

SPERRY RAND

UNIVAC

CONTINUOUS
FORM
SPECIFICATIONS

TYPES 0752, 0758, 0768
AND DCT 2000 PRINTER

PROGRAMMERS
REFERENCE

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UNIVAC CONTINUOUS FORM SPECIFICATIONS

Types 0752, 0758, 0768 and DCT 2000 Printer

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INTRODUCTION

The specifications given here are for the continuous printing forms to be used with the following UNIVAC Printers:

The UNIVAC Bar Printer - Type 0752
The UNIVAC Drum Printer - Types 0758 and 0768
The UNIVAC DCT 2000 Printer (Bar Type)

These are general recommendations developed to give the most satisfactory results.

IMPORTANT: For any deviations whatsoever from the specifications given here or for special forms and applications, the user should do the following in the interest of his own satisfaction and protection:

1. Consult the forms supplier representative for his advice before ordering.
2. If the supplier is doubtful, he should prepare samples and test those samples on the users equipment if it is available. If it is not, the test can be arranged through the local UNIVAC Marketing representative.

If a doubtful form is to be used on both the Bar and Drum Printers, make the test on both types of printer for added assurance.

It is the ultimate responsibility of the forms supplier to satisfy the user. To further assist the supplier, he has the following services available to him:

- ☒ The publications and advice of the Printing Industries of America, Business Forms Section.
- ☒ UNIVAC Engineering consultation and testing arranged through the local UNIVAC Marketing representative.

The continuous forms referred to may be blank or printed forms. The forms have sprocket holes in both outside margins. The sprocket holes are engaged by tractors on a form feeding device to feed the paper in proper alignment through the Printer.

These forms, including the sprocket hole margins as well as the side and interform perforations, must have sufficient strength to withstand the normal stresses encountered in feeding forms through a high speed printer.

Continuous forms may be single-part (one original) or multi-part (an original with carbon copies).

A standard form part is one sheet of paper of the same uniform thickness from its left edge to its right edge. A standard multi-part pack is also of uniform thickness from its left edge to its right edge.

When there is any variation whatsoever in the thickness of a part or of a pack, it is most advisable to have samples prepared and tested before any investment or involvement in such forms is made.

SPROCKET HOLE SPECIFICATIONS

The hole diameter is 0.155"; + 0.005", - 0.000"

The vertical center line of the holes should be 0.250" \pm 0.010" from the edge of the form.

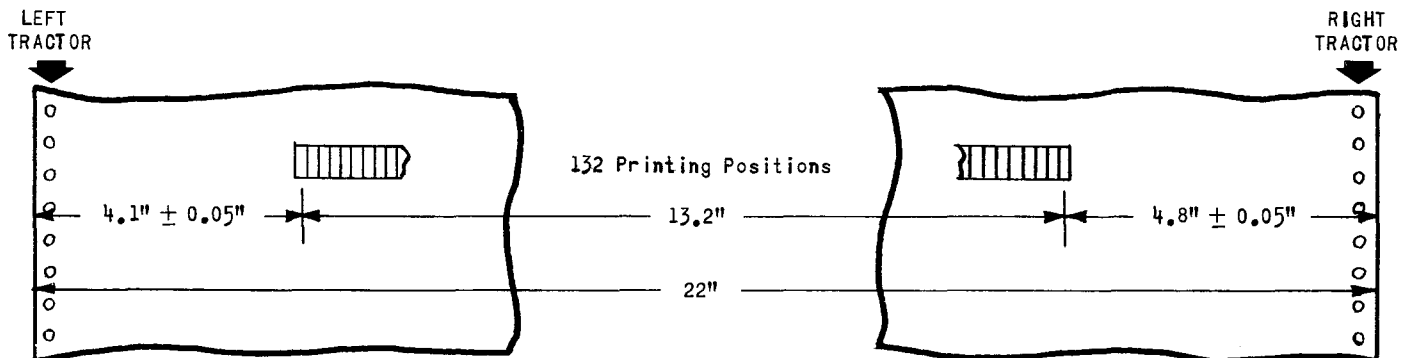
The vertical hole-to-hole spacing is 0.500" \pm 0.010" with a maximum spacing variation between any two holes on a sheet of \pm 1/64".

The opposing holes in the margins of the form must have the same common horizontal center lines.

WIDTH

The UNIVAC Printer can be provided with as many as 132 print positions. These print positions are 0.1" apart. This is, of course, 13.2" for the full width printing line.

Any sprocketed paper (or card) stock from 2.75" minimum to 22" maximum outside width can be handled. NOTE: This is the full width of the paper including the sprocket hole margins.



■ With the 22" maximum outside width, no lateral form adjustment is possible. Both the Left and Right Tractors are at their extreme outside positions. With the Tractors in this position, the registration from Print Line Character Positions 1 and 132 on a form are:

- The printing from Character Position 1 will be 4.1" \pm 0.05" from the left edge.
- The printing from Character Position 132 will be 4.8" \pm 0.05" from the right edge.

■ With paper widths up to 18" maximum, full lateral adjustment of a form with respect to its left edge and Character Position 1 is possible. The printing may be anywhere from 4.1" \pm 0.05" from the left edge to as close to the left edge as is desired and practical (see just below).

If the lateral adjustment with respect to the right edge and Character Position 132 is the criteria, the maximum paper width is 17" because of the 4.8" distance from Character Position 132 and the extreme outside position of the Right Tractor.

A vertical tear-off strip may or may not be specified for removing one or both of the sprocket hole margins after the printer run of the forms is completed. This strip is obtained by a vertical perforation usually about 1/2" from the edge of the form - Side Perforation. The proximity of the printing to either the left or right edge of the form should be governed by the absence or presence of a Side Perforation.

- ⊠ If the edge has no perforation, the printing should not be closer than 7/16" from the outside edge of the form. Printing any closer to the sprocket holes can cause added tension on the feeding margin to weaken or tear the Interform (form-to-form) Perforation.
- ⊠ If a Side Perforation is present, allow a minimum of 1/2" from the first (or last) character to the Side Perforation. The printing is thus far enough away to prevent damage to the Side Perforation.

In the interest of economy, be guided by the standard paper widths suggested by the forms supplier when designing forms. Any deviation from these widths, if possible, will add to the cost of the forms. When the completed forms must be of a specific width, seek the supplier's advice as to the most economical and practical means of obtaining the final result from within his standards. (See DESIGN below)

LENGTH

Minimum - No limit. Forms packaged by the supplier with less than 8" fold can cause stacking problems.

Maximum - 22". This maximum is determined by the maximum Form Control Tape loop for trouble-free operation.

For forms folded greater than 15", it is necessary for the user to supplement the Form Receiving Platform so that the entire area of the form will be flat as it is received. Also, such forms are very difficult and heavy to handle in quantity.

The form length must be divisible by the Printer Line Spacing to be used with that form. This is either 6 or 8 lines to the inch of either single, double, or triple spacing.

For the sake of economy in some few cases but, in most cases, within the ability to manufacture, it is vitally necessary to know the standard form length possibilities of the forms supplier before starting a form design. When the completed forms must be of a specific length, seek the supplier's advice as to the most economical and practical way to obtain the final result from within his standards. (See DESIGN below)

DESIGN

Before attempting any form design, the user must become acquainted with the standards, especially paper widths and form lengths, of the forms suppliers in his area. It is helpful to know, at least in general, the abilities of each supplier. By knowing these abilities and following these standards, practical design and form economy can result.

The user should consult the supplier's representative regarding the design of a form before ordering the form. A more efficient design may be obtained but, and most important, the final specifications can be submitted in a manner acceptable by the supplier for immediate and proper processing.

Vertical Rules

Rules may fall between adjacent characters (0.1" apart). Over a distance greater than 8-1/2" however, characters may touch these rules due to expansion or contraction of the paper especially when used under conditions of temperature and humidity in variance with the supplier's standards.

The more desirable practice, where possible, is to allow a blank position for vertical rules and to center the rule through this position.

Horizontal Rules

Printer Spacing is either 6 lines to the inch or 8 lines to the inch.

Single-spaced, 6 lines to the inch ruling is practical if required.

Single-spaced, 8 lines to the inch ruling is not recommended where the registration between lines must be critical. In addition, the conflict between the ruling and the printing reduces the legibility of the resulting report.

Form Alignment Mark

A symbol or horizontal line printed in the left margin aids the operator to line up the forms for the first printing line (Home position) of the next or following form. As a reference point on the machine:

- On the Bar Printer, the black line in the bend at the bottom of the Pressure Plate of the Upper Left Tractor can be used. It is 6-1/2" from this point to the center of the printing line.
- On the Drum Printer, a horizontal line scribed on the platen marks the center of the printing line. This line is easily seen when the carriage is out.

PAPER STOCK and WEIGHT

The various recommended paper stocks and weights are given here. The definitive weight and thickness specifications for the various papers are given below under the subject of Paper and Carbon Weight Definitions.

Single-Part Forms

Minimum - 16 lb. Bond.

Under conditions of high static activity, especially where a relative humidity of less than 40% will prevail, a minimum weight of 20 lb. Bond should be used.

Maximum - Bond - Any standard weight greater than 16 lb.

Ledger - Any standard weight.

Index Bristol - 110 lb.

Tabulating Card - Standard weight.

Post Card - Standard weight.

In any case, the paper fed must not be thicker than 15-1/2 mils.

Multi-Part Forms

Maximum Pack Thickness - 15-1/2 mils (1 mil = 0.001"). This is the maximum permissible thickness to allow clear printing.

Maximum Number of Parts - 4, 5, or 6 depending primarily upon the maximum pack thickness of 15-1/2 mils.

Packs may combine Bond paper and no more than one part of Ledger, Index Bristol, Tabulating Card, or Post Card stock. In these cases, the heaviest weight part should be at the back of the pack.

For multi-part forms, the 15-1/2 mil maximum pack thickness is the principal governing factor in determining the number of parts permissible. The combined thickness of the paper parts plus carbon is not to exceed this maximum.

Where the weight of one or more of the parts is fixed, it may be necessary to compromise in the selection of the weights for the other parts and the carbon in order to keep the pack within the maximum thickness. This is especially true when a Ledger, Index Bristol, Tabulating Card or Post Card stock must be one of the parts.

Remember, only one part of a multi-part form can be of the heavier stock papers (Ledger, Index Bristol, Tabulating Card, or Post Card); also, it should be at the back of the pack as the last copy.

When planning these multi-part forms, be guided by the thickness and weight of the various papers and carbon given below under Paper and Carbon Weight Definitions.

NOTE: When multiple copies are required, the printing capacity is sufficient, and the nature of the job is such, consider designing the form so that it can be run two up, i.e., two identical side-by-side copies.

For an equivalent number of copies, the number of paper parts and carbon sheets required is, of course, reduced together with the more exacting specification requirements. This can mean a much lower form cost and provide greater ease and efficiency of form handling.

The maximum number of copies obtainable within the maximum specifications given above is, of course, greater.

CARBON PAPER GRADE and WEIGHT

A wide range of carbon formulas are available to the forms supplier so that the proper grade of carbon can be selected based on the legibility requirements of the application.

The recommended carbon paper weights are given below. The definitive weight and thickness specifications for the various carbon papers are outlined under the subject of Paper and Carbon Weight Definitions.

For 2- or 3-part forms -- Any type of carbon paper may be used provided the combined thickness of the parts and carbon does not exceed the maximum of 15-1/2 mils.

For 4-, 5-, or 6-part forms -- Carbon paper weight of 5-1/2 or 6-1/2 lb. may be used.

IMPORTANT: When extreme legibility is a requirement for the last two (2) parts, the forms supplier should be consulted for carbon and legibility tests.

PAPER and CARBON WEIGHT DEFINITIONS

Through the use of the tables given below, a judgement can be made as to the weight of paper and carbon to be used when specifying a multi-part form.

The thickness given here for a particular weight is based on an average density for the type of paper stock. It is recognized that the density is subject to variation and thus can influence the thickness of a given weight.

When it is desired to measure the thickness of individual sheets of paper (not the combined sheets comprising a pack), a standard micrometer with a 1/4" diameter spindle and anvil may be used. The micrometer should read to 0.0001".

Bond

The standard weights and thickness given here for Bond stock are based on 500, 17" x 22", sheets having an approximate density of 0.0267 pounds per cubic inch.

Weight in pounds	9	11	13	16	20	24	28
Thickness in mils	1.8	2.2	2.6	3.2	4.0	4.8	5.6

Ledger

The standard weights and thickness given here for Ledger stock are based on 500, 17" x 22", sheets having an approximate density of 0.0242 pounds per cubic inch.

Weight in pounds	24	28	32	36	40	44
Thickness in mils	5.6	6.1	7.0	7.9	8.9	9.6

Index Bristol

The standard weights and thickness given here for Index Bristol stock are based on 500, 25-1/2" x 30-1/2", sheets having an approximate density of 0.0333 pounds per cubic inch.

Weight in pounds	90	110	140	170
Thickness in mils	7.0	8.5	11.0	13.0

Tabulating Card

The standard weight and thickness given here for Tabulating Card stock is based on 500, 24" x 36", sheets having an approximate density of 0.0335 pounds per cubic inch.

Weight in pounds	101 ± 5%
Thickness in mils	7.0 ± 0.4

Post Card

The standard weight and thickness given here for Post Card stock is based on 500, 24" x 36" sheets having an approximate density of 0.0322 pounds per cubic inch.

Weight in pounds	125 ± 5%
Thickness in mils	9.0 ± 0.5

Carbon Paper

The standard weights and thickness given here for Carbon Paper are based on 500, 20" x 30", sheets.

Weight in pounds	5-1/2	6-1/2	8	9	10
Thickness in mils	0.6	0.7	1.0	1.1	1.2

FORMS FOR DUPLICATING

When the forms to be printed by the UNIVAC Printer are to be used as the master for the various duplicating processes such as; offset, facsimile, spirit, and stencil, it is most advisable to deal with a reliable, qualified forms supplier.

It is also most important to advise the supplier's representative of the full particulars of the duplicating operation and process involved so that he can prepare his specifications accordingly.

With some processes, the type of ribbon used on the Printer is of vital importance. The ribbon supplier should be consulted in this regard.

IMPORTANT: Printing tests involving paper, carbon, and ribbons should be made before large quantities of these forms are ordered.

The following suggestions are offered according to the various masters and processes:

Offset

If the master is the original copy (first part), a special ribbon is required to assure printing of a quality to provide good reproduction.

When the master is one part of a multi-part set, a special hard carbon must be used so that the oils and waxes in the carbon paper will not bleed into the master during storage.

Facsimile and Heat Transfer

Master and carbon should be packed separately and collated as they are fed into the Printer. A print setting that will not cut through the carbon or emboss the master should be used.

A relatively "soft" carbon is suggested. A very "soft" carbon will result in indistinct characters.

A light (silk preferred) ribbon is recommended.

Spirit

Master and carbon should be packed separately and collated as they are fed into the Printer. A print setting that will not cut through the carbon or emboss the master should be used.

A relatively "soft" carbon is suggested. A very "soft" carbon will result in indistinct characters.

A light (silk preferred) ribbon is recommended.

Stencil

A "soft" stencil stock printed with a silk (or equivalent) ribbon is suggested.

NCR PAPER

A maximum multi-part form of four parts of 15 pound NCR Paper is recommended. If heavier weight paper or more parts are desired, a test must be made.

MULTI-PART FORM FASTENINGS

Most types of fastenings such as glued margins, bump, crimp, etc. are satisfactory. Glued margins should run clear of the Print Hammer area to avoid smudging.

Because of the two sets of Tractors, one above and the other below the printing line of the UNIVAC Printer, partially punched sprocket holes are a satisfactory means of form fastening. As the form enters the lower set of Tractors, the hinging back of the sprocket hole perforations locks all form parts into alignment before printing.

Carbon paper must be fastened to its individual form part even though the form parts may or may not be fastened to each other.

Avoid the use of staples when the form is narrower than the Print Hammer area. Staples when used must have a maximum thickness of 1/16" when closed. Staples may be used on forms that are wider than the Print Hammer area so that the staples clear the exposed portion of the fabric ribbon. Staples may be used on one side of a narrow form provided the margin containing the staple is clear of the Print Hammer area.

When staples are to pass through the Tractors, the Tractor Pressure Plate clearance should be 0.056".

Fastening techniques not referred to above may be submitted for Engineering evaluation by the forms supplier through the local UNIVAC Marketing representative. Pending evaluation, their use is to be avoided.

SIDE and INTERFORM PERFORATIONS

Most nationally known suppliers of continuous paper forms have specific types of perforations which will withstand the rapid acceleration rates encountered when feeding these forms through the UNIVAC Printer and, in addition, provide ease of decollating and bursting. The method of bursting, machine or manual, should be specified.

FORM MAKEUP	SIDE PERFORATION			FORM-TO-FORM PERFORATION		
	MAX. CUT	MIN. UNCUT	RATIO	MAX. CUT	MIN. UNCUT	RATIO
Single Part	1/8"	1/32"	4 : 1	1/16"	1/32"	2 : 1
2-Part	1/8"	1/32"	4 : 1	1/16"	1/32"	2 : 1
3-Part	3/16"	1/32"	6 : 1	1/8"	1/32"	4 : 1
4-Part	1/4"	1/32"	8 : 1	1/8"	1/32"	4 : 1
5 or 6-Part	5/16	1/32"	10 : 1	3/16"	1/32"	6 : 1

The preceding table outlines the recommended side and form-to-form perforations according to the number of parts comprising the form.

Refrain from specifying or using perforations which have an extremely long cut area as compared to the uncut area. These perforations may separate upon form skipping instructions.

The recommended perforations are as follows:

- For single or 2-part forms, the best perforation is the close spaced or "needle" type design. This design consists of such configurations as closely spaced, minute, round punched holes of the "dashed line" type of about 1/16" cut and 1/32" uncut.
- For multi-part forms of 3 or more parts, the ratio of cut to uncut can increase somewhat as the number of copies making up the form increases.

IMPORTANT: If the format for a particular report requires the printing to occur within about 1/2" either above or below the perforation, the close spaced or needle type perforation should be specified for all parts of a continuous form to be used with this printing format.

Printing close to a perforation can cause the perforation to partially break through, or weaken, to a point whereby the form will either jam on line feeding or separate completely on skipping.

ADDITIONAL RECOMMENDATIONS

Purchase Orders

Purchase orders for continuous forms to the nationally known suppliers should include a statement citing the type or types of UNIVAC Printer with which the form is to be used. For example:

- "To be used on the UNIVAC 0752 Bar Printer."
- or "To be used on the UNIVAC 0758 Drum Printer."
- or "To be used on the UNIVAC 0768 Drum Printer."
- or "To be used on the UNIVAC DCT 2000 Printer."

If the form is to be used with more than one type of UNIVAC Printer, that fact should be included in the statement.

This statement is helpful to the purchaser because these companies are familiar with the particulars of form construction for use with this equipment.

Stock Forms

Stock forms, sometimes referred to as blank forms, are those that are not designed for specific applications with preprinted headings and rulings.

Stock forms, either single or multi-part, containing horizontal lines, stripes, or bands of tinted colors are recommended and are available from the suppliers of continuous forms.

These horizontal markings on the paper permit easy movement of the eye across a line so that data from one line is not confused with the data on the line above or below.

Shipping Containers

Forms should be packaged by the supplier as one continuous string within a carton to reduce setup time. If there is a break in this continuity, a marker should be inserted at that point in the stack.

The size of the container should be consistent with:

- ☒ Ease of handling by the operator.
- ☒ The width and height of the form feeding area in the front of the Printer.

Strong containers should be specified to eliminate damage in shipment.

It is preferable that the forms not be fed directly from the shipping container; drag and feeding problems can result. If it is necessary however, the forms can be fed from their carton provided the top and front of the carton are cut completely away and the rear corners of the carton are slit from top to bottom. By so doing, the forms will be free to rise as they are being fed through the Printer.

Storing

Continuous forms should be stored in an atmosphere approximating that of the area in which they are to be used. If they must be stored in cold or damp areas, they should be conditioned in the area in which they are to be used for at least twelve hours. During this conditioning time, the containers should be opened.

Forms containing carbon paper must not be stored in areas where the temperature exceeds 100° F for an extended period. The carbon will lose its effectiveness due to evaporation of the solvent.

Following a run, the unused forms of an opened carton should be re-packaged sufficiently and stored properly so that dust, dirt, and debris are excluded. The forms will then be ready for use when they are needed.

