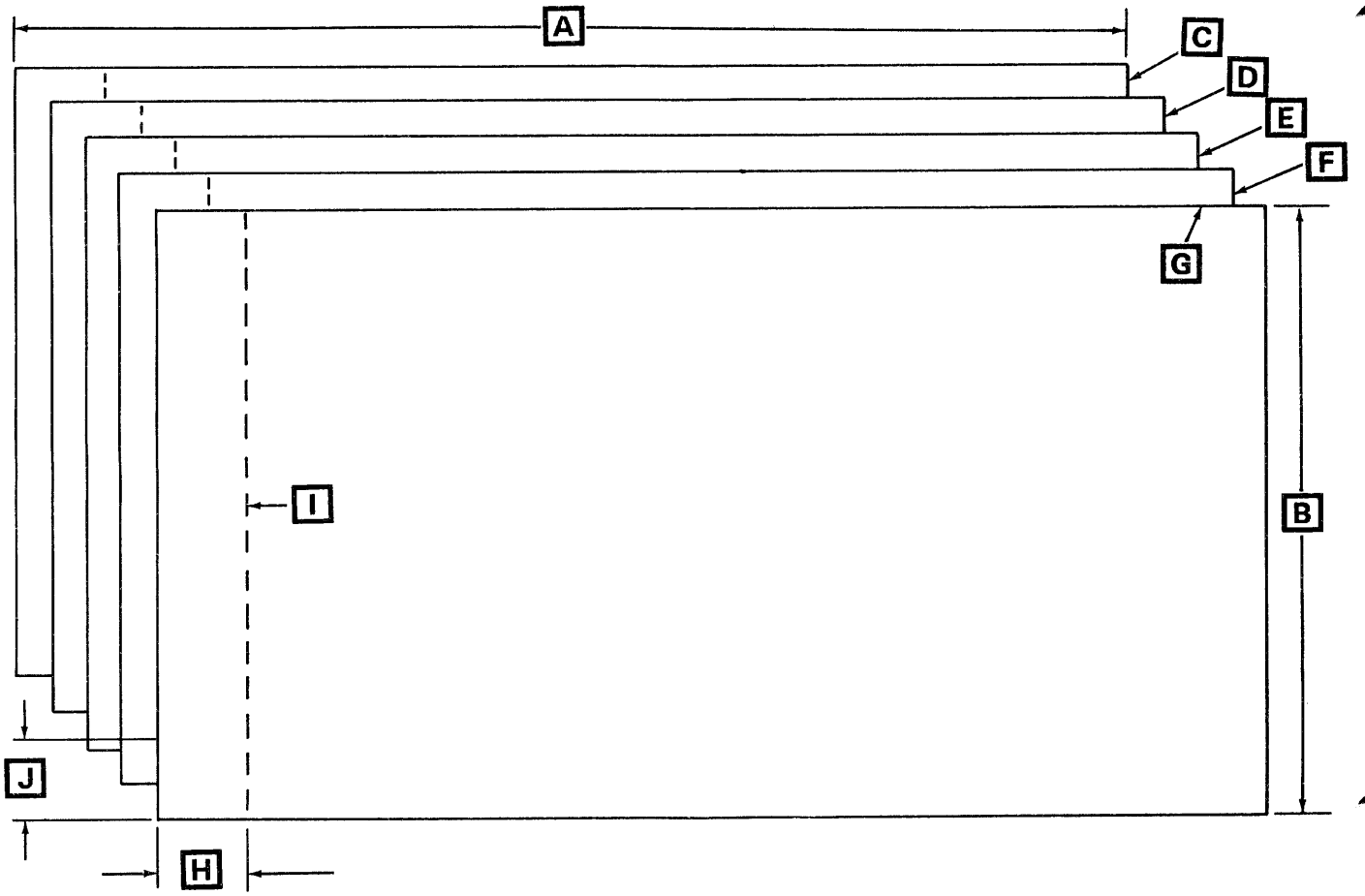
Notes:

1. Single-part form thickness should be at least 0.10 mm (.004 in) but not exceeding 0.28 mm (.011 in).
2. Form must be opaque to be sensed by the registration sensor.
3. Metal fastened or stapled forms are not permitted as they may damage the printer or cause irrecoverable paper jams.
4. Forms should not be preprinted with lines to designate printing areas.
5. Forms should not have any folds, tears, or mutilations. Mutilated forms must be flattened before using or be replaced.
6. Document Color Specifications. (See Note 8 also.)
   For good print contrast, the background color on single-part forms should conform to the following:
   a. Natural, white, or pastel pink, blue, green, or yellow stock is acceptable.
   b. Color should be uniform in the area to be printed.
   c. Safety paper with small geometric patterns on a white or pastel background is acceptable if the pattern is pastel.
   d. Patterns and background may be different shades of the same pastel.
   e. Changes in color, pictures, halftone reproductions, and certain types of safety and bank note paper may result in unsatisfactory print contrast.
7. Print quality is affected by the variance in card, paper stock, and environment (temperature and humidity). Sample forms should be evaluated in the user environment to determine whether performance criteria are met before ordering large quantities.
8. All forms should be tested to ensure acceptable printer processing and satisfactory print quality first before ordering large quantities.

For general forms design considerations, see pages 5 to 10.

3608 Form Specifications

Multiple-Part Forms (Part 1 of 2)



A **Form Width:** 122 to 216 mm (4.8 to 8.5 in) including the glue strip.

Note: *All parts of the form should be the same width.*

B **Form Height:** 82.6 mm (3.25 in)

C **Last Copy:** The 3608 is designed to enable optical reading of the OCR-7B characters on the last copy. This part should be 105 g/m^2 (28-lb) white OCR bond paper or white (161 g/m^2 (99-lb) OCR card stock. Natural colored card stock may be used but white card stock is preferred. A change in character reject and substitution rates may result from the use of other than white OCR stock. OCR feature not available on 88.9 mm (3.5 in) form height.

D **OCR Carbon:** If the OCR sheet is to be OCR-scanned, a medium-hard black scanning carbon is recommended. Low-temperature applications may require a softer carbon. (See Note 5.)

E **Middle Copy:** 38 to 45 g/m^2 (10- to 12-lb) paper. If middle copy is a self-contained (ink-impregnated) carbonless paper, the first part should be likewise.

F **Front Carbon:** If middle part is a self-contained (ink-impregnated) carbonless paper, no carbon paper is necessary. If first part of form is 41 to 49 g/m^2 (11- to 13-lb) translucent paper, the front carbon must be double-faced.

For general forms design considerations, see pages 5 to 10.

3608 Form Specifications

Multiple-Part Forms (Part 2 of 2)

G **First Copy**: May be either 45 g/m^2 (12-lb) self-contained (ink-impregnated) carbonless paper or 41 to 49 g/m^2 (11- to 13-lb) translucent paper so that the carbon printing on the back may be read from the front. With a basic 10-pitch printer, 38 to 45 g/m^2 (10- to 12-lb) plain paper may be used. To prevent smearing of characters on the first copy, paper quality should be such that the first copy remains flat without curling or waviness.

H **Glue Strip**: Recommended width is 11.1 to 15.9 mm (.437 to .625 in). Variations of the glue strip width affect horizontal registration of printing on detached portions of the form set. The glue strip must be on the left side of the form. The glue strip must be tightly glued and remain flat to prevent forms foldback passing through the printer. Forms with spot or intermittent gluing, wavy or curled glue strips are not recommended for processing as printer jams and smearing could result.

Form Thickness: 0.2 to 0.43 mm (.008 to .017 in) including the glue strip.

I **Scoring**: Forms should be constructed such that no material is removed from the scored area. Corner cuts on the detachable portions of the document are permissible. The scoring should be designed so that the form set does not delaminate during machine processing. Closely spaced perforations on the top copy are recommended to prevent smearing of the leading or left edge of the removable top copy.

J Horizontal print registration is controlled by the bottom 9.53 mm (.375 in) of the left edge of the document. The lower left corner of the document must be square for a minimum of 6.4 mm (.25 in) along the bottom edge. No discontinuities or cutouts should exist along the bottom edge from the first print column to the end of the document. (See Note 4.)

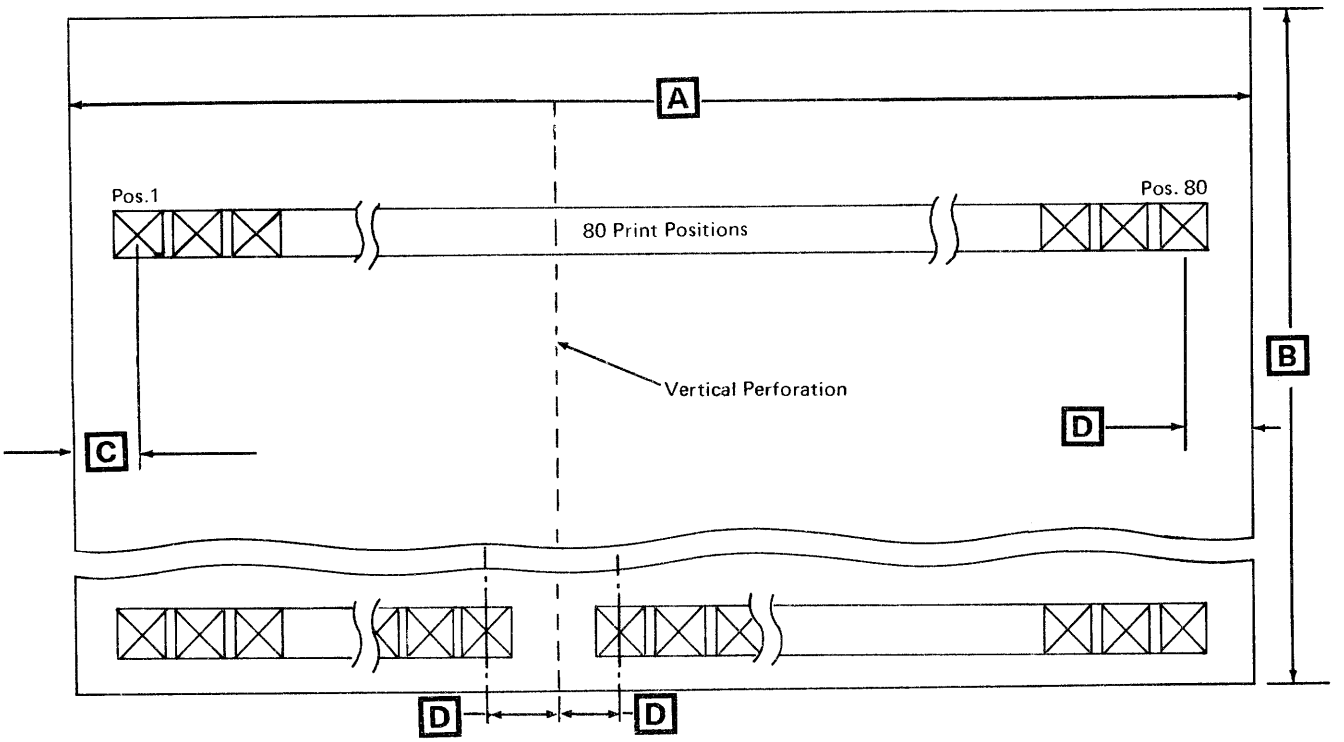
Notes:

1. OCR printing is recommended only on two- and three-part forms.
2. Metal fastened or stapled forms are not permitted as they may damage the printer or cause irrecoverable paper jams.
3. Because of margin requirements, some OCR equipment cannot read the first or last OCR print position.
4. Lines preprinted on a form should have at least 5.1 mm (.2 in) clearance from the nominal edge of a character. Two character positions should be allowed between OCR-7B fields.
5. Print quality is affected by the variance in card, paper stock, carbon stock, and environment (temperature and humidity). Sample forms should be evaluated in the user environment to determine whether performance criteria are met.
6. Forms must be new and unprocessed by any other machine. The forms should not have any folds, tears or mutilations. Mutilated forms must be flattened before using or replaced.
7. All forms should be tested to ensure acceptable printer processing and satisfactory print quality before ordering large quantities.

For general forms design considerations, see pages 5 to 10.

3610 (Models 2, 4, 5, and 12) and 3612 (Models 2 and 12) Form Specifications

Journal/Roll Forms (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**	215.9 mm (8.5 in) (Only width, Models 4 and 5)	101.6 mm (4 in)

B **Journal/Roll Length**

Single-part forms approximately 30.5 m (100 ft) See Note 1.
Two-part forms approximately 15.2 m (50 ft)

C Edge of journal/roll to first available print position

	Maximum	*Minimum*
3610-2 and 12, 3612-2 and 12	7.6 mm (.3 in)	4.4 mm (.175 in)
3610-4 and 5	None	4.4 mm (.175 in)

D Printing must not occur closer than 4.4 mm (.175 in) to a vertical perforation or from the right edge of the document. See Note 8.

For general forms design considerations, see pages 5 to 10.

3610 (Models 2, 4, 5, and 12) and 3612 (Models 2 and 12) Form Specifications

Journal/Roll Forms (Part 2 of 2)

Notes:

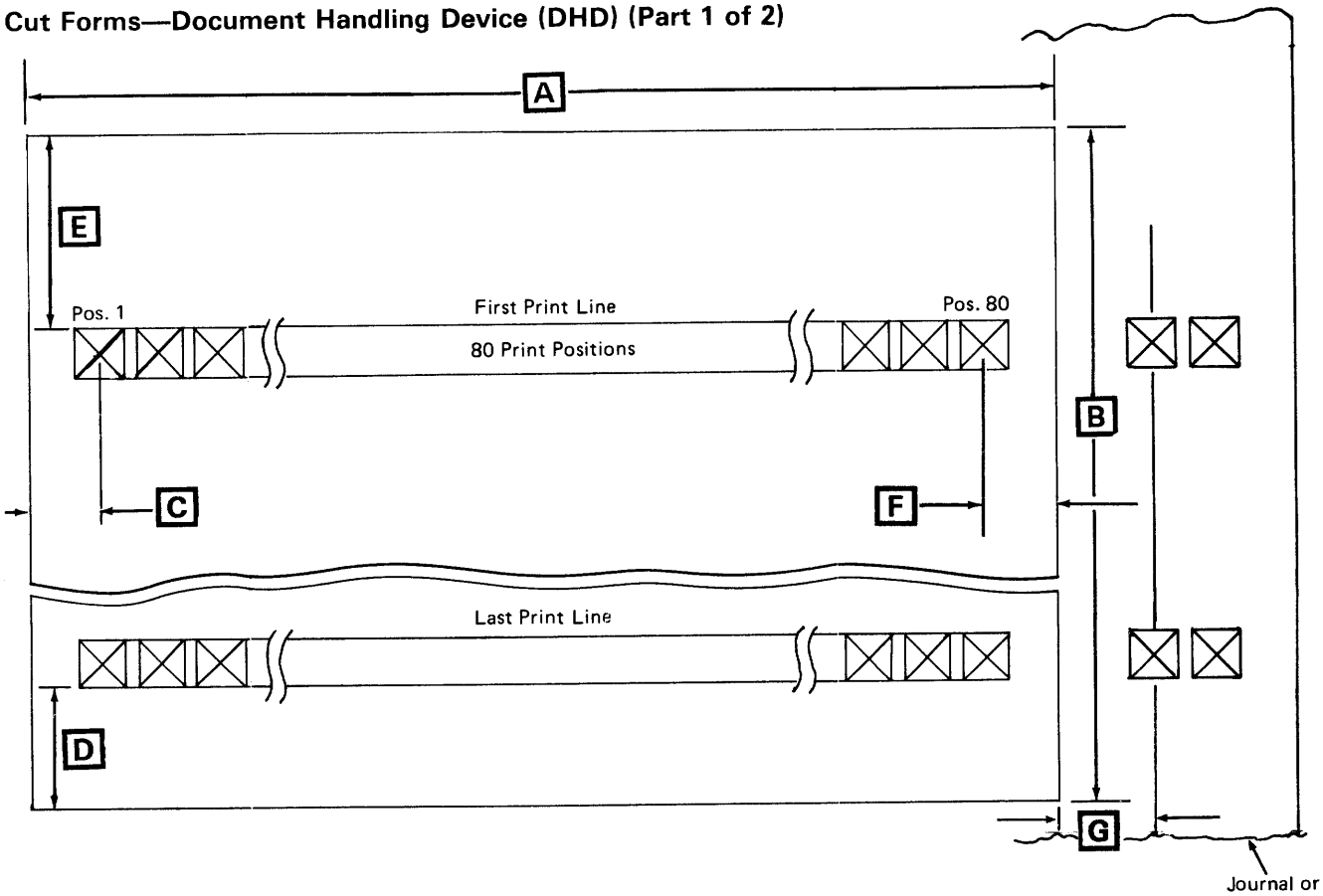
1. Maximum journal/roll diameter 61 mm (2.4 in). Maximum take-up roll capacity 30.5 m (100 ft) single part. Maximum take-up roll capacity, Models 4 and 5, 15.2 m (50 ft) single part, or one half of the journal roll.
2. Journal/roll forms: One- or two-part 38 to 45 g/m^2 (10- to 12-lb) self-contained (ink-impregnated) carbonless paper.
3. Bond paper should not be used for journal/roll purposes.
4. Preprinted journal/roll forms are not recommended.
5. Journal/roll forms are overprinted in red to indicate the last 914.4 to 1219.2 mm (3 to 4 ft).
6. Passbook printing is not permitted in the standard journal/roll form printers. (Passbook printing is a special application.)
7. A minimum clear margin of 3.18 mm (.125 in) is required between the edges of the journal and first and last print position.
8. Vertically perforated journals are not to be separated in the printer (one part exiting, the other on take-up).
9. All forms should be tested to ensure acceptable printer processing and print quality.
10. **Printing beyond the right edge of a cut form and onto a journal or continuous forms must not occur closer than:**
    4.4 mm (.175 in) with a "Type 2" print wheel [3.18 mm (.125 in) minimum clear margin], or
    13.9 mm (.55 in) with a "Type 1" print wheel [12.7 mm (.5 in) minimum clear margin].

    Note: ***The "Type 2" print wheels have a metal disk with radial teardrop slots approximately 6.35 mm (.25 in) wide.***

For general forms design considerations, see pages 5 to 10.

3610 and 3612 (All Models) Form Specifications

Cut Forms—Document Handling Device (DHD) (Part 1 of 2)



A **Form Width**

3610 Models 4 and 5	101.6 to 235 mm (4 to 9.25 in)	
3610 and 3612 Models 1, 2, and 12	101.6 to 235 mm (4 to 9.25 in)	
3610 and 3612 Models 3 and 13	101.6 to 215.9 mm (4 to 8.5 in)	

B **Height Minimum** 68.6 mm (2.7 in) (See Note 12.)

C Edge of document to print position 1. Range of adjustment from 3.18 mm (.125 in) to 25.4 mm (1 in). (See Note 10.) Models 4 and 5 range of adjustment from 3.18 mm (.125 in) to 4.7 mm (.185 in).

D Distance from the bottom of the document to the bottom of the last print line (see Note 12):

	3610 and 3612-2 and 3	**3610-4 and 5**
Single-line print using document stop (See Note 15)	17.8 to 21.1 mm (.70 to .83) in	19.3 to 22.6 mm (.76 to .89 in)
Multiline print	11 mm (.43 in) minimum	11 mm (.43 in) minimum

E Multiline Printing (See Note 1d) Distance from top of document to top of first print line:

3610 and 3612-2 and 3	**3610-4 and 5**
21.8 to 26.4 mm (.86 to 1.04 in) (See to Note 14.)	18.3 to 22.9 mm (.72 to .90 in)

F Printing must not occur closer than 4.4 mm (.175 in) from the right edge of the document. (See Note 10.)

G Printing beyond the right edge of a cut form and onto a journal or continuous forms must not occur closer than:
4.4 mm (.175 in) with a "Type 2" print wheel [3.18 mm (.125 in) minimum clear margin], or
13.9 mm (.55 in) with a "Type 1" print wheel [12.7 mm (.5 in) minimum clear margin].

Note: *The "Type 2" print wheels have a metal disk with radial teardrop slots approximately 6.35 mm (.25 in) wide.*

For general forms design considerations, see pages 5 to 10.

3610 and 3612 (All Models) Form Specifications

Cut Forms—Document Handling Device (DHD) (Part 2 of 2)

Notes:

1. Cut forms can be used individually or in conjunction with journal/roll or continuous forms:
   a. Single-part forms: 45 g/m^2 (12-lb) bond to 161 g/m^2 (99-lb) tab card stock.
   b. Maximum thickness must not exceed four parts, or when used with journal or continuous forms, the total combined thickness must not exceed 0.43 mm (.017 in). Card stock, if used, must be the last copy.
   c. When used with continuous sheet forms, a carbon behind the cut form is necessary if the printout is required on the first sheet of the continuous form.
   d. Single- or multiple-part cut forms continuously joined and horizontally perforated for individual tear-off are not to be processed if folded.
2. Stepped or shingled edges are not recommended.
3. Indexing of adhesive fastened forms, with left or right edges glued, is 63.5 mm (2.5 in) maximum (15 lines at 6 lines/in.).
4. No printing can be within 4.8 mm (.19 in) of any glued area or horizontal perforation.
5. Bottom edge gluing is not recommended.
6. Spot carbon is not recommended.
7. Do not process any type of folded forms, or print on or across punched holes, other holes, edges, cutouts, or perforations.
8. Metal fastened or stapled forms are not permitted.
9. Models 3 and 13 of the 3610 and 3612 must be indexed so that the horizontal perforation on the continuous form is at least 19.1 mm (.75 in) from the print line when using cut and continuous forms together. (Lesser distances may not allow easy insertion of the cut form.)
10. When using cut forms on Models 3 and 13 of the 3610 and 3612, the edges of the cut form must not touch the pins, and the printing must not be closer to the centerline of the pins than 13.9 mm (.55 in).
11. All forms should be tested to ensure acceptable printer processing and print quality.
12. The maximum distance the bottom edge of a print line can be to the bottom edge of a form is:

3610 and 3612 Models 2 and 3	279.4 mm (11 in)
3610 Models 4 and 5	244.48 mm (9.625 in)

13. When designing preprinted cut forms that include boxes or windows for printing data, the windows should be made large enough (two line spaces minimum) to accommodate variations in line space registration. Spacing variations generally are cumulative. The amount depends mainly on form length and number of copies.

    Variations from exact spacing that can be expected are:

1- and 2-Part Forms	1 Line Space in 279 mm (11 in)
3-Part Forms	1 Line Space in 229 mm (9 in)
4-Part Forms	1 Line Space in 152 mm (6 in)

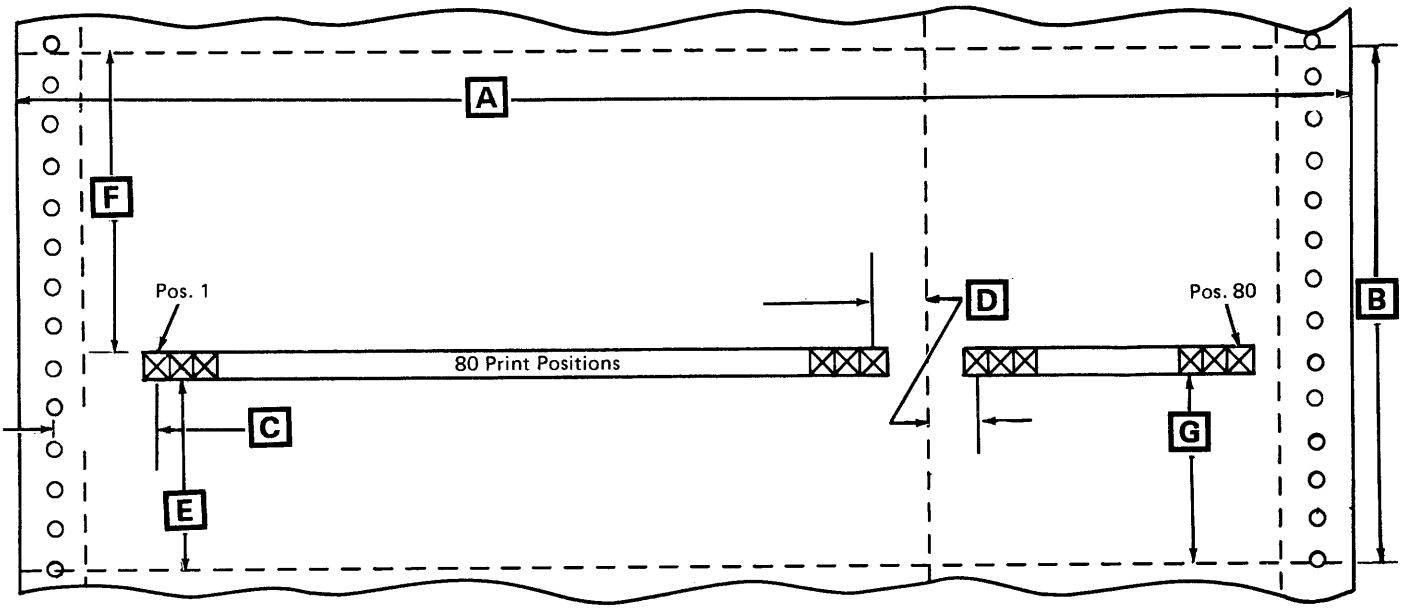
14. If the top of the form is not used as the reference point, printing *tick or orientation* marks is recommended. The tick mark on the edge of the form is used to reference the print line to the horizontal indicating device on the access cover. Printing occurs between 32.3 mm (1.27 in) and 33.8 mm (1.33 in) from the top of the form or the tick mark to the top of the first print line. Provide suitable finger holding space above the tick or orientation marks for ease of form insertion and alignment.
15. Maximum number of lines printed below dimension [D], maintaining the minimum dimension of 11 mm (.43 in) are:

3610-2 and 3	5 lines per inch—one line
3612-2 and 3	6 lines per inch—one line
3610-4 and 5	5 lines per inch—one line
	6 lines per inch—two lines

For general forms design considerations, see pages 5 to 10.

3610 (Models 3 and 13) and 3612 (Models 3 and 13) Form Specifications

Continuous Forms—Single- or Multiple-Part (Part 1 of 2)



A **Form Width** 241.3 mm (9.5 in)

B Maximum Length (between tear-off perforations): 335.6 mm (14 in)

C Printing must not be closer to the centerline of the platen pins than 13.9 mm (.55 in).

D Minimum distance from any print position to any vertical perforation is 4.4 mm (.175 in).

E Minimum distance from glued area or horizontal perforation to last print line is 4.8 mm (.19 in).

F Minimum distance from horizontal perforation to the first print line is 19.1 mm (.75 in).

G Print position distance from bottom of last print line to bottom edge of last form is 7.9 mm (.31 in) minimum.

For general forms design considerations, see pages 5 to 10.

3610 (Models 3 and 13) and 3612 (Models 3 and 13) Form Specifications

Continuous Forms—Single- or Multiple-Part (Part 2 of 2)

Notes:

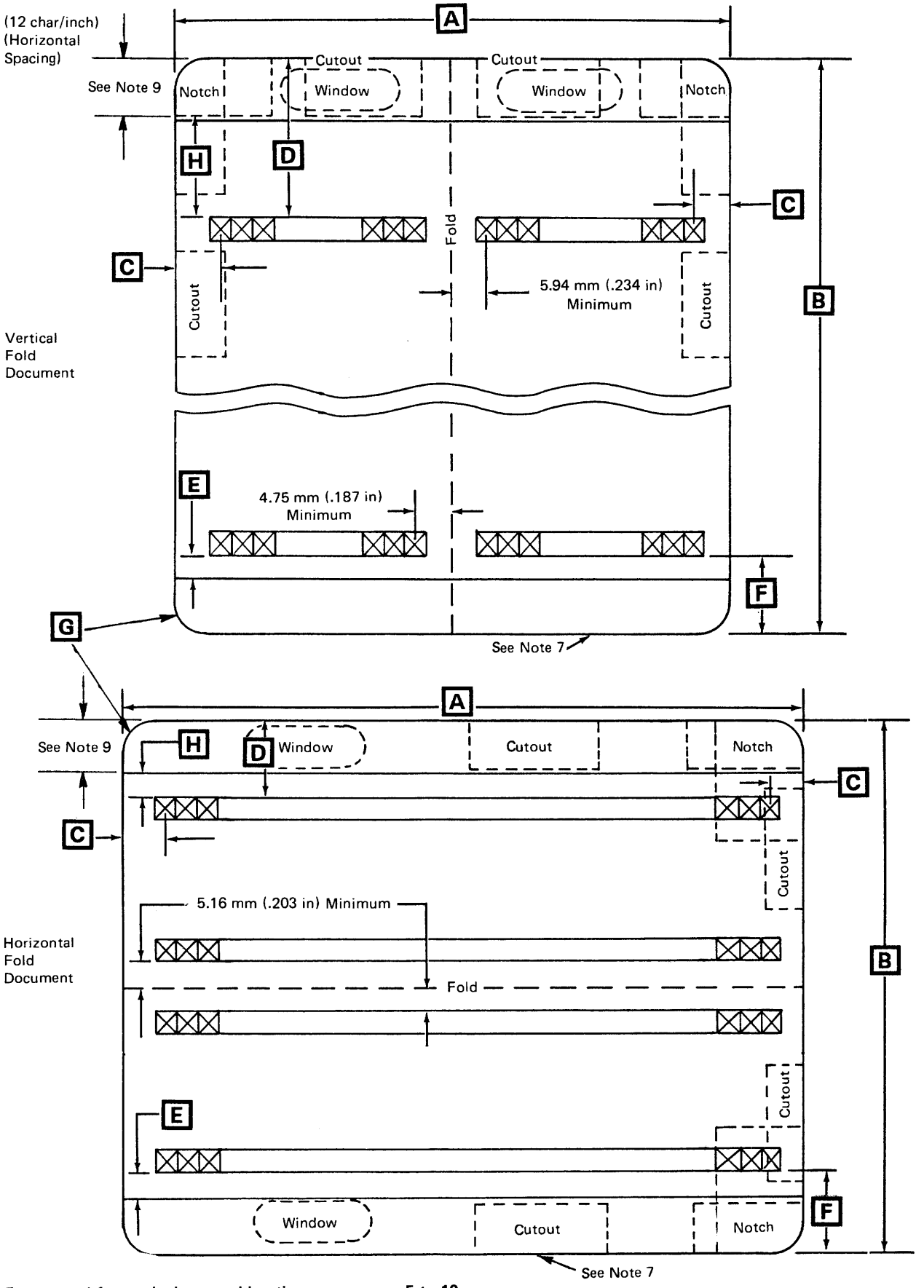
1. Maximum multiple copy: four parts.
   Maximum total thickness: 0.43 mm (.017 in).
2. Recommended Paper Weights:
   Multiple-Part — 45 g/m^2 (12-lb) paper; 34 g/m^2 (9-lb) carbon maximum.
   Single-Part — 56 to 75 g/m^2 (15-to 20-lb) paper.
3. Metal fasteners or staples are not permitted.
4. Continuous card stock not permitted.
5. Partial forms separation (torn perforations) is not permitted.
6. All forms should be tested to ensure acceptable printer processing and print quality.
7. When printing beyond the right edge of a cut form onto a continuous form, printing on a continuous form must not occur closer than:
   4.4 mm (.175 in) with "Type 2" print wheel [3.18 mm (.125 in) minimum clear margin], or
   13.9 mm (.55 in) with a "Type 1" print wheel [12.7 mm (.5 in) minimum clear margin].

   The "Type 2" print wheels have a metal disk with radial teardrop slots approximately 6.35 mm (.25 in) wide.

For general forms design considerations, see pages 5 to 10.

3611, 3612 Form Specifications

Passbook Forms (Part 1 of 3)



For general forms design considerations, see pages 5 to 10.

3611, 3612 Form Specifications

Passbook Forms (Part 2 of 3)

		Maximum	*Minimum*
A	**Form Width * ** *** †** (See Note 18.)	221 mm (8.7 in)	101.6 mm (4 in)
B	**Form Length ***	209.6 mm (8.25 in)	120.7 mm (4.75 in)

C Minimum distance from either edge of page to the first or last print position character centerline is 4 mm (.156 in).

D Minimum distance between the top edge of the cover and/or page and the top of the first print line:
13.5 mm (.53 in) with standard internal stop
21.1 mm (.83 in) with optional internal stop (FC-9650). (See Note 9.)

E Minimum distance between bottom of the last print line to the bottom of a short page, or to the top edge of a cutout, notch, window, etc., is 3.18 mm (.125 in). Refer to dimension F.

F Minimum distance between bottom of the last print line to the bottom edge of *cover* when internal pages are the same size as the cover is 12.7 mm (.5 in).

G Rounded outer corners are recommended, from 3.18 to 9.53 mm (.125 to .375 in), not to exceed 12.7 mm (.5 in) radius. (Rounded corners not permitted at the centerfold.)

H Minimum distance between the top of the first print line to the top edge of a short page, or to the bottom edge of a cutout, notch, window, etc., is 4.3 mm (.17 in).

* Manufacturing tolerance on any specific passbook length and width shall not exceed, in the folded form, ±0.38 mm (.015 in) across the folded dimension and ±0.191 mm (.0075 in) across the sheared dimension. All sheared edges must be straight within 0.13 mm (.005 in) and square and parallel to each other within 0.13 mm (.005 in).

** Magnetic label requires: A 104.1 mm (4.1 in) minimum width horizontal fold passbook. Cover thickness between 0.18 mm (.007 in) and 1.02 mm (.04 in). Corner radii not to exceed 9.53 mm (.375 in) and the cover should be smooth and the material compatible with the stripe adhesive.

*** Process one and only one width passbook per 3611-1 or 3612 Passbook Printer. Do not interchange horizontal and vertical fold passbooks in the same printer.

† The 3611-2 handles multiwidth horizontal fold passbooks. Do not interchange horizontal and vertical fold passbooks in the same printer. With this printer, the left-hand guide can be set to process maximum width cut forms. See Note 18 and dimension A above.

For general forms design considerations, see pages 5 to 10.

3611, 3612 Form Specifications

Passbook Forms (Part 3 of 3)

Notes:

1. **Form Thickness**

	Maximum	*Minimum*
Vertical book (open for printing)	1.58 mm (.062 in) (1 cover and all pages)	0.28 mm (.011 in) (1 cover and 1 page)
Horizontal book (open for printing)	1.27 mm (.05 in) (1 cover and all pages)	0.28 mm (.011 in) (1 cover and 1 page)

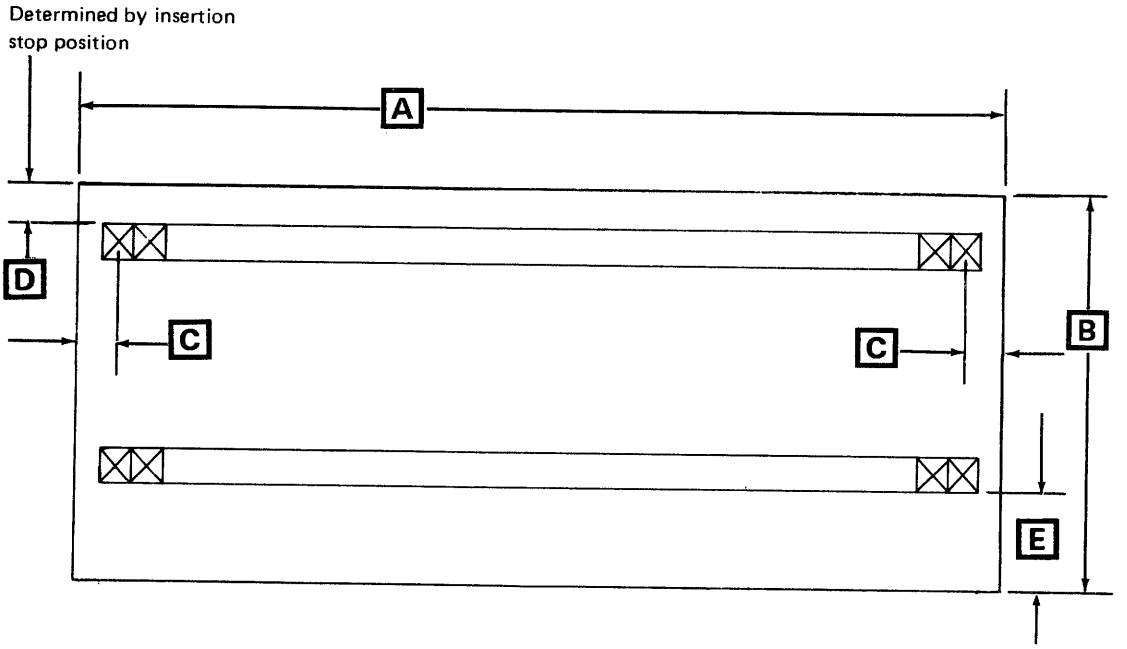
2. Page quality: 75 to 120 g/m^2 (20 to 32 lb), calendar finish on both sides, white or light color (recommended for maximum contrast).
3. Narrow pages are permissible on vertical or horizontal passbooks. A minimum clear margin of 2.79 mm (.110 in) is required at page edges.
4. Metal fasteners, staples or clips, paste-ons, savings stamps, labels, "stick-ons" of any type, patches, repairs and/or fixes are not permitted on or to the passbook pages, covers, or any form. Refer to Note 10.
5. The cover must be durable so that it does not warp easily and must be the approximate stiffness and hardness of tab card stock (Taber V5-No. 8 minimum).*
6. Windows or cutouts in the cover must not degrade the leading edge rigidity of the passbook cover.
7. No cutouts or notches are allowed on sides or top edge of the cover. (Cutouts or notches not recommended in bottom edge of covers.)
8. No printing on holes, edges, cutouts, or folds is permitted because damage to the print wheel may result.
9. Maximum passbook insertion stop (FC-9650): If the top edges of cut-back inside pages or the bottom edge of notches, holes, and cutouts are between 9.1 to 16.8 mm (.36 to .66 in) from the top edge of the cover, the passbook insertion stop is set at the maximum position and the first line of print is a minimum distance of 21.1 mm (.83 in) from the top of the cover. Refer to dimensions **D** and **H**.
10. The cover must be of uniform thickness under the printing area. For example, address labels, heavy embossing, or windows under the print area may cause print wheel damage and/or degradation of print quality. A magnetic stripe or label, up to 0.13 mm (.005 in) thick, may be attached to the outside cover.
11. Warped, folded, or creased passbooks must be flattened before using, or be replaced.
12. The fold of all pages and the stitching must coincide with the cover fold.
13. Ledger cards or "No Passbook" transaction forms, if used in the 3611-1 or 3612, must be the same width and length as passbook used. Minimum thickness: 0.18 mm (.007 in). Ledger cards or "No Passbook" transaction forms, if used in the 3611-2, must be the same length as passbooks used. Minimum thickness: 0.1 mm (.004 in).
14. Passbooks should be tested to ensure acceptable printer processing and satisfactory print quality before ordering large quantities.
15. Printing may not be performed on covers.
16. Passbook line indexing (by program control) 5 or 6 lines per inch.
17. 100 print positions (maximum) at 12 characters/inch.
18. 3611-2 horizontal fold passbooks only: The left passbook guide can be repositioned to chute extreme left to permit insertion of up to 221 mm (8.7 in) wide cut forms. When passbooks are not centered, indexing at five lines per inch is recommended. Also, slightly degraded print quality and skewed print lines may occur. Recommend that application be tested to ensure satisfaction. See "Passbook Forms," dimension **A** under "3611, 3612 Form Specifications."

* Magnetic label requires: A 104.1 mm (4.1 in) minimum width horizontal fold passbook. Cover thickness between 0.18 mm (.007 in) and 1.02 mm (.04 in). Corner radii not to exceed 9.53 mm (.375 in) and the cover should be smooth and the material compatible with the stripe adhesive.

For general forms design considerations, see pages 5 to 10.

3611 Model 1 and 3612 Passbook Form Specifications

Pad Forms or Single-Card Stock



		Maximum	*Minimum*
A	**Form Width**	221 mm (8.7 in)	101.6 mm (4 in)

Width for stiffener (backing) and all pages and/or card stock must be the same size as the passbook for which the machine is set.

B	**Form Length**	209.6 mm (8.25 in)	120.7 mm (4.75 in) (For the detached form)

C Printing must not occur within 4 mm (.156 in) from either edge of the form.

D Minimum distance between the top edge of the pad and the top of the first print line:
Minimum set passbook insertion stop: 13.5 mm (.53 in)
Maximum set passbook insertion stop: 21.1 mm (.83 in)

E Minimum distance between bottom of the last print line to the bottom of the pad is 12.7 mm (.5 in).

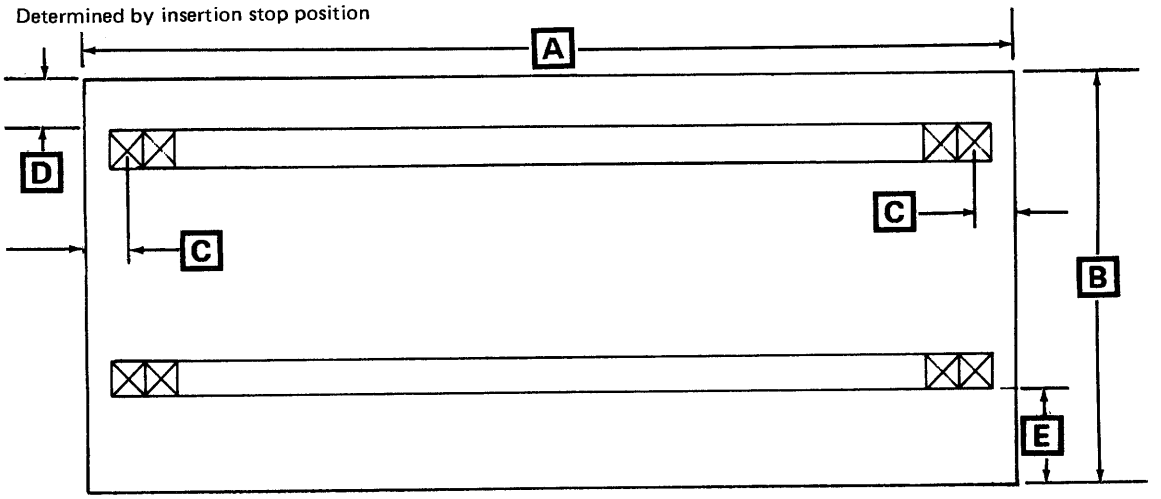
Notes:

1. a. Pad form thickness is 1.58 mm (.062 in) (full pad with stiffener) maximum and 0.28 mm (.011 in) (last page with stiffener) minimum.
   b. Card stock form thickness is 0.28 mm (.011 in) maximum and 0.18 mm (.007 in) minimum.
2. Fastening must be on the bottom edge only. Unfastened edge enters the machines first.
3. Staples and other metallic or hard fasteners are NOT permitted.
4. Printing should not be done on the stiffener or backing.
5. Warped, folded, or creased pads must be flattened before being used.
6. Pad line indexing is the same as for the passbook. See "Passbook Forms" under "3611, 3612 Form Specifications."
7. The stiffener must approximate the stiffness and hardness of tab card stock: 179 g/m^2 (99 lb), Taber V5-No. 8 minimum.
8. Carbon or self-contained carbonless (ink-impregnated) paper is not permitted.
9. The pad should be tested to ensure satisfactory print quality before ordering large quantities.
10. Forms are to be in pad form for tearing off after printing.
11. 100 print positions (maximum) at 12 characters/inch.

For general forms design considerations, see pages 5 to 10.

3611 Model 2 Form Specifications

Cut Forms (Part 1 of 2)



A Form Width

	Maximum	*Minimum*
Vertical fold passbooks	One half the width of the passbook for which the machine is set plus a constant of 110.5 mm (4.35 in). (See Note 12.)	One half the width of the passbook for which the machine is set.
Horizontal fold passbooks	centering on the platen is recommended. However, the left guide can be positioned to satisfy cut forms wider than one-half the passbook width plus 110.5 mm (4.35 in). Recommend application be tested to ensure satisfaction. See Note 14.	(Minimum same as above.)

B Form Length — 209.6 mm (8.25 in) — 69.9 mm (2.75 in) with standard internal stop; 76.2 mm (3 in) with optional internal stop. (FC-9650)

C Printing must not occur within 4 mm (.156 in) from either edge.

D Minimum distance between the top edge of the cut form and the top of the first print line is:
13.5 mm (.53 in) with standard internal stop
21.1 mm (.83 in) with optional internal stop

E Minimum distance between bottom of the last print line to the bottom of the form is 12.7 mm (.5 in).

For general forms design considerations, see pages 5 to 10.

3611 Model 2 Form Specifications

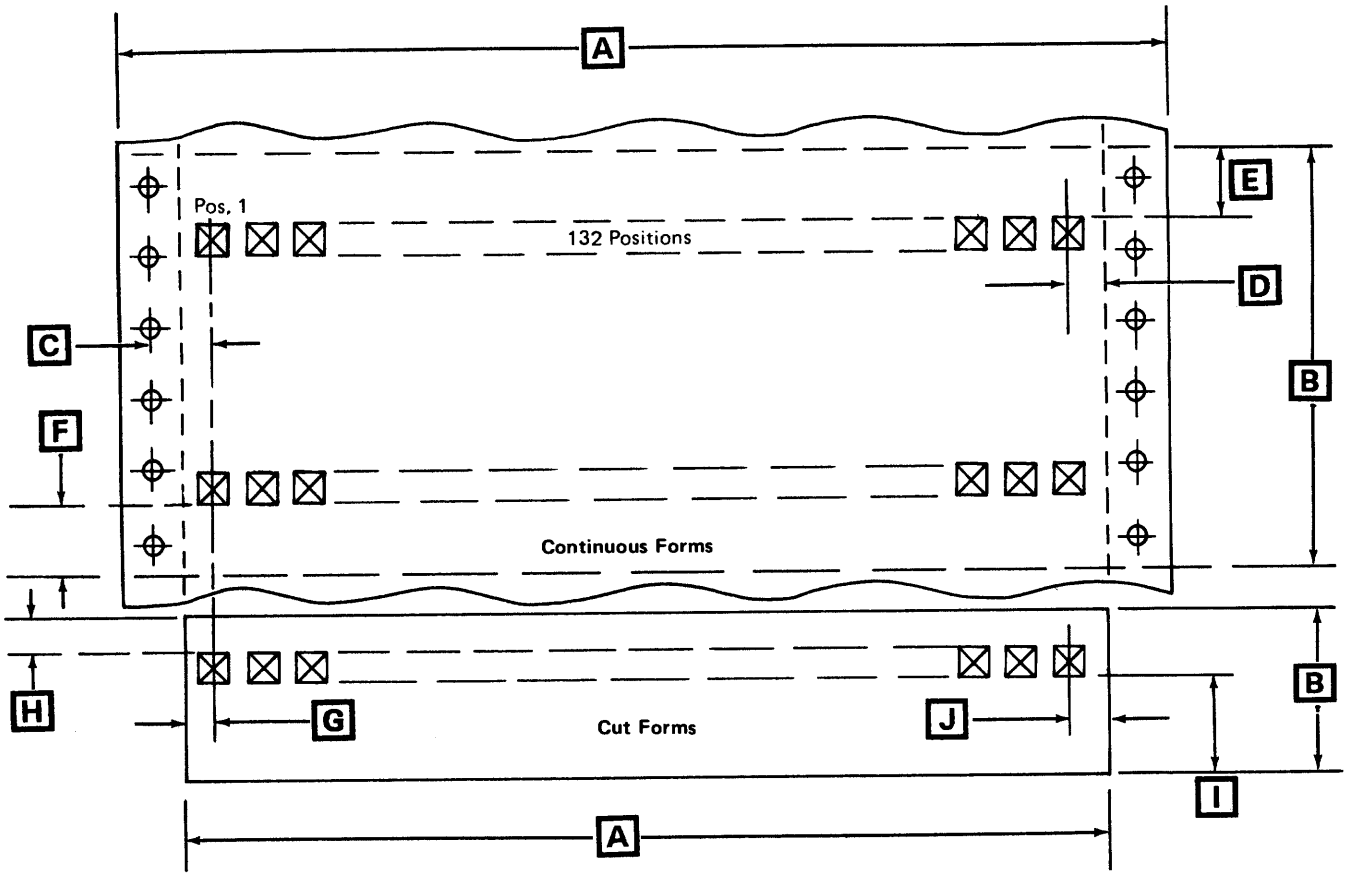
Cut Forms (Part 2 of 2)

Notes:

1. For maximum legibility of carbon copies, paper weight should not exceed 45 g/m^2 (12 lb).
2. Form thickness is 0.43 mm (.017 in) maximum, 0.1 mm (.004 in) minimum, one to four parts (original plus 3 copies). Card stock and thin [0.1 to 0.13 mm (.004 to .005 in)] paper are not recommended for applications which require multiple insertions. Card stock [0.18 mm (.007 in)], if used, must be the last copy in the forms set.
3. Forms may be fastened (glued) at the top, right or left edges, or both. Metal fastened or stapled forms are NOT permitted.
4. Shingled or stepped top or bottom page edges are not permitted.
5. Forms must have a well defined top edge.
6. Top fastened forms must not have any perforations more than 7.9 mm (.31 in) from the top of the form.
7. Bottom edge fastening is not permitted.
8. Holes or perforations are not permitted anywhere in the printing area.
9. Cut forms line indexing is the same as for the passbook. See "Passbook Forms" under "3611, 3612 Form Specifications."
10. On thin multiple-part forms, some carbon marking or smudging may occur because of the clamping mechanism. Form sets using pressure-sensitive or spot carbon paper are not recommended.
11. All forms should be tested before ordering large quantities to ensure satisfactory print quality and paper feeding.
12. Forms designed slightly larger than the maximum width may result in unacceptable feeding and skewed print lines.
13. 100 print positions (maximum) at 12 characters/inch.
14. Indexing at five lines per inch is recommended for good registration. Slightly degraded print quality and skewed print lines may occur with passbooks not centered. See "Passbook Forms," Notes † and 18 under "3611, 3612 Form Specifications."

For general forms design considerations, see pages 5 to 10.

3615 Form Specifications (Part 1 of 2)



For general forms design considerations, see pages 5 to 10.

3615 Form Specifications (Part 2 of 2)

		Continuous Forms *Maximum*	*Minimum*	Cut Forms *Maximum*	*Minimum*
A	**Form Width**	381 mm (15 in)	76.2 mm (3 in)	355.6 (14 in)	152.4 mm (6 in)
B	**Form Length**	355.6 (14 in)	76.2 mm (3 in)	355.6 mm (14 in)	69.9 mm (2.75 in)

C First print position with tear strips is 17 mm (.67 in); without tear strips is 14 mm (.55 in).

Notes: *Forms greater than 376 mm (14.8 in) up to 381 mm (15 in) increase the* C *measurement by the amount greater than 376 mm (14.8 in).*

D No printing should occur within 12.7 mm (.5 in) of the right tear strip.

E No printing should occur within 12.7 mm (.5 in) below the horizontal perforation.

F No printing should occur within 12.7 mm (.5 in) above the horizontal perforation.

G First print position is 6.4 mm (.25 in) minimum.

H Minimum distance is 17 mm (.67 in) from top edge to top edge of first print line.

I Minimum distance is 20 mm (.79 in) from bottom edge of last print line to bottom edge of form.

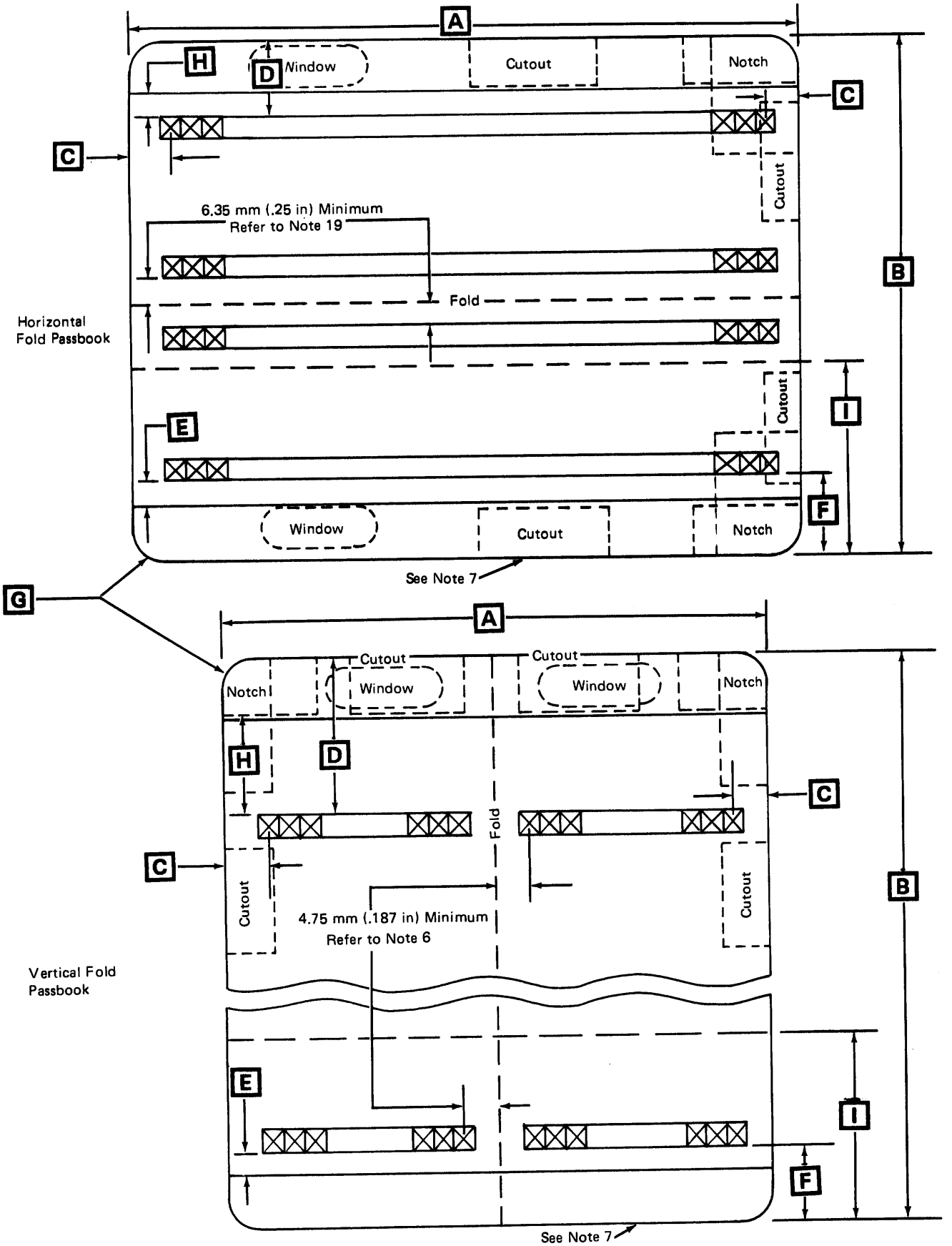
J No printing should occur within 12.7 mm (.5 in) of the right edge.

Notes:

1. The minimum thickness of all forms is 0.08 mm (.003 in).
2. Maximum thickness for single-part forms is 0.19 mm (.0075 in).
   Maximum total thickness for multiple-part forms is 0.46 mm (.018 in).
   Maximum thickness for any one part of a multiple-part cut form is 0.19 mm (.0075 in).
   Maximum per part is 0.13 mm (.005 in) for continuous forms.
3. Multiple-part cut forms must be glued at the top. No metallic fasteners, staples, or clips are permitted. Crimp fastening not recommended.
4. A maximum of four parts is recommended for continuous forms for optimum feeding and stacking.
5. Cut forms of six parts can be used. When greater than four-part forms are desired, they should be tested for acceptable processing on an individual basis.
6. Use of card-stock forms is not recommended.
7. The heaviest or card stock part of a multiple-part cut form should be the last or bottom part.
8. Continuous forms must be margin punched.
9. Friction-fed cut forms may be used without removing the forms tractor. A maximum of 127 characters can be printed per line in this mode.
10. All forms should be tested to ensure satisfactory machine processing and print quality prior to ordering large quantities.

For general forms design considerations, see pages 5 to 10.

Passbook Forms (Part 1 of 3)

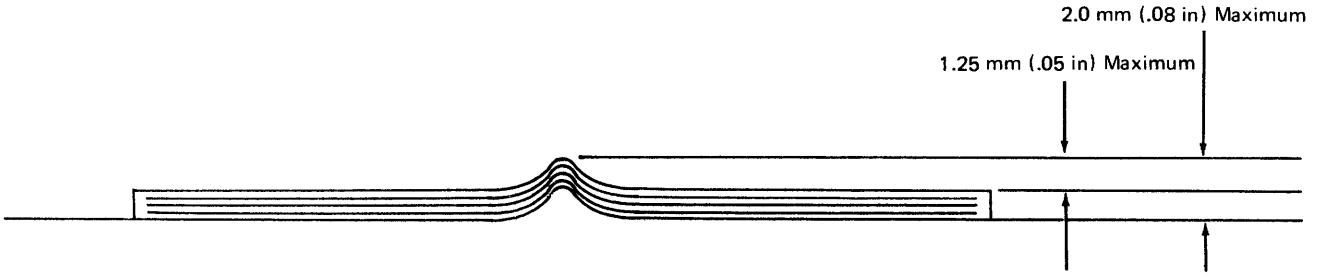


For general forms design considerations, see pages 5 to 10.

3616 Form Specifications

Passbook Forms (Part 2 of 3)

The centerfold projection (spine) is measured on a passbook opened to the center and placed on a flat surface with the pages against the flat surface. The centerfold must not exceed the maximum values shown.



A **Form Width**
(Refer to Notes 3, 4, 5, 16, 19 and 20)

Horizontal Book

101.6 to 126.7 mm (4.00 to 4.99 in)
127.0 to 152.1 mm (5.00 to 5.99 in)
152.4 to 177.5 mm (6.00 to 6.99 in)
177.8 to 190.5 mm (7.00 to 7.50 in)

A **Form Length** (Conforms to the width)
(Refer to Notes 3, 16, and 20)

Horizontal Book

120.7 to 177.8 mm (4.75 to 7.00 in)
139.7 to 209.6 mm (5.50 to 8.25 in)
152.4 to 209.6 mm (6.00 to 8.25 in)
146.0 to 190.5 mm (5.75 to 7.50 in)

B **Form Width**
(Refer to Notes 3 to 6, 16, and 19)

Vertical Book

101.6 to 126.7 mm (4.00 to 4.99 in)
127.0 to 152.1 mm (5.00 to 5.99 in)
152.4 to 177.5 mm (6.00 to 6.99 in)
177.8 to 202.9 mm (7.00 to 7.99 in)
203.2 to 215.9 mm (8.00 to 8.50 in)

B **Form Length** (Conforms to the width)
(Refer to Notes 3 and 16)

Vertical Book

120.7 to 152.4 mm (4.75 to 6.00 in)
120.7 to 184.2 mm (4.75 to 7.25 in)
120.7 to 177.8 mm (4.75 to 7.00 in)
123.7 to 177.8 mm (4.87 to 7.00 in)
120.7 to 184.2 mm (4.75 to 7.25 in)

C Printing must not occur within 4 mm (.156 in) from either edge of the page. (Refer to Note 7.)

D Minimum distance between the top edge of the cover and/or page and the top of the first print line is 17.8 mm (.7 in).

E Minimum distance between bottom of the last print line to the bottom of a short page, or to the top edge of a cutout, notch, window, etc. is 3.18 mm (.125 in). (Refer to dimension **F**.)

F Minimum distance between bottom of the last print line to the bottom edge of cover when internal pages are the same size as the cover is 12.7 mm (.5 in).

G Rounded outer corners are recommended, from 3.18 to 9.53 mm (.125 to .375 in), not to exceed 12.7 mm (.5 in) radius. (Rounded corners not permitted at the centerfold.) (See Note 4.)

H Minimum distance between the top of the first print line to the top edge of a short page, or to the bottom edge of a cutout, notch, window, etc. is 8.1 mm (.32 in).

I Nominal initial insertion stop distance from the bottom edge of the passbook cover to the bottom edge of a print line is 31.75 mm (1.25 in).

For general forms design considerations, see pages 5 to 10.

3616 Form Specifications

Passbook Forms (Part 3 of 3)

Notes and Recommendations:

	Maximum	*Minimum*
1. **Forms Thickness**		
Horizontal book (Open for printing Refer to Note 20)	1.12 mm (.044 in) (1 cover and all pages)	0.28 mm (.011 in) (1 cover and 1 page)
Vertical book (Open for printing Refer to Note 20)	1.27 mm (.05 in) (1 cover and all pages)	0.28 mm (.011 in) (1 cover and 1 page)

2. Page quality: 75 to 120g/m^2 (20- to 32-lb), calendar finish on both sides, white or light color (suggested for maximum print contrast). (Refer to Note 20.)
3. Manufacturing tolerance on any specific passbook length and width shall not exceed, in the folded form ±0.38 mm (.015 in) across the folded dimension and ±0.191 mm (.0075 in) across the sheared dimension. All sheared edges must be straight within 0.13 mm (.005 in) and square and parallel to each other within 0.13 mm (.005 in).
4. Magnetic label requires: A 104.1 mm (4.1 in) minimum width horizontal fold passbook. Cover thickness between 0.18 mm (.007 in) and 1.02 mm (.04 in). Corner radii not to exceed 9.53 mm (.375 in) and the cover should be smooth and the material compatible with the stripe adhesive.
5. Horizontal fold passbooks of multiple widths can be processed in the same printer.
   Vertical fold passbook printers accept horizontal fold passbooks, preferably of the same width and length.
6. On printers with the vertical fold passbook feature, degraded printing is exhibited on any document when occurring within 4.75 mm (.187 in) of the centerline of the center platen. Refer to "Vertical Fold Passbook" figure.
7. Narrow pages are permissible on vertical or horizontal passbooks. A minimum clear margin of 2.79 mm (.11 in) is required at page edges.
8. Metal fasteners, staples or clips, paste-ons, saving stamps, stamps, labels, "stick-ons" of any type, patches, repairs and/or fixes are not permitted on or to the passbook pages, covers, or any form. (Refer to Note 14.)
9. The cover must be durable so that it does not warp easily and must be the approximate stiffness and hardness of tab card stock (Taber V5-No. 8 minimum). (See Note 4.)
10. Windows or cutouts in the cover must not degrade the bottom edge rigidity of the passbook cover.
11. No notches are allowed on sides or bottom edge of the covers.
12. No printing on holes, edges, cutouts, or folds is permitted as damage to the print head may result.
13. The covers must be of uniform thickness under the printing area. For example, address labels, heavy embossing, windows or die-cuts under the print area cause degradation of print quality. A magnetic stripe or label, up to 0.13 mm (.005 in) thick, may be attached to the outside cover, per attachment instructions.
14. Warped, folded, or creased passbooks must be made flat before printing on or be replaced.
15. The fold of all pages and the stitching must coincide with the cover fold.
16. "No Passbook" transaction forms, if used, should be the same width and length as passbooks used. Minimum thickness: 0.1 mm (.004 in). Multiple chute insertions not recommended.
    Single-page passbooks or ledger cards (if used), require minimum thickness of 0.18 mm (.007 in) for multiple chute insertions.
17. Passbook line indexing (by program control) 5 or 6 lines per inch.
18. Maximum available print positions:
    82 at 10 characters/inch.
    99 at 12 characters/inch.
19. *Horizontal fold*: The passbook chute left guide is fixed in the extreme left position to permit insertion of up to 221 mm (8.7 in) wide cut forms. Recommended indexing at five lines per inch (5 lpi). When printing between 6.35 mm (.25 in) and 17.8 mm (.7 in) below the centerfold, slightly misregistered and/or skewed print lines may occur.
    Vertical fold: The passbook chute left guide is fixed such that the passbook is centered in the chute. (Refer to 3616 Passbook Cut Forms, dimension [A] .)
20. Passbooks, cards and/or forms using particular materials in their construction may exhibit one or a combination of smudge and/or character bleeding, skewed and/or misregistered print lines. Refer to Note 6.
21. All passbooks, ledger cards and/or transaction forms should be tested to ensure acceptable printer processing and satisfactory print quality before ordering large quantities.

For general forms design considerations, see pages 5 to 10.

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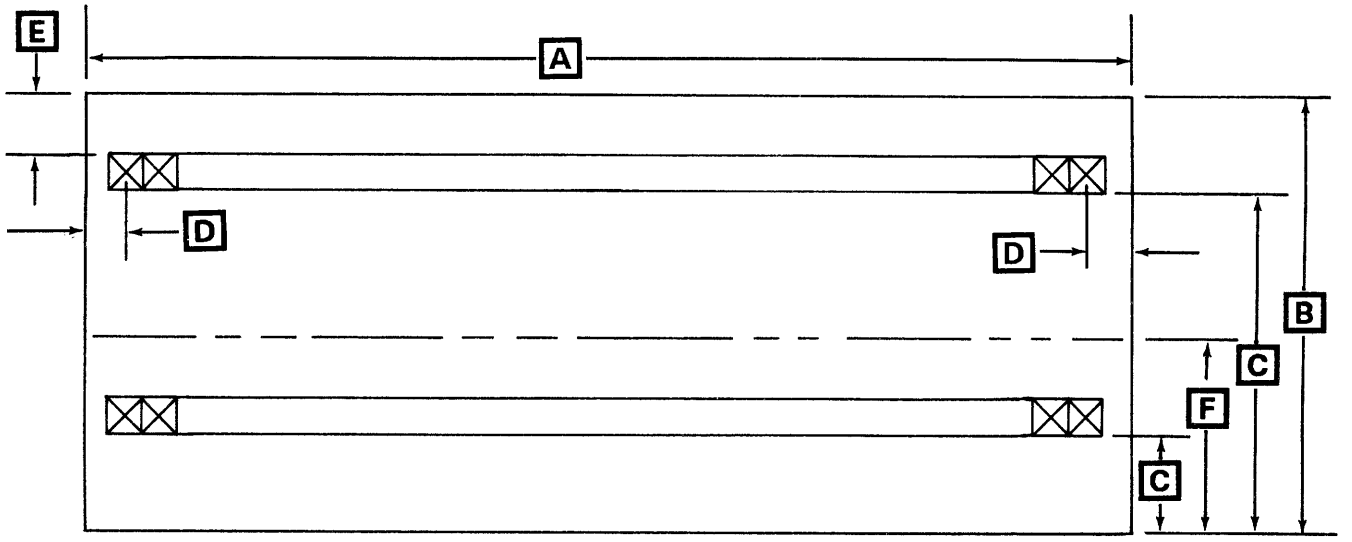
Cut Forms—Passbook Station (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**		
	Horizontal book printer (Refer to Notes 11 and 14.)	221 mm (8.7 in)	101.6 mm (4 in)
	Vertical book printer (Refer to Notes 11 and 12.)	Maximum same as above. Chute guide extreme left.	146 mm (5.75 in)
B	**Form Length** (On maximum and minimum length, refer to Note 15 and dimension C.)	377.7 mm (14.87 in)	78.7 mm (3.1 in)

C Distance between bottom of a print line to bottom edge of the form is:
Maximum: 314.3 mm (12.375 in)
Minimum: 12.7 mm (.5 in)
(Refer to Note 15.)

D Printing must not occur closer than 4 mm (.156 in) to either edge.

E Distance between the top edge of the cut form or tick marks and the top of the first print line 63.5 to 65.02 mm (2.5 to 2.56 in). (Refer to Note 15.) Printing must not occur closer than 15.7 mm (.62 in) from top edge of document.

F Nominal initial insertion distance from the bottom edge of the cut form to the bottom edge of the print line using the internal passbook stop is 31.75 mm (1.25 in).

For general forms design considerations, see pages 5 to 10.

3616 Form Specifications

Cut Forms—Passbook Station (Part 2 of 2)

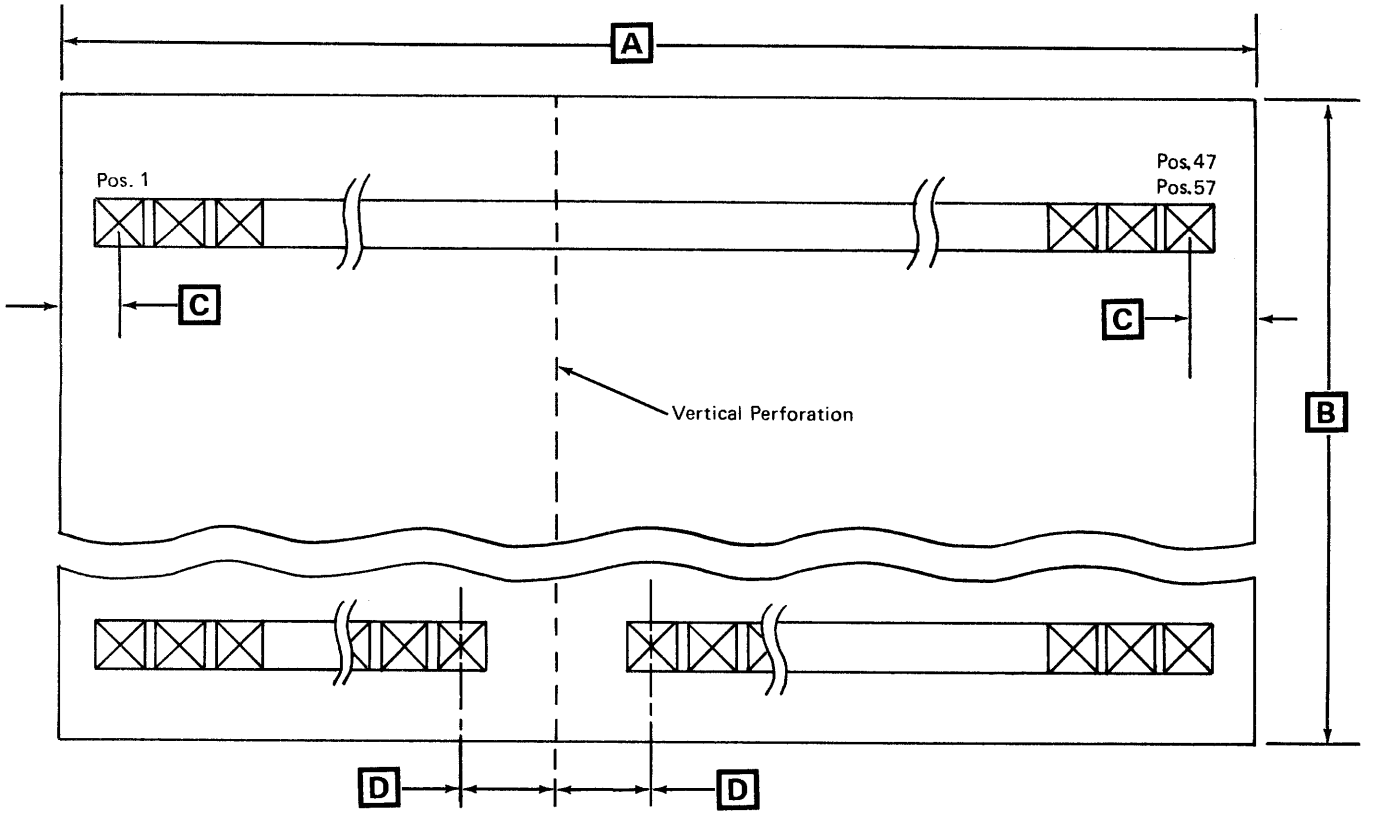
Notes and Recommendations:

1. For maximum legibility of carbon copies, paper weight should not exceed 45 g/m^2 (12 lb). (Refer to Note 17.)
2. Form thickness is 0.43 mm (.017 in), maximum, 0.1 mm (.004 in) minimum, 1 to 4 parts (original plus 3 copies). Cut forms, especially single-part 0.1 to 0.13 mm (.004 to .005 in) thick, are not recommended for applications which require multiple insertions. Card stock 0.18 mm (.007 in), if used, must be the last copy in the forms set. (Refer to Note 17.)
3. Forms can be fastened (glued) at the bottom, right or left edges, or both. Metal fastened or stapled forms are NOT permitted.
4. Shingled or stepped top or bottom page edges are not permitted.
5. Forms must have a well defined bottom edge.
6. Bottom fastened forms must not have any perforations more than 17.9 mm (.31 in) from the bottom of the form.
7. Top edge fastening is not recommended for more than three part or longer than 127 mm (5 in) forms.
8. Holes or perforations are not permitted anywhere in the printing area.
9. Cut form line indexing is the same as the passbook. (Refer to 3616 Passbook Forms.)
10. Thin multiple-part carbon forms or sets using action or self-contained carbonless or spot carbon papers are sensitive to clamping mechanism marking or smudging.
11. Forms exceeding the maximum width can result in unacceptable feeding and skewed print lines. (Refer to dimension A.)
12. On printers with the vertical fold passbook feature, degraded printing is exhibited on any document when occurring within 4.75 mm (.187 in) left or right of the platen center split.
13. Maximum available print positions:
    Horizontal fold passbook printer: 83 at 10 characters/inch or 100 at 12 characters/inch.
    Vertical fold passbook printer: limited to 100 at 12 characters/inch.
14. Indexing at five lines per inch is recommended for good registration.
15. Distance between the top edge of the chute and the top print wire at the time of initial clamp is 63.5 to 65.02 mm (2.5 to 2.56 in). If the bottom of the form is not used as the reference point, using the top edge or the printing of tick or orientation marks is recommended to reference the print line to the top of the chute. Cut form length between 69.9 to 78.7 mm (2.75 to 3.1 in) must use the top edge or tick marks for print line location. Provide suitable finger holding space above the tick or orientation marks for ease of form insertion and alignment. (Refer to dimension B and C.)
16. When designing preprinted cut forms that include boxes or windows for printing additional data, the windows should be made large enough (two line spaces minimum) to accommodate variations in line registration.
17. Cut forms constructed of combined paper types may exhibit one or a combination of the following: smudge and/or bleeding characters, skewed and/or misregistered print lines. Refer to Note 12.
18. All cut forms should be tested to ensure acceptable printer processing and satisfactory print quality before ordering large quantities.
19. Paper colors vary in reflectivity and may reduce contrast to the platen surface. This contrast is required for a photosensitive device that detects the edge of the passbook. Relatively nonreflective colors, such as dark gray, dark blue, etc., or markings or printing, must not be used between the defined end of the print line and the edge of the passbook or false edge detection may result.

For general forms design considerations, see pages 5 to 10.

3616 Form Specifications

Journal/Roll Forms (Part 1 of 2)



A **Form Width** 127 ± .38 mm (5 ± .015 in) with no telescoping of the roll.

B Journal/Roll Length: Single-part forms approximately 30.5 m (100 ft) long without splices. (Refer to Note 1.)
Two part forms approximately 15.25 m (50 ft) without splices. (Refer to Note 1.)

C Edge of journal/roll to the first and last available print position 4.24 ± 3 mm (.167 ± .118 in) with the journal/roll positioned with the right edge of the paper against the right drive flange of the take-up spool.

D Printing must not occur closer than 4.24 mm (.167 in) to a vertical perforation. (Refer to Note 7.)

For general forms design considerations, see pages 5 to 10.

3616 Form Specifications

Journal/Roll Forms (Part 2 of 2)

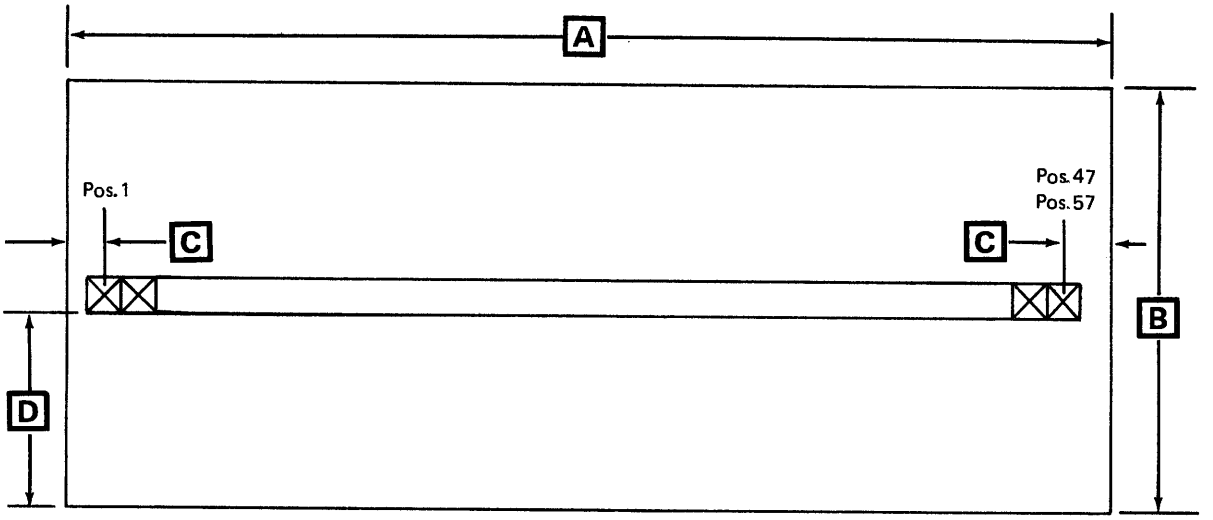
Notes and Recommendations:

1. Maximum journal/roll diameter 64 mm (2.52 in). Journal end should not be fastened to the core or hub.
2. Journal/roll forms: Single part 49 g/m^2 (13-lb) self-contained (ink-impregnated) carbonless paper, with the more sensitive side on the inside of the roll (reverse wound). (Refer to Note 10.)
3. Bond paper is not recommended for journal/roll purposes.
4. Preprinted journal/roll forms are not recommended.
5. Journal/roll forms edge(s) should be overprinted in red to indicate the last 914.4 to 1219.2 mm (3 to 4 ft).
6. Passbook printing is not permitted in the journal print station.
7. Vertically perforated journals are not to be separated in the printer (one part exiting, the other on take up).
8. Maximum available print positions:
   47 at 10 characters/inch
   57 at 12 characters/inch
9. **Warning: Journal forms using particular paper in their construction may exhibit one or a combination of smudged and/or character bleeding and/or misregistered print lines. (Refer to Note 3.)**
10. All journal forms should be tested to ensure acceptable printer processing and satisfactory print quality before ordering large quantities.
11. The journal/roll core diameter should be 20.7 ± 1.6 mm (.815 ± .063 in) and weigh less than 12 g (.423 oz) for operation of the end-of-forms switch.

For general forms design considerations, see pages 5 to 10.

3616 Form Specifications

Cut Forms—Journal Station (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width** (Refer to Note 9.)	304.8 mm (12 in)	139.7 mm (5.5 in)
B	**Form Height** (Refer to Note 9.)	152.4 mm (6 in)	69.85 mm (2.75 in)

C Edge of document to first and last print position: 4.24 mm (.167 in) minimum.

D Distance from the bottom of the document to the bottom of the print line: 19.3 to 22.6 mm (.76 to .89 in). Refer to Note 4.

For general forms design considerations, see pages 5 to 10.

3616 Form Specifications

Cut Forms—Journal Station (Part 2 of 2)

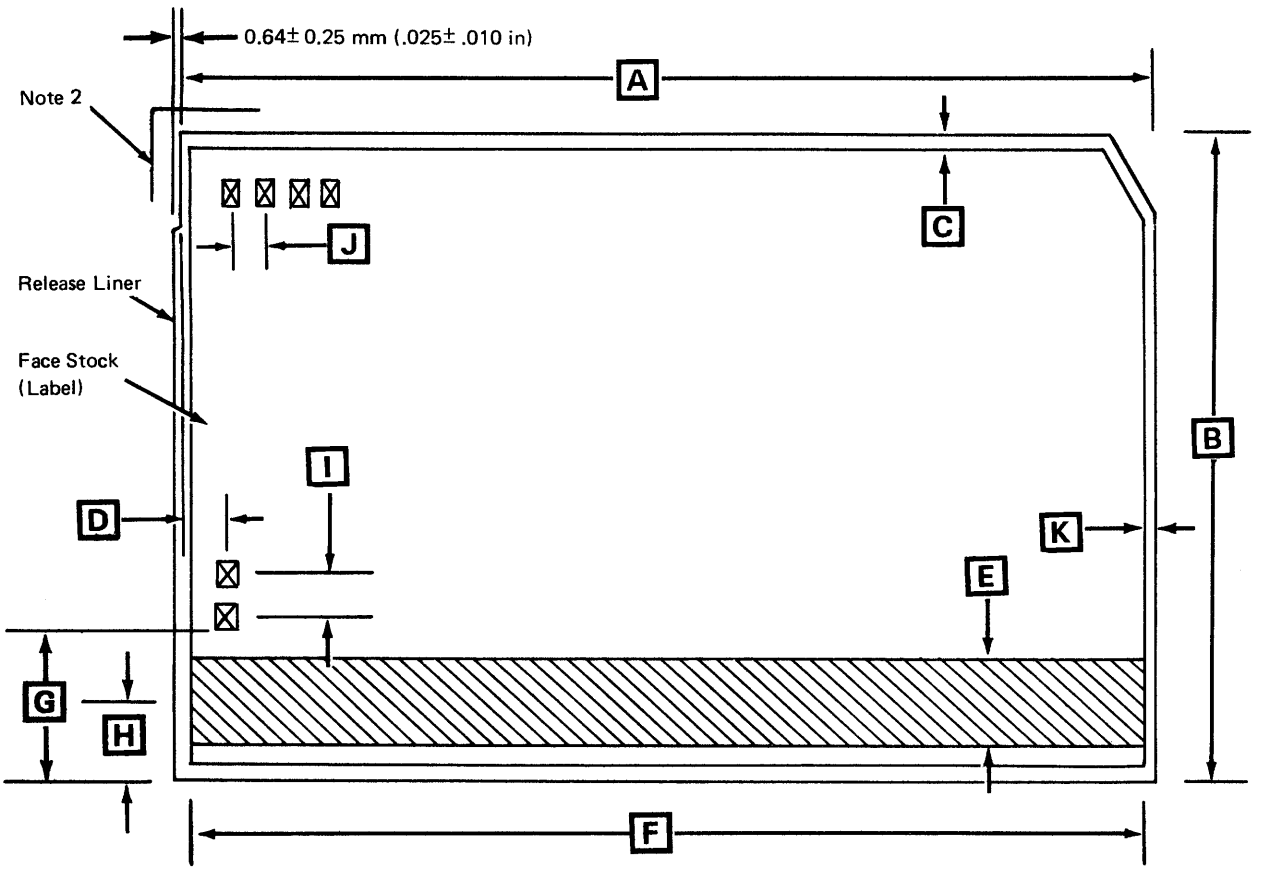
Notes and Recommendations:

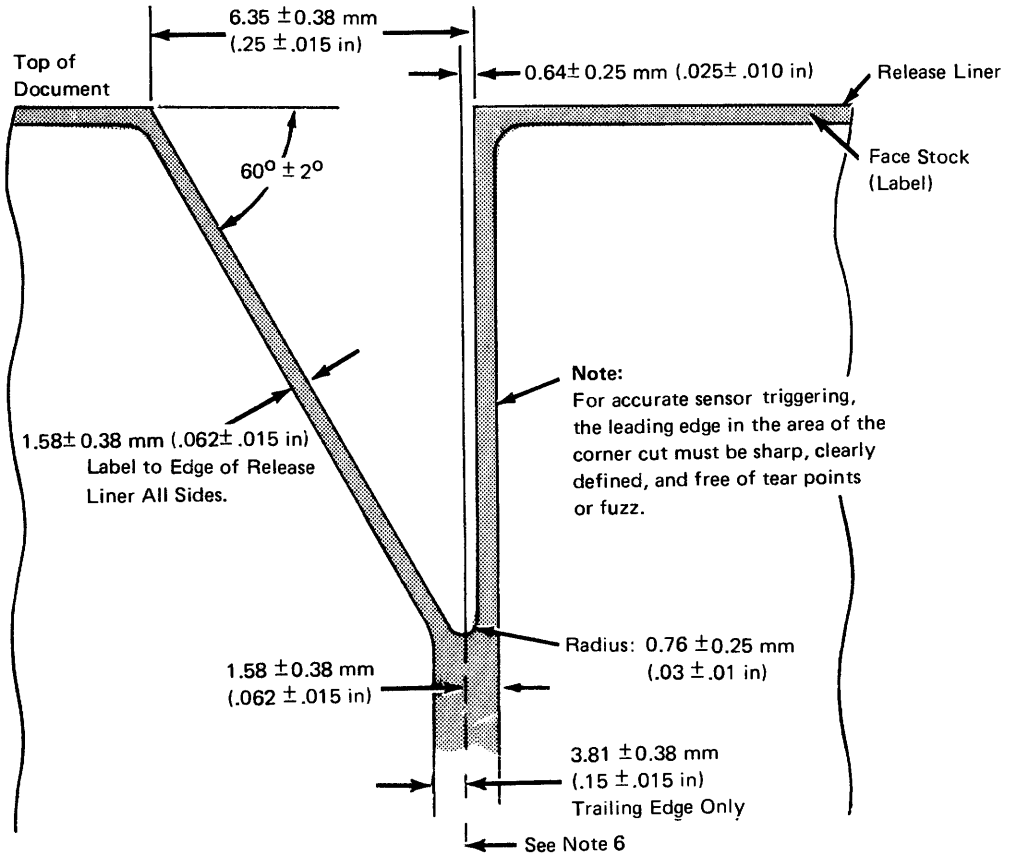
1. Cut forms can be used individually or in conjunction with journal/roll. Refer to Note 11.
   a. Thickness: 0.25 mm (.01 in) maximum; 0.1 mm (.004 in) minimum.
   b. Single-part forms: 45 g/m^2 (12-lb) bond to 161 g/m^2 (99-lb) tab card stock. Journal printing behind card stock may be illegible.
   c. Maximum of two parts recommended. When used with the journal, the total combined thickness must not exceed 0.43 mm (.017 in).
      Use of card stock not recommended. If used, card stock must be the last copy and journal printout may be illegible. Refer to Notes 10 and 11.
   d. Single- or multiple-part cut forms continuously joined and horizontally perforated for individual tear-off are not to be processed if folded.
2. Stepped or shingled edges are not recommended.
3. No indexing available on cut forms. (Only one print line per cut form.)
4. No printing can be within 3.18 mm (.125 in) of any glued area or horizontal perforation.
5. Cut forms using action or self-contained carbonless or spot carbon papers are sensitive to clamping mechanism marking.
6. Do not process any type of folded forms, print on or across punched holes, other holes, edges, cut-outs, or perforations.
7. Metal fastened or stapled forms are not permitted.
8. When designing preprinted cut forms that include boxes or windows for printing data, the windows should be made large enough (two line spaces minimum) to accommodate line registration variations.
9. Forms wider than 304.8 mm (12 in) and higher than 152.4 mm (6 in) must be held in place by the operator.
10. **Warning: Cut forms constructed of combined paper types may exhibit one or a combination of the following: smudged and/or bleeding characters; skewed or misregistered print line and possible illegible journal printout.**
11. All cut forms should be tested to ensure acceptable printer processing and satisfactory print quality before ordering large quantities.
12. Maximum available print positions:
    47 at 10 characters/inch
    57 at 12 characters/inch.

For general forms design considerations, see pages 5 to 10.

3642 Form Specifications

Continuous Forms—Pressure Sensitive Labels with Magnetic Stripe (Part 1 of 3)





For general forms design considerations, see pages 5 to 10.

3642 Form Specifications

Continuous Forms—Pressure Sensitive Labels with Magnetic Stripe (Part 2 of 3)

Magnetic stripe labels are made of a release liner and a face stock which is attached to the release liner by an appropriate adhesive.

A **Release Liner Length**

Maximum: 187.33 ± 0.38 mm (7.375 ± .015 in)
Minimum: 127 ± 0.38 mm (5 ± .015 in)

Note: *Increments must be multiples of 3.175 mm (.125 in).*

B **Release Liner Height**

82.55 ± 0.38 mm (3.25 ± .015 in)

C Face stock must be 1.57 ± 0.38 mm (.062 ± .015 in) from release liner edge except for the trailing (right) edge, which is 3.81 ± 0.38 mm (.15 ± .015 in) from release liner edge.

D Centerline of first printable position from the sensing edge of the document is 5.08 + 1.4 - 1.14 mm (.2 + .055 - .045 in).

Magnetic Stripe

E Height: 9.53 ± 0.25 mm (.375 ± .01 in)

F Length must be the same as the face stock length.

Form Thickness (including magnetic stripe)

Face stock: 0.117 ± 0.015 mm (.0046 ± .006 in)
Release liner: 0.084 ± 0.01 mm(.0033 ± .004 in)
Total thickness with adhesive: 0.211 ± 0.023 mm (.0083 ± .0009 in)

G Location of bottom of document to bottom of last row of printing is 19.84 mm (.781 in).

H Centerline of magnetic stripe to bottom of document is 8.71 ± 0.38 mm (.343 ± .015 in).

I Nominal centerline-to-centerline dimension between characters in vertical column is 5.08 mm (.2 in).

J Nominal centerline-to-centerline dimension between characters in horizontal row is 2.5 mm (.1 in).

The nominal distance from the bottom edge of the form to a particular print line is:

Print Line Position	Distance from Bottom of Document to Bottom of Print Line	
1	65.56 mm	(2.581 in)
2	60.48 mm	(2.381 in)
3	55.40 mm	(2.181 in)
4	50.32 mm	(1.981 in)
5	45.24 mm	(1.781 in)
6	40.16 mm	(1.581 in)
7	35.08 mm	(1.381 in)
8	30 mm	(1.181 in)
9	24.92 mm	(.981 in)
10	19.84 mm	(.781 in)

K The trailing edge of the label is 3.81 ± 0.38 mm (.15 ± .015 in) back from the score line on the release liner.

For general forms design considerations, see pages 5 to 10.

3642 Form Specifications

Continuous Forms—Pressure Sensitive Labels with Magnetic Stripe (Part 3 of 3)

The recommended base color in the print area is white. Background colors other than white should conform to the following:

1. Pastels or tints, such as light green, yellow, pink and orange, are acceptable.
2. Color should be uniform in the area to be printed.
3. Small geometric patterns on white or pastel background are acceptable if the pattern is pastel.
4. Patterns and background may be different shades of the same pastel.
5. Pictures and halftone reproductions and nonpastel colors may result in unsatisfactory ink contrast.

Notes:

1. Multiple-part forms are not recommended. If multiple-part forms are to be used, they must not exceed the maximum forms thickness and must be tested by the customer for satisfactory use.
2. Upper left corner (the sensing edge) should be sharp and clearly defined to ensure a good first column of printing.
3. The clearance from the nominal edge of a 3642-printed character to any preprinted information should be:
   127-mm (5-in) document: 5.08-mm (.2-in) horizontal clearance
   152.4-mm (6-in) document: 6.35-mm (.25-in) horizontal clearance
   187.3-mm (7.375-in) document: 7.62-mm (.3-in) horizontal clearance
4. Encoding is possible within first 127 mm (5 in) of the magnetic stripe.
5. Print quality and bursting of documents can be affected by the variances in card and paper stock; therefore, sample forms should be evaluated before ordering large quantities.
6. The burst strength (straight-pull test) of scores between labels should not be less than 0.28 N/mm (1.6 lb/in) nor greater than 2.01 N/mm (11.5 lb/in) after folding. At least one hold point must be below the magnetic stripe, and the cut through the magnetic stripe must be continuous.
7. Continuous forms must have a corner cut in the upper right hand corner of the form. Cut forms do not need a corner cut.

For general forms design considerations, see pages 5 to 10.

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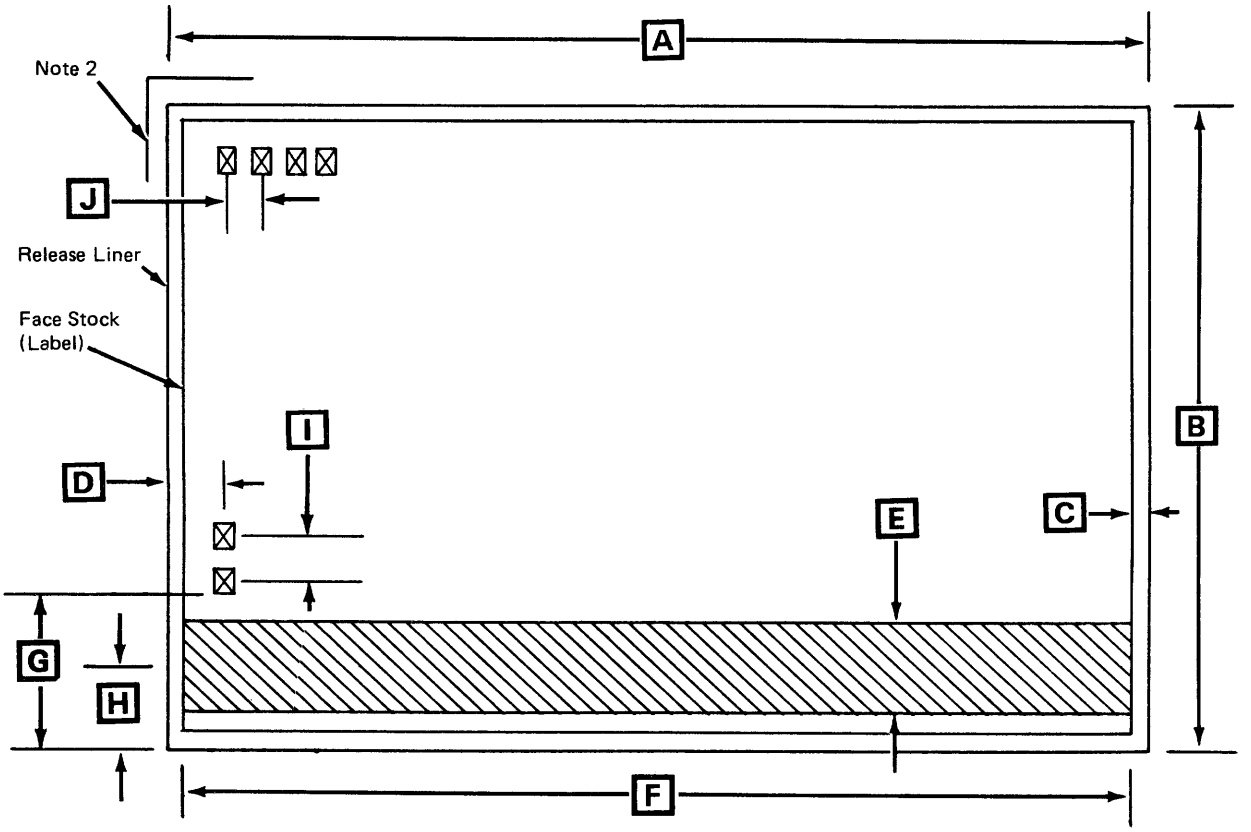
Cut Forms—Pressure Sensitive Labels with Magnetic Stripe (Part 1 of 2)



Magnetic stripe labels are made of a release liner and a face stock which is attached to the release liner by an appropriate adhesive.

A **Release Liner Length**

Maximum: 187.33 ± 0.38 mm (7.375 ± .015 in)
Minimum: 127 ± 0.38 mm (5 ± .015 in)

Note: *Increments must be multiples of 3.175 mm (.125 in).*

B **Release Liner Height:**

82.55 ± 0.38 mm (3.25 ± .015 in)

C Face stock must be 1.57 ± 0.38 mm (.062 ± .015 in) from release liner edges on all sides.

D Centerline of first printable position from the sensing edge of the document is 5.08 + 1.4 - 1.14 mm (.2 + .055 - .045 in).

For general forms design considerations, see pages 5 to 10.

3642 Form Specifications

Cut Forms—Pressure Sensitive Labels with Magnetic Stripe (Part 2 of 2)

Magnetic Stripe

[E] Height: 9.53 ± 0.25 mm (.375 ± .010 in)

[F] Length must be the same as the face stock length.

Form Thickness (including magnetic stripe)

Face stock: 0.117 ± 0.015 mm (.0046 ± .006 in)
Release liner: 0.084 ± 0.01 mm (.0033 ± .0004 in)
Total thickness with adhesive: 0.21 ± 0.02 mm (.0083 ± .0009 in)

[G] Location of bottom of document to bottom of last row of printing is 19.84 mm (.781 in).

[H] Centerline of magnetic stripe to bottom of document is 8.7 ± 0.381 mm (.343 ± .015 in).

[I] Nominal centerline-to-centerline dimension between characters in vertical column is 5.08 mm (.2 in)

[J] Nominal centerline-to-centerline dimension between characters in horizontal row is 2.5 mm (.1 in).

The nominal distance from the bottom edge of the form to a particular print line is:

Print Line Position	Distance from Bottom of Document to Bottom of Print Line	
1	65.56 mm	(2.581 in)
2	60.48 mm	(2.381 in)
3	55.40 mm	(2.181 in)
4	50.32 mm	(1.981 in)
5	45.24 mm	(1.781 in)
6	40.16 mm	(1.581 in)
7	35.08 mm	(1.381 in)
8	30 mm	(1.181 in)
9	24.92 mm	(.981 in)
10	19.84 mm	(.781 in)

The recommended base color in the print area is white. Background colors should conform to the following:

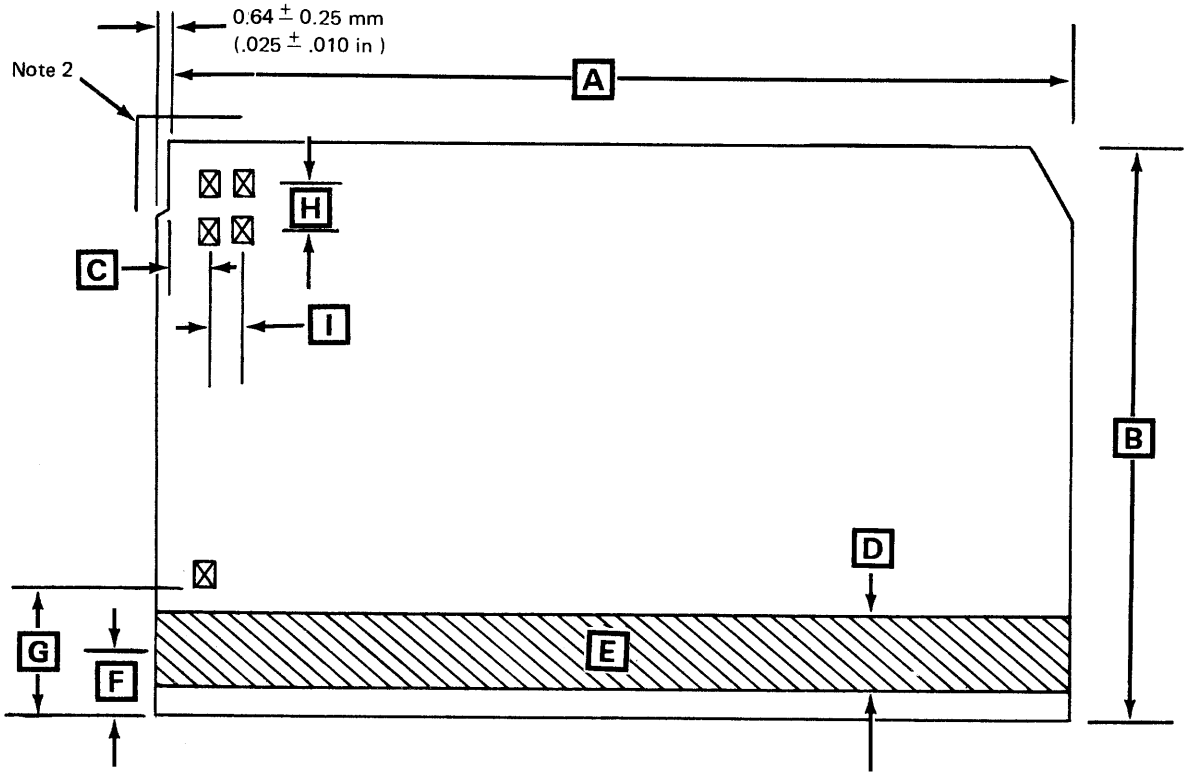
1. Pastels or tints, such as light green, yellow, pink, and orange, are acceptable.
2. Color should be uniform in the area to be printed.
3. Small geometric patterns on white or pastel background are acceptable if the pattern is pastel.
4. Patterns and background may be different shades of the same pastel.
5. Pictures and halftone reproductions and nonpastel colors may result in unsatisfactory ink contrast.

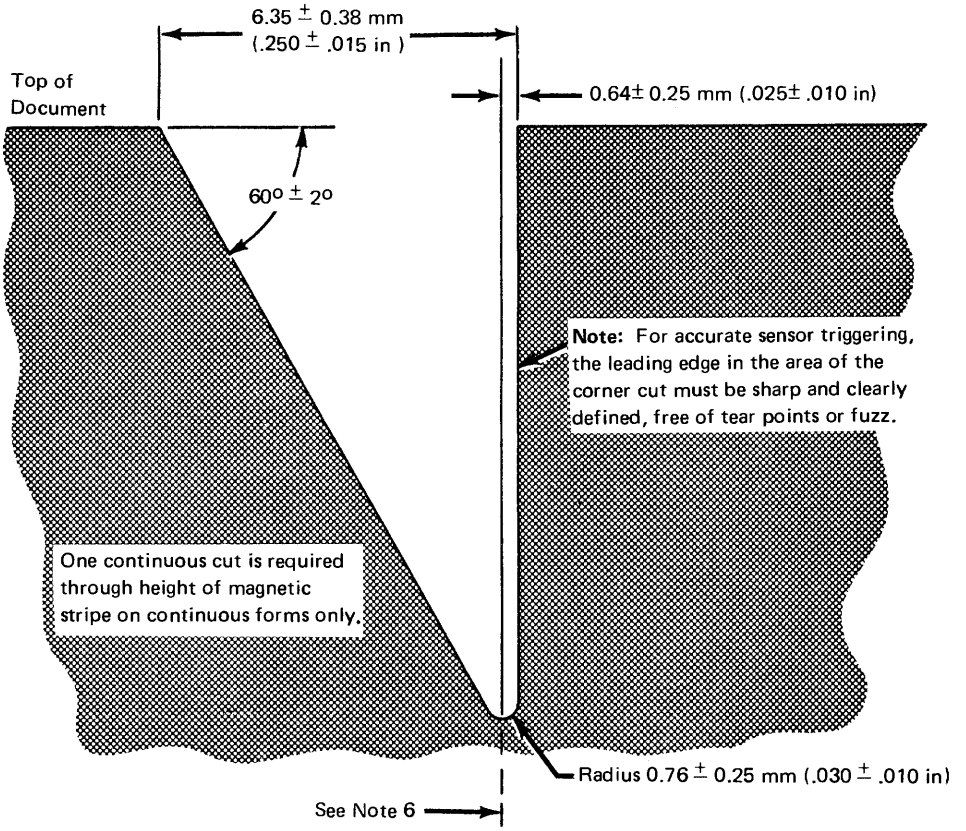
Notes:

1. Multiple-part forms are not recommended. If multiple-part forms are to be used, they must not exceed the maximum forms thickness and must be tested by the customer for satisfactory use.
2. Upper left corner (the sensing edge) should be sharp and clearly defined to ensure a good first column of printing.
3. The clearance from the nominal edge of a 3642-printed character to any preprinted information should be:
   127-mm (5 in) document: 5.08-mm (.2-in) horizontal clearance
   152.4-mm (6-in) document: 6.35-mm (.25-in) horizontal clearance
   187.3-mm (7.375-in) document: 7.62-mm (.3-in) horizontal clearance
   1.78-mm (.07-in) vertical clearance
   0.76-mm (.03-in) clearance from either side of the magnetic stripe.
4. Encoding is possible within first 127 mm (5 in) of the magnetic stripe.
5. Print quality of documents can be affected by the variances in card and paper stock; therefore, sample forms should be evaluated before ordering large quantities.

For general forms design considerations, see pages 5 to 10.

Continuous Forms—Cards with Magnetic Stripe (Part 1 of 3)





Magnetic Stripe Card Corner Cut for Continuous Forms Only

For general forms design considerations, see pages 5 to 10.

3642 Form Specifications

Continuous Forms—Cards with Magnetic Stripe (Part 2 of 3)

A **Form Length**

Maximum: 187.33 ± 0.38 mm (7.375 ± .015 in)
Minimum: 127 ± 0.38 mm (5 ± .015 in)

Note: *Increments must be multiples of 3.175 mm (.125 in).*

B **Form Height:**

82.55 + 0.38 mm (3.25 + .015 in)

C Centerline of first printable position is 2.54 + 1.397 - 1.143 mm (.1 + .055 - .045 in) from the sensing edge.

Magnetic Stripe

D Height: 9.53 ± 0.25 mm (.375 ± .01 in)

E Length must be the same length as form length.

F Center of magnetic stripe to bottom of document is 8.71 ± 0.13 mm (.343 ± .015 in)

Form Thickness (including magnetic stripe)

Maximum: 0.3 mm (.012 in)
Minimum: 0.18 mm (.007 in)

G Location of bottom of document to bottom of last row of printing is 19.84 mm (.781 in).

H Nominal centerline-to-centerline dimension between characters in a vertical column is 5.08 mm (.2 in).

I Nominal centerline-to-centerline dimension between characters in horizontal row is 2.54 mm (.1 in).

The nominal distance from the bottom edge of the form to a particular print line is:

Print Line Position	Distance from Bottom of Document to Bottom of Print Line	
1	65.56 mm	(2.581 in)
2	60.48 mm	(2.381 in)
3	55.40 mm	(2.181 in)
4	50.32 mm	(1.981 in)
5	45.24 mm	(1.781 in)
6	40.16 mm	(1.581 in)
7	35.08 mm	(1.381 in)
8	30 mm	(1.181 in)
9	24.93 mm	(.981 in)
10	19.84 mm	(.781 in)

Card magnetic stripe continuous forms are made with 44.91-kg (99-lb) card stock only.

The recommended base color in the print area is:
Card stock—white or natural

Background colors should conform to the following:

1. Pastels, such as light green, yellow, pink, or orange, are acceptable.
2. Color should be uniform in the area to be printed.
3. Small geometric patterns on white or pastel background are acceptable if the pattern is pastel.
4. Patterns and background may be different shades of the same pastel.
5. Pictures and halftone reproductions and nonpastel colors may result in unsatisfactory ink contrast.

For general forms design considerations, see pages 5 to 10.

3642 Form Specifications

Continuous Forms—Cards with Magnetic Stripe (Part 3 of 3)

Notes:

1. Multiple-part forms are not recommended. If multiple-part forms are to be used, they must not exceed the maximum forms thickness and must be tested by the customer for satisfactory use.
2. Upper left corner (the sensing edge) should be sharp and clearly defined to ensure a good first column of printing.
3. The clearance from the nominal edge of a 3642-printed character to any preprinted information should be:
   127-mm (5-in) document: 5.08-mm (.2-in) horizontal clearance
   152.4-mm (6-in) document: 6.35-mm (.25-in) horizontal clearance
   187.3-mm (7.375-in) document: 7.62-mm (.3-in) horizontal clearance
   1.78-mm (.07-in) vertical clearance
   0.76-mm (.03-in) clearance from either side of the magnetic stripe.
4. Encoding is possible within first 127 mm (5 in) of magnetic stripe.
5. Print quality and bursting of documents can be affected by the variances in card and paper stock; therefore, sample forms should be evaluated before ordering large quantities.
6. The burst strength (straight-pull test) of scores between labels shall not be less than 0.28 N/mm (1.6 lb/in) nor greater than 2.01 N/mm (11.5 lb/in) after folding. At least one hold point must be below the magnetic stripe, and the cut through the magnetic stripe must be one continuous.
7. Continuous forms must have a corner cut in the upper right hand corner of the form. Cut forms do not have this corner cut.

For general forms design considerations, see pages 5 to 10.

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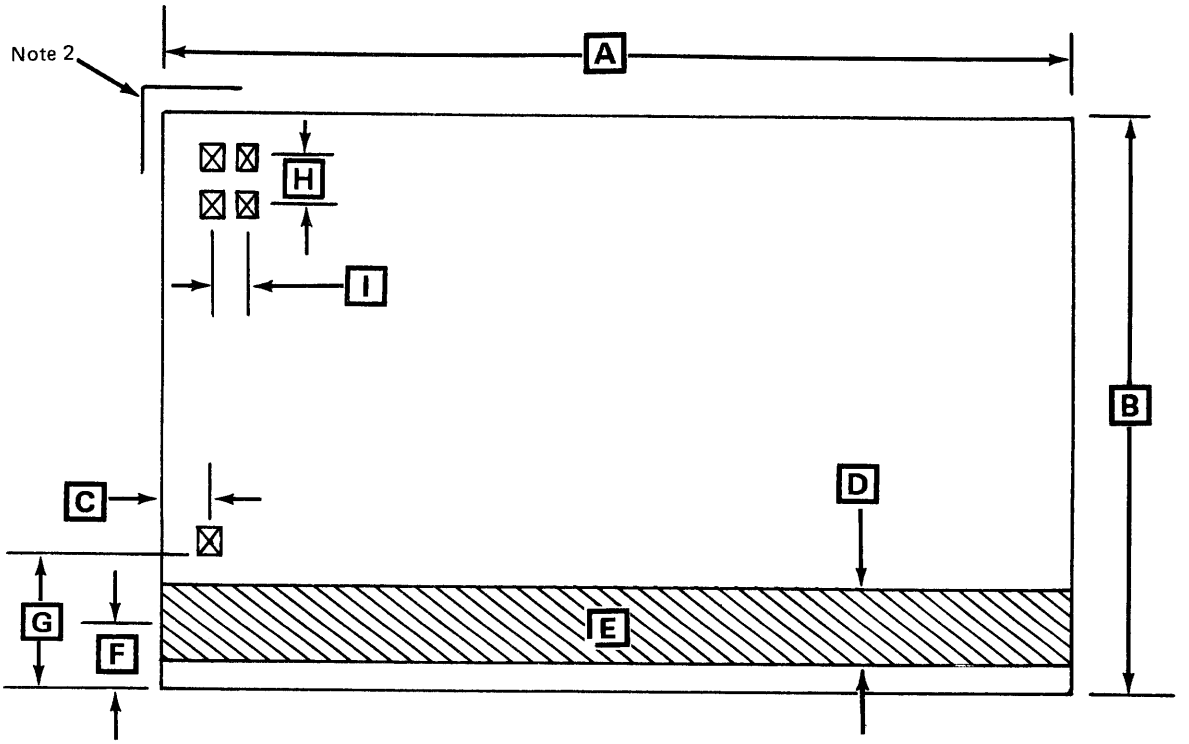
3642 Form Specifications

Cut Forms—Cards with Magnetic Stripe (Part 1 of 2)



A **Form Length**

Maximum: 187.33 ± 0.38 mm (7.375 ± .015 in)
Minimum: 127 ± 0.38 mm (5 ± .015 in)

Note: *Increments must be multiples of 3.175 mm (.125 in).*

B **Form Height**

82.55 + 0.38 mm (3.250 + .015 in)

C Centerline of first printable position is 2.54 + 1.397 - 1.143 mm (.1 + .055 - .045 in) from the sensing edge.

Form Thickness (including magnetic stripe)

Maximum: 0.03 mm (.012 in)
Minimum: 0.18 mm (.007 in)

Magnetic Stripe

D Height: 9.53 ± 0.25 mm (.375 ± .01 in)

E Length must be the same length as form length.

F Center of magnetic stripe to bottom of document is 8.71 ± 0.13 mm (.343 ± .015 in).

G Location of bottom of document to bottom of last row of printing is 19.84 mm (.781 in).

H Nominal centerline-to-centerline dimension between characters in a vertical column is 5.08 mm (.2 in).

I Nominal centerline-to-centerline dimension between characters in horizontal row is 2.54 mm (.1 in).

For general forms design considerations, see pages 5 to 10.

3642 Form Specifications

Cut Forms—Cards with Magnetic Stripe (Part 2 of 2)

The nominal distance from the bottom edge of the form to a particular print line is:

Print Line Position	Distance from Bottom of Document to Bottom of Print Line	
1	65.56 mm	(2.581 in)
2	60.48 mm	(2.381 in)
3	55.40 mm	(2.181 in)
4	50.32 mm	(1.981 in)
5	45.24 mm	(1.781 in)
6	40.16 mm	(1.581 in)
7	35.08 mm	(1.381 in)
8	30 mm	(1.181 in)
9	24.93 mm	(.981 in)
10	19.84 mm	(.781 in)

Card magnetic stripe cut forms are made with 44.91-kg (99-lb) card stock only.

The recommended color in the print area is:

Card stock—white or natural
Tag stock—white

Background colors should conform to the following:

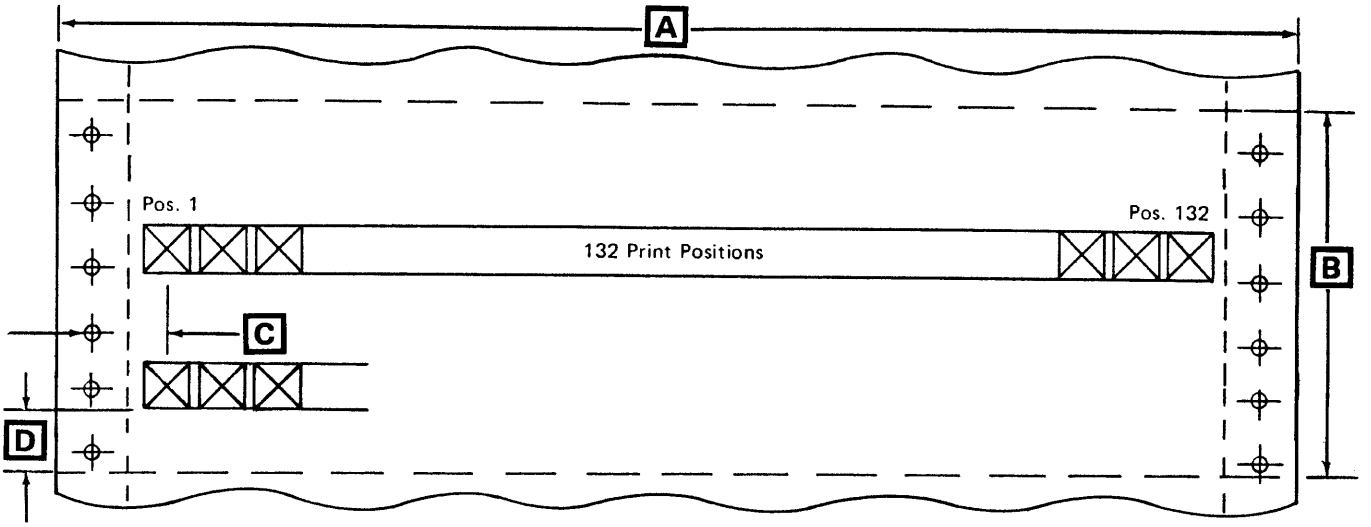
1. Pastels, such as light green, yellow, pink, or orange, are acceptable.
2. Color should be uniform in the area to be printed.
3. Small geometric patterns on white or pastel background are acceptable if the pattern is pastel.
4. Patterns and background may be different shades of the same pastel.
5. Pictures and halftone reproductions and nonpastel colors may result in unsatisfactory ink contrast.

Notes:

1. Multiple-part forms are not recommended. If multiple-part forms are to be used, they must not exceed the maximum forms thickness and must be tested by the customer for satisfactory use.
2. Upper left corner (the sensing edge) should be sharp and clearly defined to ensure a good first column of printing.
3. The clearance from the nominal edge of a 3642-printed character to any preprinted information on a form should be:
   127-mm (5-in) document: 5.08-mm (.2-in) horizontal clearance
   152.4-mm (6-in) document: 6.35-mm (.25-in) horizontal clearance
   187.3-mm (7.375-in) document: 7.62-mm (.3-in) horizontal clearance
   1.78-mm (.07-in) vertical clearance
   0.76-mm (.03-in) clearance from either side of the magnetic stripe.
4. Encoding is possible within first 127 mm (5 in) of magnetic stripe.
5. Print quality of documents can be affected by the variances in card and paper stock; therefore, sample forms should be evaluated before ordering large quantities.

For general forms design considerations, see pages 5 to 10.

3645, 3715, 3767, 3771, 3773, 3774, 4974, 5103, 5256, 5320 A Models Form Specifications (Part 1 of 2)



		Continuous Forms		Cut Forms	
		Maximum	*Minimum*	*Maximum*	*Minimum*
A	**Form Width**	381 mm (15 in)	76.2 mm (3 in)	368.3 mm (14.5 in)	152.4 mm (6 in)
B	**Form Length**	355.6 mm (14 in)	76.2 mm (3 in)	355.6 mm (14 in)	76.2 mm (3 in)

C First print position 13.9 mm (.55 in) maximum, 7.6 mm (.3 in) minimum. The minimum distance for 381 mm (15 in) forms is 10.8 mm (.425 in). A minimum of 9.53 mm (.375 in) if interchangeability with the 3717, 3775, 3784, or 5320B Model is desired.

For cut forms, the nominal distance from the left edge of the form to the center of the first print position is 6.4 mm (.25 in).

Except for the horizontal dimensions to the first print position specified above, no printing should occur within 12.7 mm (.5 in) of any edge, perforation, or fold of forms.

D For cut forms, the minimum distance from the bottom of the last print line to the bottom of the form is 12.7 mm (.5 in).

For general forms design considerations, see pages 5 to 10.

3645, 3715, 3767, 3771, 3773, 3774, 4974, 5103, 5256, 5320 A Models Form Specifications (Part 2 of 2)

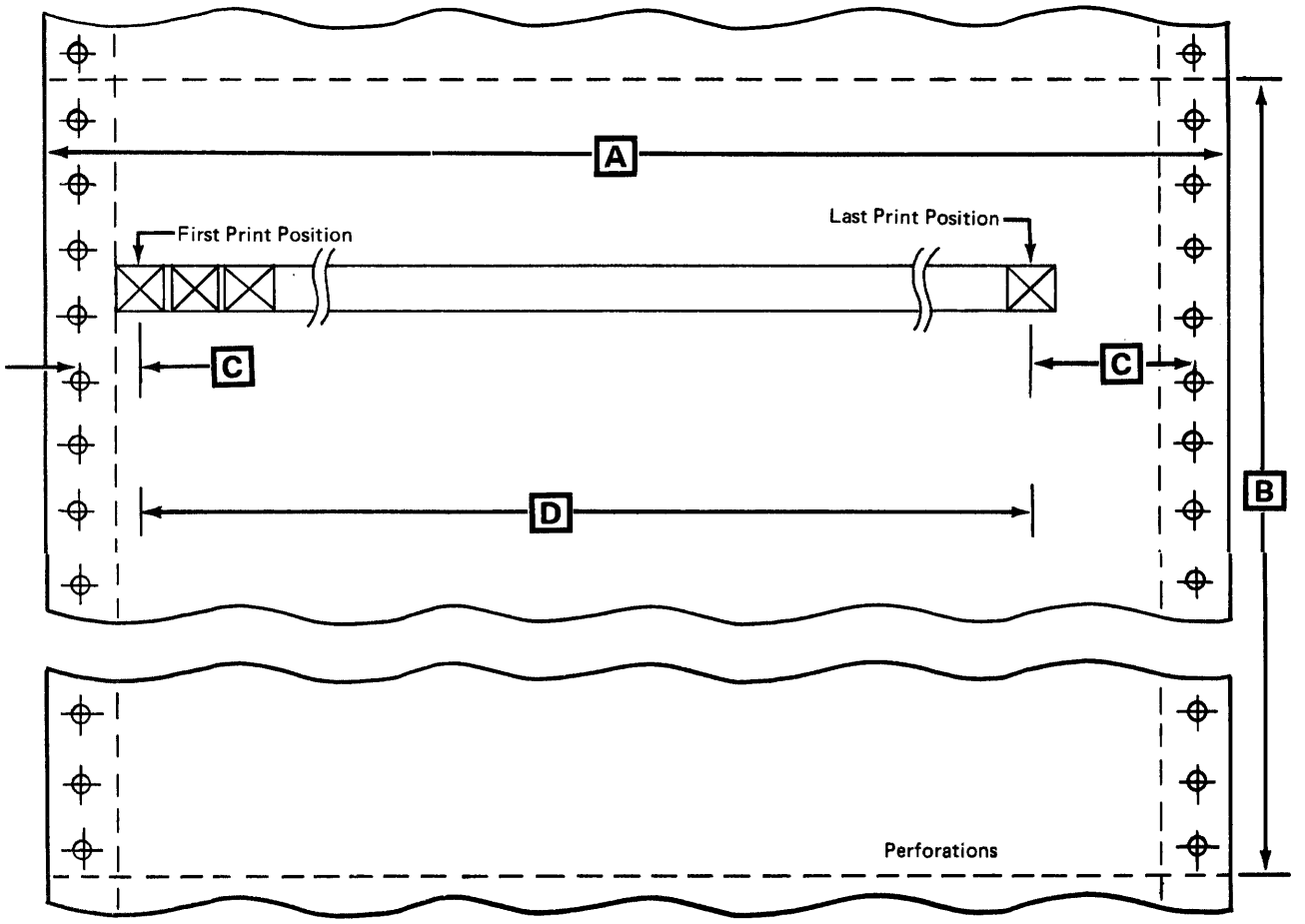
Notes:

1. Continuous card stock forms are generally not recommended. (For the 5256 and 5320 A only, see *IBM System/32 Membership and Mailing List System Design Objectives,* GH30-0010, or *Design Specifications,* GH30-0012 for card stock specifications approved for this Industry Application Program or other user applications with card stock requirements that meet such specifications.)
2. Staples are not permitted.
3. Multiple-part cut forms (form sets) must be glued together at the top.
4. Partial forms separation is not permitted.
5. Crimped multiple-part cut forms are not recommended because they tend to separate when wrapped around the platen.
6. Carbon or self-contained carbonless (ink-impregnated) forms are recommended for multiple-part continuous forms.
7. Using the forms tractor is recommended for feeding all edge-punched continuous forms.
8. Continuous single-part forms can be fed through the pressure-feed mechanism if the feeding paths are clear and the forms are kept straight. However, forms that are not kept straight require periodic operator adjustment.
9. The maximum multiple-part forms thickness is 0.46 mm (.018 in). The maximum single-part forms thickness is 0.19 mm (.0075 in).
10. The print head should not be required to travel beyond the edges of the form or across any punched holes in the form.
11. Up to six-part continuous part forms may be used; however, for optimum feeding and stacking, a maximum of four parts is recommended. Five- or six-part forms should be tested by the customer for satisfactory feeding, registration, and print quality.

For general forms design considerations, see pages 5 to 10.

3736 Form Specifications

Continuous Forms



		Maximum	*Minimum*
A	**Form Width**	381 mm (15 in)	63.5 mm (2.5 in)
B	**Form Length**	355.6 mm (14 in) with paper stacker/tray.	

C If the form has no tear strip, the center of the first and last print positions should be at least 3.8 mm (.15 in) from the centerline of the margin holes.

D Maximum carrier movement is 332.7 mm (13.1 in).

Maximum forms set thickness is 0.51 mm (.02 in).

Maximum number of copies is five plus one original.

	Maximum	*Minimum*
Paper Weight		
Single-part	90 g/m^2 (24 lb)	60 g/m^2 (16 lb)
Multiple-part	90 g/m^2 (24 lb)	45 g/m^2 (12 lb)

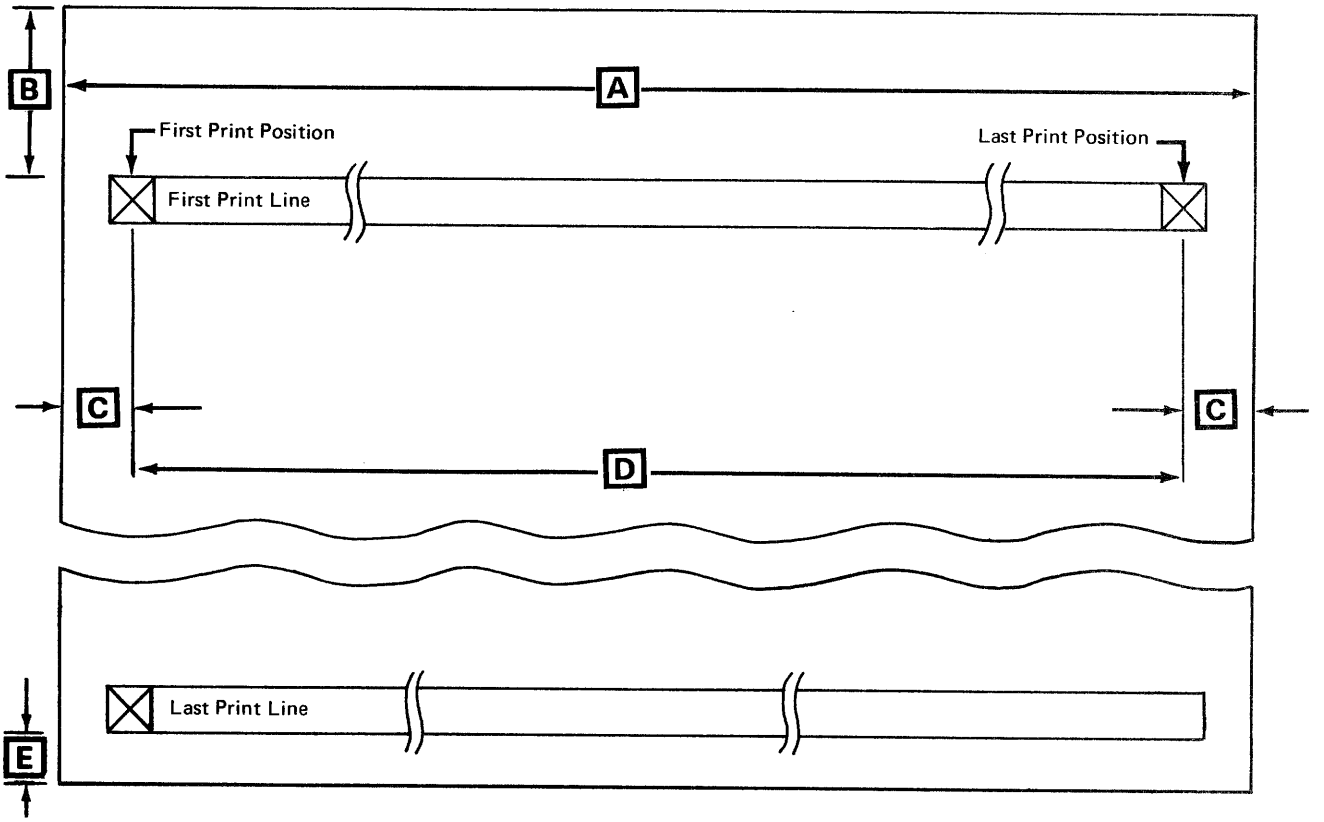
Notes:

1. The end-of-forms sensor is 2.54 (.1 in) to the left of the first character position. To avoid false end-of-forms detection, a left margin of 12.7 mm (.5 in) minimum is required.
2. All plies and carbons of multiple-part paper should be fastened securely along both sides to prevent separation of individual plies. Spot-crimping may cause uneven line spacing and paper jams because of ply separation.
3. The customer should test samples of multiple-part forms before ordering large quantities.
4. Rolls of forms should not be less than 12.7 mm (.5 in) inside diameter, nor greater than 95.3 mm (3.75 in) outside diameter.

For general forms design considerations, see pages 5 to 10.

3736 Form Specifications

Cut Forms—Single- or Multiple-Part



A **Form Width** is 381 mm (15 in) maximum.

B Minimum distance between the top edge of the form and the top of the first print line:
Without manual intervention: 19.1 mm (.75 in)
With manual intervention: 12.7 mm (.5 in).

When printing is to begin less than 19.1 mm (.75 in) from the top edge of the form, the forms require operator intervention as the leading ledge of the paper is fed past the forms bail rollers.

Printing within the top 12.7 mm (.5 in) of the form is permitted but only if left and right margins are a minimum of 12.7 mm (.5 in). This avoids the paper becoming trapped in the card guide.

C Minimum distance from the first or last print position to edge of form is 2.54 mm (.1 in).

D Maximum carrier movement is 332.7 mm (13.1 mm).

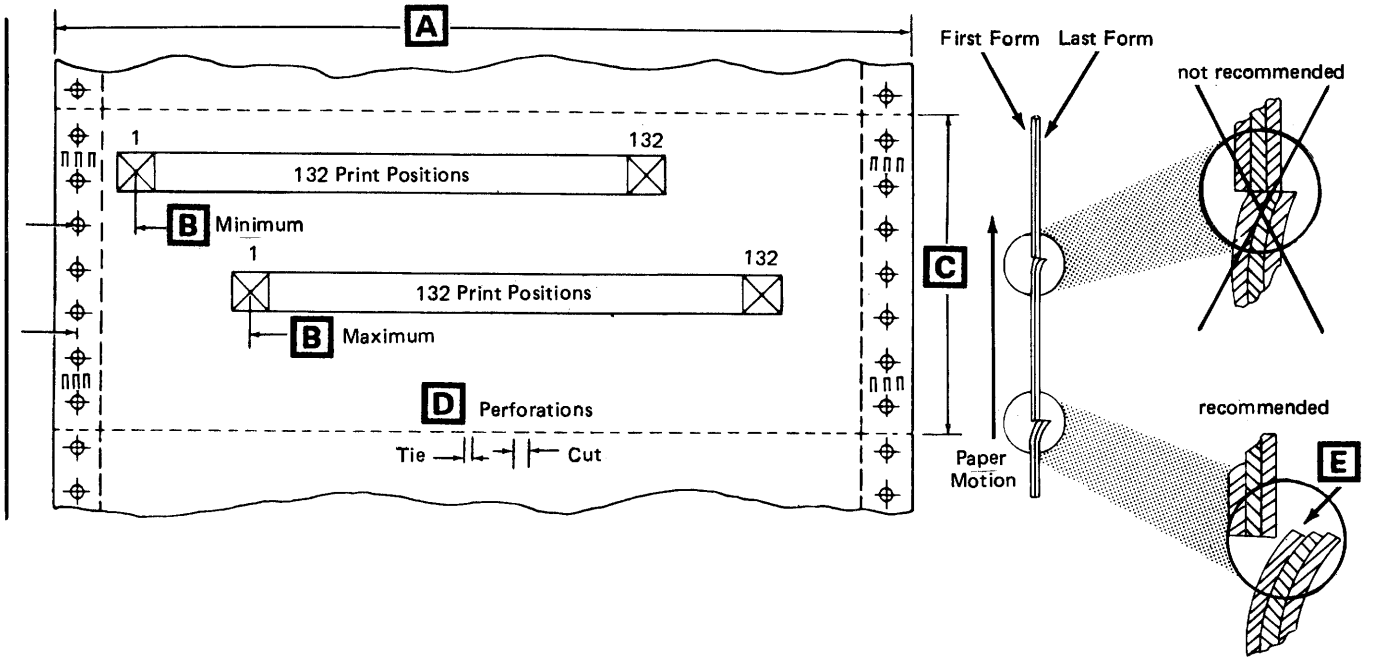
E Minimum recommended distance from the bottom of the last print line to the bottom edge of the form is 25.4 mm (1 in). Printing within the bottom 25.4 mm (1 in) of the form is permitted, but print registration can be seriously affected.

Notes:

1. Maximum forms thickness is 0.51 mm (.02 in) including carbons.
2. Maximum number of copies is five plus one original.
3. Forms less than 139.7 mm (5.5 in) in length are difficult to insert and align.

For general forms design considerations, see pages 5 to 10.

4245 Form Specifications (Part 1 of 2)



A Form Width

	B *Maximum*	B *Minimum*	*Comment*
559 mm (22 in)	119.4 mm (4.7 in)	113 mm (4.45 in)	Maximum form width; minimum tractor movement
451.6 mm (17.78 in)	119.4 mm (4.7 in)	7.6 mm (.3 in)	Full flexibility and range of line location.
88.9 mm (3.5 in)		7.6 mm (.3 in)	Minimum form width; full range of tractor movement.

C Form Length

	Maximum	*Minimum*	
	609.6 mm (24 in)	76.2 mm (3 in)	Minimum fold-to-fold length: 152.4 mm (6 in)

D Perforations

For best stacking results with forms consisting of four or more parts, the following perforation dimensions are recommended:

	Maximum	*Minimum*
Tie	1.6 mm (.063 in)	0.7 mm (.028 in)

The following tie-to-cut ratios are recommended (to provide sharp folds required for best stacking results):

Tie-to-cut ratio four-part forms	1 : 3 or 4
Tie-to-cut ratio five- or six- part forms	1 : 3.5 or 4

E Crimping

Crimping should be in the direction of paper motion as shown. The crimp of the first form must extend behind the last form.

Other methods of crimping may result in forms separation and stacking problems and should be tested for satisfactory performance.

For general forms design considerations, see pages 5 to 10.

4245 Form Specifications (Part 2 of 2)

Notes and Recommendations

1. Form Feeding:
   a. Form lengths greater than 356 mm (14 in) require that the acoustic enclosure remain open.
   b. Form lengths greater than 432 mm (17 in) require that the front door remain open.
   c. For effective stacking, the recommended flat-fold length is 203 to 305 mm (8 to 12 in). Short forms should be grouped to improve stacking efficiency.
   d. The printer is program-controlled and can print at either 6 or 8 lines-per-inch.
   e. No printing may occur within 12.7 mm (.5 in) of the horizontal perforation (it may cause folding problems in the stacker).
2. Multiple-part forms should be fastened securely on both sides and only in the margin areas. Single-side fastening is not recommended; however, if this method is used, the fastening must be on the right side. Carbons must also be fastened on the right-hand side.

   Multiple-part forms of three or more parts intended for use in relative humidity near 80% should be fastened on both margins, with four elements per form.

   Thickness variations within multiple-part forms must be within 0.3 mm (.012 in). This applies to forms where not all layers are the same size.
3. Forms should be free of margin-hole chad.
4. No hard or metallic fasteners are permitted.
5. Composite form set thickness should not exceed 0.51 mm (.02 in). The 4245 prints on continuous forms consisting of one to four parts (copies). Forms consisting of more than four parts should be tested under operating conditions to determine acceptability. Satisfactory legibility may require adjustment of the paper and carbon specifications with regard to weight and smoothness. Lighter weight forms and carbon paper result in better performance.

   Ribbon smudging may occur as form set approaches maximum thickness.
6. A leader is normally required for prenumbered forms.
7. Forms with labels are permitted as long as the adhesive is completely covered by the label.

   These forms must be tested to ensure proper feeding without label peeling.
8. For best results with 5- and 6-part forms, carbonless paper is recommended.

   Carbonless forms:

Paper weight:	
Top sheet:	56 g/m^2 (15 lb/17 x 22 inch — 500-sheet ream)
Inner sheets:	43 g/m^2 (11.5 lb/17 x 22 inch — 500-sheet ream)
Last sheet:	56-58 g/m^2 (15-15.5 lb/17 x 22 inch — 500-sheet ream)
Maximum thickness:	0.38 mm (.015 in)
Form type:	Coated back/Coated front (CB-CF)
Forms fastening:	Forms must be fastened so that individual forms do not separate while feeding through the printer.

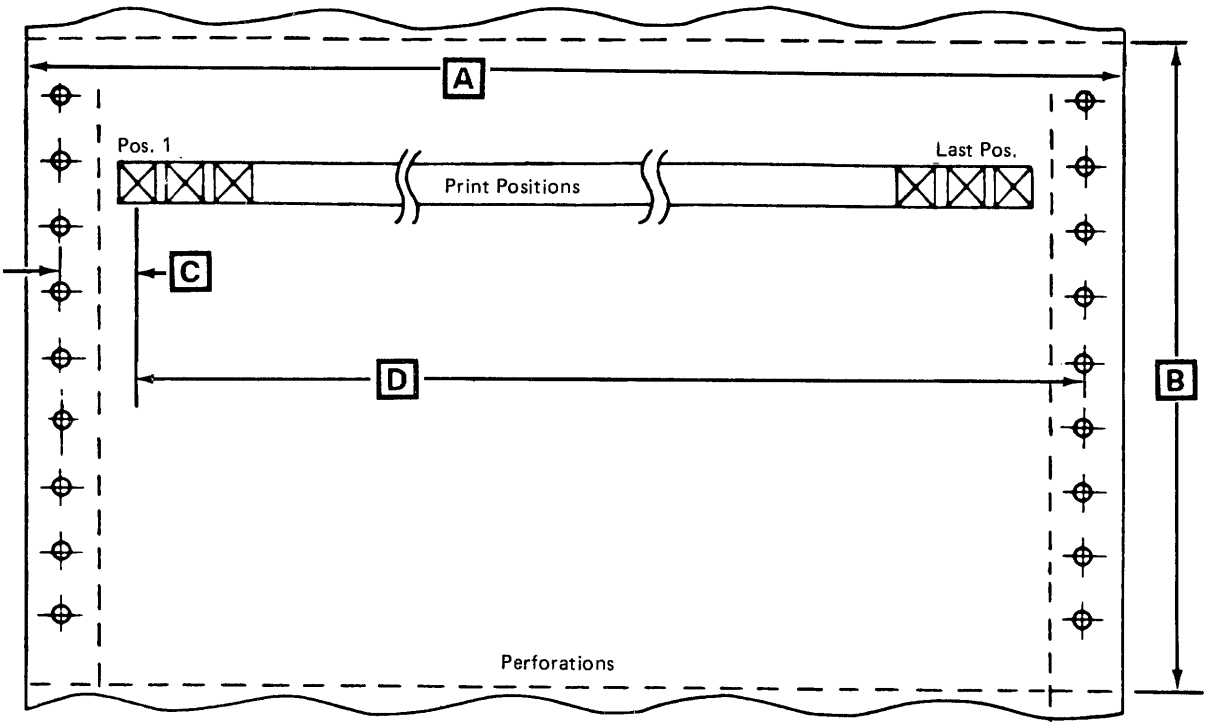
9. Single-part form weight:

Maximum:	130 g/m^2 (35 lb/17 x 22 inch — 500-sheet ream)
Minimum:	55 g/m^2 (14.8 lb/17 x 22 inch — 500-sheet ream)

10. Perforated card stock weight:

Recommended:	160 g/m^2 (99 lb/24 x 36 inch — 500-sheet ream)

4248 Model 1 Form Specifications (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**	476.3 mm (18.75 in)	88.9 mm (3.5 in)
B	**Form Length**	431.8 mm (17 in)	152.4 mm (6 in) (Fold to Fold)
C	**First Print Position**		
	Form width up to 462.2 mm (18.19 in):	69.9 mm (2.75 in)	6.4 mm (.25 in)
	Form width 476.3 mm (18.75 in)	69.9 mm (2.75 in)	20.5 mm (.81 in)

D The maximum distance from center of the first print position to the centerline of the right margin holes is 443.8 mm (17.47 in).

For general forms design considerations, see pages 5 to 10.

4248 Model 1 Form Specifications (Part 2 of 2)

Recommendations

1. Prenumbered documents should have leaders.
2. Margin holes should be free of chad to avoid false form checks and form jams.
3. Multiple Parts:
   a. Should be securely fastened on both edges — preferably, with a four-element fastening arrangement. Single-side fastening is not recommended. However, if this method is used, fastening must be on the right side.
   b. Carbons should be fastened on both sides. If single-side fastening is used, carbons must be fastened on the right side.
   c. No metallic or hard fasteners permitted.
   d. Maximum form set thickness is 0.5 mm (.02 in). Ribbon smudging may occur as form set approaches maximum thickness.
4. Before use, forms should be conditioned for a minimum of 48 hours in an atmosphere similar to that of the intended working humidity.
5. Paper colors vary in reflectivity; this reflectivity can reduce the contrast between paper and the absence of paper. This contrast is required for a photosensitive, form-motion detection device. Relatively nonreflective colors (such as dark gray, dark blue, etc.), markings, or printing must not be used on the back side of the left tear strip (or the area around pin feed holes), or false form checks may result.

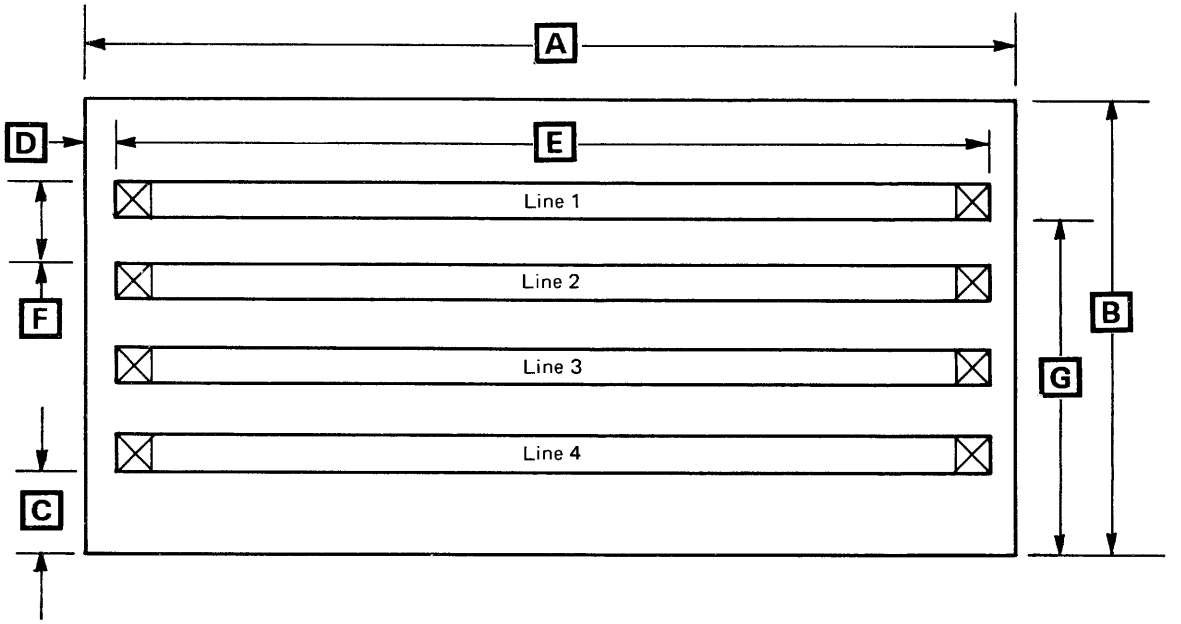
   Relatively nonreflective colors, markings, etc., and cutouts with lengths greater than 13 mm (.51 in) are not permitted 31 to 36 mm (1.22 to 1.417 in) from the center of the left margin holes, or a false end-of-forms indication may result.
6. Card Stock
   a. Single-part, fanfold card forms not exceeding a weight of 162.7 g/m^2 and 0.23 mm (.009 in) may be used.
   b. Operator attention may be required to assure proper stacking of card stock forms.
7. Minimum weight for single-part forms is 56 g/m^2 (15 lb/ream 17" x 22").
8. Avoid printing on horizontal perforations. Print quality may deteriorate when printing occurs within 12.7 mm (.5 in) of horizontal perforations.
9. Print quality, form feeding, and form stacking are affected by variance in card, paper stock, and environment (temperature and humidity). Also, the high-performance carriage accelerates and decelerates the forms at very high rates, and increases the susceptibility of the forms to pin-feed hole damage and forms separation. Maximum of two-part form set recommended in high-speed mode.

   Although most forms can be processed satisfactorily, all forms should be tested under operating conditions to ensure acceptable printer processing before ordering large quantities.

   Modifications to form fastening techniques, perforations, stiffness, and paper quality can often overcome form processing difficulties.

4710 Form Specifications

Cut Forms (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**	229 mm (9 in)	74 mm (2.9 in)
B	**Form Length**	152 mm (6 in)	68 mm (2.7 in)

C Bottom margin is 20 mm (.79 in) minimum.

D Document edge to edge of first character is 6.4 mm (.25 in) minimum.

E Maximum line length is 102 mm (4 in)

Print positions:	40 at 10 cpi
	48 at 12 cpi

F Nominal line spacing at 6 lines per inch is 4.3 mm (.17 in).

G Bottom of form to bottom of line 1 is 33 mm (1.3 in) nominal.

For general forms design considerations, see pages 5 to 10.

4710 Form Specifications

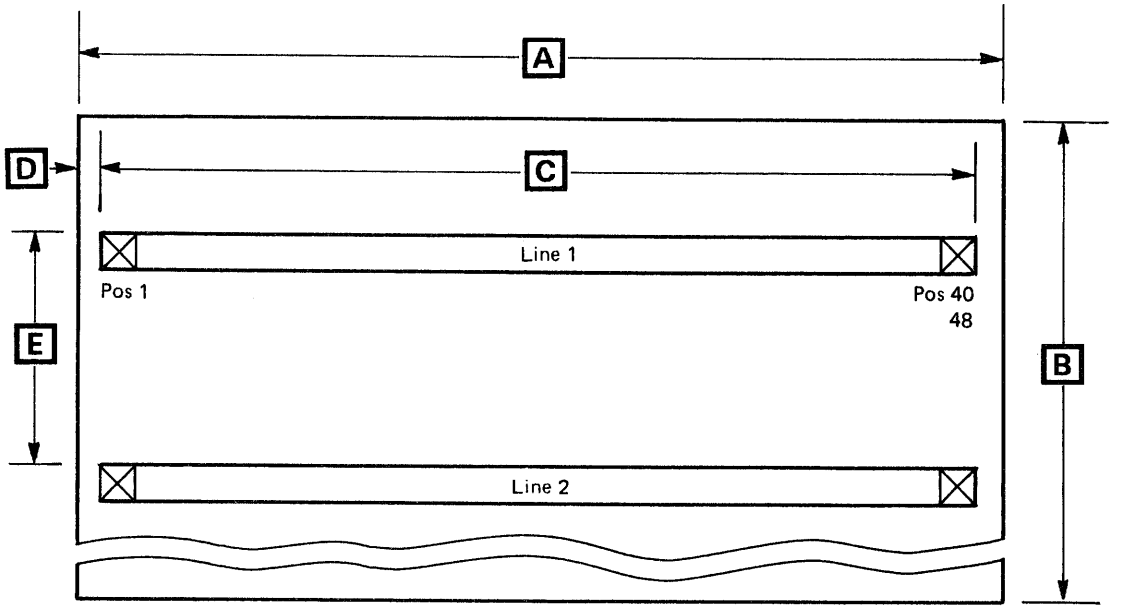
Cut Forms (Part 2 of 2)

Notes and Recommendations:

1. Form thickness is 0.076 mm (.003 in) minimum and 0.432 mm (.017 in) maximum. Maximum thickness applies to any combination of journal and cut forms.
2. A maximum of three-part cut forms may be used with single-ply journal paper. A maximum of two-part cut forms may be used with with two-ply journal paper.
3. Card stock 0.18 to 0.254 mm (.007 to .01 in), if used, must be the last copy in the forms set. Printing on either single- or two-part journal may be obscured when card stock is used as a part of the cut form.
4. All parts of a multiple-part cut form must have the same perimeter dimensions. Stepped or shingled edges are not permitted.
5. Forms must have a well-defined bottom edge.
6. Multiple-part forms can be fastened at the bottom, top, left, or right edges.
7. Metal fasteners or staples are NOT permitted.
8. Printing is not permitted within 6.4 mm (.25 in) of the area used for fastening.
9. Holes, perforations, or foreign materials are not permitted anywhere in the printing area.
10. Thin multiple-part carbon forms or sets using action or self-contained carbonless or spot carbon papers are sensitive to clamping mechanism marking or smudging.
11. Forms exceeding the maximum perimeter dimensions can result in unacceptable feeding and skewed print lines.
12. Cut forms constructed of combined paper types may cause smudged or bleeding characters and skewed or misregistered print lines.
13. All cut forms should be tested to ensure acceptable printer processing and satisfactory print quality before ordering large quantities.
14. Paper colors vary in reflectivity and may reduce contrast to the platen surface. This contrast is required for a photosensitive device that detects the edge of the form. Relatively nonreflective colors, such as dark gray, dark blue, etc., or markings or printing, must not be used between the defined end of the print line and the edge of the form or false edge detection may result.

For general forms design considerations, see pages 5 to 10.

Journal/Roll Forms (Part 1 of 2)



		One-Part Nominal	*Two-Part Nominal*
A	**Form Width**	114.3 mm (4.5 in)	114.3 mm (4.5 in)
B	**Form Length**	30.5 m (100 ft)	15.24 m (50 ft)
C	Maximum line length is 102 mm (4.0 in)		
	Print positions:	40 at 10 cpi 48 at 12 cpi	
D	Document edge to edge of first character is 6.4 mm (.25 in) nominal.		
E	Line spacing at 6 lines per inch is 4.3 mm (.17 in) nominal.		

For general forms design considerations, see pages 5 to 10.

4710 Form Specifications

Journal/Roll Forms (Part 2 of 2)

Notes and Recommendations:

1. Maximum journal/roll diameter is 63.5 mm (2.5 in). Journal end must be fastened to the core or hub by looping around the core or hub with the paper bonded to itself (inside ply when using two-part paper).
2. Paper weight: 41 to 56 g/m^2 (11 to 15 lb).
3. Paper thickness:

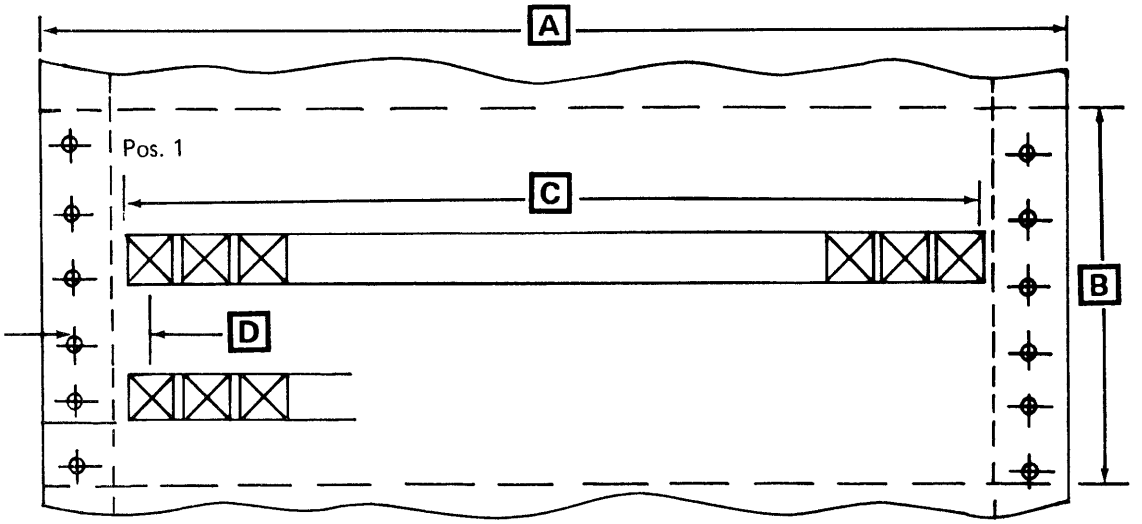
	Maximum	*Minimum*
Single-part	0.091 mm (.0036 in)	0.081 mm (.0032 in)
Two-part	0.183 mm (.0072 in)	0.163 mm (.0064 in)

4. When cut forms are placed in front of the journal, the maximum thickness of the cut form/journal must not exceed .432 mm (.017 in).
5. Cut forms containing card stock may cause journal printing to be obscured.
6. Journal paper must be single-part or two-part, uncoated, self-contained, carbonless paper.
7. Bond paper is not recommended.
8. The entire length of the paper roll shall be free of splices and tears.
9. Nominal journal/roll core diameter is 22.2 mm (.875 in) outside and 11.1 mm (.438 in) inside.
10. Journal/roll paper should be overprinted in red to indicate the last 910 to 1200 mm (3 to 4 ft).

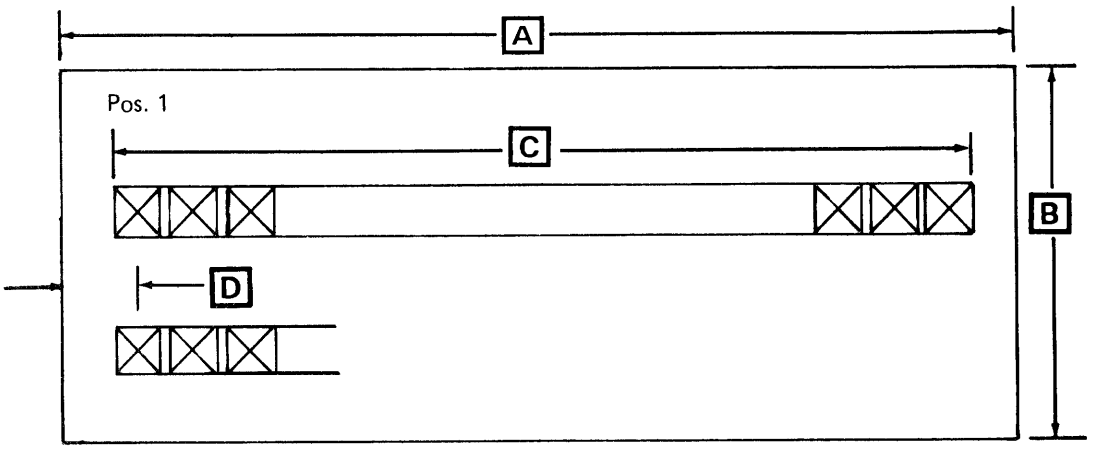
For general forms design considerations, see pages 5 to 10.

4975 Models 01L and 01R Form Specifications (Part 1 of 2)

Continuous Forms



Cut Forms



		Continuous Forms		Cut Forms	
		Maximum	*Minimum*	*Maximum*	*Minimum*
A	**Form Width**	381 mm (15 in)	76.2 mm (3 in)	304.8 mm (12 in)	146.1 mm (5.75 in)
B	**Form Length**	355.6 mm (14 in)	76.2 mm (3 in)	355.6 mm (14 in)	76.2 mm (3 in)
C	**Print Positions**	132 at 10 cpi 198 at 15 cpi			

D For continuous forms, the first print position is 11.4 mm (.45 in) maximum and 7.6 mm (.3 in) minimum from the center of the feed holes to the center of the first position. The minimum distance for 381 mm (15 in) forms is 10.8 mm (.425 in). No printing should occur within 12.7 mm (.5 in) of any edge, perforation, crimp, or fold.

For cut forms, the first print position is 7.1 mm (.28 in) maximum and 4.6 mm (.18 in) minimum from the left edge of the form to the center of the first position. For normal operation, the recommended minimum distance to the first printed position on a page is 19.1 mm (.75 in) from the left edge of the form. No printing should occur within 19.1 mm (.75 in) of any other edge (top, bottom, or right) or perforation (horizontal or vertical).

For general forms design considerations, see pages 5 to 10.

4975 Models 01L and 01R Form Specifications (Part 2 of 2)

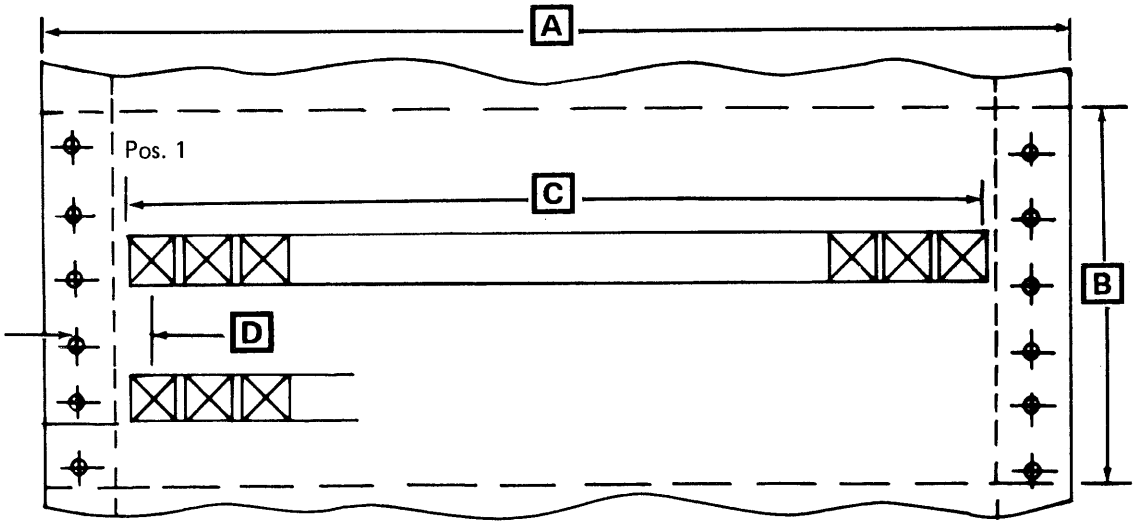
Notes:

1. Single-part forms should weigh 56 to 90 g/m^2 (15 to 24 lb) a ream. Heavier single-part continuous forms may be tested for satisfactory print quality, feeding, stacking, and registration.
2. Card stock forms are not recommended.
3. Staples are not permitted.
4. Roll forms are not permitted.
5. Multiple-part cut forms (form sets) must be glued together at the leading edge.
6. Stepped or shingled edges are not recommended.
7. Crimped multiple-part cut forms are not recommended because they can separate when wrapped around the platen.
8. Continuous forms must be edge punched and require use of forms tractor.
9. Recommended minimum continuous form width is 127 mm (5 in). A minimum form width of 76.2 mm (3 in) may be used; however, forms less than 127 mm (5 in) wide should be tested for satisfactory feeding, stacking, and print quality.
10. The maximum single-part forms thickness is 0.13 mm (.005 in). The maximum multiple-part forms thickness is 0.41 mm (.016 in).
11. The minimum forms thickness is .08 mm (.003 in).
12. A maximum of four-part continuous forms or four-part cut forms may be used.
13. Forms should be designed so that the print head is not required to travel beyond the edges of the form or across holes punched in the form.
14. Linear indexing (line spacing) increases as a document thickness increases; therefore, consideration must be taken when designing preprinted multiple-part cut forms.
15. Print quality is affected by the variance in paper stock, carbon stock, and environment (temperature and humidity). Sample forms should be evaluated in the user environment to determine whether performance criteria are met before ordering large quantities.
16. Cut form specifications apply to forms to be used with document insertion device.

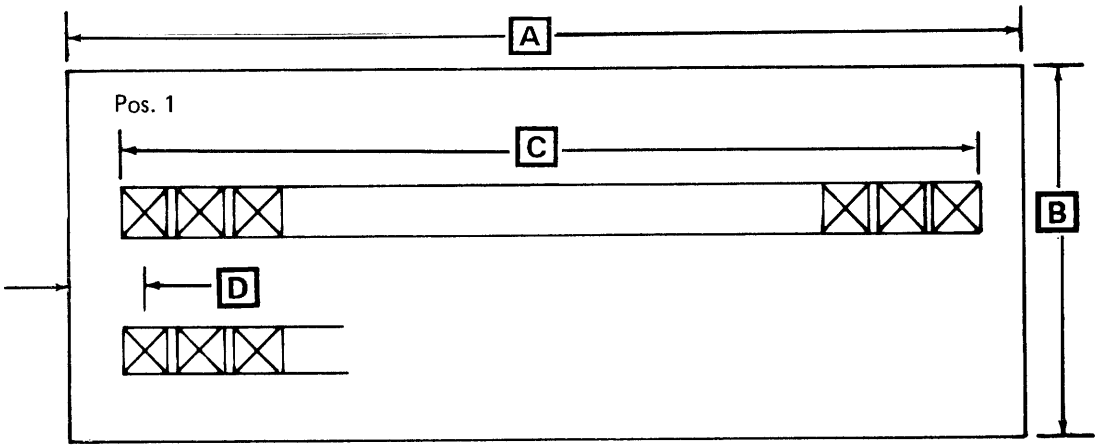
For general forms design considerations, see pages 5 to 10.

4975 Models 02L and 02R Form Specifications (Part 1 of 2)

Continuous Forms



Cut Forms



		Continuous Forms		Cut Forms	
		Maximum	*Minimum*	*Maximum*	*Minimum*
A	**Form Width**	381 mm (15 in)	76.2 mm (3 in)	304.8 mm (12 in)	146.1 mm (5.75 in)
B	**Form Length**	355.6 mm (14 in)	76.2 mm (3 in)	355.6 mm (14 in)	76.2 mm (3 in)
C	**Print Positions**	132 at 10 cpi 198 at 15 cpi			

D For continuous forms, the first print position is 11.4 mm (.45 in) maximum and 7.6 mm (.3 in) minimum from the center of the feed holes to the center of the first position. The minimum distance for 381 mm (15 in) forms is 10.8 mm (.425 in). No printing should occur within 12.7 mm (.5 in) of any edge, perforation, crimp, or fold.

For cut forms, the first print position is 7.1 mm (.28 in) maximum and 4.6 mm (.18 in) minimum from the left edge of the form to the center of the first position. For normal operation, the recommended minimum distance to the first printed position on a page is 19.1 mm (.75 in) from the left edge of the form. No printing should occur within 19.1 mm (.75 in) of any other edge (top, bottom, or right) or perforation (horizontal or vertical).

For general forms design considerations, see pages 5 to 10.

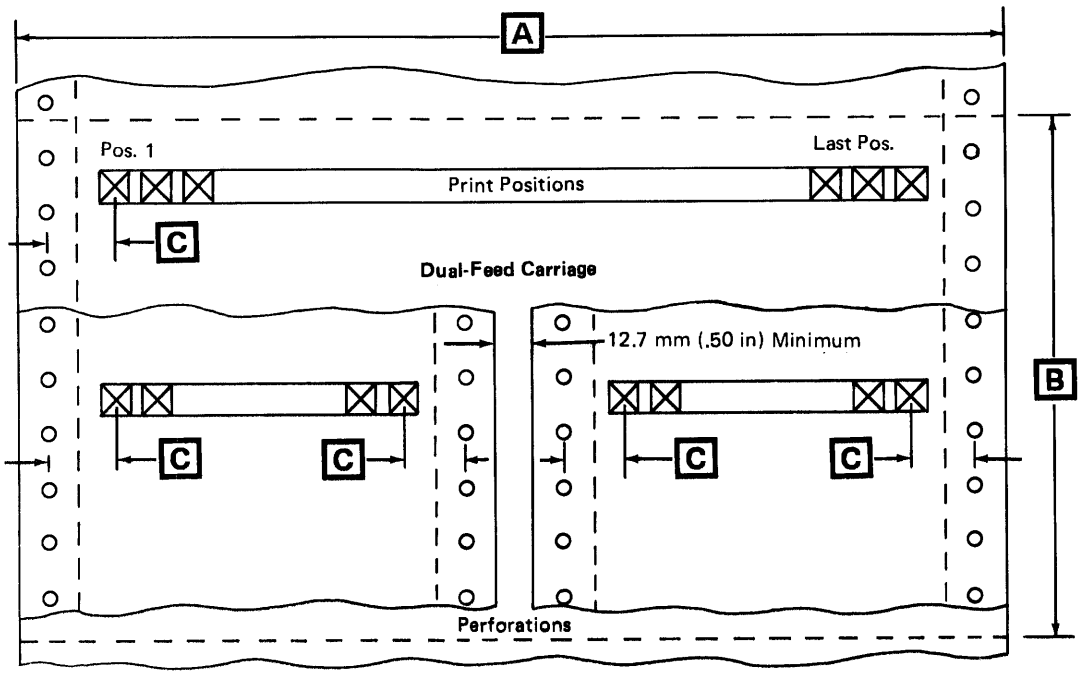
4975 Models 02L and 02R Form Specifications (Part 2 of 2)

Notes:

1. Single-part forms should weigh 56 to 90 g/m^2 (15 to 24 lb) a ream. Heavier single-part continuous forms may be tested for satisfactory print quality, feeding, stacking, and registration.
2. Card stock forms are not recommended.
3. Staples are not permitted.
4. Roll forms are not permitted.
5. Multiple-part cut forms (form sets) must be glued together at the leading edge.
6. Stepped or shingled edges are not recommended.
7. Crimped multiple-part cut forms are not recommended because they can separate when wrapped around the platen.
8. Continuous forms must be edge punched and require use of forms tractor.
9. Recommended minimum continuous form width is 127 mm (5 in). A minimum form width of 76.2 mm (3 in) may be used; however, forms less than 127 mm (5 in) wide should be tested for satisfactory feeding, stacking, and print quality.
10. The maximum single-part forms thickness is 0.13 mm (.005 in). The maximum multiple-part forms thickness is 0.41 mm (.016 in) for cut forms, 0.46 mm (.018 in) for continuous forms.
11. The minimum forms thickness is .08 mm (.003 in).
12. A maximum of four-part continuous forms or four-part cut forms may be used.
13. Forms should be designed so that the print head is not required to travel beyond the edges of the form or across holes punched in the form.
14. Linear indexing (line spacing) increases as a document thickness increases; therefore, consideration must be taken when designing preprinted multiple-part cut forms.
15. Print quality is affected by the variance in paper stock, carbon stock, and environment (temperature and humidity). Sample forms should be evaluated in the user environment to determine whether performance criteria are met before ordering large quantities.
16. Cut form specifications apply to forms to be used with document insertion device.

For general forms design considerations, see pages 5 to 10.

5203 Form Specifications (Part 1 of 2)



For general forms design considerations, see pages 5 to 10.

5203 Form Specifications (Part 2 of 2)

	Maximum	*Recommended (Permits Full Width Adj)*	*Minimum*
A Form Width			
Single-Feed Carriage	511.2 mm (20.125 in)	425.5 mm (16.75 in)	98.4 mm (3.875 in)
Dual-Feed Carriage			
Single Form	482.6 mm (19 in)	406.4 mm (16 in)	98.4 mm (3.875 in)
Dual Forms (total includes unused distance between forms)			
132 Print Pos.	495.3 mm (19.5 in)	409.6 mm (16.125 in)	98.4 mm (3.875 in)
120 Print Pos.	495.3 mm (19.5 in)	377.8 mm (14.875 in)	98.4 mm (3.875 in)
96 Print Pos.	495.3 mm (19.5 in)	317.5 mm (12.5 in)	98.4 mm (3.875 in)
B Form Length (6 lpi)	558.8 mm (22 in)	355.6 mm (14 in)	76.2 mm (3 in)

C If form has a tear strip, the centerline of the first and last print positions should be at least 9.5 mm (.375 in) from the centerline of the margin holes.

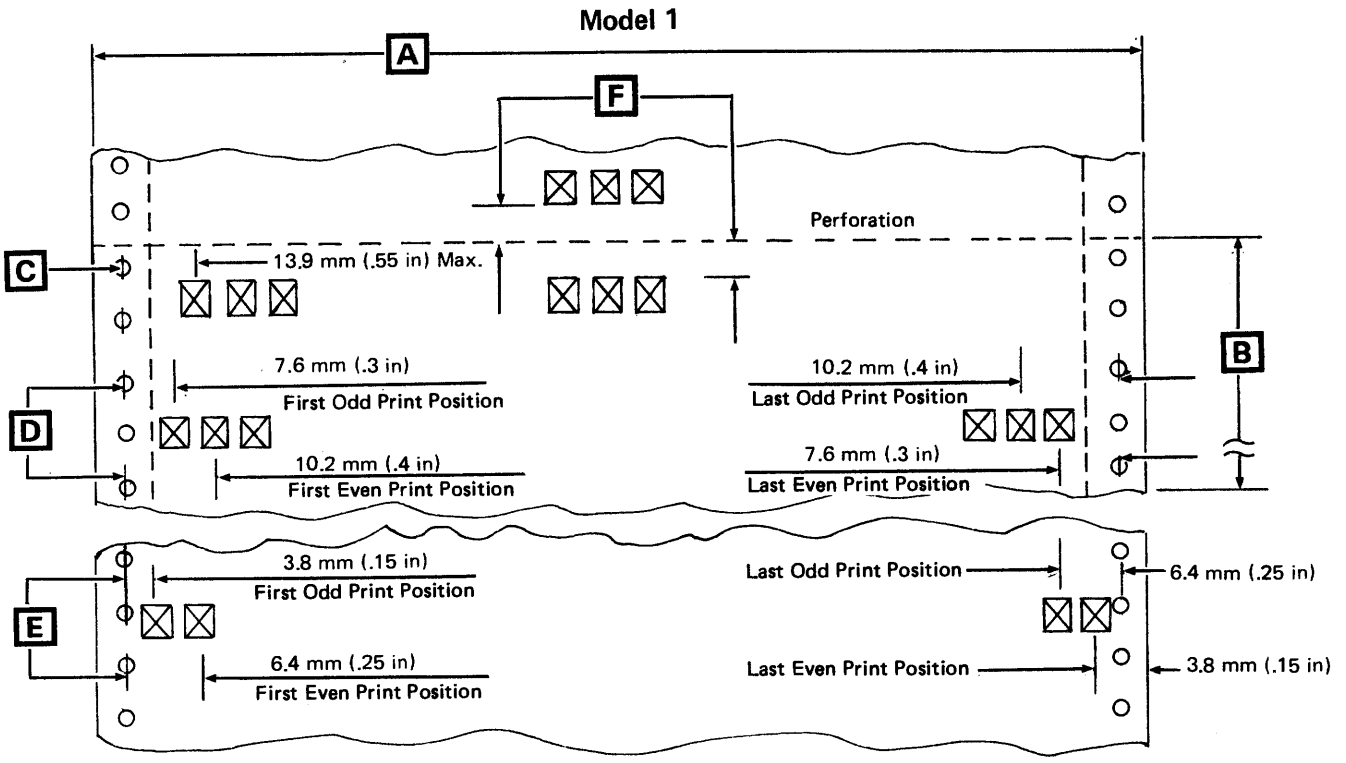
If no tear strip, first and last print positions may be located immediately adjacent to the margin holes.

Notes:

1. Fastening multiple set forms on both edges is recommended. If only one side is fastened, it should be the right side.
2. Choose paper quality and thickness of forms to be used on Model 3 after first testing for legibility and feeding performance.
3. Number of available print positions—96, 120, and 132.
4. Form lengths exceeding 355.6 mm (14 in) are not recommended because stacking faults may occur.

For general forms design considerations, see pages 5 to 10.

5211 (Model 1) Form Specifications (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**	387 mm (15.25 in)*	88.9 mm (3.5 in)
B	**Form Length**	355.6 mm (14 in)	76 mm (3 in)

* The maximum forms width for which the minimum distance specified in D and E is obtainable is 363.2 mm (14.3 in) for the right side and 377.2 mm (14.85 in) for the left side.

C The distance from the center of the left margin hole to centerline of print position No. 1 is 13.9 mm (.55 in) maximum. (Left tractor in leftmost position.)

D On forms with 12.7 mm (.5 in) tear strips, minimum distance between the center of the margin holes and the center of the first odd or last even print position used is 7.6 mm (.3 in). Minimum distance between the center of the margin holes and the center of the first even or last odd print position used is 10.2 mm (.4 in).

Note: *Tear strips may break as the minimum distance is approached.*

E On forms without tear strips, minimum distance between the center of the margin holes and the center of the first odd or last even print position used is 3.8 mm (.15 in). Minimum distance between the center of the margin holes and the first even or last odd print position used is 6.4 mm (.25 in).

F No printing should occur within 12.7 mm (.5 in) of the horizontal perforation.

For general forms design considerations, see pages 5 to 10.

5211 (Model 1) Form Specifications (Part 2 of 2)

Forms Thickness Considerations

1. Up to six-part forms can be used with total thickness not to exceed 0.51 mm (.02 in).
2. Forms of more than four parts should be tested to assure satisfactory feeding, print quality, and legibility.
3. Some ribbon smudging may occur as forms approach maximum thickness.

Fastening Recommendations

1. Multiple crimp fastening on both edges of multiple ply forms is recommended. Crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fasteners are used, the following should be considered:
   a. Crimps should not project significantly above the surface of the first form to avoid ribbon interference.
   b. Crimps should not add significantly to the total form thickness.
   c. The protruding tail of the crimp should be opposite the direction of forms motion so that the forms motion tends to compress and tighten the crimp. The crimp should also be away from the surface of the forms where printing is occurring to avoid ribbon interference.
   d. Excessively hard or stiff crimps may interfere with proper ribbon and/or form processing operation.
2. No hard or metallic fasteners are permitted.

Card Stock Forms

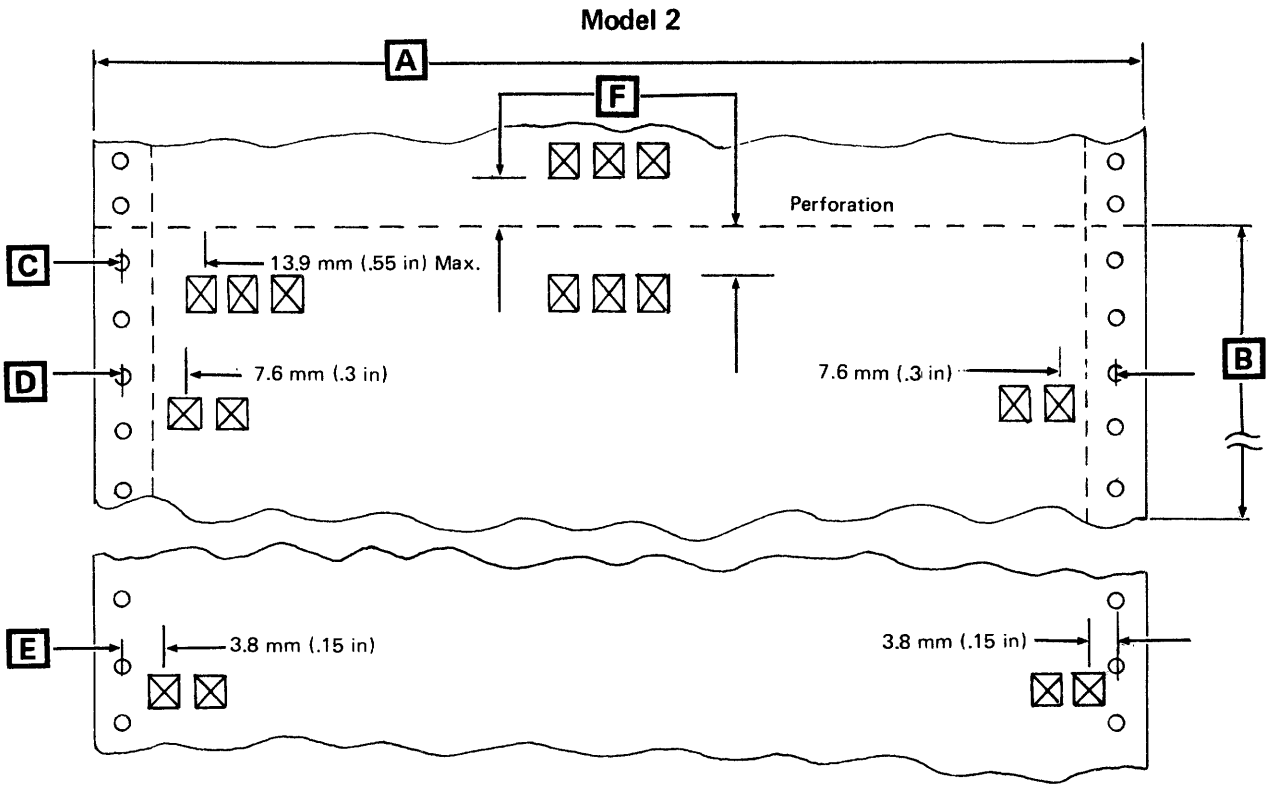
1. Single-part card forms may be used. Card forms should be tested to assure satisfactory feeding and print quality.
2. Card stock should not exceed 0.23-mm (.009-in) thickness. Overlapped glue joints are not permitted.
3. For best stacking efficiency, the distance between folds should be 152.4 to 355.6 mm (6 to 14 in).
4. When feeding card forms, operator attention may be required to ensure correct stacking.

Notes:

1. Feed holes should be free of chads and crimps to avoid false form jam checks.
2. Cutouts are not permitted from 69.9 to 82.6 mm (2.75 to 3.25 in) from the left edge of form with tractor in leftmost position. Cutouts in this area can cause a false end-of-forms indication.
3. A leader of at least 406 mm (16 in) is recommended for alignment of prenumbered documents. A narrow 76.2 mm (3 in) long trailer (trailer not to ride over end-of-forms switch) is required on the last form of the form set to maintain registration on the last form.
4. Left tractor must be in leftmost position when using maximum width forms.
5. Paper colors vary in reflectivity and may reduce contrast to the feed holes. This contrast is required for a photosensitive forms motion detection device. Relatively nonreflective colors, such as dark gray, dark blue, etc., or markings or printing, must not be used on the back side of the left tear strip (or area around pin-feed holes) or false forms checks may result.

For general forms design considerations, see pages 5 to 10.

5211 (Model 2) Form Specifications (Part 1 of 2)



		Maximum	*Minimum*
A	**Form Width**	387 mm (15.25 in)*	88.9 mm (3.5 in)
B	**Form Length**	355.6 mm (14 in)	76 mm (3.0 in)

* The maximum forms width for which the minimum distance specified in D and E is obtainable is 363.2 mm (14.30 in) for the right side and 377.2 mm (14.85 in) for the left side.

C The distance from the center of the left margin hole to centerline of print position No. 1 is 13.9 mm (.55 in) maximum. (Left tractor in leftmost position.)

D On forms with 12.7 mm (.5 in) tear strips, minimum distance between the center of the margin holes and the center of the first or last print position used is 7.6 mm (.3 in).

Note: *Tear strips may break as the minimum distance is approached.*

E On forms without tear strips, minimum distance between the center of the margin holes and the center of the first or last print position used is 3.8 mm (.15 in).

F No printing should occur within 12.7 mm (.5 in) of the horizontal perforation.

For general forms design considerations, see pages 5 to 10.

5211 (Model 2) Form Specifications (Part 2 of 2)

Forms Thickness Considerations

1. Up to six-part forms can be used with total thickness not to exceed 0.51 mm (.02 in).
2. Forms of more than four parts should be tested to assure satisfactory feeding, print quality, and legibility.
3. Some ribbon smudging may occur as forms approach maximum thickness.

Fastening Recommendations

1. Multiple crimp fastening on both edges of multiple ply forms is recommended. Crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fasteners are used, the following should be considered:
   a. Crimps should not project significantly above the surface of the first form to avoid ribbon interference.
   b. Crimps should not add significantly to the total form thickness.
   c. The protruding tail of the crimp should be opposite the direction of forms motion so that the forms motion tends to compress and tighten the crimp. The crimp should also be away from the surface of the forms where printing is occurring to avoid ribbon interference.
   d. Excessively hard or stiff crimps may interfere with proper ribbon and/or form processing operation.
2. No hard or metallic fasteners are permitted.

Card Stock Forms

1. Single-part card forms may be used. Card forms should be tested to assure satisfactory feeding and print quality.
2. Card stock should not exceed 0.23-mm (.009-in) thickness. Overlapped glue joints are not permitted.
3. For best stacking efficiency, the distance between folds should be 152.4 to 355.6 mm (6 to 14 in).
4. When feeding card forms, operator attention may be required to ensure correct stacking.

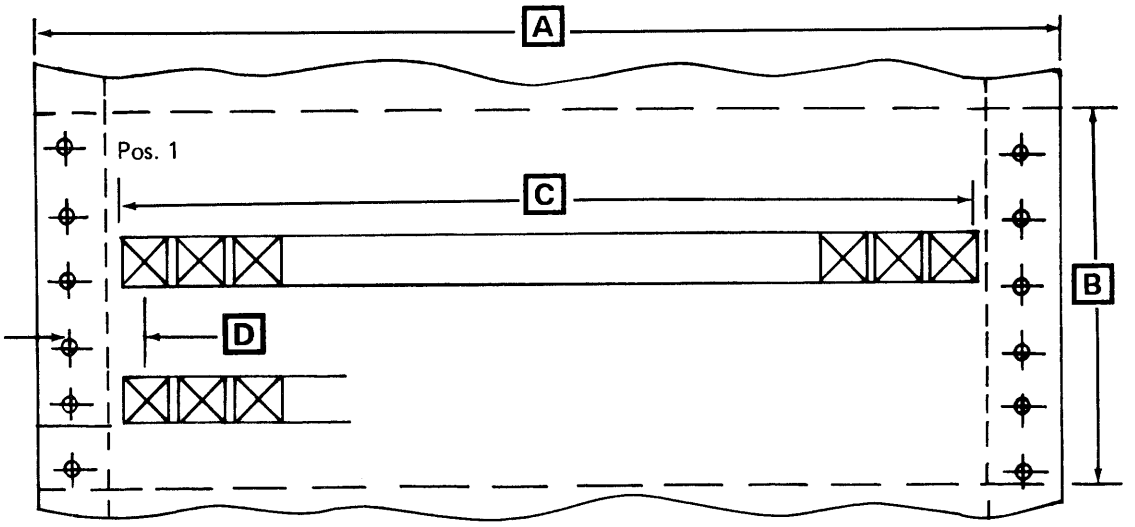
Notes:

1. Feed holes should be free of chads and crimps to avoid false form jam checks.
2. Cutouts are not permitted from 69.9 to 82.6 mm (2.75 to 3.25 in) from the left edge of form with tractor in leftmost position. Cutouts in this area can cause a false end-of-forms indication.
3. A leader of at least 406 mm (16 in) is recommended for alignment of prenumbered documents. A narrow 76.2 mm (3 in) long trailer (trailer not to ride over end-of-forms switch) is required on the last form of the form set to maintain registration on the last form.
4. Left tractor must be in leftmost position when using maximum width forms.
5. Paper colors vary in reflectivity and may reduce contrast to the feed holes. This contrast is required for a photosensitive forms motion detection device. Relatively nonreflective colors, such as dark gray, dark blue, etc., or markings or printing, must not be used on the back side of the left tear strip (or area around pin-feed holes) or false forms checks may result.

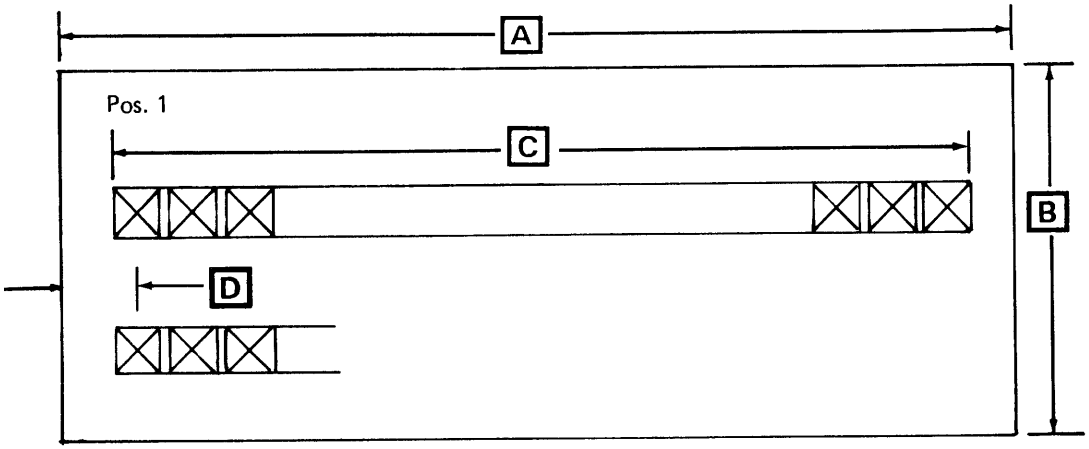
For general forms design considerations, see pages 5 to 10.

5222 Form Specifications (Part 1 of 2)

Continuous Forms



Cut Forms



		Continuous Forms		Cut Forms	
		Maximum	*Minimum*	*Maximum*	*Minimum*
A	**Form Width**	381 mm (15 in)	76.2 mm (3 in)	304.8 mm (12 in)	146.1 mm (5.75 in)
B	**Form Length**	355.6 mm (14 in)	76.2 mm (3 in)	355.6 mm (14 in)	76.2 mm (3 in)
C	**Print Positions**	132 at 10 cpi 198 at 15 cpi			

D For continuous forms, the first print position is 11.4 mm (.45 in) maximum and 7.6 mm (.3 in) minimum from the center of the feed hole to the center of the first position. The minimum distance for 381 mm (15 in) forms is 10.8 mm (.425 in). No printing should occur within 12.7 mm (.5 in) of any edge, perforation, crimp, or fold.

For cut forms, the first print position is 7.1 mm (.28 in) maximum and 4.6 mm (.18 in) minimum from the left edge of the form to the center of the first position. For normal operation, the recommended minimum distance to the first printed position on a page is 19.1 mm (.75 in) from the left edge of the form. No printing should occur within 19.1 mm (.75 in) of any other edge (top, bottom, or right) or perforation (horizontal or vertical).

For general forms design considerations, see pages 5 to 10.

5222 Form Specifications (Part 2 of 2)

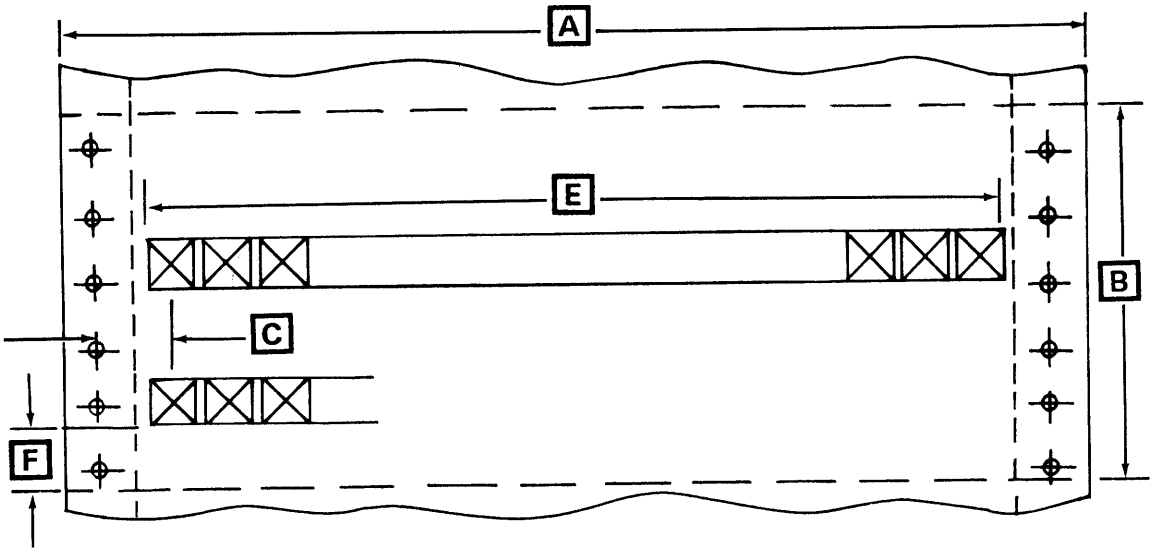
Notes:

1. Single-part forms should weigh 56 to 90 g/m^2 (15 to 24 lb) a ream. Heavier single-part continuous forms may be tested for satisfactory print quality, feeding, stacking, and registration.
2. Card stock forms are not recommended.
3. Staples are not permitted.
4. Roll forms are not permitted.
5. Multiple-part cut forms (form sets) must be glued together at the leading edge.
6. Stepped or shingled edges are not recommended.
7. Crimped multiple-part cut forms are not recommended because they can separate when wrapped around the platen.
8. Continuous forms must be edge punched and require use of forms tractor.
9. Recommended minimum continuous form width is 127 mm (5 in). A minimum form width of 76.2 mm (3 in) may be used; however, forms less than 127 mm (5 in) wide should be tested for satisfactory feeding, stacking, and print quality.
10. The maximum single-part forms thickness is 0.13 mm (.005 in). The maximum multiple-part forms thickness is 0.41 mm (.016 in).
11. The minimum forms thickness is .08 mm (.003 in).
12. A maximum of four-part continuous forms or four-part cut forms may be used.
13. Forms should be designed so that the print head is not required to travel beyond the edges of the form or across holes punched in the form.
14. Linear indexing (line spacing) increases as a document thickness increases; therefore, consideration must be taken when designing preprinted multiple-part cut forms.
15. Print quality is affected by the variance in paper stock, carbon stock, and environment (temperature and humidity). Sample forms should be evaluated in the user environment to determine whether performance criteria are met before ordering large quantities.
16. Cut form specifications apply to forms to be used with document insertion device.

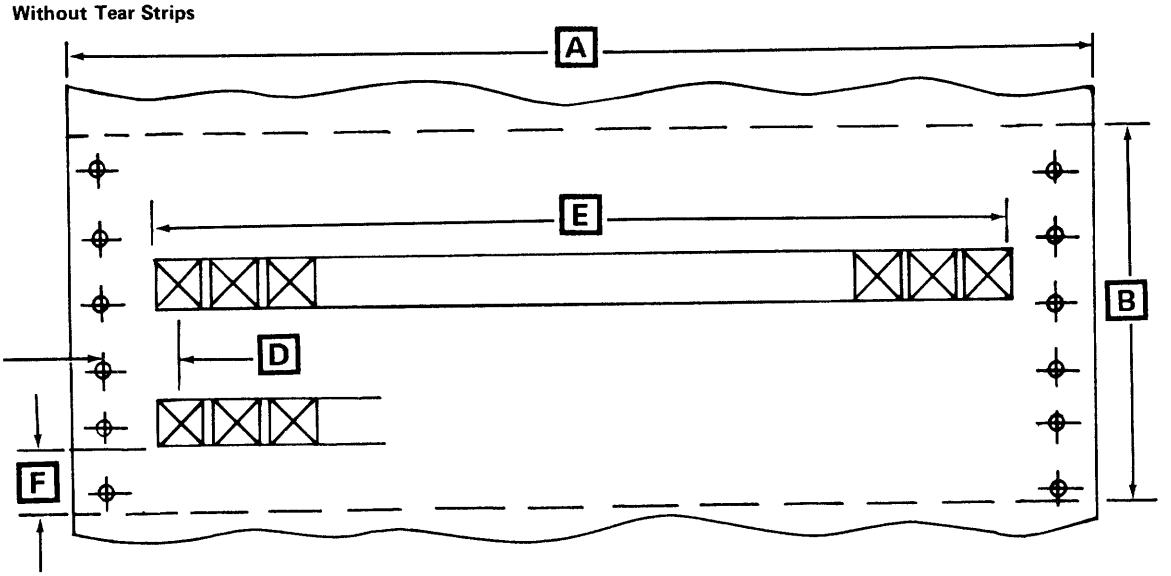
For general forms design considerations, see pages 5 to 10.

5224 (Models 1 and 2) Form Specifications (Part 1 of 2)

With Tear Strips



Without Tear Strips



For general forms design considerations, see pages 5 to 10.

5224 (Models 1 and 2) Form Specifications (Part 2 of 2)

		Minimum	*Maximum*
A	**Form Width**	76.2 mm (3 in)	450 mm (17.7 in)
B	**Form Length**	76.2 mm (3 in)	318 mm (12.5 in)

C D Margins (see below)

Form Width	Tear Strips	Character Density	Margins	
			Minimum	Maximum
76.2 mm (3 in) to 440 mm (17.3 in)	With	C 10 cpi	7.6 mm (.3 in)	73.3 mm (2.89 in)
		C 15 cpi	7.2 mm (.28 in)	72.9 mm (2.87 in)
	Without	D 10 cpi	4.1 mm (.16 in)	73.3 mm (2.89 in)
		D 15 cpi	3.7 mm (.15 in)	72.9 mm (2.87 in)
440 mm (17.3 in) to 450 mm (17.7 in)	For form widths over 440 mm (17.3 in), the appropriate minimum margins shown above increase the same amount as the form width does.			

E Print positions: 132 at 10 cpi
198 at 15 cpi

F Printing should not occur within 12.7 mm (.5 in) of the perforation, edge, crimp, or fold.

Notes:

1. Card stock is not recommended.
2. Alignment of prenumbered documents requires a minimum of 254 mm (10 in) of leader.
3. Partial forms separation is not permitted.
4. Cut forms and forms without perforations (such as roll forms) are not permitted.
5. Minimum form length (between folds or perforations) is 152.4 mm (6 in).
6. Maximum form length shown is for optimum stacking. Greater form length may be used, but sample forms should be tested to ensure proper stacking.
7. Feed holes should be free of chads and crimps to avoid real/false form jam checks.
8. Print quality and registration may deterioriate when printing occurs within 101.6 mm (4 in) from the bottom of the last form.
9. The maximum single-part forms thickness is 0.19 mm (.0075 in). The maximum multiple-part forms thickness is 0.46 mm (.018 in). Ribbon smudging can occur as the form set approaches maximum thickness.
10. Minimum form thickness is 0.064 mm (.0025 in).
11. A maximum of four-part continous forms is recommended for optimum registration, feeding, and stacking. Five- or six-part forms can be used, but should be tested by the customer before ordering large quantities.

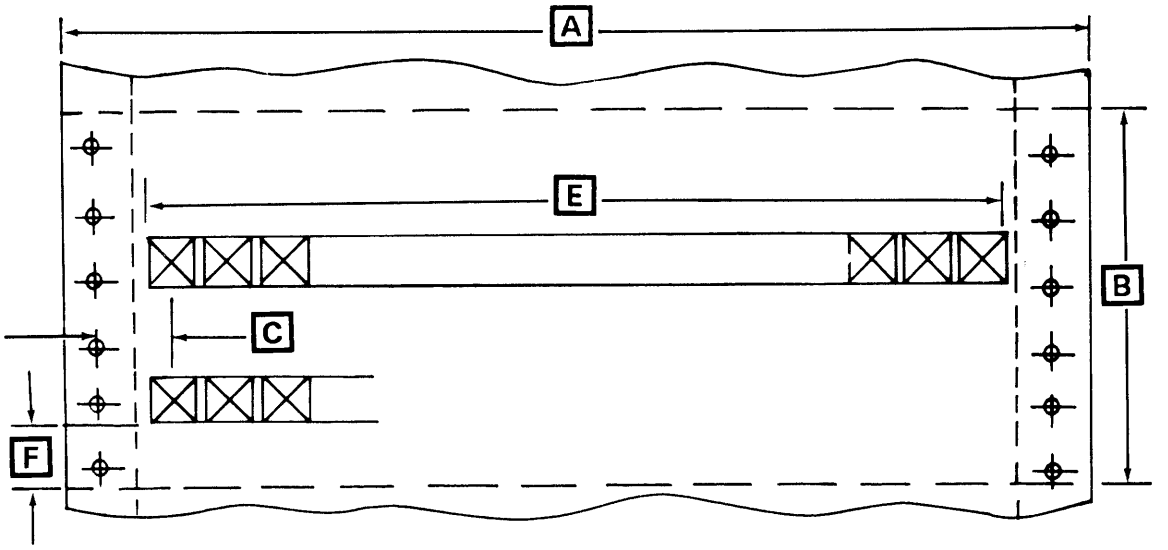
Fastening Recommendations

1. Multiple crimp fastening on both edges of multiple ply forms is recommended. Crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fasteners are used, the following should be considered:
   a. Crimps should not project significantly above the surface of the first form to avoid ribbon interference.
   b. Crimps should not add significantly to the total form thickness.
   c. The protruding tail of the crimp should be opposite the direction of forms motion so that the forms motion tends to compress and tighten the crimp. The crimp should also be away from the surface of the forms where printing is occurring to avoid ribbon interference.
   d. Excessively hard or stiff crimps may interfere with proper ribbon and/or form processing operation.
2. No hard or metallic fasteners are permitted.

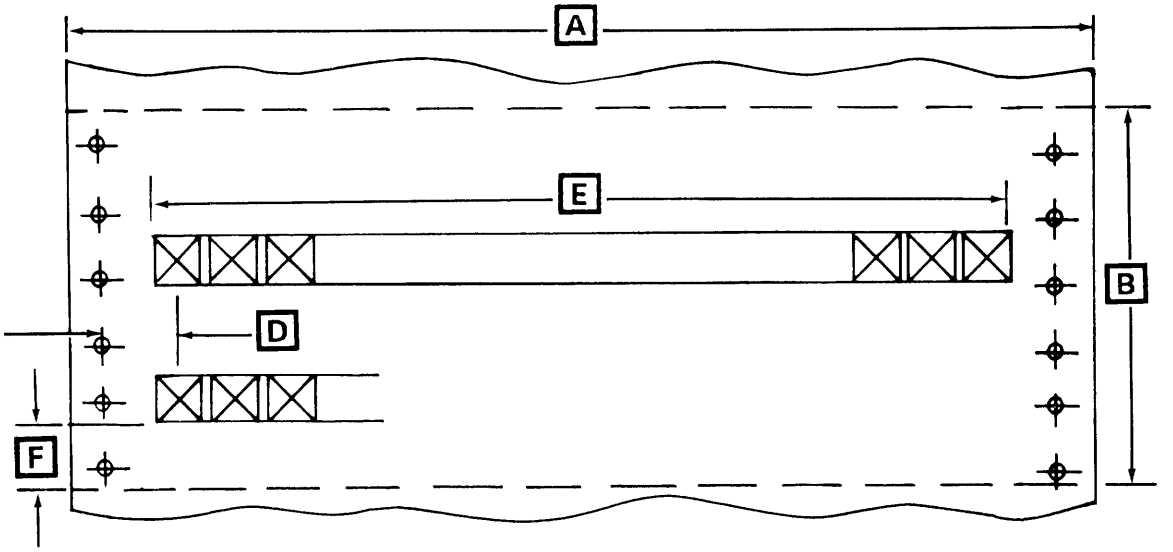
For general forms design considerations, see pages 5 to 10.

5224 (Model 12) Form Specifications (Part 1 of 2)

With Tear Strips



Without Tear Strips



For general forms design considerations, see pages 5 to 10.

5224 (Model 12) Form Specifications (Part 2 of 2)

		Minimum	*Maximum*
A	**Form Width**	76.2 mm (3 in)	450 mm (17.7 in)
B	**Form Length**	76.2 mm (3 in)	318 mm (12.5 in)
C D	Margins (see below)		

Form Width	Tear Strips	Character Density	Margins	
			Minimum	Maximum
76.2 mm (3 in) to 440 mm (17.3 in)	With	C 10 cpi (Alphameric)	7.6 mm (.3 in)	73.3 mm (2.89 in)
		C 5 cpi (Ideographic)	8.9 mm (.35 in)	74.6 mm (2.94 in)
	Without	D 10 cpi (Alphameric)	4.1 mm (.16 in)	73.3 mm (2.89 in)
		D 5 cpi (Ideographic)	5.4 mm (.21 in)	74.6 mm (2.94 in)
440 mm (17.3 in) to 450 mm (17.7 in)	For form widths over 440 mm (17.3 in), the appropriate minimum margins shown above increase the same amount as the form width does.			

E Print positions: 66 at 5 cpi (Ideographic)
132 at 10 cpi (Alphameric)

F Printing should not occur within 12.7 mm (.5 in) of the perforation, edge, crimp, or fold.

Notes:

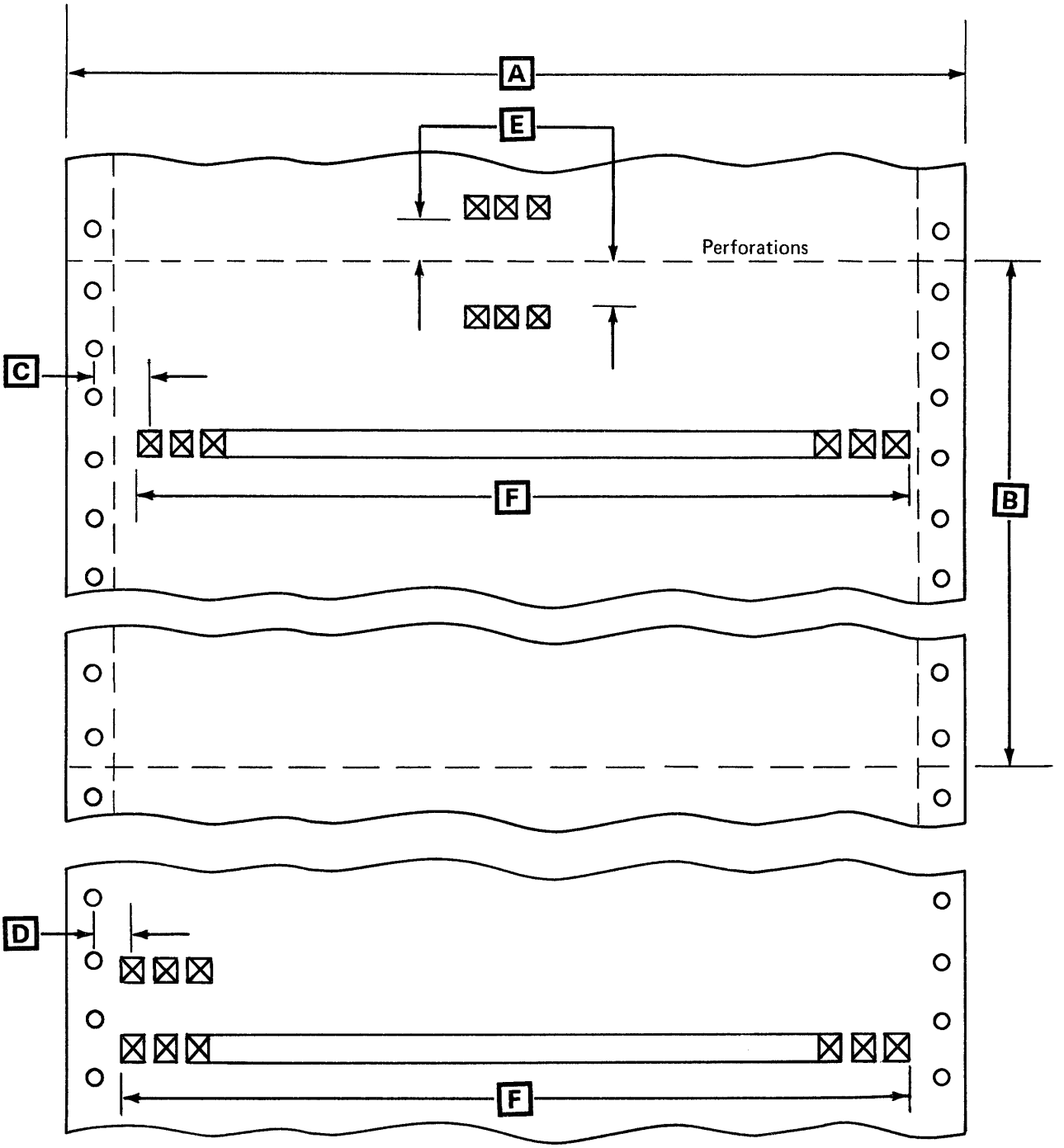
1. Card stock is not recommended.
2. Alignment of prenumbered documents requires a minimum of 254 mm (10 in) of leader.
3. Partial forms separation is not permitted.
4. Cut forms and forms without perforations (such as roll forms) are not permitted.
5. Minimum form length (between folds or perforations) is 152.4 mm (6 in).
6. Maximum form length shown is for optimum stacking. Greater form length may be used, but sample forms should be tested to ensure proper stacking.
7. Feed holes should be free of chads and crimps to avoid real/false form jam checks.
8. Print quality and registration may deterioriate when printing occurs within 101.6 mm (4 in) from the bottom of the last form.
9. The maximum single-part forms thickness is 0.19 mm (.0075 in). The maximum multiple-part forms thickness is 0.46 mm (.018 in). Ribbon smudging can occur as the form set approaches maximum thickness.
10. Minimum form thickness is 0.064 mm (.0025 in).
11. A maximum of four-part continous forms is recommended for optimum registration, feeding, and stacking. Five- or six-part forms can be used, but should be tested by the customer before ordering large quantities.

Fastening Recommendations

1. Multiple crimp fastening on both edges of multiple ply forms is recommended. Crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fasteners are used, the following should be considered:
   a. Crimps should not project significantly above the surface of the first form to avoid ribbon interference.
   b. Crimps should not add significantly to the total form thickness.
   c. The protruding tail of the crimp should be opposite the direction of forms motion so that the forms motion tends to compress and tighten the crimp. The crimp should also be away from the surface of the forms where printing is occurring to avoid ribbon interference.
   d. Excessively hard or stiff crimps may interfere with proper ribbon and/or form processing operation.
2. No hard or metallic fasteners are permitted.

For general forms design considerations, see pages 5 to 10.

5225 (Models 1, 2, 3, and 4) Form Specifications (Part 1 of 2)



For general forms design considerations, see pages 5 to 10.

5225 (Models 1, 2, 3, and 4) Form Specifications (Part 2 of 2)

		Minimum	*Maximum*
A	**Form Width**	76.2 mm (3 in)	450 mm (17.7 in)
B	**Form Length**	76.2 mm (3 in)	318 mm (12.5 in)
C D	Margins (see below)		

Form Width	Tear Strips	Character Density	Margins	
			Minimum	Maximum
76.2 mm (3 in) to 402 mm (15.8 in)	With	C 10 cpi	7.6 mm (.3 in)	73.3 mm (2.89 in)
		C 15 cpi	7.2 mm (.28 in)	72.9 mm (2.87 in)
	Without	D 10 cpi	4.1 mm (.16 in)	73.3 mm (2.89 in)
		D 15 cpi	3.7 mm (.15 in)	72.9 mm (2.87 in)
402 mm (15.8 in) to 450 mm (17.7 in)	For form widths over 402 mm (15.8 in), the appropriate minimum margins shown above increase the same amount as the form width does.			

E Printing should not be within 12.7 mm (.5 in) of the perforation.

F Print positions: 132 at 10 cpi
198 at 15 cpi

Notes:

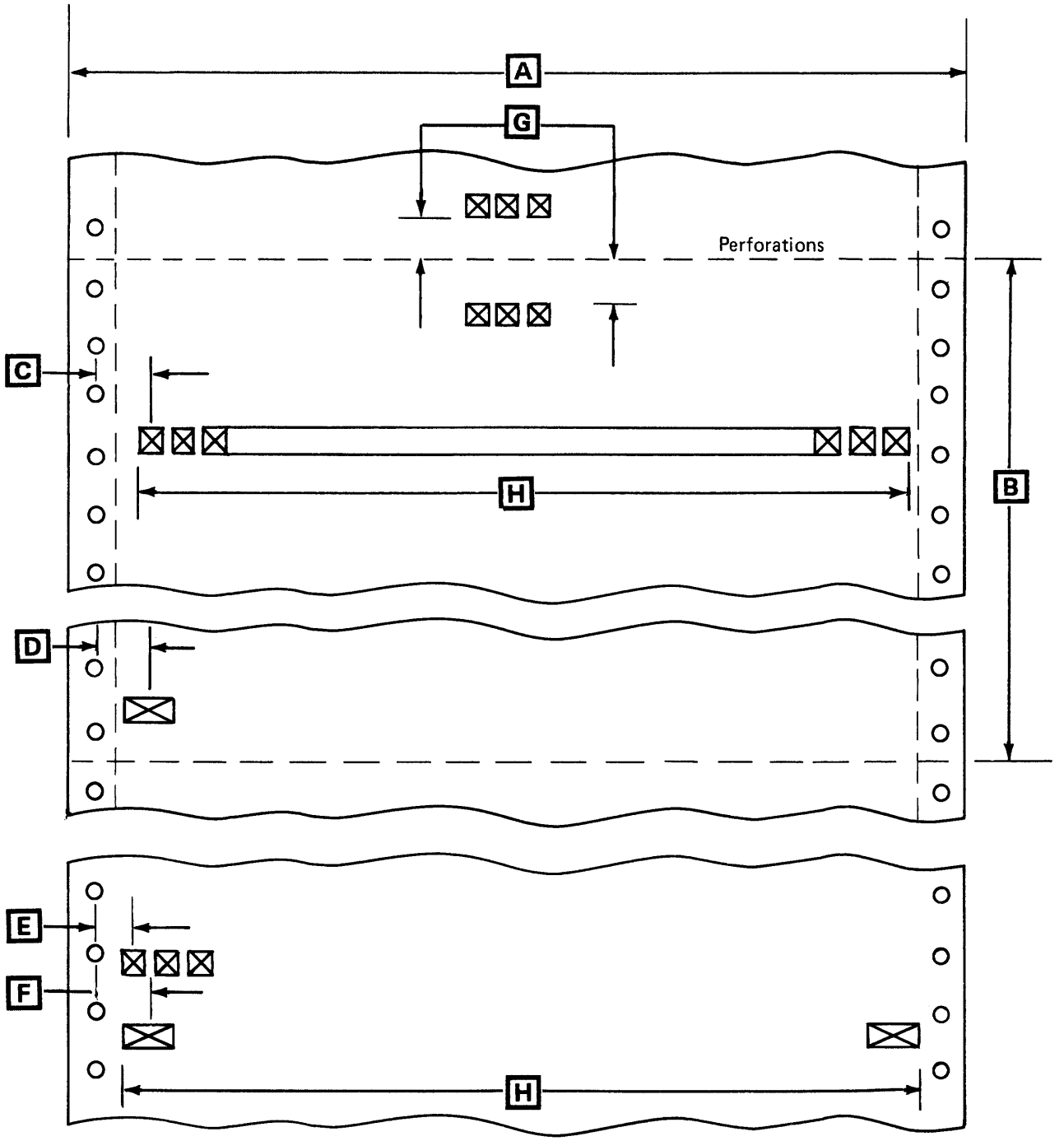
1. The minimum form length is 76.2 mm (3 in) with a minimum of 152.4 mm (6 in) between folds.
2. Print quality and registration specifications may not apply to printing within the last 101.6 mm (4 in) of the last form.
3. Alignment of prenumbered documents requires a minimum of 406 mm (16 in) of leader.
4. Composite form set thickness should be a minimum of 0.06 mm (.0024 in) and a maximum of 0.46 mm (.018 in). The 5225 printer uses continuous forms consisting of from one to four parts. Five or six-part forms can be used and should be tested to ensure satisfactory feeding, stacking, registration, and print quality. Ribbon smudging can occur as the form set approaches maximum thickness.
5. Feed holes should be free of chads and crimps to avoid real/false form jam checks.
6. Partial forms separation is not permitted.
7. Card stock is not recommended.

Fastening Recommendations

1. Multiple crimp fastening on both edges of multiple ply forms is recommended. Crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fasteners are used, the following should be considered:
   a. Crimps should not project significantly above the surface of the first form to avoid ribbon interference.
   b. Crimps should not add significantly to the total form thickness.
   c. The protruding tail of the crimp should be opposite the direction of forms motion so that the forms motion tends to compress and tighten the crimp. The crimp should also be away from the surface of the forms where printing is occurring to avoid ribbon interference.
   d. Excessively hard or stiff crimps may interfere with proper ribbon and/or form processing operation.
2. No hard or metallic fasteners are permitted.
3. If a glue fastening is required, the forms should be tested for acceptable feeding.

For general forms design considerations, see pages 5 to 10.

5225 (Models 11 and 12) Form Specifications (Part 1 of 2)



For general forms design considerations, see pages 5 to 10.

5225 (Models 11 and 12) Form Specifications (Part 2 of 2)

		Minimum	*Maximum*
A	**Form Width**	76.2 mm (3 in)	450 mm (17.7 in)
B	**Form Length**	76.2 mm (3 in)	318 mm (12.5 in)
C D E F	Margins (see below)		

Form Width	Tear Strips	Character Density (Type)	Margins Minimum	Margins Maximum
76.2 mm (3 in) to 402 mm (15.8 in)	With	C 10 cpi (Alphameric)	7.6 mm (.3 in)	73.3 mm (2.89 in)
		D 5 cpi (Ideographic)	8.9 mm (.35 in)	74.6 mm (2.94 in)
	Without	E 10 cpi (Alphameric)	4.1 mm (.16 in)	73.3 mm (2.89 in)
		F 5 cpi (Ideographic)	5.4 mm (.21 in)	74.6 mm (2.94 in)
402 mm (15.8 in) to 450 mm (17.7 in)	For form widths over 402 mm (15.8 in), the appropriate minimum margins shown above increase the same amount as the form width does.			

G Printing should not be within 12.7 mm (.5 in) of the perforation.

H Print positions: 66 at 5 cpi (ideographic)
132 at 10 cpi (alphameric)

Notes:

1. The minimum form length is 76.2 mm (3 in) with a minimum of 152.4 mm (6 in) between folds.
2. Print quality and registration specifications may not apply to printing within the last 101.6 mm (4 in) of the last form.
3. Alignment of prenumbered documents requires a minimum of 406 mm (16 in) of leader.
4. Composite form set thickness should be a minimum of 0.06 mm (.0024 in) and a maximum of 0.46 mm (.018 in). The 5225 printer uses continuous forms consisting of from one to four parts. Five or six-part forms can be used and should be tested to ensure satisfactory feeding, stacking, registration, and print quality. Ribbon smudging can occur as the form set approaches maximum thickness.
5. Feed holes should be free of chads and crimps to avoid real/false form jam checks.
6. Partial forms separation is not permitted.
7. Card stock is not recommended.

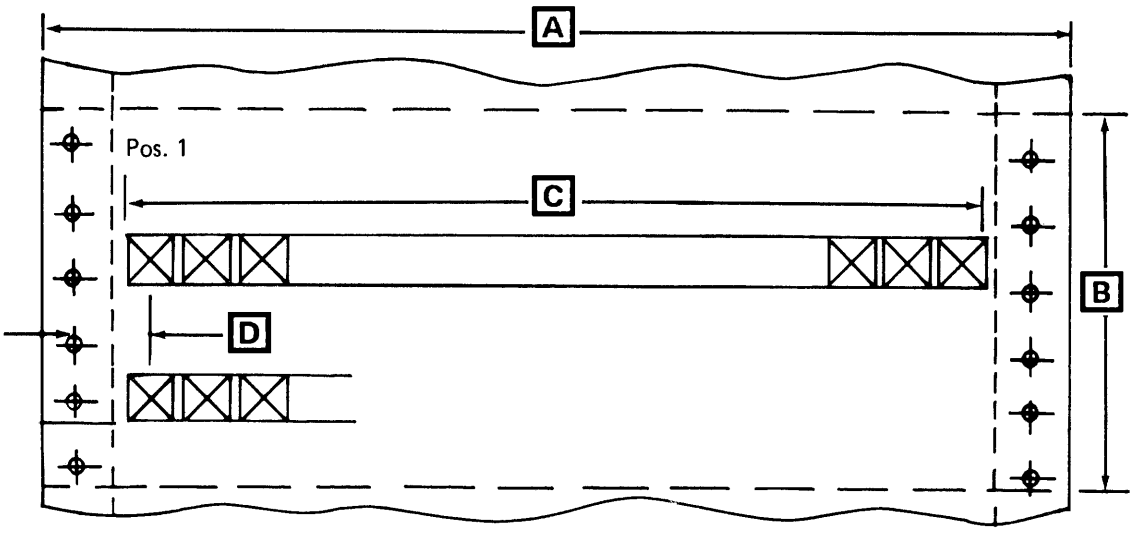
Fastening Recommendations

1. Multiple crimp fastening on both edges of multiple ply forms is recommended. Crimps should not be within 12.7 mm (.5 in) of the horizontal perforation. If crimp fasteners are used, the following should be considered:
   a. Crimps should not project significantly above the surface of the first form to avoid ribbon interference.
   b. Crimps should not add significantly to the total form thickness.
   c. The protruding tail of the crimp should be opposite the direction of forms motion so that the forms motion tends to compress and tighten the crimp. The crimp should also be away from the surface of the forms where printing is occurring to avoid ribbon interference.
   d. Excessively hard or stiff crimps may interfere with proper ribbon and/or form processing operation.
2. No hard or metallic fasteners are permitted.
3. If a glue fastening is required, the forms should be tested for acceptable feeding.

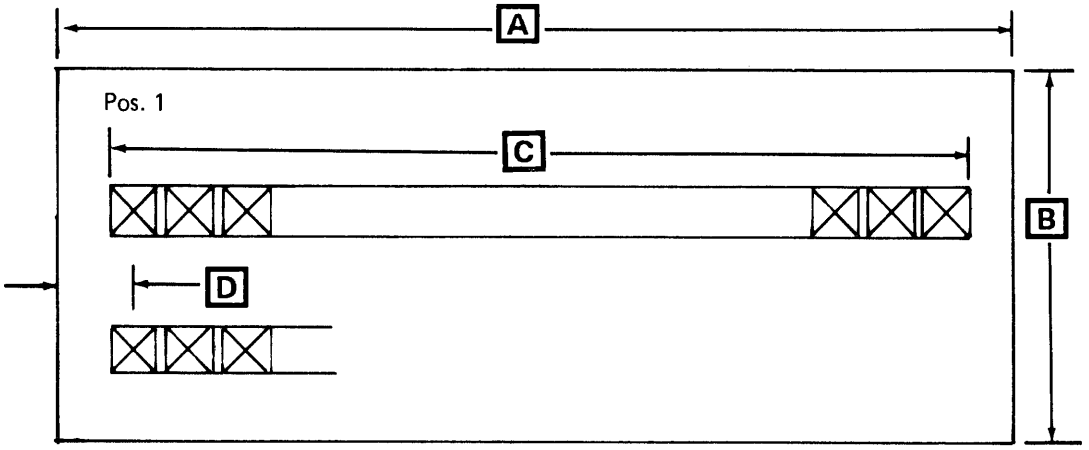
For general forms design considerations, see pages 5 to 10.

5241 Form Specifications (Part 1 of 2)

Continuous Forms



Cut Forms



		Continuous Forms		Cut Forms	
		Maximum	*Minimum*	*Maximum*	*Minimum*
A	**Form Width**	381 mm (15 in)	76.2 mm (3 in)	304.8 mm (12 in)	146.1 mm (5.75 in)
B	**Form Length**	355.6 mm (14 in)	76.2 mm (3 in)	355.6 mm (14 in)	76.2 mm (3 in)
C	**Print Positions**	132 at 10 cpi 198 at 15 cpi			

D For continuous forms, the first print position is 11.4 mm (.45 in) maximum and 7.6 mm (.3 in) minimum. The minimum distance for 381 mm (15 in) forms is 10.8 mm (.425 in). No printing should occur within 12.7 mm (.5 in) of any edge, perforation, crimp, or fold.

For cut forms, the first print position is 7.1 mm (.28 in) maximum and 4.6 mm (.18 in) minimum from the left edge of the form to the center of the first position. For normal operation, the recommended minimum distance to the first printed position on a page is 19.1 mm (.75 in) from the left edge of the form. No printing should occur within 19.1 mm (.75 in) of any other edge (top, bottom, or right) or perforation (horizontal or vertical).

For general forms design considerations, see pages 5 to 10.

5241 Form Specifications (Part 2 of 2)

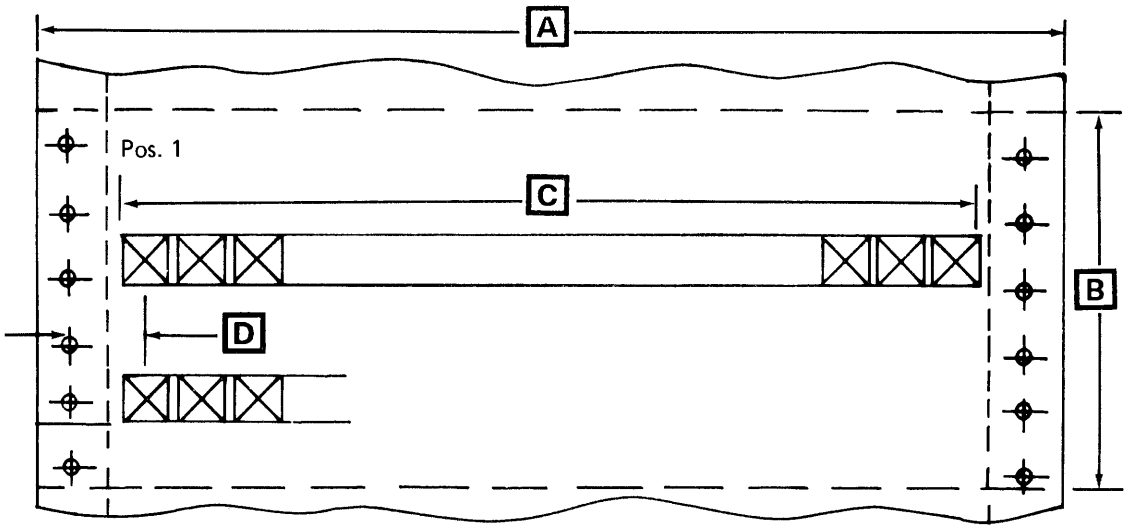
Notes:

1. Single-part forms should weigh 56 to 90 g/m^2 (15 to 24 lb) a ream. Heavier single-part continuous forms may be tested for satisfactory print quality, feeding, stacking, and registration.
2. Card stock forms are not recommended.
3. Staples are not permitted.
4. Multiple-part cut forms (form sets) must be glued together at the leading edge.
5. Stepped or shingled edges are not recommended.
6. Crimped multiple-part cut forms are not recommended because they can separate when wrapped around the platen.
7. Continuous forms must be edge punched and require use of forms tractor.
8. Recommended minimum continuous form width is 127 mm (5 in). A minimum form width of 76.2 mm (3 in) may be used; however, forms less than 127 mm (5 in) wide should be tested for satisfactory feeding, stacking, and print quality.
9. The maximum single-part forms thickness is 0.13 mm (.005 in). The maximum multiple-part forms thickness is 0.3 mm (.012 in).
10. The minimum forms thickness is .08 mm (.003 in).
11. A maximum of four-part continuous forms or four-part cut forms may be used.
12. Roll forms are not permitted.
13. Forms should be designed so that print head is not required to travel beyond the edges of the form or across holes punched in the form.
14. Linear indexing (line spacing) increases as a document thickness increases; therefore, consideration must be taken when designing preprinted multiple-part cut forms.
15. Print quality is affected by the variance in paper stock, carbon stock, and environment (temperature and humidity). Sample forms should be evaluated in the user environment to determine whether performance criteria are met before ordering large quantities.

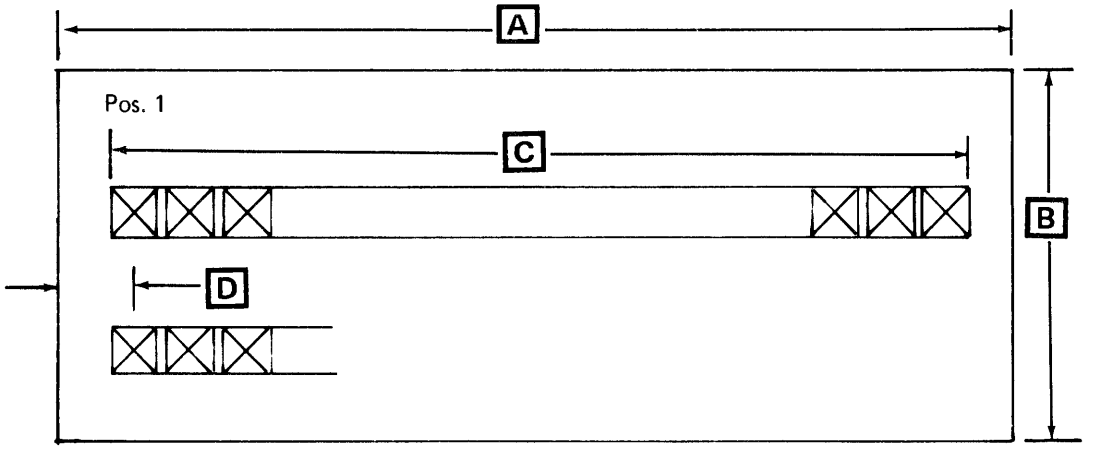
For general forms design considerations, see pages 5 to 10.

5242 Form Specifications (Part 1 of 2)

Continuous Forms



Cut Forms



		Continuous Forms		Cut Forms	
		Maximum	*Minimum*	*Maximum*	*Minimum*
A	**Form Width**	381 mm (15 in)	76.2 mm (3 in)	304.8 mm (12 in)	146.1 mm (5.75 in)
B	**Form Length**	355.6 mm (14 in)	76.2 mm (3 in)	355.6 mm (14 in)	76.2 mm (3 in)
C	**Print Positions**	132 at 10 cpi 198 at 15 cpi			

D For continuous forms, the first print position is 13.9 mm (.55 in) maximum and 7.6 mm (.3 in) minimum. The minimum distance for 381 mm (15 in) forms is 10.8 mm (.425 in). No printing should occur within 12.7 mm (.5 in) of any edge, perforation, crimp, or fold.

For cut forms, the first print position is 8.89 mm (.35 in) maximum and 3.81 mm (.15 in) minimum from the left edge of the form to the center of the first position. For normal operation, the recommended minimum distance to the first printed position on a page is 19.1 mm (.75 in) from the left edge of the form. No printing should occur within 19.1 mm (.75 in) of any other edge (top, bottom, or right) or perforation (horizontal or vertical).

For general forms design considerations, see pages 5 to 10.

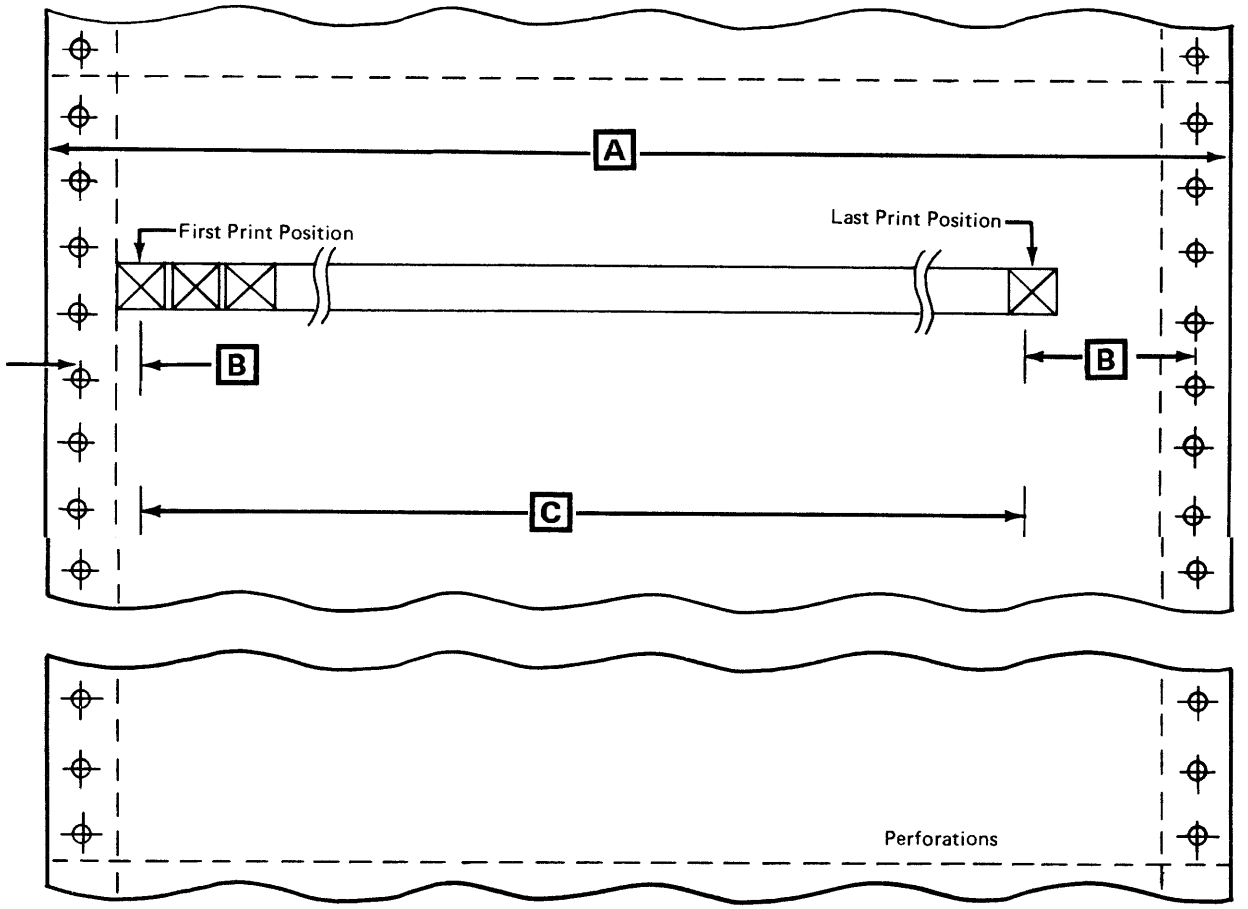
5242 Form Specifications (Part 2 of 2)

Notes:

1. Single-part forms should weigh 56 to 90 g/m^2 (15 to 24 lb) a ream. Heavier single-part continuous forms may be tested for satisfactory print quality, feeding, stacking, and registration.
2. Card stock forms are not recommended.
3. Staples are not permitted.
4. Multiple-part cut forms (form sets) must be glued together at the leading edge.
5. Stepped or shingled edges are not recommended.
6. Crimped multiple-part cut forms are not recommended because they can separate when wrapped around the platen.
7. Continuous forms must be edge punched and require use of forms tractor.
8. Recommended minimum continuous form width is 127 mm (5 in). A minimum form width of 76.2 mm (3 in) may be used; however, forms less than 127 mm (5 in) wide should be tested for satisfactory feeding, stacking, and print quality.
9. The maximum single-part forms thickness is 0.13 mm (.005 in). The maximum multiple-part forms thickness is 0.46 mm (.018 in) for continuous forms and 0.3 mm (.012 in) for cut forms.
10. The minimum forms thickness is .08 mm (.003 in).
11. Up to six-part continuous forms may be used; however, for optimum feeding and stacking a maximum of four parts is recommended. Five- or six-part forms should be tested for satisfactory feeding, registration, and print quality. Up to four-part cut forms may be used.
12. Roll forms are not permitted.
13. Forms should be designed so that print head is not required to travel beyond the edges of the form or across holes punched in the form.
14. Linear indexing (line spacing) increases as a document thickness increases; therefore, consideration must be taken when designing preprinted multiple-part cut forms.
15. Print quality is affected by the variance in paper stock, carbon stock, and environment (temperature and humidity). Sample forms should be evaluated in the user environment to determine whether performance criteria are met before ordering large quantities.

For general forms design considerations, see pages 5 to 10.

7436 Form Specifications



		Maximum	*Minimum*
A	**Form Width**	381 mm (15 in)	63.5 mm (2.5 in)

B If the form has no tear strip, the center of the first and last print positions should be at least 3.8 mm (.15 in) from the centerline of the margin holes.

C Maximum carrier movement is 332.7 mm (13.1 in).

Maximum forms set thickness is 0.51 mm (.02 in).

Maximum number of copies is five plus one original.

	Maximum	*Minimum*
Paper Weight		
Single-part	90 g/m^2 (24 lb)	60 g/m^2 (16 lb)
Multiple-part	90 g/m^2 (24 lb)	45 g/m^2 (12 lb)

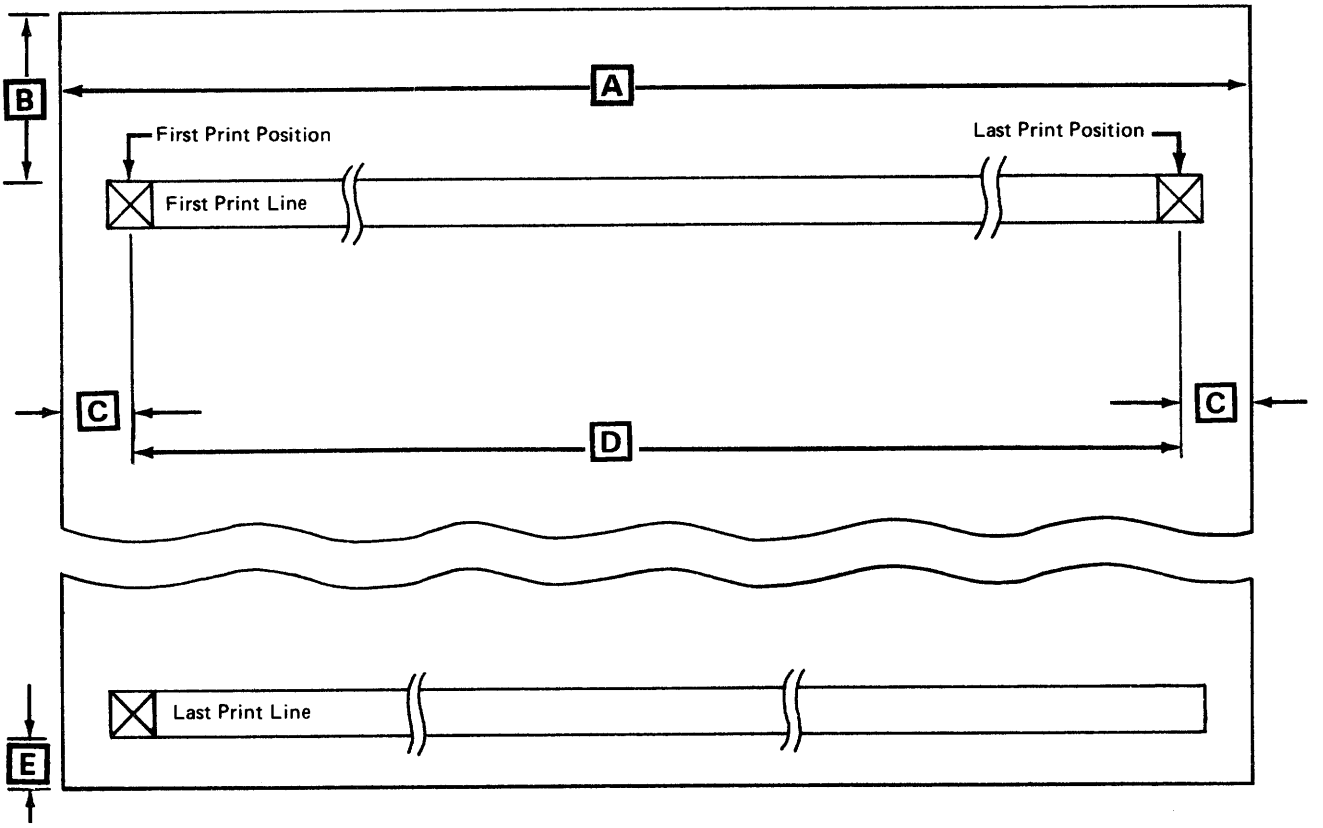
Notes:

1. The end-of-forms sensor is 2.54 (.1 in) to the left of the first character position. To avoid false end-of-forms detection, a left margin of 12.7 mm (.5 in) minimum is required.
2. All plies and carbons of multiple-part paper should be fastened securely along both sides to prevent separation of individual plies. Spot-crimping may cause uneven line spacing and paper jams because of ply separation.
3. The customer should test samples of multiple-part forms before ordering large quantities.

For general forms design considerations, see pages 5 to 10.

7436 Form Specifications

Cut Forms—Single- or Multiple-Part



A **Form Width** is 381 mm (15 in) maximum.

B Minimum distance between the top edge of the form and the top of the first print line:
Without manual intervention: 19.1 mm (.75 in)
With manual intervention: 12.7 mm (.5 in).

When printing is to begin less than 19.1 mm (.75 in) from the top edge of the form, the forms require operator intervention as the leading ledge of the paper is fed past the forms bail rollers.

Printing within the top 12.7 mm (.5 in) of the form is permitted but only if left and right margins are a minimum of 12.7 mm (.5 in). This avoids the paper becoming trapped in the card guide.

C Minimum distance from the first or last print position to edge of form is 2.54 mm (.1 in).

D Maximum carrier movement is 332.7 mm (13.1 mm).

E Minimum recommended distance from the bottom of the last print line to the bottom edge of the form is 25.4 mm (1 in). Printing within the bottom 25.4 mm (1 in) of the form is permitted, but print registration can be seriously affected.

Notes:

1. Maximum forms set thickness is 0.51 mm (.02 in) including carbons.
2. Maximum number of copies is five plus one original.

For general forms design considerations, see pages 5 to 10.

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Form Design Reference Guide for Printers (File No. GENL-03) Printed in U.S.A. GA24-3488-18

GA24-3488-18

Form Design Reference Guide
for Printers
Order No. GA24-3488-18

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