

**Systems Reference Manual
for Users of...**

**Burroughs
E 6000
ELECTRONIC
ACCOUNTING
SYSTEMS**



SYSTEMS
REFERENCE MANUAL
FOR USERS OF...

Burroughs
SERIES E 6000
ELECTRONIC ACCOUNTING SYSTEMS

CUSTOMER EDUCATION PROGRAM

BUSINESS MACHINES GROUP
SALES AND TECHNICAL EDUCATION DEPARTMENT
SALES DEVELOPMENT DEPARTMENT

Burroughs Corporation

Detroit, Michigan 48232



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SECTION 1

INTRODUCTION

This manual contains systems design information about the Burroughs E 6000 Electronic Accounting System. It is intended as a training textbook for the Customer Education Program. For additional information regarding equipment description detail, reference should be made to the publication

"E 6000 Electronic Accounting System Equipment Reference Manual, Customer Education Program". The manual may be obtained from Burroughs Corporation, Detroit, Michigan 48232 or from the local Burroughs branch office. Both manuals are intended to supplement the E 6000 Basic Assembler Manual.

FORMS DESIGN CHARACTERISTICS

2-1. DIMENSIONS

Widths

Magnetic striped ledgers are available in the following form widths on any E 6000 system:

Form widths: 6", 8", 10", 12", 14-1/2",
16-1/2", and 19".

Any Series E 6000 machine with magnetic striped ledger capability may use any 6 of the 7 forms listed above interchangeably, the exception being that either the 16-1/2" or the 19" form may be used, but not both on the same system.

Manually inserted forms for use in the conventional ledger carriage may be any width from 22" maximum to the smallest practical to insert and print on.

Manually inserted forms for insertion in the striped ledger console may be a maximum of 12.5" total width. The manually inserted form may extend from a point 2.4" in from the left edge of the carriage to a point that is .5" from the left edge of the adjacent striped ledger inserted form.

Heights

The standard height for magnetic striped ledgers is 11". As an optional feature, a 14" ledger is available on a special order basis. While the 14" form provides 56 posting lines and the 11" form provides 38 posting lines, the system must use either one height or the other, and must not interchange sizes from job to job on the same system. The A 4004 Magnetic Ledger Reader reads only 11" forms and is not able to accept the 14" ledger forms.

Margin and Heading Requirements

There are no restrictions on using the full width of the magnetic striped ledger card for posting, except care should be exercised to avoid typing or printing punctuation or minus symbol over the stripes. Figure 2-1 shows the margin and heading requirements for both an 11" and a 14" ledger.

Margin requirements for manually aligned forms in a striped ledger carriage and in a conventional ledger carriage are shown in Figure 2-2. There is no restriction on form depth in total on any manually aligned form as long as the minimum distances from the top and bottom are maintained and fixed form limits are not used.

2-2. OTHER DESIGN CONSIDERATIONS

Striping Options

To provide increased form use, and to increase data storage capacity of magnetic striped ledgers, a choice of additional methods of magnetic striping is available.

HEAD TO HEAD STRIPING

This permits usage of both sides of the form for posting, thus doubling the posting capacity of a single ledger. Figure 2-3 illustrates the Head to Head striping method.

BACK TO BACK STRIPING (TUMBLEHEAD)

This method of striping will permit using the second set of stripes as a continuation of the first. Once data has been forwarded to the second set of stripes, the encoded data on the first set of stripes is no longer accurate (see Figure 2-4).

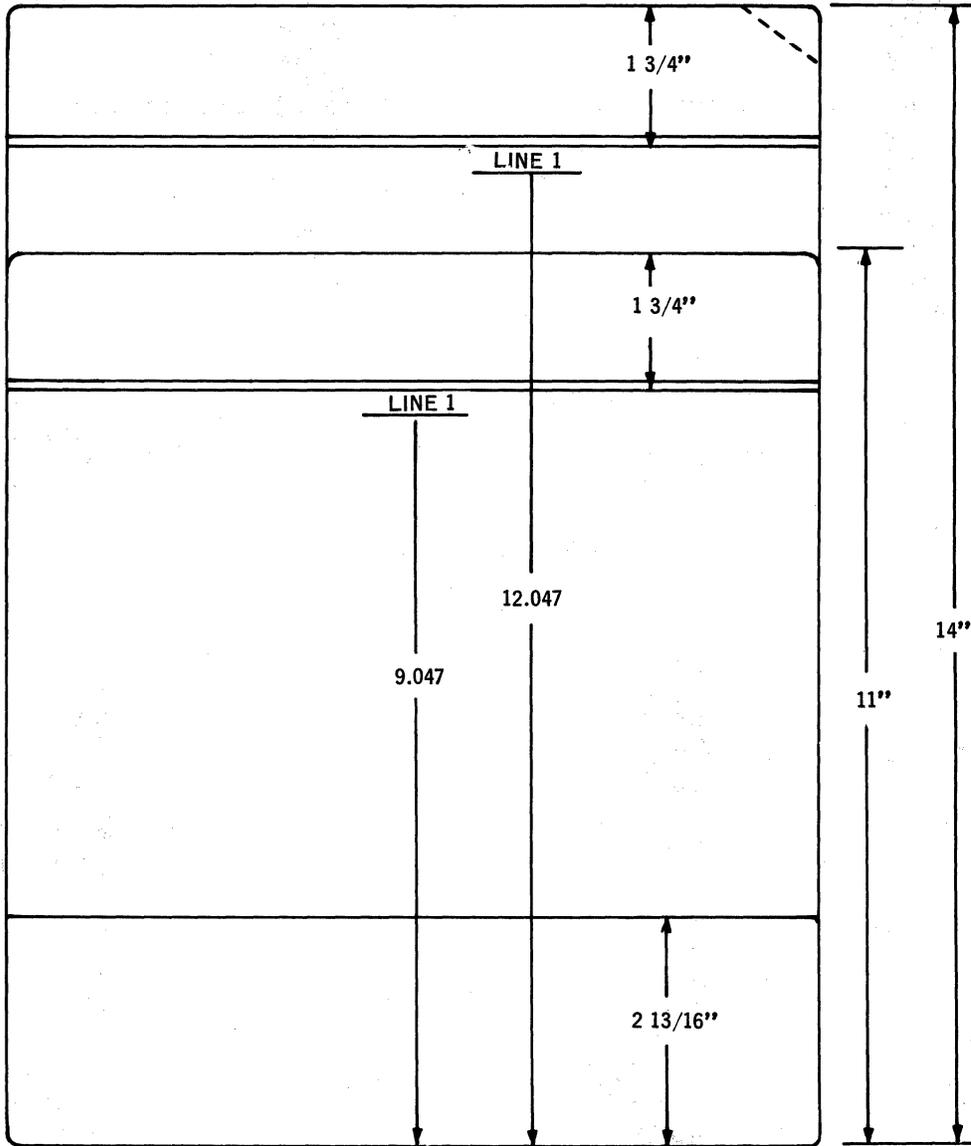


Figure 2-1. Margin Requirements—Magnetic Striped Ledgers

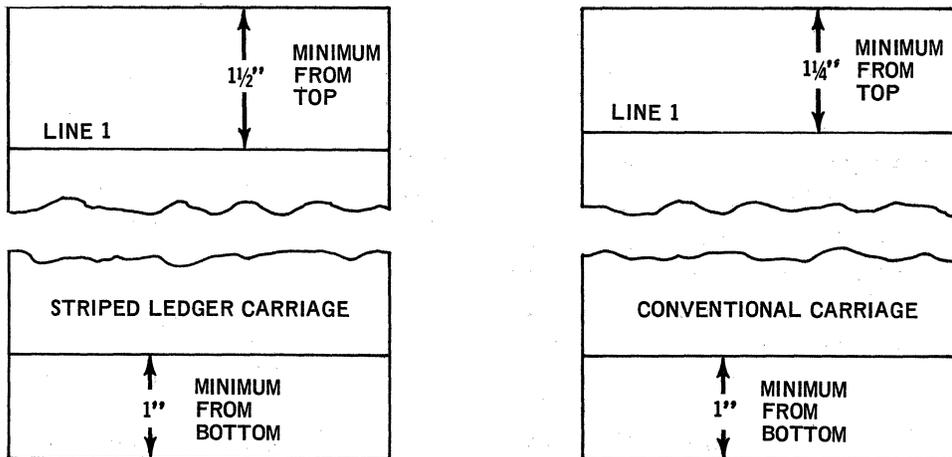


Figure 2-2. Manually Aligned Forms—Conventional and Striped Ledger Carriages

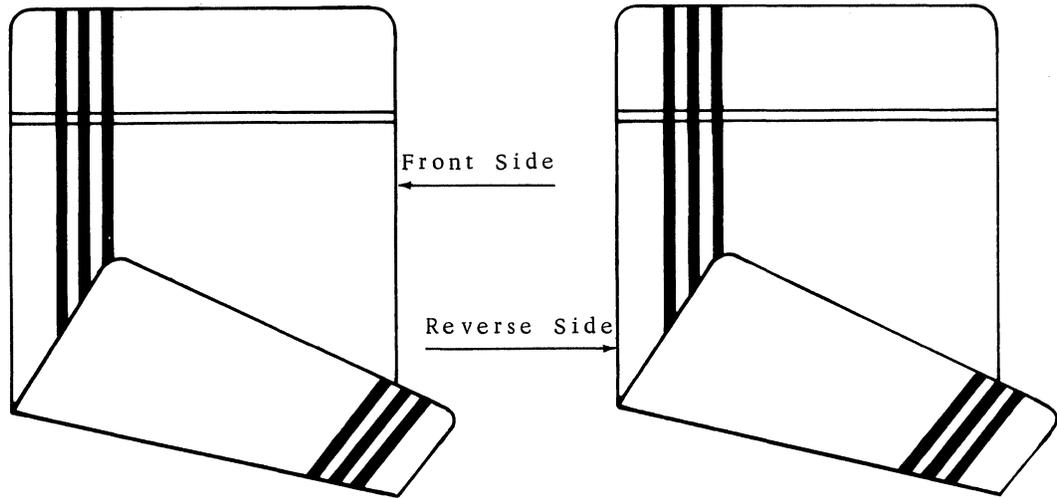


Figure 2-3. Head to Head Striping

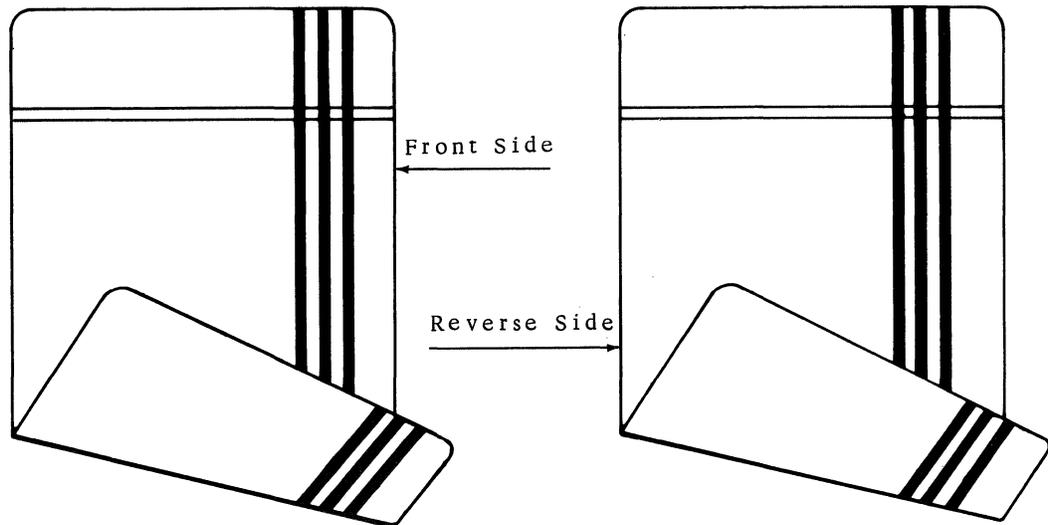


Figure 2-4. Back to Back Striping

TWO SETS OF STRIPES - SAME SIDE

This striped ledger format permits storing constant data in the left set of stripes and current data in the right set of stripes. This necessitates inserting the ledger into the carriage head down to read the constant data, then turning the ledger head up for posting.

As stated previously, the programing must be such that no typing or printing of punctuation or minus symbol is done on the face of the ledger card over the stripes.

Systems Compatibility

With proper adjustment, magnetic striped ledgers are interchangeably readable on any other like E 6000 system.

Visible Record Filing Ledgers (Die-Cut)

Die-cut ledgers for use with visible record filing equipment are available in 6", 8", 12" and 16-1/2" widths. No other widths are permitted.

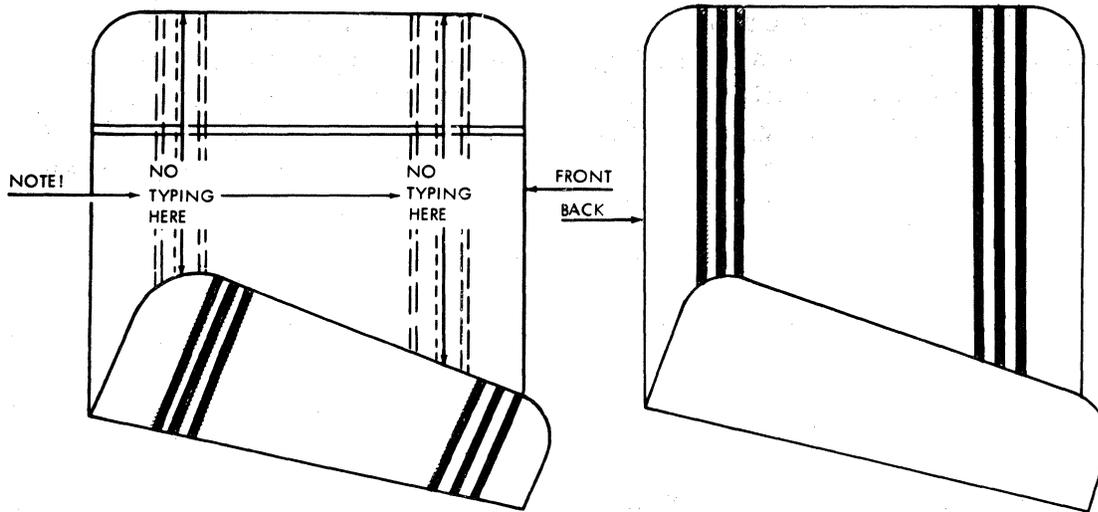


Figure 2-5. Two Sets of Stripes—Same Side

The die-cut increments are of specific dimensions for use with the striped ledger models (see Figure 2-6).

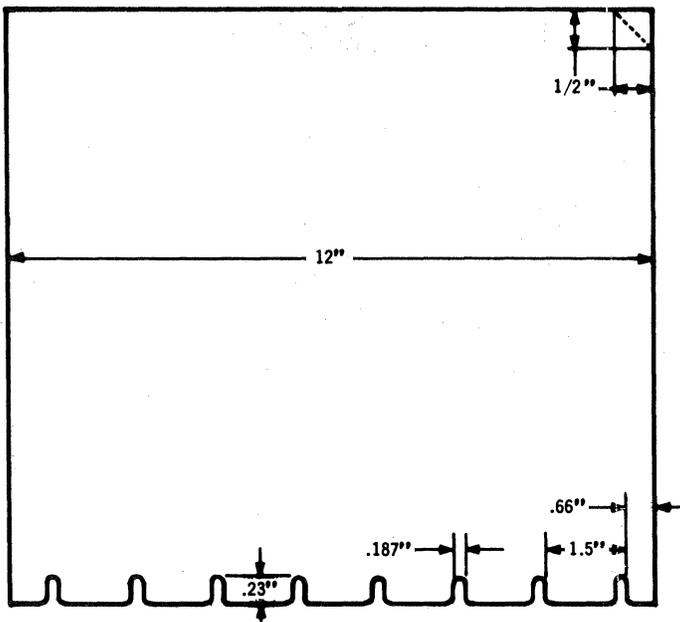


Figure 2-6. Visible Record Ledger

Translucent Ledgers

Translucent stock is available for all size ledgers. The translucent paper permits rapid reproductions of the ledgers by means of special copying equipment.

Photocopying of Ledgers

The magnetic striped ledgers used with all E 6000 systems may be photocopied, micro-filmed, xeroxed, etc., without any adverse effect upon the encoding on the magnetic stripes.

Other Manually Aligned Forms Considerations

FIXED LIMIT ALIGNMENT

The adjustable fixed limit for manual forms will permit fixed printing lines from a maximum of 9.047" from the bottom of the form down to 2-13/16" from the bottom of the form, in increments of 1/6".

A fixed limit of 2" can be obtained by using the manually retractable guide located in the area of the manually aligned form.

2-3. MAGNETIC STRIPE DETAIL

Stripe and Word Format

Figure 2-7 illustrates the stripe and word formatting of the magnetic striped ledger for a maximum Series E 6000 system. The line find stripe contains a single pulse to

control form alignment. The two data stripes contain 120 digit positions each, excluding sign positions. These 120 positions are divided into ten 12-digit words, plus sign for each word. These two stripes read into the memory addresses as illustrated in Figure

2-8. Read-in always occurs in MA's 20-29 and 30-39 on dual stripe models, and always clears and replaces any prior contents of those two decades of memory. Read-in occurs in MA's 20-29 only on single stripe models.

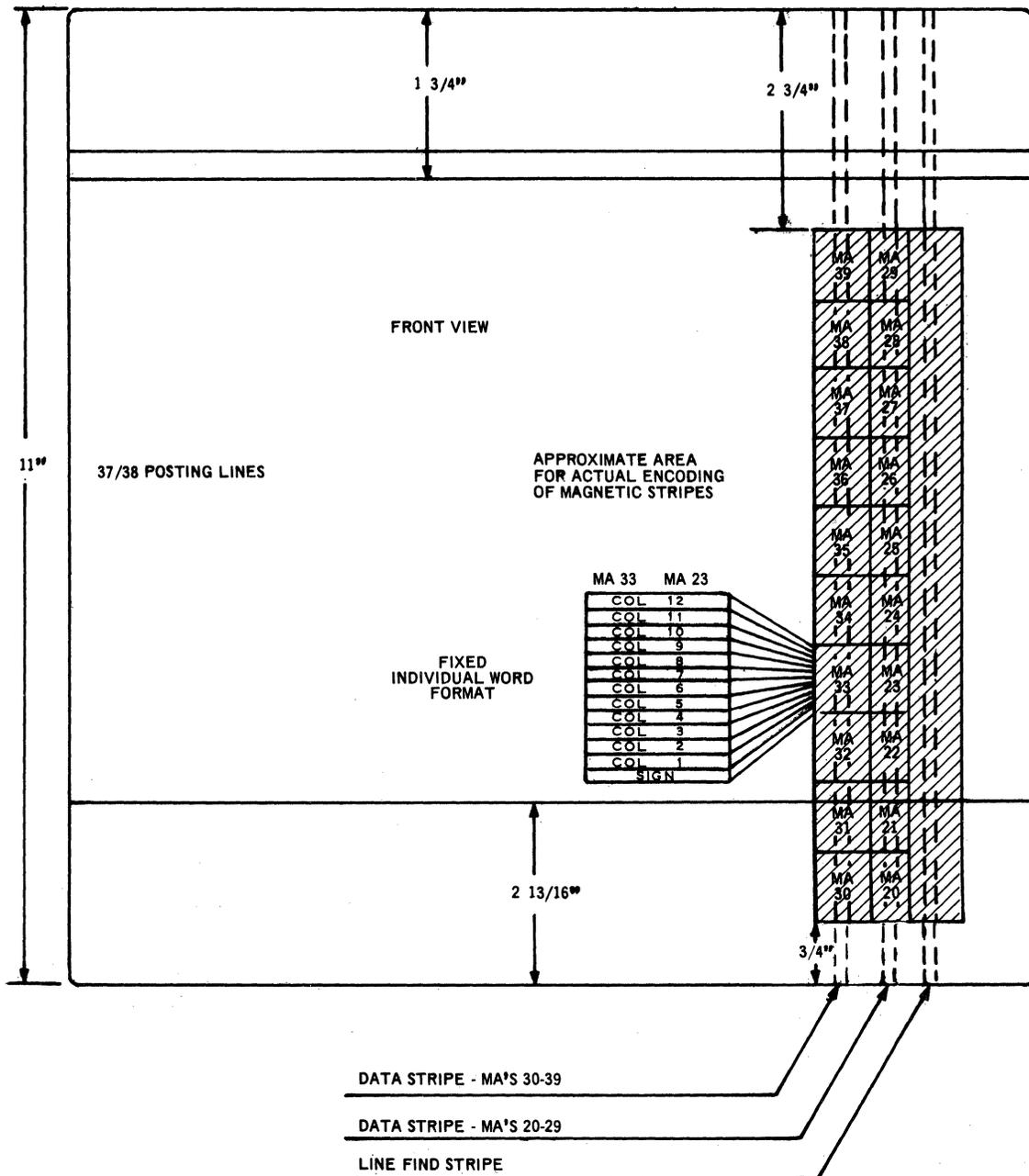


Figure 2-7. Stripe and Word Formatting

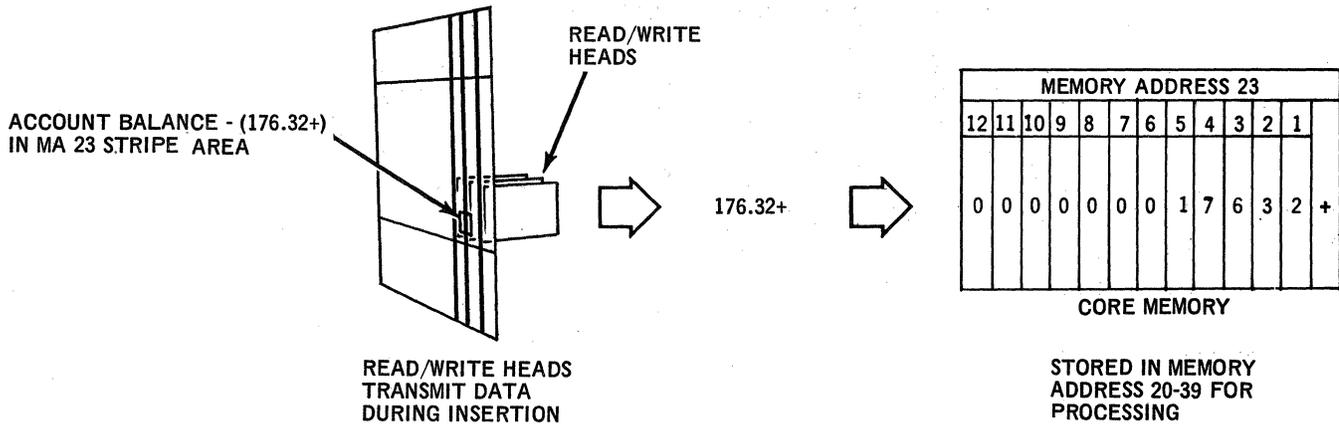


Figure 2-8. Striped Ledger Data Read-In

Form ejection causes the reversal of the read-in procedure, with magnetic core memory transmitting its contents from MA's 20-39 to the reading heads, and the old stripe data is erased and the new data written during form ejection.

Stripe Data Storage Allocation

Reference should be made to Figure 2-9, Sample Data Stripe Allocation. This stripe represents a Mortgage Loan Accounting application and provides certain guidelines regarding the assignment of data storage on the stripe.

ACCOUNT NUMBER

There are 2 methods of verification possible on the E 6000. The first method, through an internal program, would compare the account number in an MA with an account number either listed on the keyboard, or stored in any other MA from a previous listing, magnetic ledger insertion, or punched card read-in operation. This internal routine could programatically verify account selection.

A second method, where media must be associated with the ledger, would be to list the account number on the keyboard, and insert the desired ledger in a position programmed to "Verify". Failure to achieve a match between the keyboard and card would cause a light on the keyboard to come on immediately and halt the machine operation until the correct ledger and account number match was made.

Since this second method requires that the keyboard entry agree with the contents of MA 20, the account number is usually placed in MA 20 as a consistent location for all programs.

The account number itself may contain statistical codings, such as a control number or, in payroll, a prefix or suffix code to designate "married" or "single" for Federal Withholding Tax computations:

Example: 1,708.01 .01 = Single

1,711.00 .00 = Married

Since the entire contents of MA 20 is compared to the keyboard, the entire account number, including codings, must be entered to verify.

MA 20			MA 21			MA 22			MA 23			MA 24			MA 25			MA 26			MA 27			MA 28			MA 29		
Account Number			Orig. Loan Date	Orig. Loan Value	% Ap. V.	Int. Rate	Prin. Bal. (+)		Escrow Balance (+ -)			Contract Status Balance (+ -)			Loan Codes			NAME			AND			ADDRESS					
Taxes		Dt.	Hazard		Int.	Mtge. In.		Del.	Life Ins.		Del.	Total	Total	Previous 12 Month's Pay Record	NAME			AND			ADDRESS								
Date Paid	Mo. Amt.	Pd. to	Date Paid	Mo. Amt.	Pd. YTD (+)	Date Paid	Mo. Amt.	Int. Bal. (+)	Date Paid	Mo. Amt.	Esc. Bal. (+)	Esc. Pmt. (+)	Reg. Pmt. (+)																
MA 30			MA 31			MA 32			MA 33			MA 34			MA 35			MA 36			MA 37			MA 38			MA 39		

Figure 2-9. Sample Data Stripe Allocation

ACCOUNT BALANCES - ANY SIGN POSSIBLE

The next area to consider is assignment of stripe data area to any desired account balances. First, consider any balance (units or dollars) that might possibly have a sign change at any time for any reason imaginable. When these balances have been determined, assign a full 12 digits plus sign to these balances (a whole Memory Address) to provide for a changing sign condition. In Figure 2-9, MA's 23 and 24 contain the Escrow Balance and the Contract Status Balance. Since both of these balances have the potential of going "minus" at any time, a full 12-digit-plus-sign Memory Address has been assigned to this data.

ACCOUNT BALANCES - NO SIGN CHANGE POSSIBLE

Wherever a changing balance is determined to never have the possibility of a sign change, this unit of data may be assigned to any consecutive group of data positions in any given Memory Address. (A unit of information of any size should never overlap between MA's.) For example, the Principal Balance is a constantly changing balance, but will never have a minus condition. When it reaches .00, the loan has been paid off. This balance has a maximum size of eight digits, or 999,999.99 dollars, and is assigned to the eight right-hand digit positions of MA 22 in Figure 2-9.

Two 6-digit amounts occupy MA 34, one in the six high order positions and one in the six low-order positions.

Delinquency balances for interest and escrow balances are only required in whole dollar figures for loan reporting, so these balances

are maintained in the four low-order positions of MA's 32 and 33, respectively, dropping the tens and units positions and storing dollars only.

NAME, ADDRESS, AND OTHER ALPHA DATA

To represent an alphabetic character in magnetic core memory, two memory locations must work together at all times. When dealing with magnetic striped ledger alpha, MA's in the 20 and 30 decade are "paired" for storage of alpha characters. The pairs must always be the same units digit in each decade; i.e. MA's 26 and 36 together, MA's 27 and 37, etc.

Although alpha data can be assigned to any paired MA's in the 20-30 decades, the high-order MA's, (in Figure 2-9, MA's 26-29 and MA's 36-39) are the most convenient to use for alpha data storage. This will eliminate need to program or test for "overflow" typing beyond the defined capacity into other data storage area. Again, maximum record size will govern this assignment.

STATISTICAL REPORTING, CODING AND DATA

To provide management reporting information automatically, any remaining digit positions may be assigned to dates, constants, special codings or other factors. It is programmatically possible to isolate as small as a single digit of coding from all other stripe data in order to prepare reporting media.

Careful record must be kept of the "structure" of the stripe data on every application in order to rebuild a damaged ledger and provide exact coding locations for report program writing.

SYSTEMS CONSIDERATIONS

3-1. PROBLEM DEFINITION

General

Electronic accounting systems must contain an instruction program to act on data and make decisions. Since these systems have no capabilities of logical thought, all desired results, decisions, and computations must occur by a conscious programming effort on the part of the individual responsible for the programming task.

Obviously, the resulting program can be only as good as the information used to prepare the program. This section deals with useful tools to assist in problem definition.

Analysis Guides

The first step in problem definition is adequate documentation of the present procedures, to assist in organizing information and as a guide to recalling some of the more commonplace, but vital facts about a system. Analysis Guides for some of the more general accounting applications are:

1. Billing Analysis Guide.
2. Accounts Receivable and Sales Distribution Analysis Guide.
3. Accounts Payable Analysis Guide.
4. Stores Records Analysis Guide.
5. Payroll Analysis Guide.
6. Wage Accrual Analysis Guide.
7. Piece Work Analysis Guide.

To illustrate the detail of analysis required, a 4-page Payroll Analysis Guide has been reproduced as Figure 3-1.

Source Media

Page 1 of the Analysis Guide indicates that source media should be prepared as samples with entries. This is a vital part of any good analysis for Series E 6000 equipment.

Volume Data

To effectively time out and schedule each job, Page 1 of the Analysis Guide asks for volume figures. These should be based upon actual count of the data requested as this data must be used in scheduling.

Detail Information

Depending upon the application, the remaining questions deal with those questions which have, in the past, been unusual or likely to cause trouble if their answer was not obtained. The E 6000 requires even more depth than asked for here. For example, at the top of Page 3, the notation is made "If retirement is to be calculated, obtain the calculation procedure."

This requires the complete formulization of the method(s) of computing retirement. In addition, the E 6000 will have to have some means of knowing when to compute retirement if not all employees are eligible. The complete detail of the eligibility system is necessary for this program to provide maximization of automatic procedures.

Coding Systems

Any present system of number codings must be carefully documented, especially when it is used for statistical reporting.

PAYROLL ANALYSIS GUIDE

Date _____

Firm Name _____ Type Business _____

Address _____ Telephone Number _____

Name - to whom proposal addressed _____ Title _____

Department head _____ Title _____

Person(s) assisting in analysis _____

Others involved in decision: Name _____ Title _____

Accounting Firm _____ Accountant _____

SECTION I: VOLUME DATA

		Hourly		Other
		Executive	Piece Work	
Number of Employees		_____	_____	_____
Number paid: Weekly		_____	_____	_____
Bi-Weekly		_____	_____	_____
Semi-Monthly		_____	_____	_____
Monthly		_____	_____	_____
Other		_____	_____	_____
Closing & Due Days (dates)				
Weekly	(C) _____	_____	_____	_____
	(D) _____	_____	_____	_____
Bi-Weekly	(C) _____	_____	_____	_____
	(D) _____	_____	_____	_____
Semi-Monthly	(C) _____	_____	_____	_____
	(D) _____	_____	_____	_____
Monthly	(C) _____	_____	_____	_____
	(D) _____	_____	_____	_____
Other	(C) _____	_____	_____	_____
	(D) _____	_____	_____	_____

Show as: (C) Tue - 11 AM
 (D) Fri - 11 AM

Source media for payroll preparation: _____ Obtain copy of each type with entries

Executive _____

Hourly/P.W. _____

Salaried _____

Other (_____) _____

Other (_____) _____

Do employees have "clock" numbers _____ Executive _____ Other _____

or other "I.D." numbers? _____ Hourly/P.W. (_____) _____

_____ Salaried (_____) _____

If yes, how many digits? _____ (show sample)

Are there seasonal or other peaks? _____ If yes, what is the effect on the workload?

Other factors affecting volume: _____

Figure 3-1. Payroll Analysis Guide

SECTION II: CALCULATION OF EARNINGS

Rates: Is one rate to be used to calculate earnings? _____ If not, how is the rate obtained? _____
How many digits in the rate? _____ (show sample, including digits to the right of the decimal point). Must hourly rate be shown on earnings statement? _____

Hours: Are portions of hours expressed in: 1/10? _____ 1/4? _____ 1/6? _____
1/60? _____ Other? _____
What is the base for regular hours: 40? _____ Other? _____

Other: How are O.T. hours indicated? (Assume 49 hours worked) OT _____ Reg _____
Is time and a half used for O.T. calculations? _____ If not, factor is: _____

Must provision be made for double time, etc? _____ How is this to be shown on the earnings statement? _____
Is incentive type pay applicable (i.e., night differential, etc.)? _____

If incentive pay is applicable, describe exactly how this affects regular and over-time calculations? _____

Determine if there are other factors affecting earnings calculations and pay, (i.e., minimum wage, etc.). If yes, describe fully: _____

Are commissions pre-calculated? _____ Source media: _____
Are commissions shown as "Other" pay? _____

If a salaried person gets overtime pay, how is the overtime pay calculated and is it shown as O.T. pay or "Other" pay? _____

Is Vacation pay, Sick Leave pay, etc., shown as: Regular pay? _____ Other pay? _____
Types of "Other" pay: _____
Other factors affecting Earnings Calculations: _____

SECTION III: DEDUCTIONS

Taxes: Is Federal W/H to be calculated? _____ Is FICA to be calculated? _____

Can "Combined" tax be used? _____

Is State W/H tax to be calculated? _____
Is State W/H tax to be accumulated by state? _____ How many? _____
Specify states involved: _____
Can payroll be prepared by state? _____

Is City tax to be calculated? _____ How many cities? _____
Is City tax to be accumulated by city? _____ Can payroll be prepared by city? _____ Obtain tax procedure for each city.

Are certain employees exempt from:
City tax? _____ How designated? _____
State tax? _____ How designated? _____

Figure 3-1. (Continued) Payroll Analysis Guide

Other: Is Retirement to be calculated? _____ Listed? _____

If retirement is to be calculated, obtain calculation procedure. In many instances, there is a relation between Retirement and FICA.

List the deductions other than taxes for which columns must be provided. Denote if they are applicable to every pay period, or periodic. If periodic, specify frequency.

<u>Deduction</u>	<u>Executive</u>	<u>Hourly/P.W.</u>	<u>Salaried</u>	<u>Other</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Types of "Other" deductions (for which columns are not provided):

How are expense reimbursements handled? _____

Determine if there are any unusual types of deductions. For example; in some businesses (i.e., hospitals, clubs, etc.) where employees eat meals on premises for the convenience of the employer, this amount is considered as an allowance and shown as other pay and, in turn, subtracted as a deduction. Explain fully.

Totals to Date: Indicate by "X" those applicable

Earnings (calendar YTD) _____ Fed W/H Tax _____ Bond _____ (Determine method
Earnings (fiscal YTD) _____ City Tax _____ of handling)
Earnings (not subject to FICA) _____ Retirement _____ Other _____

SECTION IV: CHECK PREPARATION

Are preprinted check numbers to be used? _____ Where located? _____

Are check numbers to be printed by payroll machine? _____

Is check protection to be printed by payroll machine? _____

Is a check protector to be used? _____ Where protected? _____

How many signatures on check? _____

Name of Bank: _____ Bank Account No. - _____

Are checks to be pre-addressed? _____ How? _____

Is Social Security Number to be shown on check? _____

Other check data: _____

Figure 3-1. (Continued) Payroll Analysis Guide

SECTION V: TOTALS

Determine if payroll is to be prepared by department of other unit (i.e., branch, job, cost center, etc.). How many such units? _____

Are departmental (or other unit) totals to be provided? _____ If yes, indicate by "X" which totals must be provided for each department:

Reg Hours	_____	Fed W/H	_____	Net Pay	_____
O.T. Hours	_____	FICA	_____	Deductions (by type)	_____
Reg Earns	_____	City Tax	_____		_____
O.T. Earns	_____	State Tax	_____		_____
Gross Earns	_____	Retire	_____		_____

Are totals "progressed" (subtotaled) by unit? _____ or Totaled? _____
List ALL "grand" totals to be provided:

SECTION VI: OTHER DATA

How is the payroll to be processed (when writing by department or other unit) when an employee works in two or more departments? _____

If the firm does Government contract work, must a copy of the payroll journal be forwarded to a governmental agency? _____ If yes, what information must be on the journal?

How are payroll checks reconciled? _____
Other applicable information: _____

SECTION VII: PRESENT SYSTEM

Method of Payroll preparation now used: _____

Equipment now used (show serial numbers): _____
Which, if any, to be traded in _____

Time spent in:	<u>No. People</u>	<u>Hours (day)</u>	<u>Overtime</u>	<u>Comments</u>
Payroll Calculation	_____	_____	_____	_____
Payroll Writing	_____	_____	_____	_____
941a preparation	_____	_____	_____	_____
W-2 preparation	_____	_____	_____	_____

Other applicable information: _____

If present ledger format is to be changed, draw headings for the tentative ledger.



Figure 3-1. (Continued) Payroll Analysis Guide

3-2. SYSTEMS ANALYSIS FLOW CHARTS

Definition

Some means must be provided to organize the detail contained in the Analysis Guide (and some which is not) into common communication media. A flow chart serves this purpose. It graphically depicts the flow of work through an accounting system.

For example, consider the general job of payroll preparation. When the payroll closes, the time cards are extended in the payroll clerk's office and transmitted to the accounting machine. The accounting machine operator prepares the following records for each employee:

Employee Check and Statement of Earnings.

Employee Earnings Ledger.

In addition, the payroll journal is prepared as a by-product of each employee posting.

At the completion of the payroll run, the General Ledger is updated and the time cards placed in a permanent file.

Figure 3-2 translates this general group of information into a flow chart, more easily read by all and easy to draw.

Symbols

This flow chart uses some standardized symbols which may be quickly drawn with a template, such as the Burroughs Flow Chart Template.

PAYROLL WRITING

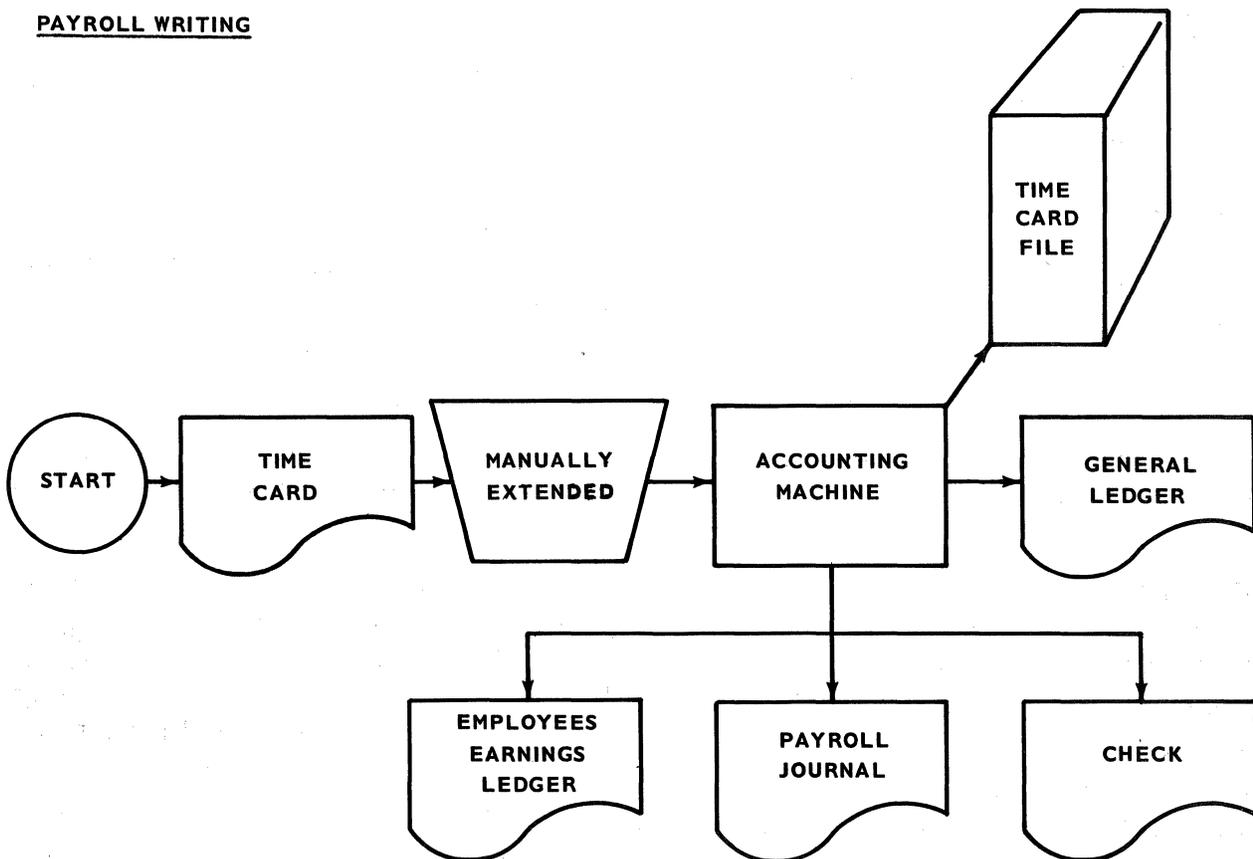
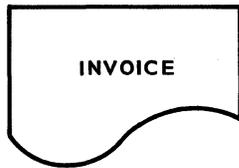


Figure 3-2. System Analysis Flow Chart



SOURCE DOCUMENT

This symbol is used to indicate a document or a ledger card.



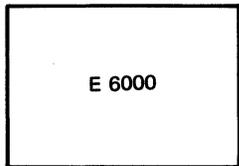
CLERICAL FUNCTION

The operation performed by someone is shown with the symbol to the left.



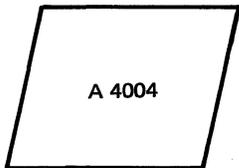
DECK OR FILE

Indicates a deck of punched cards, or a file, depending on how it is drawn. (See "Time Card File" above.)



MACHINE FUNCTION

The rectangle shows a machine in operation; the E 6000 system or conventional accounting machines.



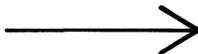
INPUT/OUTPUT ADJUNCTS

Shows the use of an adjunct to the E 6000 system is called for.



PRINTED OUTPUT

Reports or other data may be illustrated with the symbol at the left.



DIRECTION OF FLOW

Arrows are used to show the direction that the work is flowing; normally left to right.



Although the flow chart in Figure 3-2 is a systems analysis flow chart, it is really not detailed enough to properly describe what actually happens in the system.

For example, the time cards come in from each department in the operation and they are immediately taken to an adding machine where

a control total of hours is run in each department. Since the employee earnings ledgers are filed by employee, by department, the time cards must then be sorted into employee number in each department batch for ease of posting in sequence. At this time the extension of the wages is made and noted on the time card.

The employee earnings ledgers are posted on the accounting machine, and a payroll check and payroll journal are obtained as a by-product.

At the end of each department, the total hours is printed, permitting a balance between the posting operation and the hours control total previously established. If a balance is achieved, the time cards are permanently filed.

Payroll writing totals are obtained and in some manner, department costs for the payroll are calculated. These totals, plus the other payroll totals, are then posted in the General Ledger on the accounting machine

Figure 3-3 depicts this more detailed system analysis flow chart.

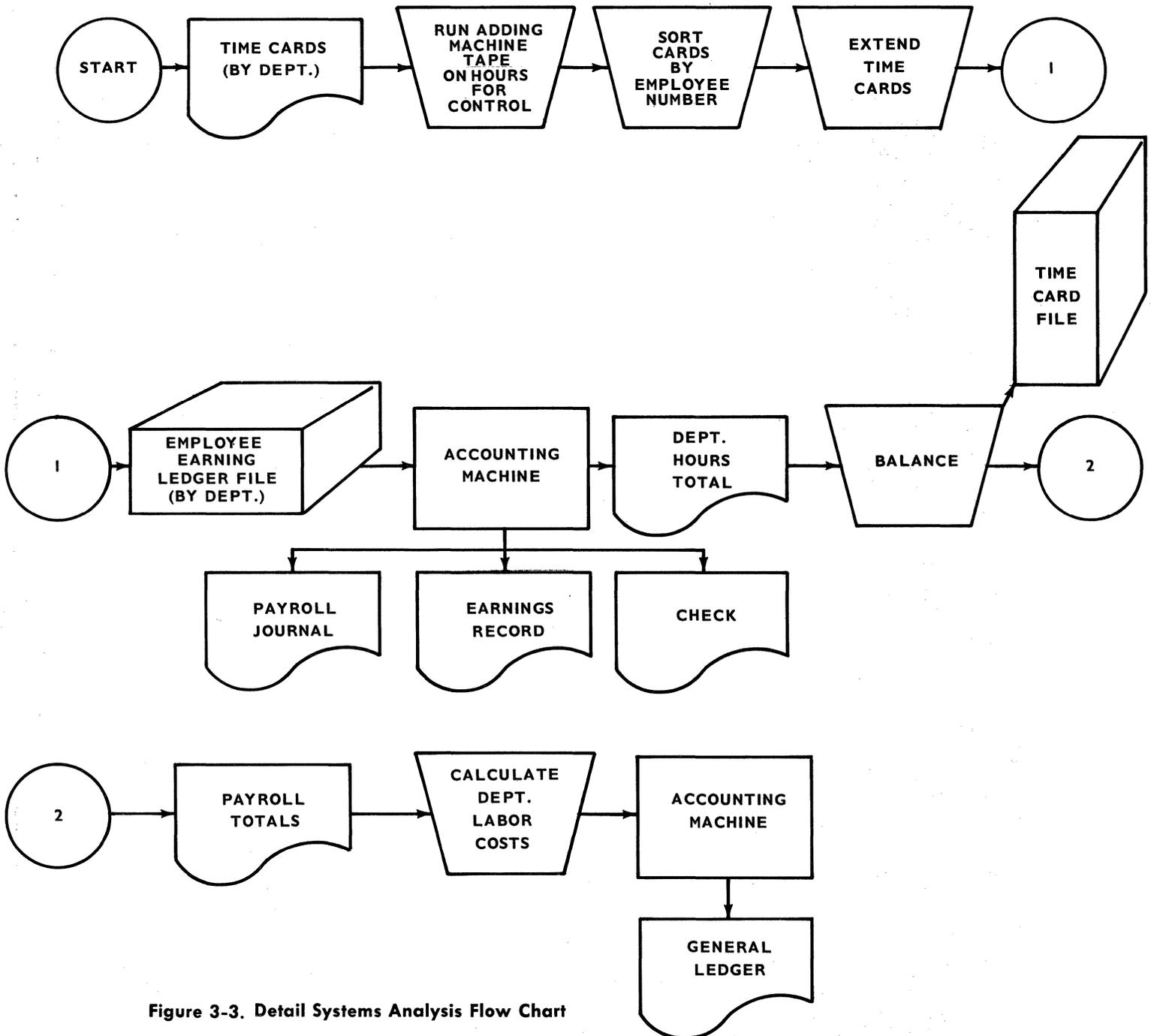


Figure 3-3. Detail Systems Analysis Flow Chart

From this flow chart, detail program flow charts may be prepared, using this system as a guide. For example, the single notation "Calculate Depart. Labor Costs" may eventually involve this series of calculations:

DEPARTMENTAL LABOR COST CALCULATION
 FACTORS: TOTAL PAYROLL DOLLARS
 TOTAL PAYROLL HOURS
 DEPARTMENT HOURS TOTAL

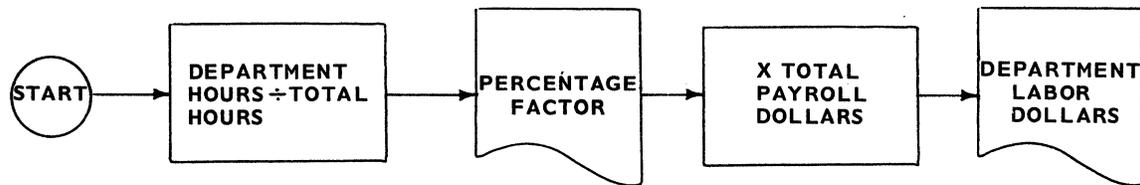


Figure 3-4. Program Flow Chart

From this flow chart, machine language programs may be prepared.

3-3. JOB SCHEDULING

General

The advent of electronic accounting systems marked the end of the application of one machine to one specific job. Because of the investment, and the inherent capability of the equipment to do more work in less time, broader areas of accounting application are being undertaken.

Today's equipment vitally affects nearly every phase of business record keeping, especially in those firms where a single electronic accounting system is the entire record-keeping unit.

To insure the proper scheduling of jobs reaching the machine to avoid bottlenecks and missed deadlines, a work schedule of jobs should be prepared, both before the installation and during the course of the installation.

Month-to-month adjustments mean accurate scheduling when job volumes vary by season or growth. Today's schedule will, in all probability, be invalid this time next year.

Scheduling Techniques

The following suggested procedure might be of assistance in planning the preparation of a job schedule.

1. Make a list of every job for which machine time will be required. Reports would certainly be a "job" whenever a special program to prepare a report is required. In general, any work requiring set-up and run time to produce a result should be classed as a job.
2. All jobs should be assigned either a deadline date or a range of dates within which the job must be completed. Example:

Deadline dates: 15th of each month, last day of each month, 2nd Friday of each month, every Wednesday.

Range of dates: W-2 between January 1 and 31 each year.

3. In order to effectively schedule each job in the total system framework, an estimate of time must be made in two areas:

- a. Get-ready time: the time required to prepare media before machine processing. This would include such things as sorting routines, preparation of pre-list adding machine tapes, stuffing of ledger trays, running a trail balance, coding, etc.
- b. Machine-run time: the start-to-finish time of the entire job, including totaling and balancing.

The preliminary time estimates may be based upon the present system timings, or a proposal. As soon as programs have been finalized, more complete timings are possible, based upon the actual run times of the postings.

When the installation is underway, actual timings based upon known volumes of work are possible, and should be used to prepare further job scheduling charts.

Figure 3-5 provides an example of a list of jobs and their timings on a pre-installation estimate basis.

As soon as jobs have been written out as illustrated in Figure 3-5, then a complete job schedule may be prepared.

Figure 3-6 illustrates a completed job schedule for those jobs which appeared in Figure 3-5.

A schedule should be prepared for each month, especially where there are seasonal variations or peaks, and for those reporting months such as fiscal year end, 941a quarterly payroll reports, etc. Generally, the most active month should be chosen since the maximum peak must be known to permit proper planning.

Jobs with definite deadline dates should be graphed first, then those more flexible jobs fit in around the deadline jobs wherever practical.

Each day is tentatively divided into four periods: two in the morning and two in the afternoon, for a single shift operation. The usual productivity factor would permit about 1-1/2 hours of productive time in each of these periods, or a total of about 6 hours per day productive equipment time. This would mean that the 10 hour payroll job would require about 1-1/2 days on the graph.

Tentative Job Schedule

XYZ Company

<u>Job Title</u>	<u>Deadline Date</u>	<u>Prep. Time</u>	<u>Run Time</u>
1. Payroll Writing - Sort and Prelist	Closed Sunday Due Thursday AM	3 hrs.	10 hrs.
2. Labor Distribution	As soon after closing as possible	-	2 hrs.
3. General Ledger Posting Coding Journal Entries	ASAP-EOM Payroll must always be posted by 10th of month	1 hr.	1 hr.

Figure 3-5. Tentative Job List and Timings

The preparation time on the payroll job can easily be overlapped with machine running time, as shown in the Monday blocks. Where two or more people are available, this overlapping of functions can increase equipment efficiency.

Some additional reporting jobs have been added to January's calendar that do not appear on the job list: EOM General Ledger posting for December and the attendant report writing, and the 941a and W-2 reporting jobs. Notice how these quickly complicate the scheduling job and make year end reports unavailable until the 11th of the month in this particular case.

3-4. JOB TIMING

General

In order to effectively schedule jobs, an accurate method of timing must be used to determine machine run time. There are several variables in timing a job, and the timings will almost never match exactly with the run time of the job. However, the variation will normally be the result of some unusual factor such as a new operator, or a change in procedures, and will serve accurately enough to permit efficient scheduling.

Timing Methods

Figure 3-7 details a timing form which can easily be used to determine average job timings.

Note that this detail timing requires at least a close estimate of the volumes and machine programming to be effective. This would normally be available as soon as the programming has been finalized.

Because the individual installation may vary in terms of efficiency of its operation, the following factors should be considered in adjusting the allowance for operator efficiency:

1. High frequency of media requiring operator decision or the decision of a manager before continuing posting, such as establishing distribution codings during the posting rather than before.
2. Frequency of breaks in the posting routine, such as totaling after a large number of small batches of work (like posting cash in a public utility, or departmental totals on a payroll).
3. Large percentage of errors in the media, like analyzing sales checks for a department store, which must be corrected on the spot.

When this Timing Chart has been completed, then the finalized Job Schedule may be prepared.

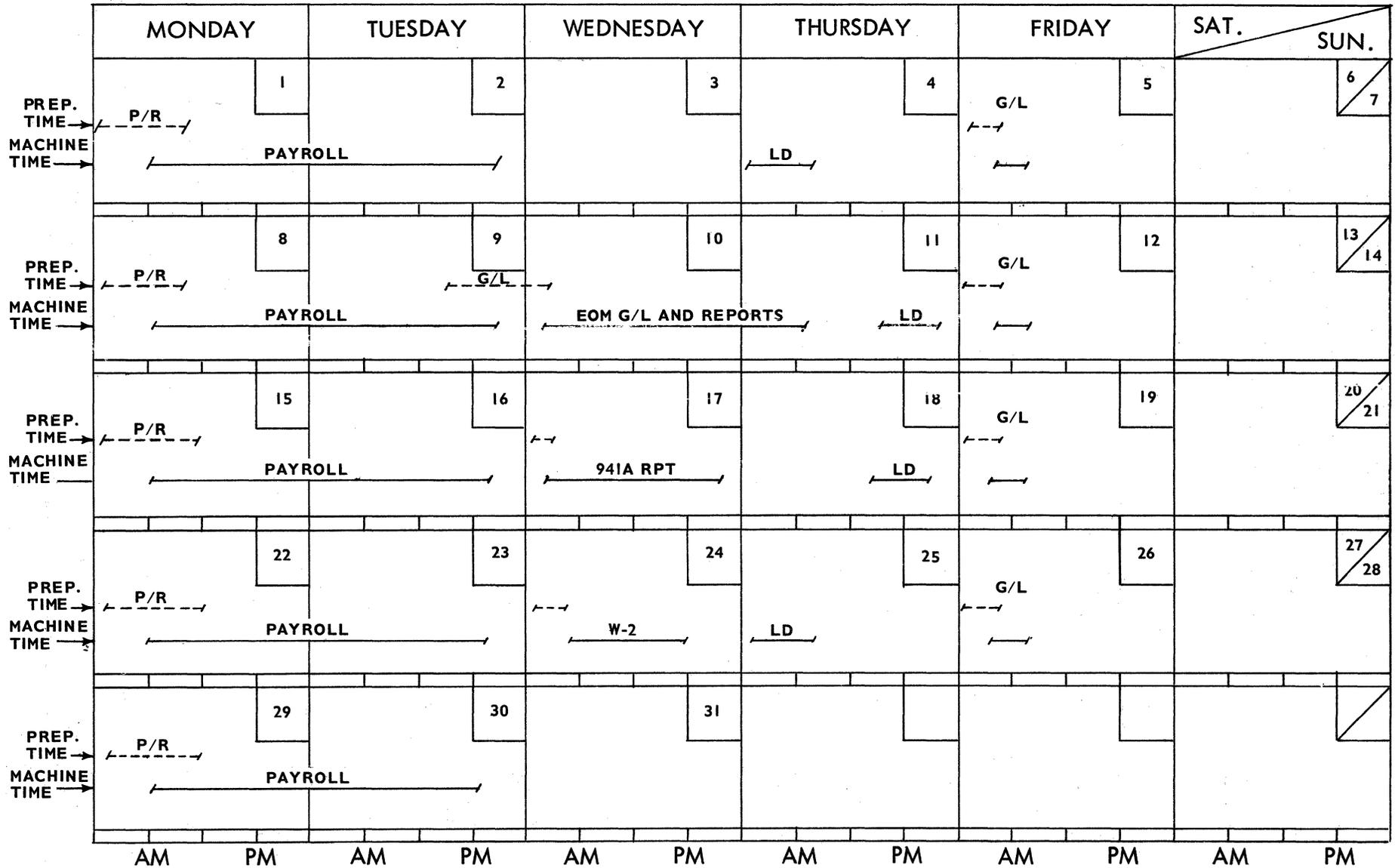


MONTH OF

January, 19--

JOB SCHEDULER

3-12



FILL IN ACTUAL DAYS OF MONTH IN UPPER RIGHT-HAND CORNER

————— MACHINE TIME

- - - - - PREPARATION TIME

Figure 3-6. Completed Job Schedule

JOB TIMING CHART

JOB TITLE _____

VOLUME OF WORK IN TERMS OF NUMBER OF LEDGER INSERTIONS _____

Fill out the chart according to the data from the Flow Chart, Program Sheets, and forms design:

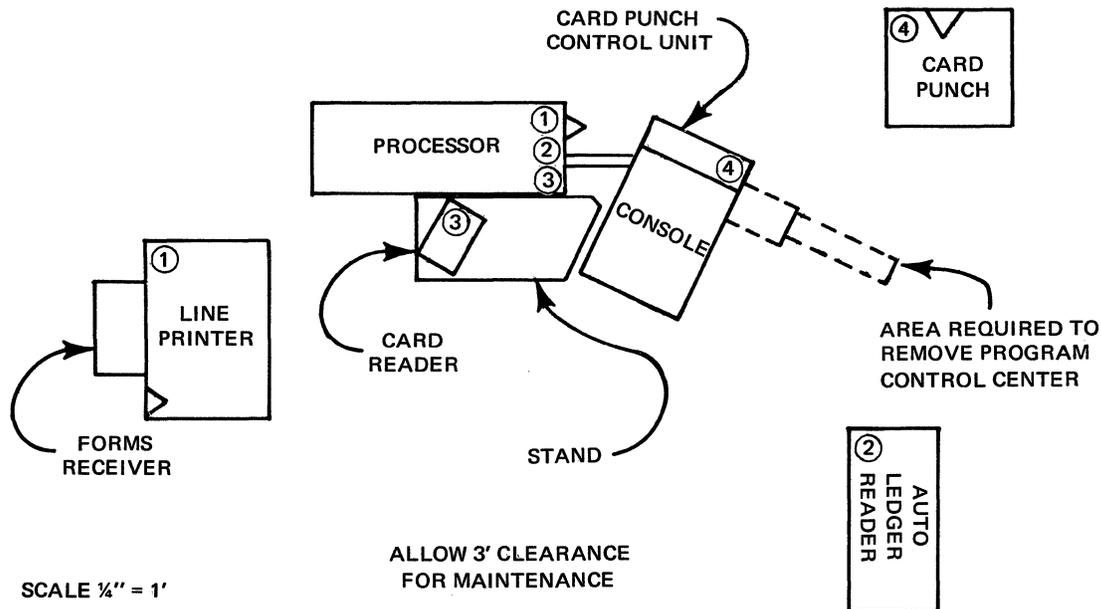
<u>DATA</u>	<u>TOTAL</u> <u>NO.</u>	x	<u>WORK</u> <u>UNIT</u>	<u>TOTAL SECONDS</u>
How many figures will the operator list on the keyboard in one average posting? (Includes the machine cycle time)	_____		x 2.0 sec.	_____
Other than keyboard entries, how many machine cycles will the machine make automatically in one posting?	_____		x .6 sec.	_____
Is there typing to be done? By the operator - average number of keystrokes on one line	_____		x .25 sec.	_____
Automatic typing from memory by the E 6000 - No. of strokes	_____		x .133 sec.	_____
Forms Handling:				
Magnetic Ledger card:				
How many will the operator select, insert and remove in one posting line: From a strict sequence, like payroll	_____		x 3.5 sec.	_____
From a random sequence, like Accounts Receivable ledgers	_____		x 8.0 sec.	_____
PLUS form alignment and ejection time, per striped ledger handled	_____		x 2.2 sec.	_____
Manually aligned forms: Number of manual forms handled	_____		x 3.0 sec.	_____
TOTAL NUMBER OF SECONDS ON ONE POSTING LINE				_____
TOTAL POSTING VOLUME				_____ X
TOTAL TIME (IN SECONDS) TO COMPLETE MACHINE RUN				_____
MULTIPLY BY THE OPERATING EFFICIENCY FACTOR OF 120% - INCLUDING SETUP, TOTALING, ERRORS, ETC.				_____ 120% X
TOTAL ACTUAL JOB TIME - IN SECONDS				_____
DIVIDE BY 60 TO DETERMINE TOTAL MINUTES OF PRODUCTION				_____ 60 ÷
TOTAL ESTIMATED JOB TIME:				_____

Figure 3-7. Job Timing Chart

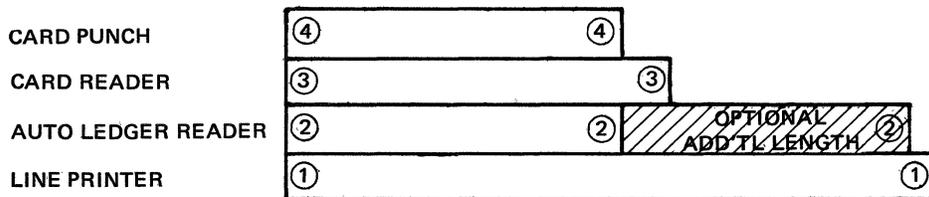
SECTION 4

DIMENSIONS, WEIGHT, AND POWER REQUIREMENTS

4-1. DIMENSIONS, WEIGHT, AND POWER REQUIREMENTS



INTER-CONNECTING CABLES
(USE TO DETERMINE PERIPHERAL PLACEMENT)



THE CONSOLE AND PROCESSOR ARE PHYSICALLY ATTACHED AS SHOWN ABOVE. THEIR RELATIVE POSITIONS CANNOT BE CHANGED.
CABLE LENGTHS HAVE BEEN SCALED DOWN TO ALLOW FOR DISTANCE OF CONNECTIONS ABOVE FLOOR LEVEL. NO OPTIONS OTHER THAN SHOWN.

④③②① INDICATES PERIPHERAL DEVICE CONNECTION POINTS.

> Indicates external power connection circuits required -

Processor - 120/240 volt, 60 cycle, 20 amp; wall connector is Pass & Seymour Co. # 5331 (4 prong, 20 amp.)

Line Printer - 120V, 60 cycle, 30 amp - Hubbell Twist Lock # 3331

Card Punch - 120V, 60 cycles, 15 amp - 2 pole, 3 wire grounding plug.

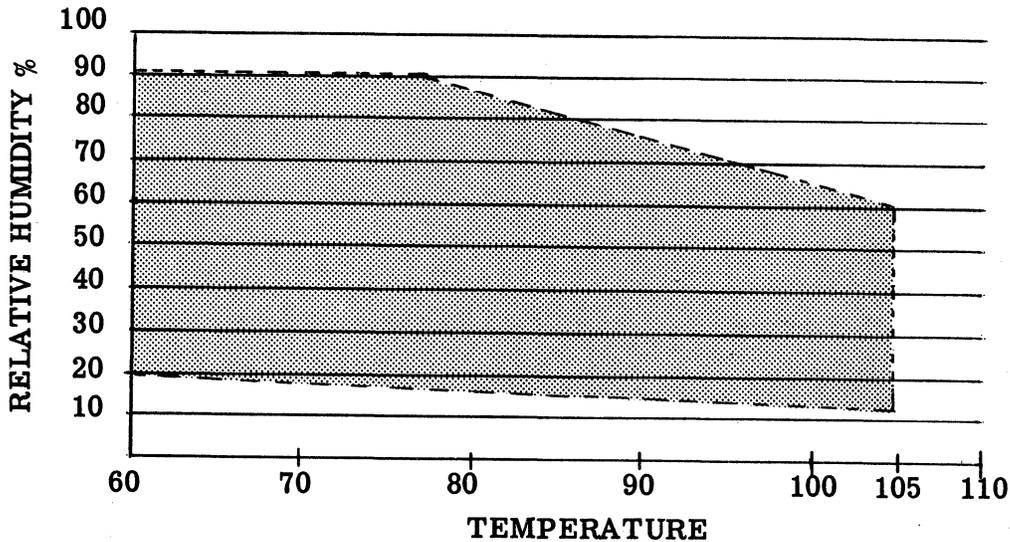
Component	Dimensions		Weight	Volts	Watts	Amps	BTU's	Connector Cable
	Depth	Width						
Processor	22"	63"	650	120/240V	1,550	}15 ³	}5,290	
Console	34"	33"	240	60C				
Card Reader	11"	25"	45	*	66	1 ³	290	12'
Stand	22"	48"	109					
Line Printer	30"	45"	500	120V/60C	1,950	17	6,655	15 1/2'
Ledger Reader	23"	46"	300	*	320	5 ⁸	1,092	9' or 15'
Card Punch	34"	32"	208	120V/60C	250	2 ⁸	850	9'
Card Punch C. U.	6"	22"	74	*	40		140	

4-2. RELATIVE HUMIDITY RANGE

The E 6000 systems are designed to operate within the following temperature ranges:

The relative humidity may vary within the following temperature humidity ranges without any adverse effect on the system:

Maximum 105°F
Minimum 60°F



4-3. GENERAL INFORMATION

Timings:	Printing and Cycling Speed	
	Carriage Tabulation	Print Cycles Per Minute
	Non-Tab	155
	.1"	120
	.5"	98
	1.0"	89
	Carriage Travel Speed	11" per second
	Magnetic Striped Ledger Read	
	(average 11" form - 1.1 second)	15" per second
	Magnetic Striped Ledger Write	
	(average 11" form - 1.1 second)	15" per second
	Typewriter Characters	7 1/2 per second
	Average Keyboard Entry	2 seconds
	Average Random Ledger Selection	8 seconds
	Average Manually Inserted Form	3 seconds



*Wherever There's
Business There's*



Burroughs