Burroughs GUIDE

TO

SYSTEMS DESIGN

Burroughs

GUIDE

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DESIGN

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Burroughs Guide to Systems Design

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INTRODUCTION

"Burroughs Guide to Systems Design" is a basic textbook that explains the procedure used to design a machine-oriented accounting or data processing system and record the system specifications in a way that will permit efficient development of the necessary application software.

The accounting or data processing system discussed in this publication is the machine operation, or operations, along with the associated clerical and other related operations required to operate the system.

The purpose of the accounting or data processing system is to provide specified information as a result of operating the system. The creation of the specified information is the result (Final output) obtained from operating the system.

The final result produced by the accounting, computing, or data processing machine may be obtained from operating one or several applicational programs along with one or several clerical or other related operations.

The general analysis and systems design procedure is:

1. Systems Analysis.
2. Define the output.
3. Define the processing.
4. Define the input.
5. Evaluate the system and,
6. Define for programing – or – re-analyze and repeat the procedure.

When the general analysis and systems design procedure is used to design an acceptable system, the system specifications are recorded in the form of:

1. A general systems flow chart of the complete accounting or data processing system.
2. Completed Program Definition Worksheets, MKTG 2366, illustrating the required output from each program in the system.
3. Completed Program Definition Charts, MKTG 2402, explaining the output, processing, and input requirements of each program in the system.

The necessary applicational software will then be developed from this information.

SECTION 1
GENERAL ANALYSIS AND SYSTEMS DESIGN

SYSTEMS DESIGN

Systems design is the analysis and subsequent organization of a problem to make it suitable for solution or processing by accounting, computing, or data processing equipment.

To design a system a thorough analysis must be made to: (1) Obtain all the necessary information, and (2) organize the information in the form of an acceptable solution.

ANALYSIS PROCEDURE

OBTAINING THE INFORMATION

The appropriate Burroughs Systems Analysis Guides can be used to obtain and record the information. If an Analysis Guide is not available for the particular application, the necessary information required to design the accounting or data processing system can generally be classified within the following categories for each application or operation.

1. General description of the application or operation.
2. Required arithmetic and/or processing.
3. Accumulations.
4. Volume information.
5. Output and/or input forms or records specifications
6. Work flow.
7. Keyboard input media.
8. Timings of present operations.

This information should be recorded for each application or operation in complete detail.

ORGANIZING THE INFORMATION INTO A SOLUTION

When all the necessary information is obtained and recorded, the first step in organizing the solution is to decide what results are required. These results are the output from the equipment. When the output is identified, the next step is to determine what processing (arithmetic or other operation) is required to obtain the output. The solution is then completed by identifying the input needed to enable this processing. A general systems flow chart is used to record the completed solution as shown in Figure 1-2.

The completed general systems solution is then evaluated to determine if it is acceptable. This evaluation would take into consideration equipment capability, configuration, timings, etc. If the evaluation reveals that the solution is not acceptable, the procedure is repeated to develop a different solution. See Figures 1-1 and 1-2.

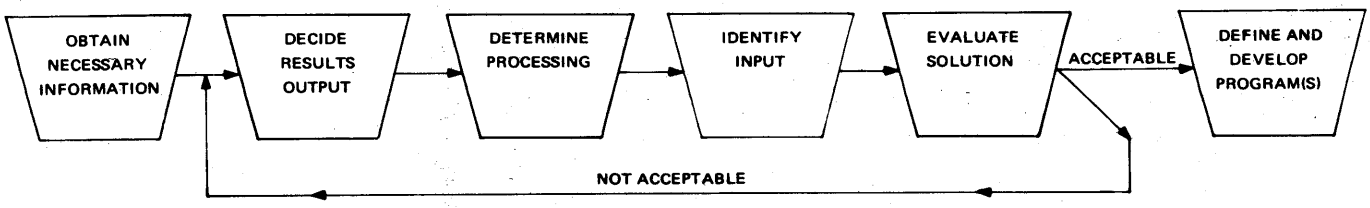


FIGURE 1-1, Analysis Procedure

EXAMPLE

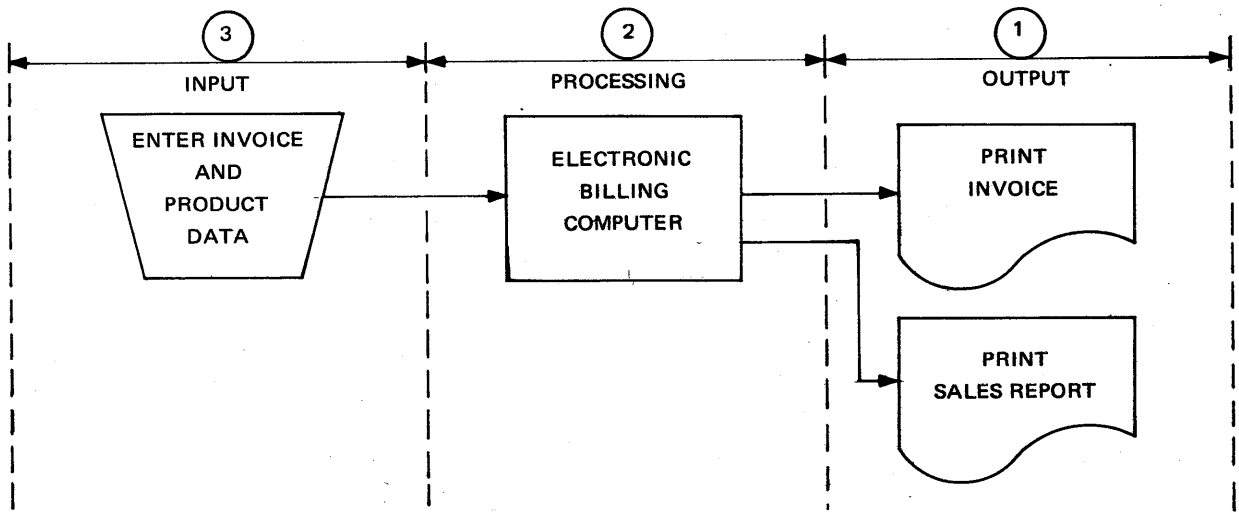
Application: Invoice writing with sales report.

1. REQUIRED OUTPUT: Customer invoice. Daily sales report by product.

2. PROCESSING REQUIRED: Invoice writing program. Accumulations of sales by 600 products and sales report writing program.

3. INPUT TO ENABLE PROCESSING: Keyboard.

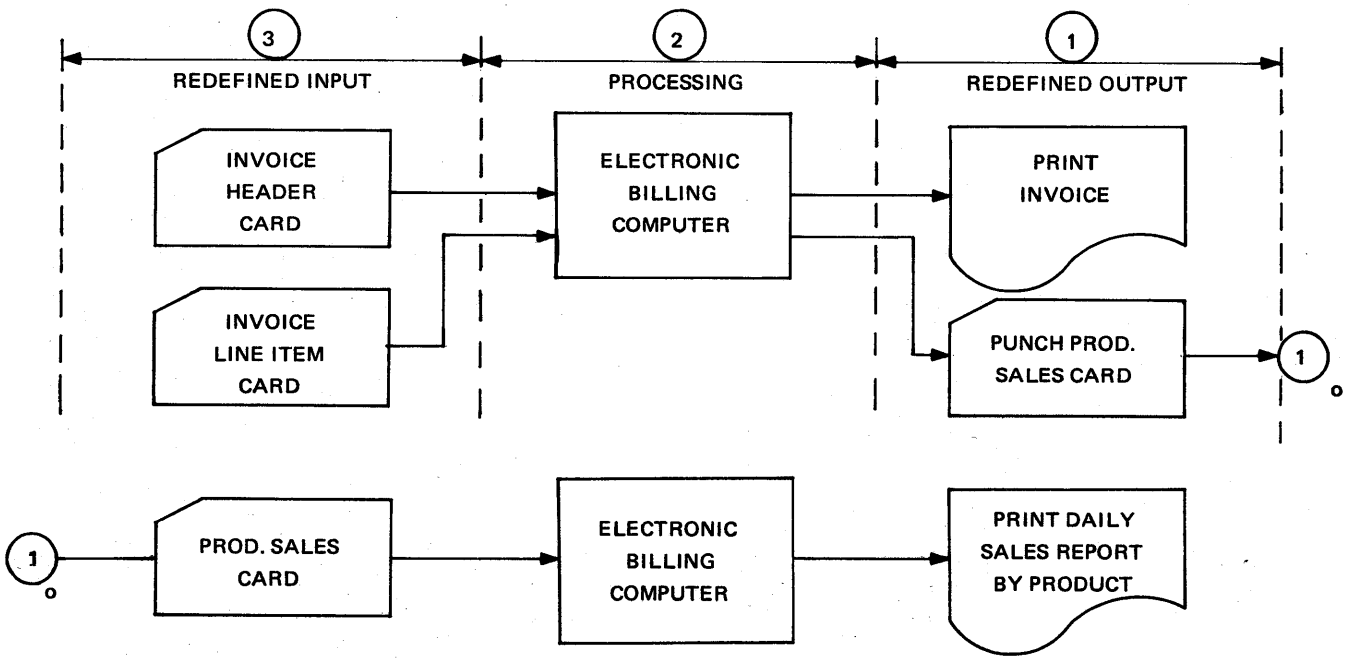
FIRST SOLUTION:



EVALUATION: Not acceptable – 600 product sales accumulations beyond memory capacity of this style computer, and keyboard entries take too much time for required volume.

FIGURE 1-2, Sample Analysis of Invoicing Application

SECOND SOLUTION:



EVALUATION: Acceptable. Redefined output card used as input for daily sales report solves memory problem. Redefined card input solves time problem from keyboard input.

FIGURE 1-2, Sample Analysis of Invoicing Application (continued)

PROGRAM DEFINITION

Proper use of the analysis procedure is the most efficient and easiest way to design an accounting or data processing system. The use of this analysis procedure provides a general systems flow chart of the system along with the detailed information about the system.

Program definition is completed by simply recording the detailed programing information on the Program Definition Worksheet, MKTG 2366, and Program Definition Chart, MKTG 2402 in the sequence indicated by the general systems flow chart. When this is done, programs can be written.

SECTION 2
PROGRAM DEFINITION FORMS

PROGRAM DEFINITION FORMS

This section explains the mechanics of how the program definition forms are prepared. The forms are the Program Definition Worksheet, MKTG 2366 and the Program Definition Chart, MKTG 2402 (formerly 1040060). Program definition techniques are explained in the other sections of this manual.

PROGRAM DEFINITION WORKSHEET

Output for each program is drawn on the Program Definition Worksheet (MKTG 2366). Customer, application, equipment, salesman, branch, and date are shown in the upper left-hand section of the form.

The worksheet is then used to draw a picture of the output required by the program. This picture illustrates:

1. Horizontal dimensions of the total printing area.
2. Horizontal location of forms within the printing area.
3. Forms design.
4. Vertical positioning of the forms.
5. Printing required.
6. Printing locations.
7. Sequence in which the program is to operate.

USE OF THE PROGRAM DEFINITION WORKSHEET

1. Identify the total horizontal printing area. Draw a horizontal line in the upper margin extending from the first printing position on the left to the last printing position on the right. For a machine with a 15-inch platen, this line extends from scale 0 on the left, to scale 15.0 on the right. SEE A IN FIGURE 2-1.

2. Draw vertical lines representing the left and right sides of the form(s). Horizontal location of the form(s) within the printing area is identified by the scale location of these lines. SEE B IN FIGURE 2-1.

3. Complete a scale drawing of the form(s) showing all vertical dimensions (when required by particular machine style), horizontal dimensions, column headings, and all other pertinent preprinted words, lines, etc. on the form. When vertical dimensions are included, normal vertical positioning of the form is identified. When vertical dimensions are not shown, required vertical spacing must be illustrated with an adequate number of sample figures or narrative explanation. SEE C IN FIGURE 2-1.

4. Enter samples of all the required printing at the appropriate scale positions. Entries should be maximum printing capacity desired in each field or column. Use X's for alpha and 9's with punctuation and symbols for numeric entries. These entries identify the printing location to the programmer without further explanation. SEE D IN FIGURE 2-1.

5. Indicate the sequence in which the program is to operate with a circled sequence number in the appropriate location. Use arrows to point to the specific operation if there isn't enough space.

   This sequence number along with a narrative description of the operation is entered on the "Program Definition Chart" as explained on Page 2-4 of this manual.

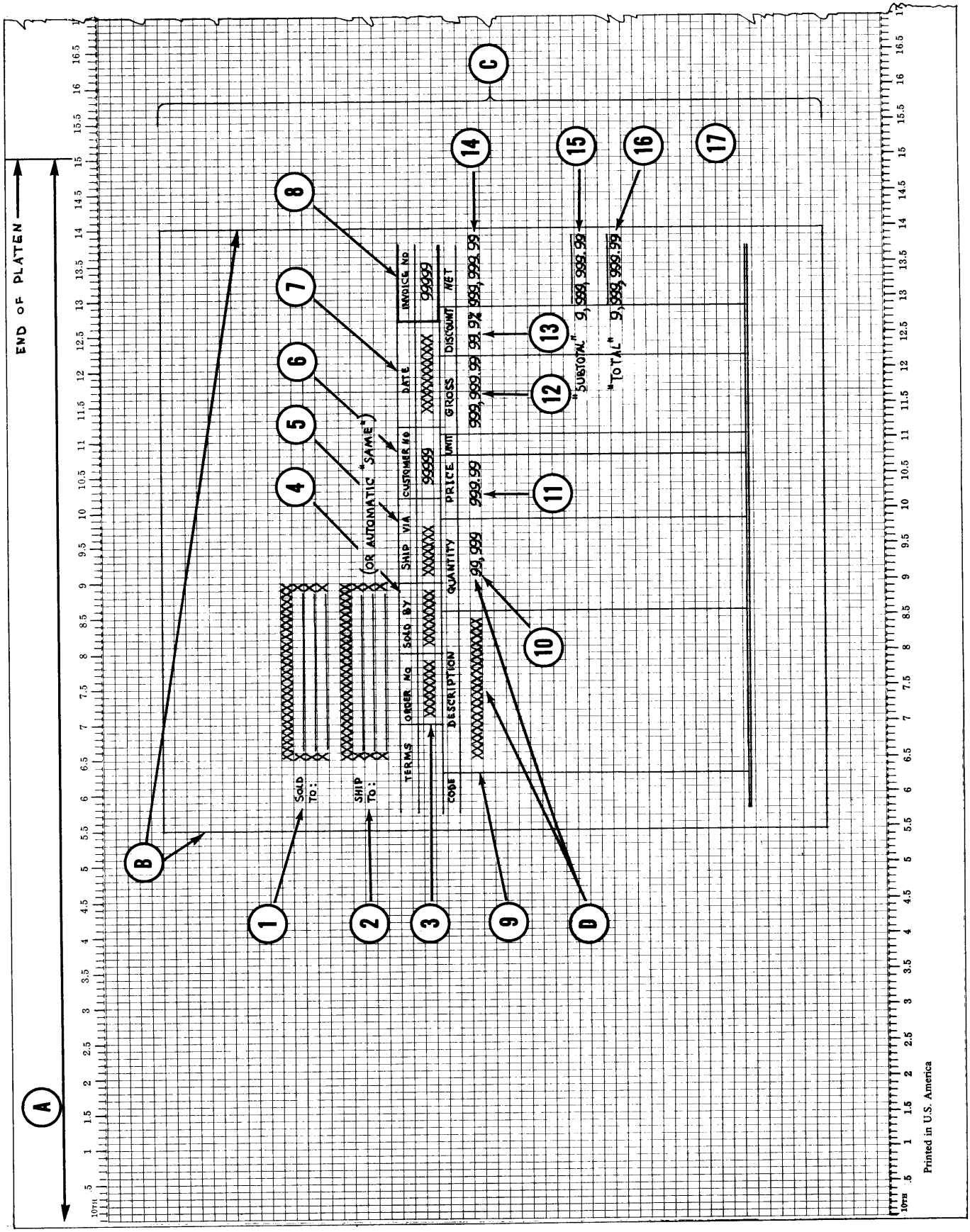


FIGURE 2-1, Program Definition Worksheet

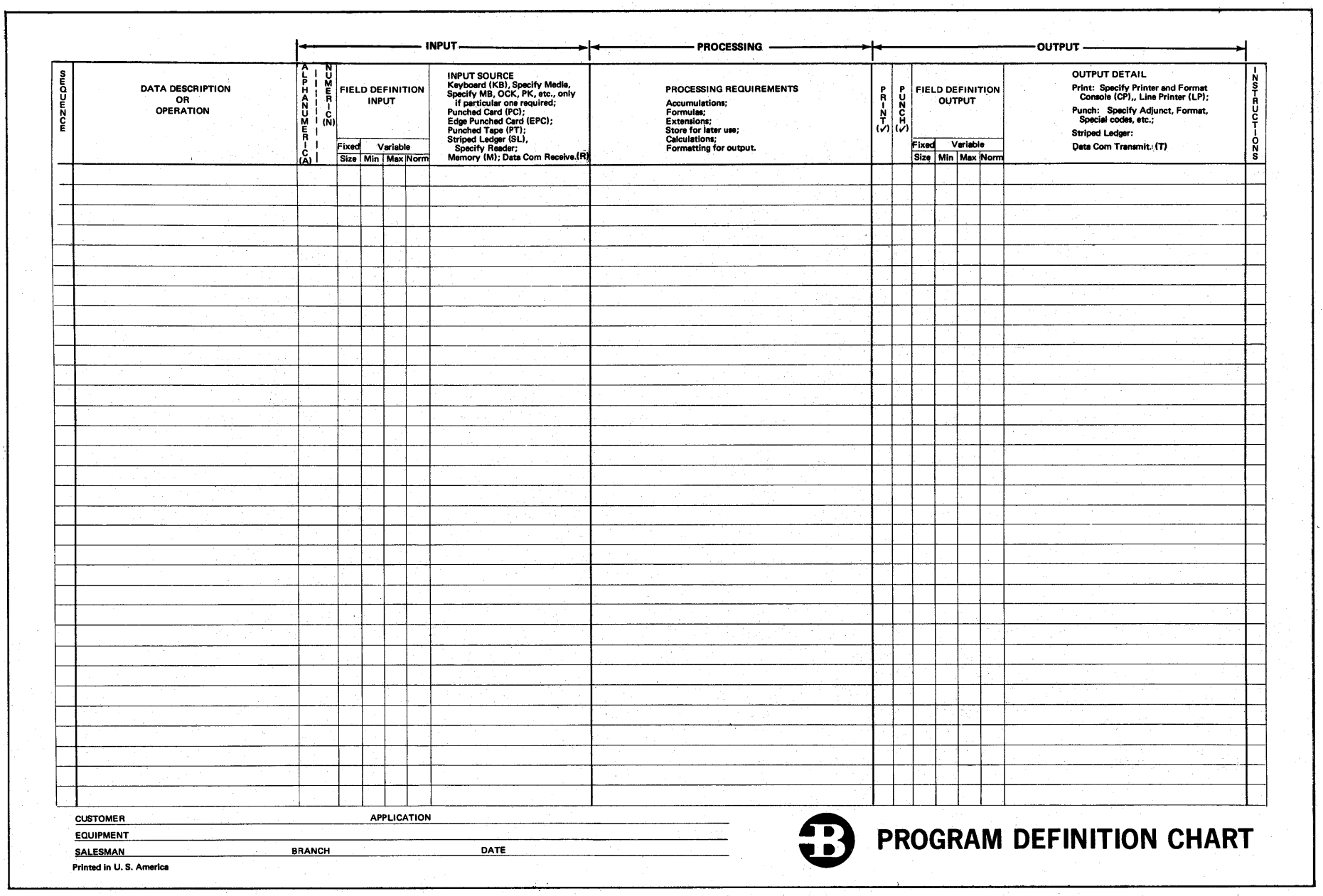


FIGURE 2-2, Program Definition Chart

PROBLEM DEFINITION CHART

The narrative explanation of the output processing, and input is written on the Program Definition Chart (MKTG 2402). Customer, application, equipment, salesman, branch, and date are shown in the lower left-hand section of the form. A description of the other sections follows.

USE OF PROGRAM DEFINITION CHART

SEQUENCE

The sequence column is used to enter a number that identifies when the program is to operate according to the explanation on that line. The operation identified with sequence 1 will occur first, sequence 2 second, sequence 3 third, etc. SEE FIGURE 2-3.

SEQUENCE	DATA DESCRIPTION OR OPERATION
2	Type ship to name and address
1	Type sold to name and address
3	Enter order number

FIGURE 2-3, Sequence and Data Description or Operation

Sequence 1 Program allows operator to type sold to name and address.

Sequence 2 Program spaces invoice and allows operator to type ship to name and address.

Sequence 3 Program allows operator to enter order number.

DATA DESCRIPTION OR OPERATION

The data description or operation column is used for a narrative explanation of the data or operation. One or more lines may be used as required. SEE FIGURE 2-3.

INPUT: ALPHANUMERIC (A) NUMERIC (N)

← INPUT →						
ALPHANUMERIC (A)	NUMERIC (N)	FIELD DEFINITION INPUT				INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive.(R)
		Fixed	Variable			
		Size	Min	Max	Norm	
A						
N						
A+N						

FIGURE 2-4, Input

This column is used to indicate that the input data is alphanumeric, numeric, or both. Enter "A" for alphanumeric and "N" for numeric and "A" and "N" for both. SEE FIGURE 2-4.

FIELD DEFINITION INPUT

The Field Definition Input column is used to identify the digit or character capacity of the input data and to indicate if the size of this data is fixed or variable.

If the input data is fixed (always the same number of characters or digits), the number of characters or digits is entered in the "Fixed Size" column. SEE "A" IN FIGURE 2-5.

If the input data is variable (not always the same number of characters or digits), the minimum, maximum, and normal number of characters or digits are entered in the appropriate "Variable" columns. SEE "B" IN FIGURE 2-5.

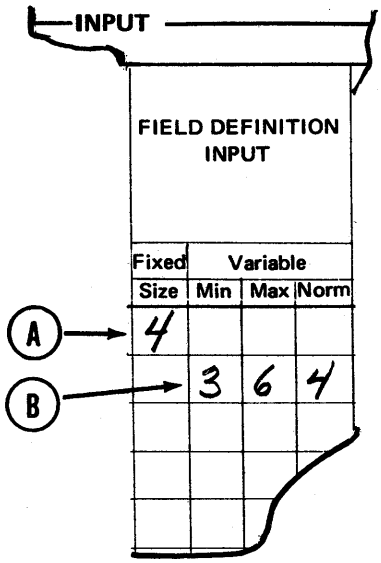


FIGURE 2-5, Field Definition Input

INPUT SOURCE

The Input Source column is used to identify how the data is entered into the machine (i.e., keyboard, punched card, edge punched card, etc.), and the media (when applicable). This column is also used for a brief narrative explanation of the input.

Initials of the input source (e.g., KB for keyboard) are entered along with the explanation. One or more lines may be used as required. See illustrations of A through H below on FIGURE 2-6.

A. Keyboard input with time cards as media. In this example, no motor bar (MB), operation control key (OCK), program key (PK), or other operator control is specified. The programmer would choose the control that most conveniently fits within the program.

   An operator control is specified in this column only when it is absolutely required; such as, to duplicate an existing installation, specified by the customer, etc.

B. Punched card input. Explanation tells the programmer that the distribution operation is ended when the descriptive total cards are fed.

C. Edge punched card input. One edge punched card is used for each invoice line description.

D. Punched tape input. The customer name is read from the punched tape strip filed with the customer ledger.

E. Striped ledger input. Inventory ledger is inserted in the console.

F. Memory input. The period ending date is read from memory.

G. Memory input. The balance is a computed result from a prior operation.

H. Receipt of a data comm. message is the input.

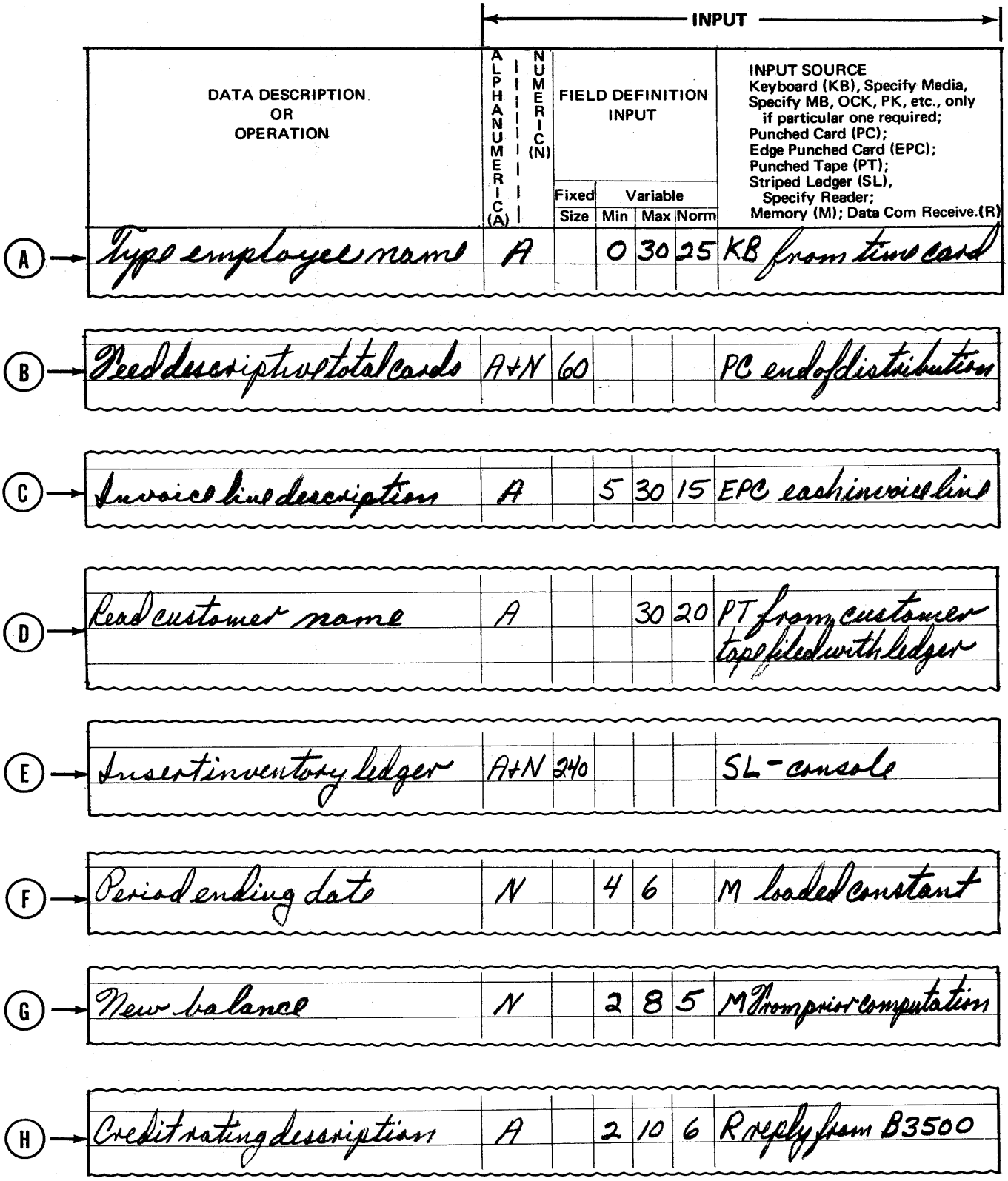


FIGURE 2-6, Input Source

PROCESSING

PROCESSING REQUIREMENTS

The Processing Requirements column is used for a narrative explanation of what the machine does with the data. This explanation must tell specifically what the machine does, but not necessarily how (programmatically) it does it. One or more lines may be used as required. SEE FIGURE 2-7.

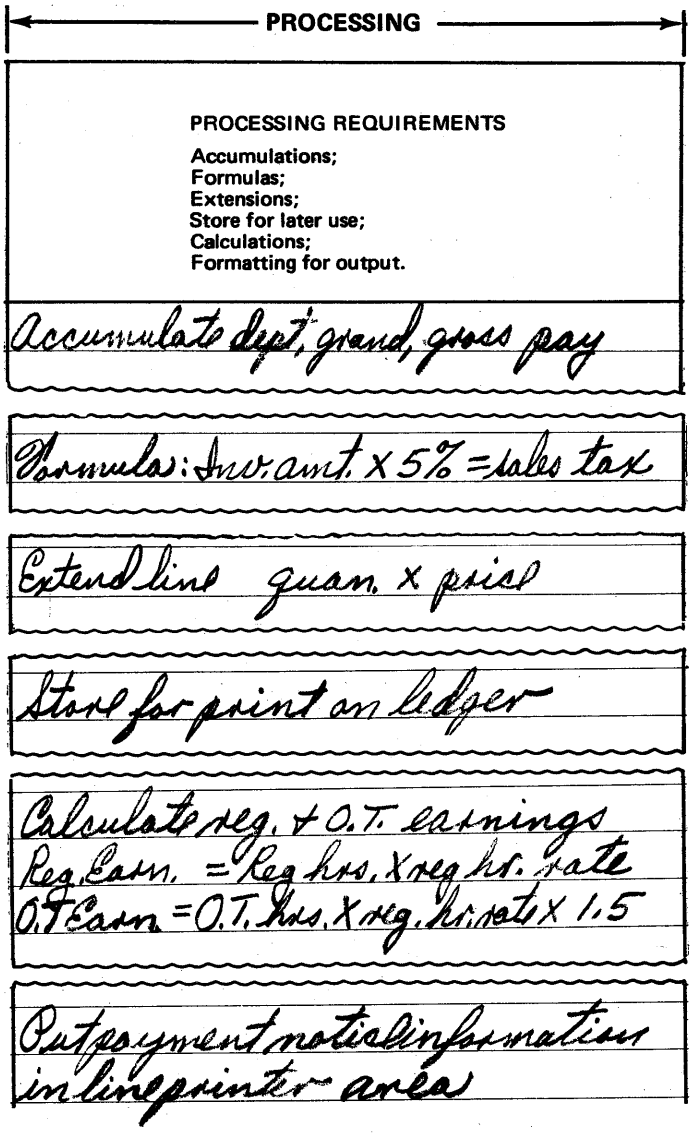


FIGURE 2-7, Processing Requirements

OUTPUT

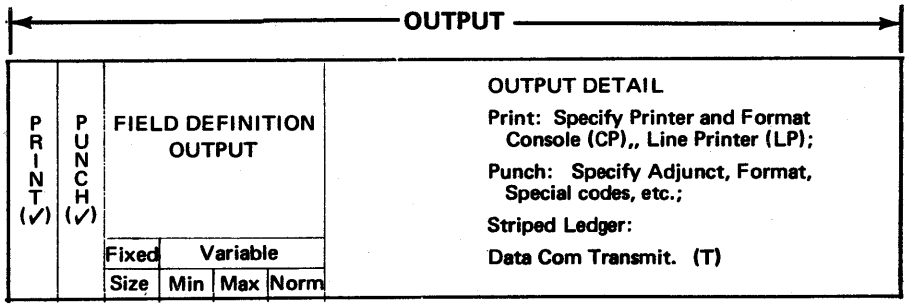


FIGURE 2-8, Output

PRINT (√)

The Print column is used to enter a check mark (√) if the output is to be printed. SEE FIGURE 2-9.

PUNCH (√)

The Punch column is used to enter a check mark (√) if the output is to be punched. SEE FIGURE 2-9.

FIELD DEFINITION OUTPUT

The Field Definition Output column is used to identify the digit or character capacity of the output data and also if this data is fixed or variable.

If the output data is fixed (always the same number of characters or digits), the number of characters or digits is entered in the Fixed Size column. SEE "A" IN FIGURE 2-9.

If the output data is variable (not always the same number of characters or digits), the minimum, maximum, and normal number of characters or digits are entered in the appropriate Variable columns. SEE "B" IN FIGURE 2-9.

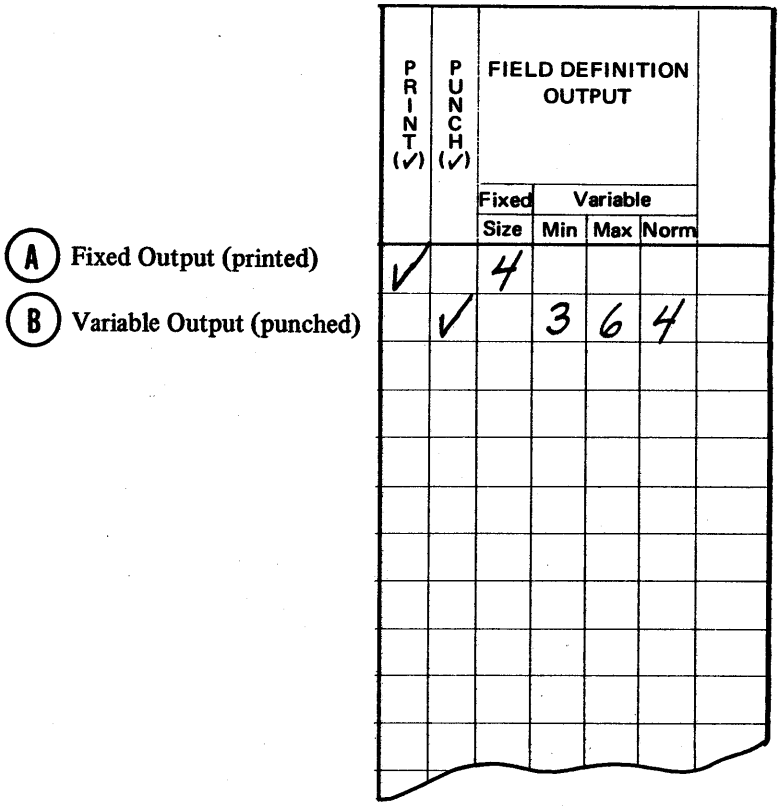


FIGURE 2-9, Field Definition Output

OUTPUT DETAIL

The output detail column is used for a detailed explanation of the output requirements. One or more lines may be used as required.

If the output is Print, specify the printer (i.e., CP for console, LP for line printer) and write an explanation (when applicable) of the printing format shown on the Program Definition Worksheet, MKTG 2366. SEE FIGURE 2-10.

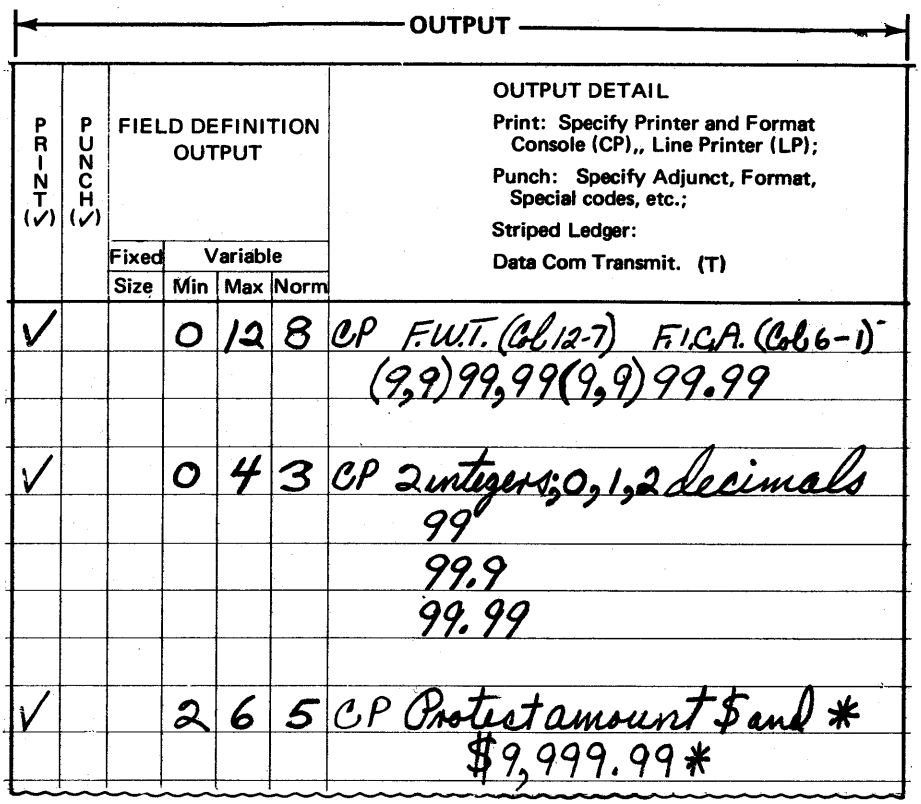


FIGURE 2-10, Output Detail – Print

When the output is Punch, specify what is punched (i.e., edge punched cards, paper tape, or punched cards), the adjunct that does the punching, the punching format, special codes, etc. Reference can be made to attached documentation, when available, such as customer punched cards, punched card layouts, etc. SEE FIGURE 2-11.

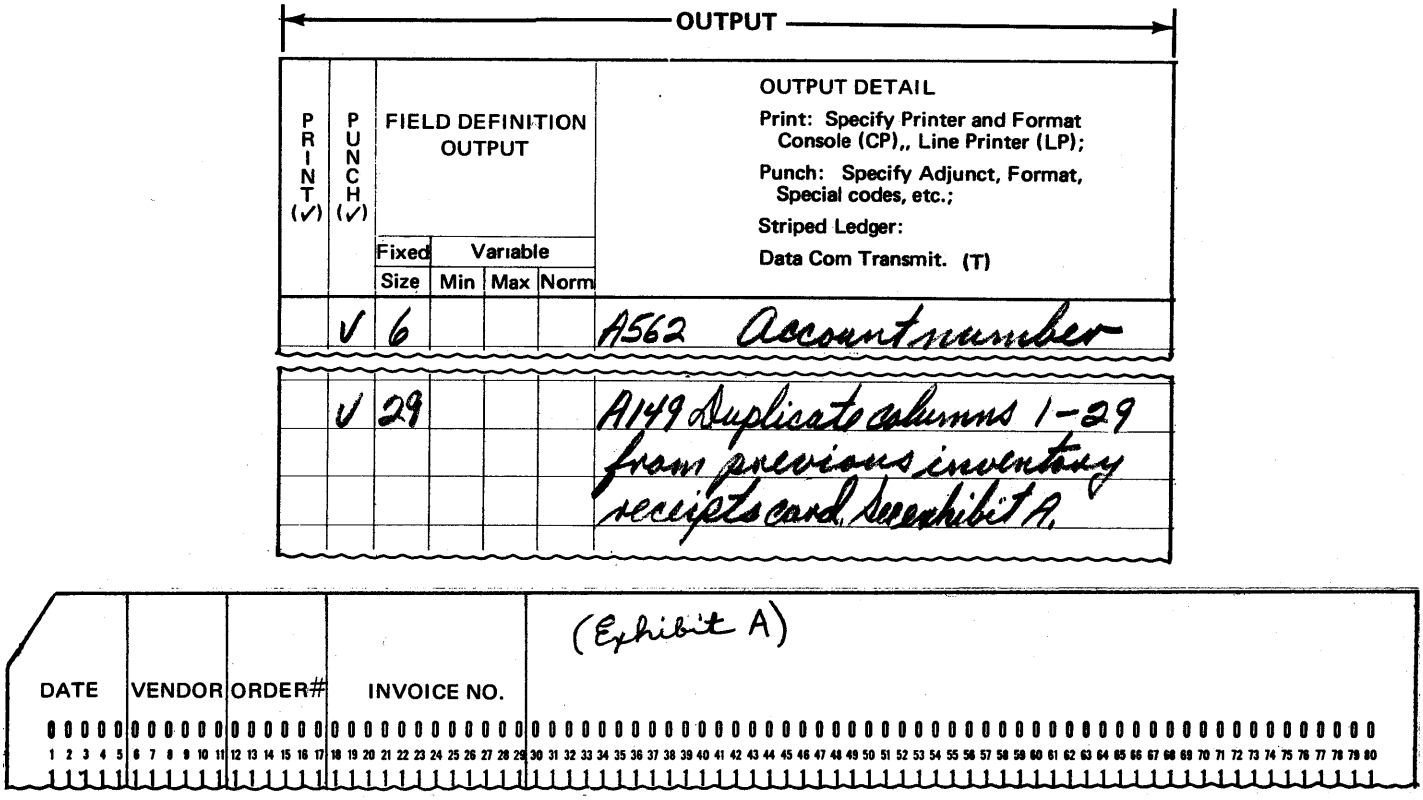


FIGURE 2-11, Output Detail – Punch

INSTRUCTIONS

Used in program estimating to enter instruction count. Number entered shows the number of instructions estimated to perform the operation described on that line. SEE FIGURE 2-12.

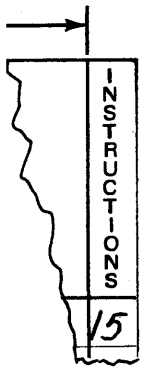


FIGURE 2-12, Instructions

SECTION 3
OUTPUT DEFINITION

OUTPUT DEFINITION

Output is defined as information in a form suitable for transmission from internal to external units of an accounting, computing, or data processing machine. It is also the process of transferring data from internal storage to an external device (one machine to another).

Output can be printed information; information punched in paper tape, edge punched cards, or 80-column punched cards; information written on magnetic striped ledgers or magnetic tape; information stored on disk or other storage component, or information transmitted via telephone, etc., to another device.

Output can be the final result of the accounting or data processing system, or it can be an intermediate result that will serve as input to produce additional output.

The final output is always defined in detail first in the systems design procedure. Intermediate output is then identified according to the requirements of the accounting or data processing system and/or the equipment configuration and processing capability.

PRINTED OUTPUT DEFINITION

Printed output required by each program is drawn to scale on the Program Definition Worksheet MKTG 2366.

Detailed information on how the printed output is created, the digit and/or character capacity, the printing device, the printing format, vertical form spacing, etc., is written on the Program Definition Chart, MKTG 2402, as explained in section 2 of this manual.

PRINTED OUTPUT DEFINITION EXAMPLE

Striped Ledger Payroll Initial Installation Program

General Systems Flow Chart

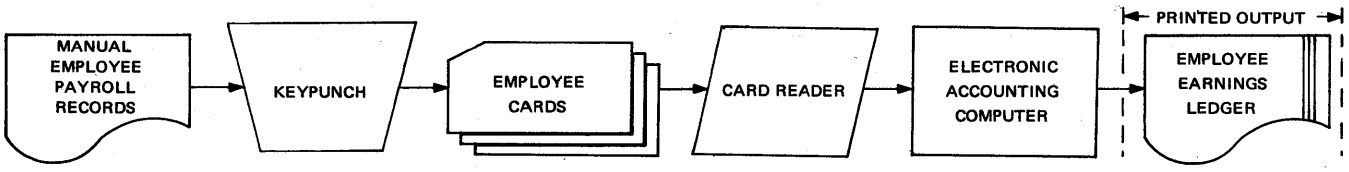


FIGURE 3-1, Printed Output Definition – Striped Ledger.

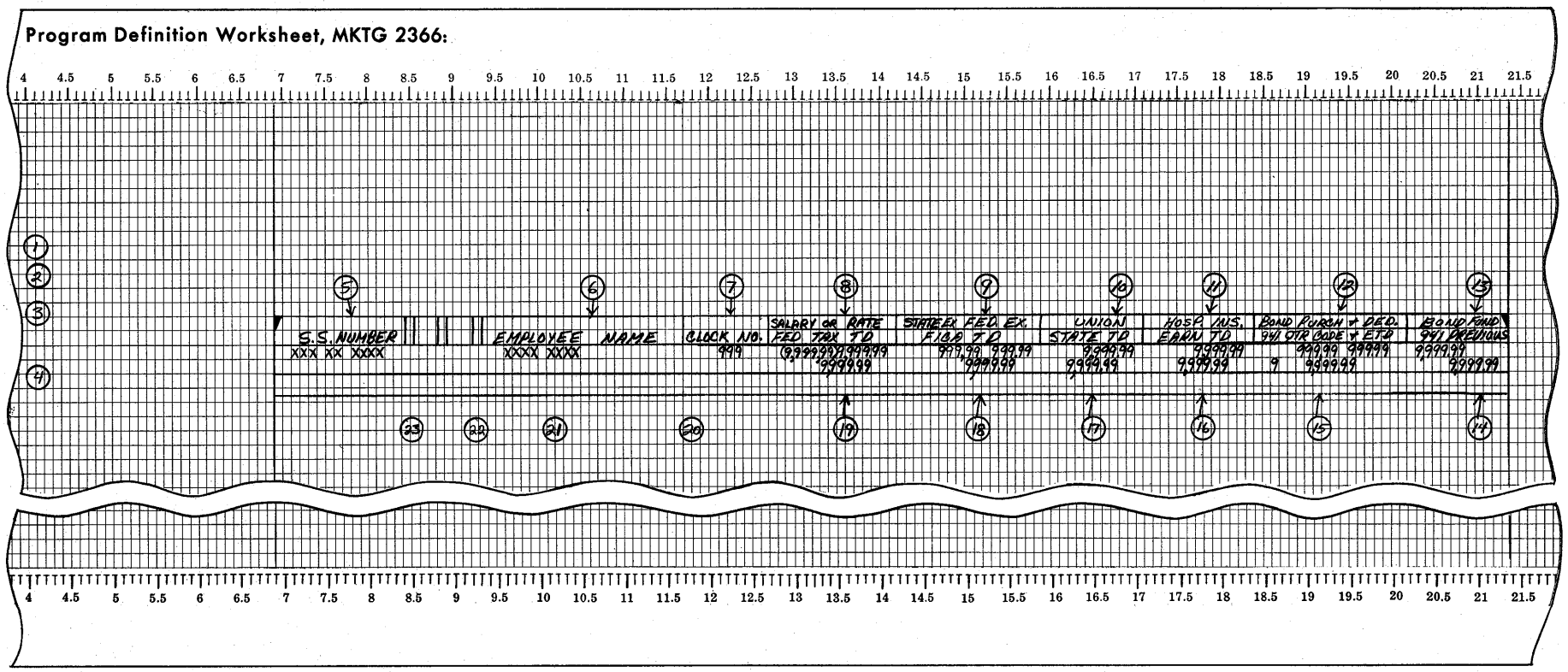


FIGURE 3-1, Printed Output Definition — Striped Ledger (Cont'd)

Program Definition Chart, MKTG 2402:

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: Variable Min	Max	Norm	INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive (R))	PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (V)	OUTPUT: PUNCH (S)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: Variable Min	Max	Norm	OUTPUT DETAIL (Print: Specify Printer and Format Console (CP), Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
1	Insert new account ticket															
2	Enter numeric amounts, select MA key	N	12					KB Payroll record.	Clear and add strip locations. Store to print on ledger and write on strip.	✓		12				Print vertically on new account ticket.
3	Social Security Number	A		1	11	11		KB Payroll record	Store to type on ledger and write on strip.	✓			1	11	11	Print on new account ticket
4	Employee name	A		1	23	20		KB Payroll record	Store to type on ledger and write on strip	✓			1	23	20	Print on new account ticket
5	Insert ledger	A								✓			1	11	11	Social security number.
6	thru 12	N								✓						Print strip content as indicated on worksheet.
13		N								✓						Prints on worksheet. Space to line -2.
14	thru 19	N								✓						Prints on worksheet. Space to line -1
20																Space to line 1
21																Write strip information
22	Eject ledger															Test write
23	Re insert ledger															

CUSTOMER APPLICATION

EQUIPMENT

SALESMAN BRANCH DATE

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PROGRAM DEFINITION CHART

FIGURE 3-1, Printed Output Definition – Striped Ledger (Cont'd)

PRINTED OUTPUT DEFINITION EXAMPLE

Striped Ledger Budget Report Writing Program

General Systems Flow Chart

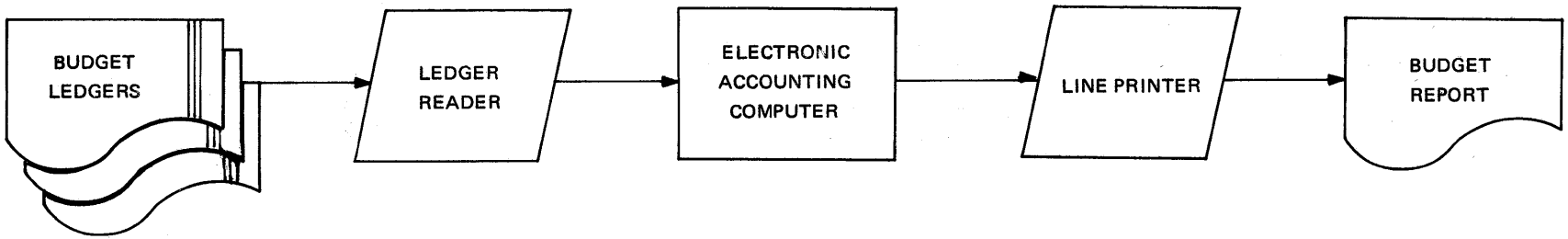

FIGURE 3-2, Printed Output Definition — Line Printer

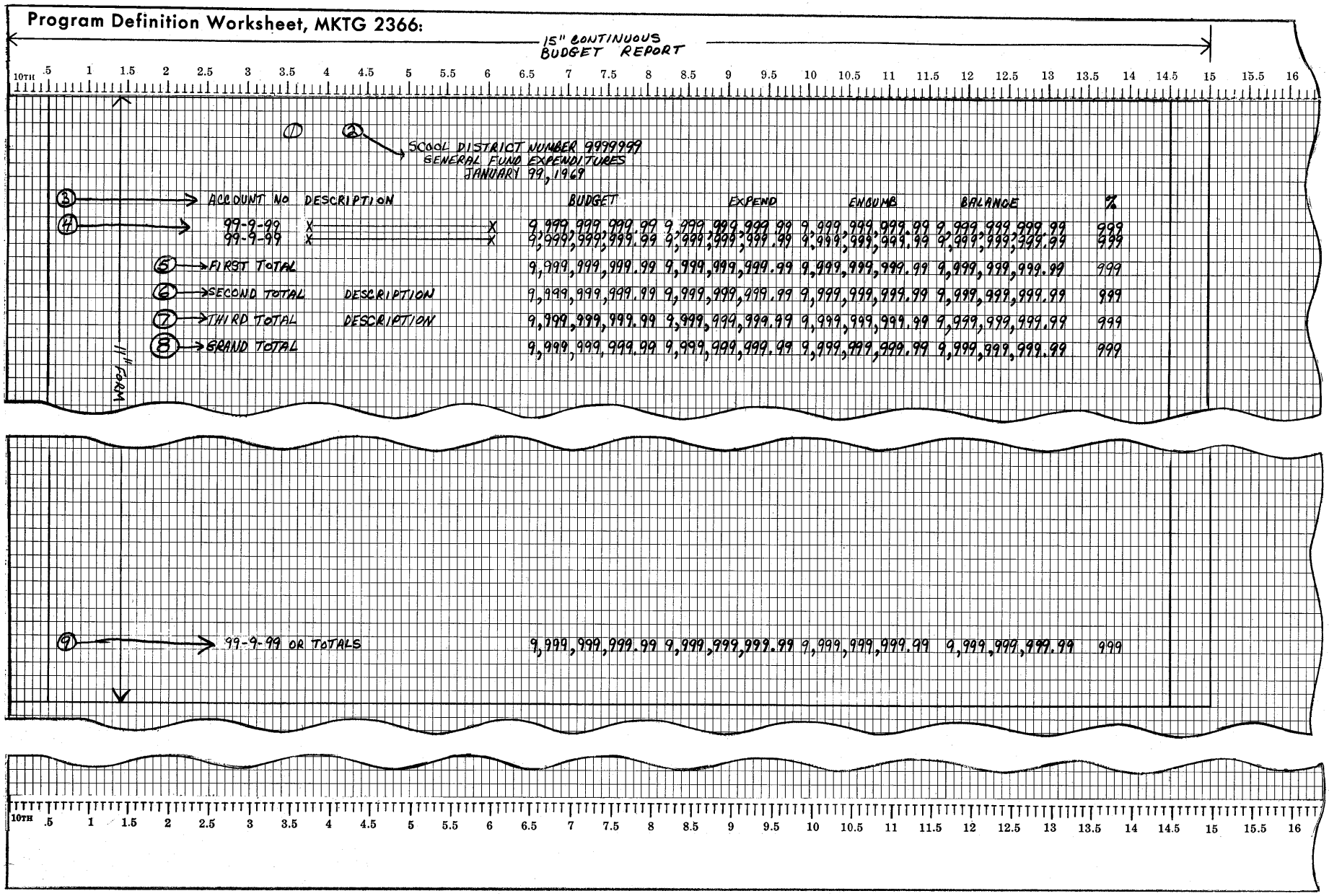

FIGURE 3-2, Printed Output Definition — Line Printer (Cont'd)

Program Definition Chart, MKTG 2402

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT — Fixed Size	INPUT: FIELD DEFINITION INPUT — Variable Min	INPUT: FIELD DEFINITION INPUT — Variable Max	INPUT: FIELD DEFINITION INPUT — Variable Norm	INPUT: INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive.(R))	PROCESSING: PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (✓)	OUTPUT: PUNCH (✓)	OUTPUT: FIELD DEFINITION OUTPUT — Fixed Size	OUTPUT: FIELD DEFINITION OUTPUT — Variable Min	OUTPUT: FIELD DEFINITION OUTPUT — Variable Max	OUTPUT: FIELD DEFINITION OUTPUT — Variable Norm	OUTPUT: OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
1.	Read budget ledger							SL A4004 Bud. Led contents to Worksheet for initial installation.	Define Log Problem Definitions									
2	Print page heading	A								✓		120				A988 As shown on worksheet at top of each 11 in. page	
3	Print column headings	A								✓		120				A988 As shown on worksheet at top of each 11 in. page	
4	Test for line-print line If total see 5	A+N							store 4 totals of budget, expend, encumb., balance. Calculate to balance. Bud-expend-encumb = bal	✓						A988 As shown on worksheet	
												24				Description	
												12				Budget	
									Calculate % of budget expended and			12				Expenditure	
									encumbered Expenditure+encumb.			12				Encumbered	
									divided by budget			12				Balance	
												03				%	
5	Test for total-print first total	A+N						M	Test on account number. When digit 3 changes, print first total. When digit 2 changes, print second total. When digit 1 changes, print 3rd total. When last total prints after last ledger print grand total. See sample report attached, exhibit R.	✓						A988 As shown on worksheet	
6	Test for total-print second total	A+N						M		✓						A988 As shown on worksheet	
7	Test for total-print third total	A+N						M		✓						A988 As shown on worksheet	
8	Test for total-print grand total	A+N						M		✓						A988 As shown on worksheet	
9	Test for bottom of form for lines and totals								Format new page headings, print last line, space forward to new page, print page headings, continue	✓						A988 As shown on worksheet	

CUSTOMER Any Customer APPLICATION Budget Report

EQUIPMENT E6494, A4004, A988

SALESMAN John Rich BRANCH Any City DATE May 18, 1969

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PROGRAM DEFINITION CHART

FIGURE 3-2, Printed Output Definition – Line Printer (Cont'd)

PUNCHED OUTPUT DEFINITION

Punched output is normally intermediate output that will be used as input in another operation. The specific information to be punched must be identified although the exact format, special codes, etc., may be determined by the programmer (except when it will be input to another style of machine or when existing punch formats are required).

The Program Definition Worksheet,, MKTG 2366 (or appropriate punched card or tape layout form) and/or the output detail section of the Program Definition Chart, MKTG 2402, is used to identify the information to be punched. SEE FIGURE 3-3.

PUNCHED OUTPUT DEFINITION EXAMPLE

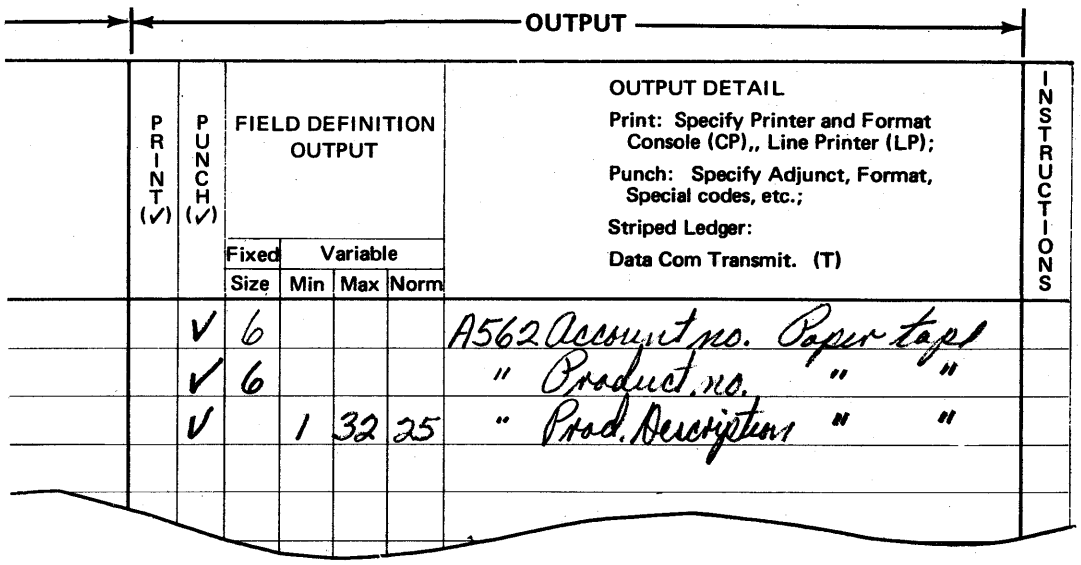
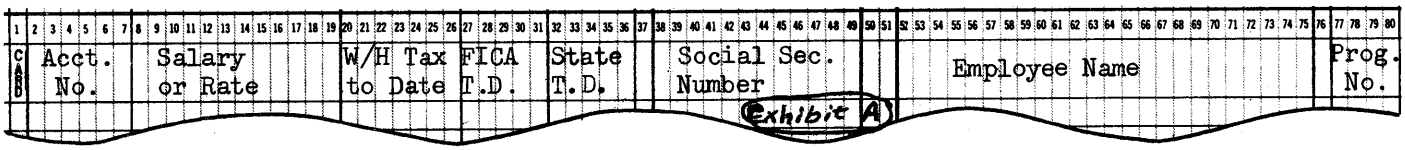


FIGURE 3-3, Punched Output Definition – Paper Tape

When punched output is to be used as input to another style of machine, or existing punch formats are required, the exact punched information, field definitions, format, special codes, etc., must be identified. This can be done by obtaining sample cards, tapes, etc., or by drawing the exact punched information on the Program Definition Worksheet, MKTG 2366, or applicable pre-printed form (e.g., MKTG 2203,etc.).

Either the samples or the drawings are marked as exhibit A, exhibit B, etc., and referred to by exhibit in the output detail section of the Program Definition Chart, MKTG 2402. SEE FIGURE 3-4.

PUNCHED OUTPUT DEFINITION EXAMPLE



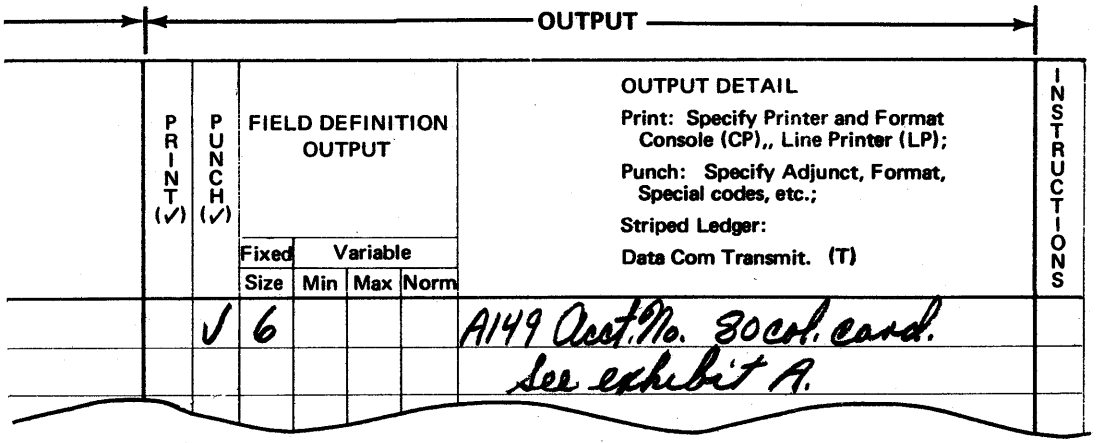


FIGURE 3-4, Punched Output Definition — Punched Card

OTHER OUTPUT DEFINITION

Other output is normally information that will be used later as input to this or some other machine. It can be written on magnetic striped ledgers, magnetic tape, disk, etc., or transmitted to another device for further processing.

Program definition for this output can be handled the same as punched output. Either samples of the required output are provided and referred to as exhibits or the required output information is identified in the output detail section of the Program Definition Chart, MKTG 2402 and formatted by the programmer.

OTHER OUTPUT DEFINITION EXAMPLE

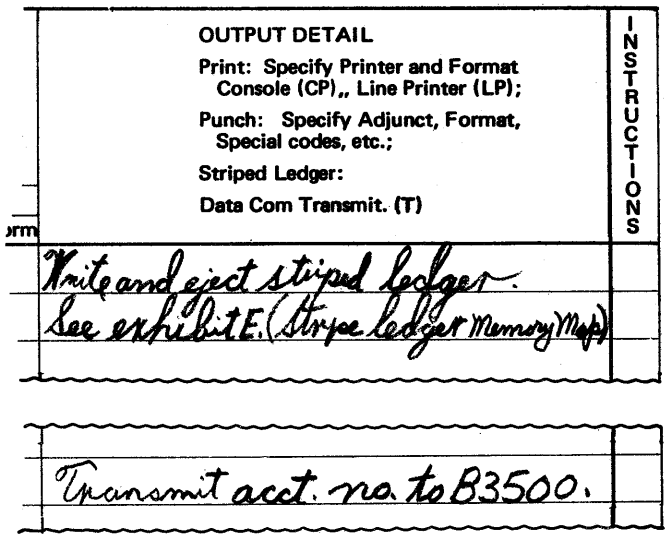


FIGURE 3-5, Other Output Definition

SECTION 4
PROCESSING DEFINITION

PROCESSING DEFINITION

Processing is the systematic handling of information by an accounting, computing, or data processing machine in accordance with a precise sequence of machine instructions. It is any operation, or combination of operations, on information, to prepare the information in the form required for either intermediate or final output.

To define the processing or information handling requirements for a program, the systems designer must first define the output. When this is done, a narrative type explanation of the processing required to create each part of the output is written in the processing section of the Program Definition Chart, MKTG 2402.

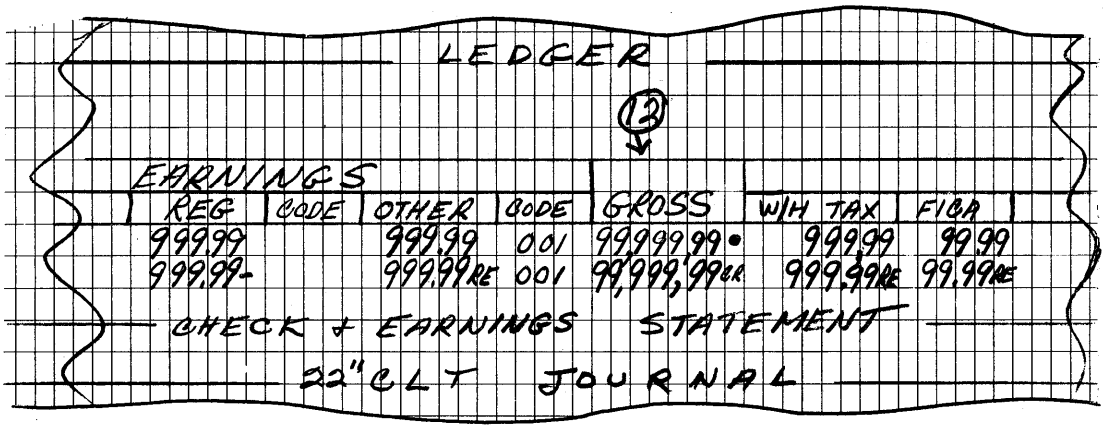
The explanation of the processing requirements must be complete, particularly in relation to accumulations, calculations, formulas, etc. Complete information is absolutely necessary to enable the programmer to create the precise sequence of machine instructions that will produce the desired results.

PROCESSING DEFINITION EXAMPLE

PROGRAM: Payroll writing.

OUTPUT DEFINED FOR THIS PROGRAM: Collated check, earnings ledger, and journal.

PROGRAM DEFINITION WORKSHEET, MKTG 2366:

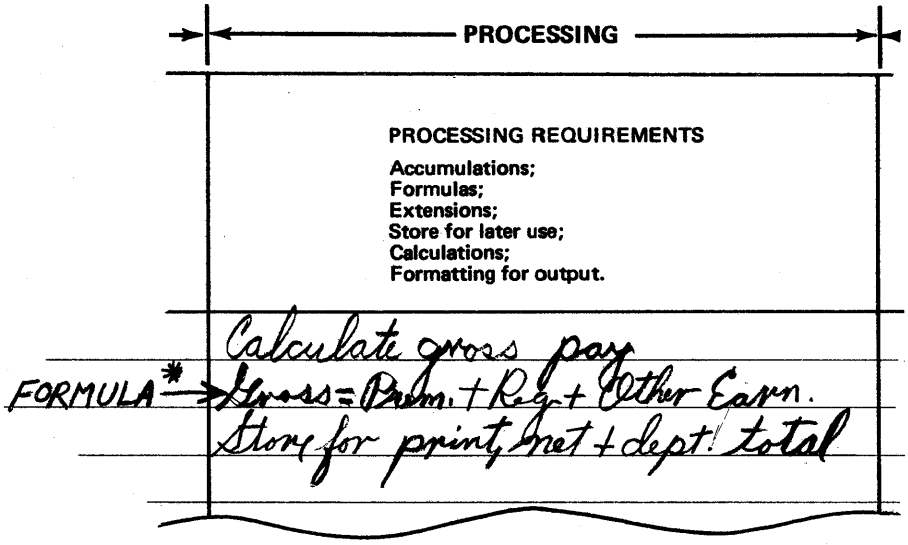


OUTPUT FOR WHICH PROCESSING IS BEING DEFINED: Gross pay – printed output shown as sequence 12.

CONCLUSIONS: Gross must be calculated prior to printing output at seq. 12.
Processing is defined with the formula and explanation.

FIGURE 4-1, Processing Definition Example

PROGRAM DEFINITION CHART, MKTG 2402:



NOTE: When extensive formulas are required, documentation can be attached and referred to, or written in the processing section.

FIGURE 4-1, Processing Definition Example (Cont'd.)

SECTION 5
INPUT DEFINITION

INPUT DEFINITION

Input is defined as information fed into an accounting, computing, or data processing machine. It is generally known information that is subsequently processed by the machine.

Input can be printed information read by an operator and entered into the machine through a keyboard; information fed into the machine from punched tape, edge punched cards, or 80-column punched cards; information read into the machine from magnetic striped ledgers or magnetic tape; information read into the machine from disk or other storage component; or information received via telephone, etc., from another device.

Input can be the initial information entered into the machine, or it can be information previously prepared by this or another machine. Input in one machine operation could be the machine output from another operation.

The initial input must always be defined in complete detail. Copies of existing media (forms from which the operator will read data in order to make keyboard entries) should be obtained and referred to as exhibits as well as any other existing input (punched cards, tape, etc.).

All input must be described completely on the Program Definition Chart, MKTG 2402, as explained in Section 2 of this manual.

KEYBOARD INPUT DEFINITION

Any information read by an operator and entered into the machine through a keyboard is known as keyboard input. This information can be alphabetic and/or numeric as applicable to the particular machine style.

A detailed explanation of keyboard input information including source (media enclosed as exhibits), alpha and/or numeric, digit and/or character capacity, and any other applicable narrative, is written in the "Input" section of the Program Definition Chart, MKTG 2402.

Motor bars, operation control keys, program keys, etc., are specified only when a particular one is required; e.g., to duplicate an existing operation, operator preference, etc. Otherwise, the programmer will select the appropriate control key.

KEYBOARD INPUT DEFINITION EXAMPLE

		INPUT						
SEQUENCE	DATA DESCRIPTION OR OPERATION	ALPHANUMERIC (A) / NUMERIC (N)	FIELD DEFINITION INPUT					INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive (R)
			Fixed	Variable				
			Size	Min	Max	Norm		
8	Enter temporary hourly rate	N		0	8	4		KB-Timecard Exhibit 2.

FIGURE 5-1, Keyboard Input Definition

PUNCHED INPUT DEFINITION

Input information can be read into an accounting, computing, or data processing machine from punched paper tape, edge punched cards, or 80-column punched cards through the appropriate reading device. This information can be punched in an off-line operation (manually punched with another device) or can be punched output in another operation from an accounting, computing, or data processing machine.

The use of punched input to an accounting, computing, or data processing machine generally allows the desired results to be created much faster, and more accurately than if the information were entered by an operator through a keyboard. This is particularly true when the same input information is entered into the machine several times to create different results. In this case, the information is punched once and then fed automatically at the feeding speed of the appropriate reading device in each operation.

As in defining punched output, the specific punched information to be read as input must be identified. As was previously explained for punched output, the exact input format, special codes, etc., may be determined by the programmer, except when existing punch formats are required.

The Program Definition Worksheet, MKTG 2366 (or appropriate punched card or tape layout form) and the input section of the Program Definition Chart, MKTG 2402, is used to identify the punched input information.

PUNCHED INPUT DEFINITION EXAMPLES

		INPUT					
SEQUENCE	DATA DESCRIPTION OR OPERATION	ALPHANUMERIC (A)	NUMERIC (N)	FIELD DEFINITION INPUT				INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive.(R)
				Fixed	Variable			
				Size	Min	Max	Norm	
5	Account number	N		6				PT A562
6	Product number	N		6				PT A562
7	Product description	A			1	32	25	PT A562

FIGURE 5-2, Punched Input Definition – Paper Tape

		INPUT					
SEQUENCE	DATA DESCRIPTION OR OPERATION	ALPHANUMERIC (A)	NUMERIC (N)	FIELD DEFINITION INPUT				INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive.(R)
				Fixed	Variable			
				Size	Min	Max	Norm	
5	Account number	N		6				EPC A562
6	Product number	N		6				EPC A562
7	Product description	A			1	32	25	EPC A562

FIGURE 5-3, Punched Input Definition – Edge Punched Cards

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	FIELD DEFINITION INPUT: Fixed Size	FIELD DEFINITION INPUT: Variable Min	Variable Max	Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive.(R)
	Read employee card	A+N			76	76	76	PC A545
	See exhibit A for format.							

FIGURE 5-4, Punched Input Definition – 80-Column Card with Existing Card Format Enclosed as Exhibit A

OTHER INPUT DEFINITION

Other input is normally information that was created as output from this or some other machine. It can be information previously written on magnetic striped ledgers, magnetic tape, disk, etc., or it could be information received from another device via telephone, etc.

Program definition for this input is handled the same as punched input. Either samples (SL memory maps, messages, etc.,) of the required input are obtained and referred to as exhibits or the input information is identified in detail in the input section of the Program Definition Chart, MKTG 2402, and formatted by the programmer.

OTHER INPUT DEFINITION EXAMPLES

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	FIELD DEFINITION INPUT: Fixed Size	FIELD DEFINITION INPUT: Variable Min	Variable Max	Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive.(R)
6	Insert striped ledger	A+N						SL console
	See exhibit R (Striped led. memory map)							
9	Receive credit limit	N			1	8	6	R

FIGURE 5-5, Other Input Definition

SECTION 6
SYSTEM EVALUATION

SYSTEM EVALUATION

System evaluation is the act of determining the acceptability of the designed system. The system evaluation is the most important phase of the general systems analysis and design procedure. A proper evaluation must be made to determine the acceptability before any further work (i.e., program definition, program writing, etc.,) is done. If the evaluation determines that the system is not acceptable, the general systems analysis and design procedure is used again for the necessary re-design.

Generally, an objective evaluation can be made from the general systems flow charts of the system. This evaluation, based on knowledge of the equipment capability, is made with reference to:

1. OPERATING SPEED. Is the particular machine capable of producing the required volume of work in an acceptable time using this system?(Input/output volumes times rated input/output machine speeds.)

2. ACCURACY. Does the system provide the required degree of accuracy? (i.e., balancing figures, audit trail, proof, etc.).

3. SIMPLICITY OF OPERATION. Does the system have a reasonable work flow and does it utilize the equipment features in a way that is acceptable to the operator?

4. RESULTS/COST. Does the overall system provide the output objectives in the form of reports or accounting data as defined by the user at an acceptable cost/result ratio?

When the system is determined acceptable with reference to the above, the systems designer will evaluate the programing requirements of the system. This is program estimating and is the final phase of the systems evaluation. The program estimate will determine:

1. How many machine instructions are in the program(s)? – Will they fit in the memory of the machine?

2. How much time will it take the machine to execute these instructions for the required volume of work? Time must be added to the operating speed calculated from input/output volumes times rated input/output machine speed (para. 1, above) **(Timings are available from the appropriate Burroughs Equipment Reference Manual.)**

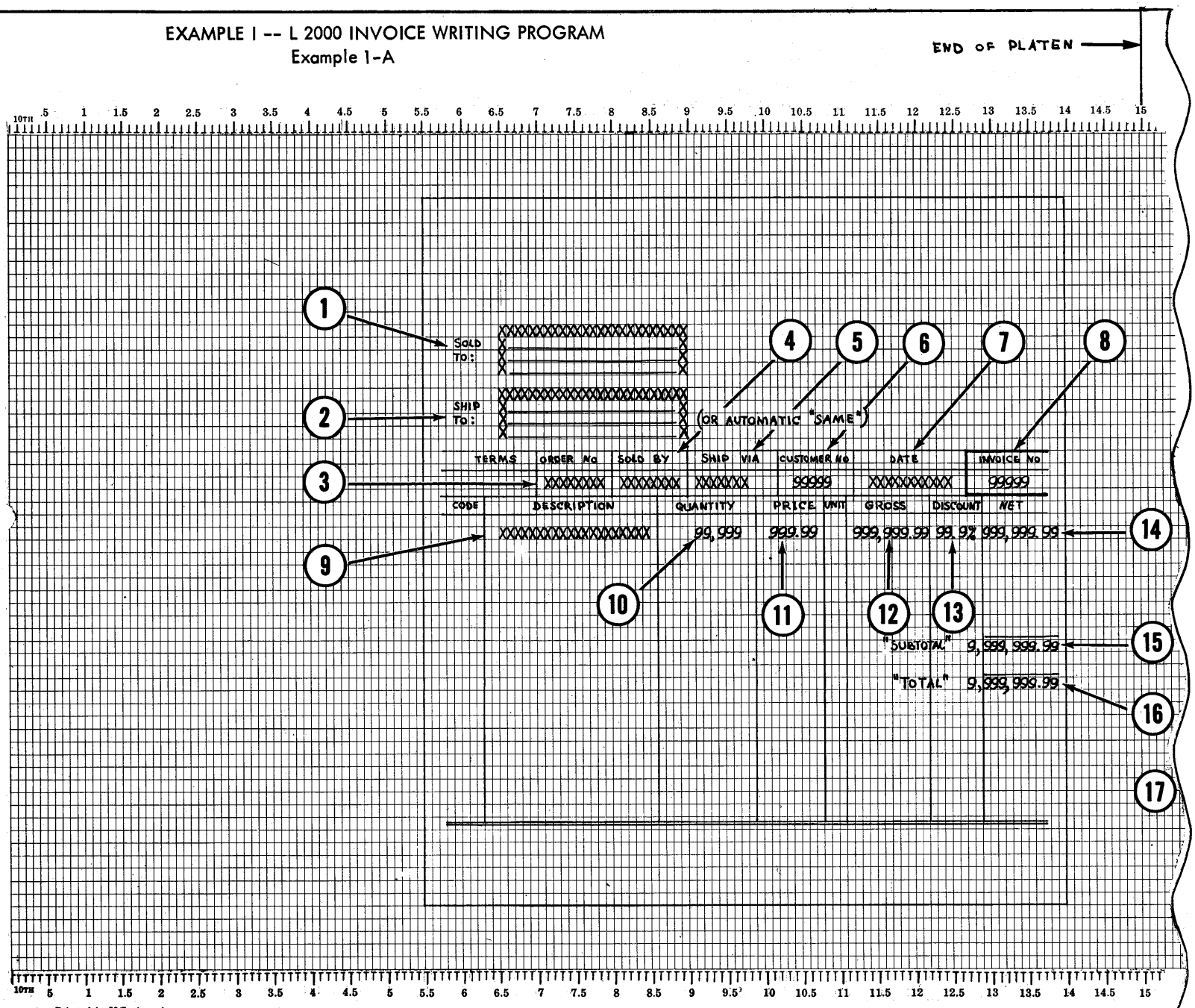
3. The time required to write, debug, and document the program(s).

In many cases, an adequate program estimate can be made from the systems analysis information and systems design represented by the general systems flow charts. The Defined Word and/or the Program Comparison Techniques are used for the applicable machine style. **(For an explanation of program estimating techniques see "Program Estimating Procedures for Software Oriented Equipment", Form 1041126.)**

For the most accurate program estimate, the Instruction Count Technique applicable to the particular machine style would be used. Program definition must be completed to use this technique effectively. (Program Definition Worksheet, MKTG 2366 and Program Definition Charts, MKTG 2402 for each program.)

EXAMPLE I -- L 2000 INVOICE WRITING PROGRAM

Example 1-A



Printed in U.S. America

Example 1-B

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: FIELD DEFINITION INPUT Variable Min	INPUT: FIELD DEFINITION INPUT Variable Max	INPUT: FIELD DEFINITION INPUT Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive(R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	OUTPUT: PRINT (✓)	OUTPUT: PUNCH (✓)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: FIELD DEFINITION OUTPUT Variable Min	OUTPUT: FIELD DEFINITION OUTPUT Variable Max	OUTPUT: FIELD DEFINITION OUTPUT Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
1	Sold to: 4 lines	A				100		KB		✓				100		CP	
2	Ship to: 4 lines	A				100		KB		✓				100		CP Automatic "same" when ship to sold to alike.	
3	Order No.	A				8		KB		✓				8		CP	
4	Sold By	A						Enforce PK	Stored in memory. Four PK choices	✓				7		CP maximum of 4 salesmen	
5	Ship via	A				7		Enforce PK	Stored in memory. Three PK choices	✓				7		CP PP, COD, MTFGHT	
6	Customer number	N				5		KB		✓				5		CP	
7	Date	A				11		M		✓				11		CP	
8	Invoice No.	N				5		M		✓				5		CP	
9	Description	A				20		KB		✓				20		CP multiple lines	
10	Quantity	N				5		KB	Store for line extension	✓				5		CP	
11	Price	N				5		KB	Extend line	✓				5		CP	
12	Gross	N				8		M	Price X quantity	✓				8		CP	
13	Discount	N		1	3	3		KB	Calculate net	✓			1	3	3	CP 2 integers, 1 decimal, % Example 12.5%	
14	Net - decision: Return to sequence 9 Go to sequence 15	N				8		M	Quan x price less discount	✓				8		CP	
15	Subtotal	N				9		M Select PK		✓				9		CP Print net column with underscore between last line items. Print "Subtotal" prior to amount.	
16	Total - decision: To sequence 1 To sequence 17	N				9		M Select PK		✓				9		CP Print net column with underscore between last amount. Print "Total" prior to amount. Advance to next invoice.	
17	A/R down total	N				9		M		✓				9		CP	

CUSTOMER XYZ Wholesale Co. APPLICATION Invoice writing

EQUIPMENT L2101-408

SALESMAN Any salesman BRANCH Any City DATE Apr. 15, 1969

Printed in U. S. America

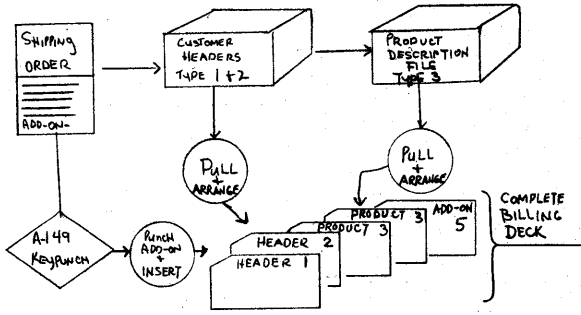
PROGRAM DEFINITION CHART

EXAMPLE 2 -- L 2000 AUTOMATED INVOICE WRITING PROGRAM
Example 2-A

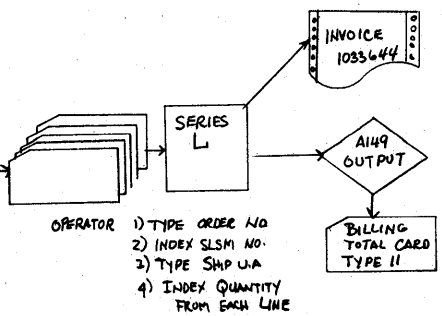
SYSTEMS WORK FLOW

CARD I/O BILLING

PRELIMINARY



BILLING

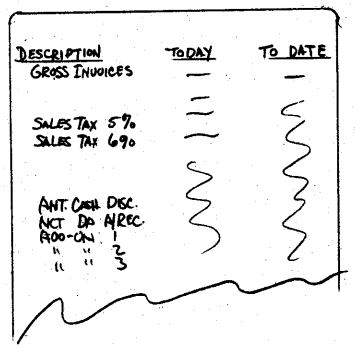


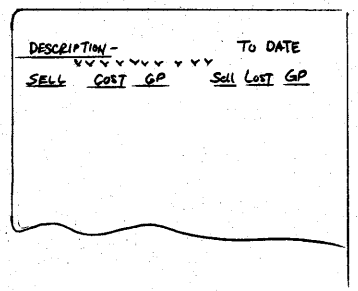
OPERATOR 1) TYPE ORDER NO
2) INDEX SLSM NO.
3) TYPE SHIP U/A
4) INDEX QUANTITY FROM EACH LINE

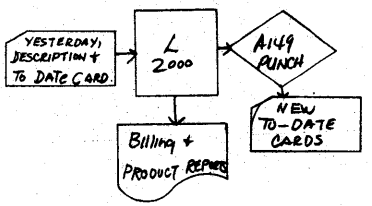
NOTE : OPERATOR ENTERS 1,2 +3 ABOVE BEFORE INVOICING BEGINS-
THEN INVOICE BEGINS PRINTING AND QTY'S ARE ENTERED IN BUFFER - (Average 5% per INVOICE) ENABLING OPERATOR TO PULL NEXT INVOICE while L2000 COMPLETES THIS ONE.

END of DAY PROCEDURE

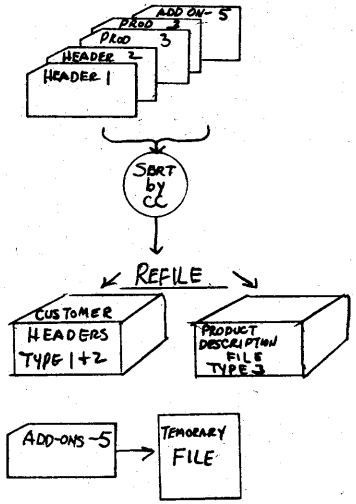
① BILLING TOTALS







REFILING PROCEDURE



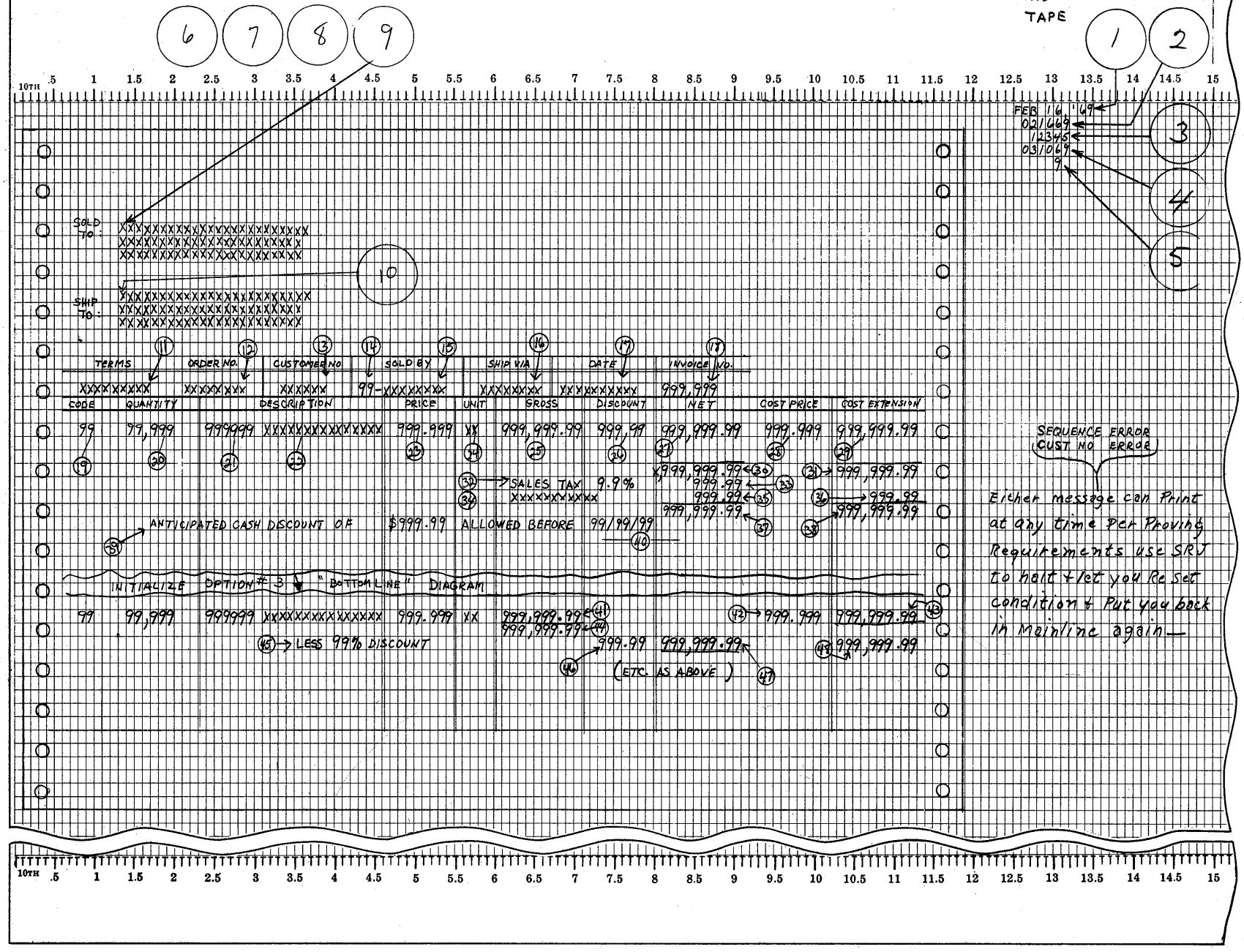
Example 2-B

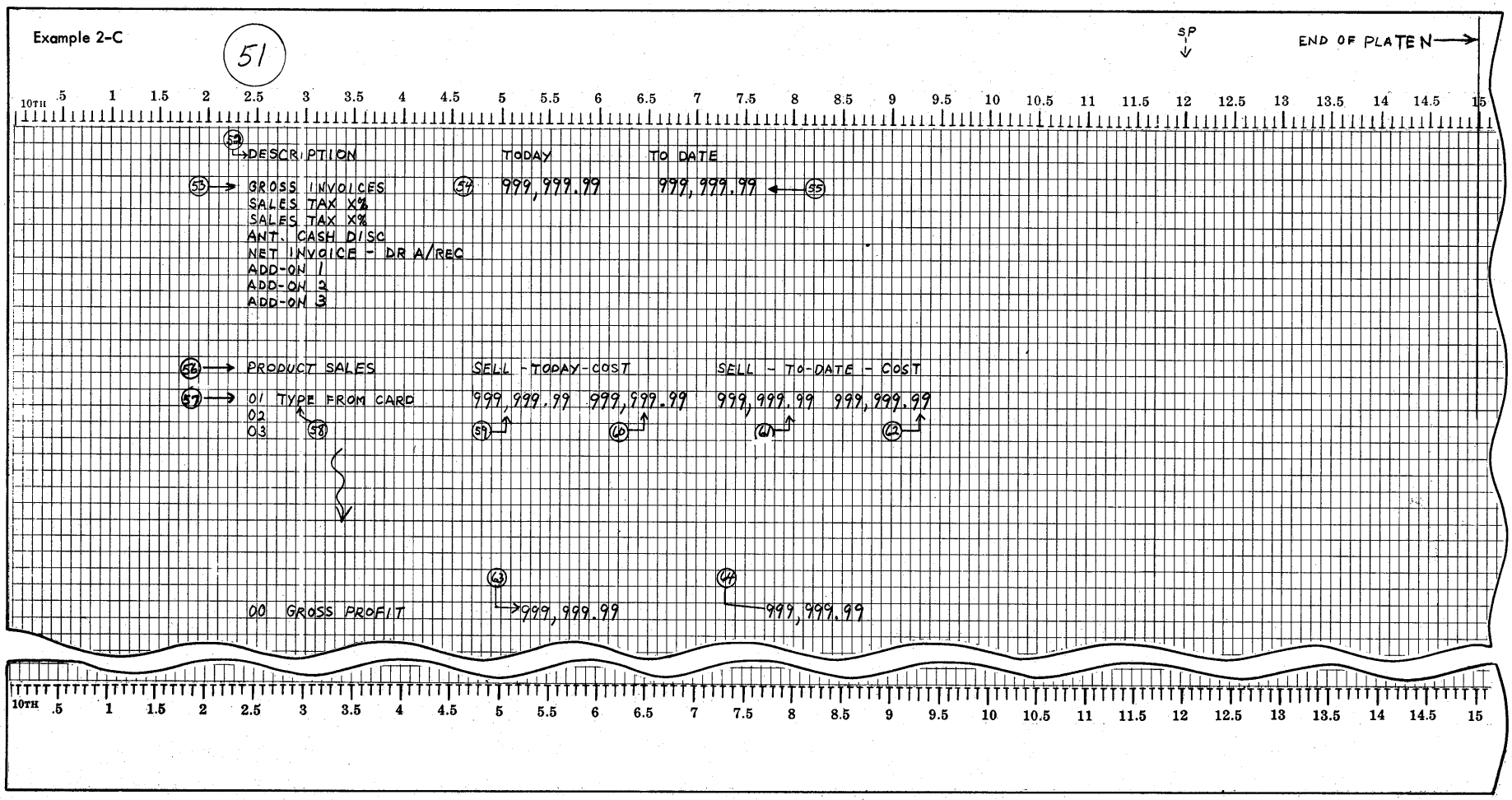
SQ

END OF PLATTEN →

← 3 7/16" MESSAGE PAD" →

TAPE




Example 2-C
51
SP
END OF PLATEN
10TH .5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9 9.5 10 10.5 11 11.5 12 12.5 13 13.5 14 14.5 15
54 DESCRIPTION
TODAY
TO DATE
55 GROSS INVOICES
52 999,999.99
999,999.99 55
SALES TAX X%
SALES TAX X%
ANT. CASH DISC
NET INVOICE - DR A/REC
ADD-ON 1
ADD-ON 2
ADD-ON 3
56 PRODUCT SALES
SELL - TODAY - COST
SELL - TO-DATE - COST
57 01 TYPE FROM CARD
999,999.99 999,999.99 999,999.99 999,999.99
02
03
58
59
46
41
42
43
44
00 GROSS PROFIT
999,999.99
999,999.99
10TH .5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9 9.5 10 10.5 11 11.5 12 12.5 13 13.5 14 14.5 15

Example 2-D

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: Variable Min	INPUT: Variable Max	INPUT: Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	OUTPUT: PRINT (Y)	OUTPUT: PUNCH (Y)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: Variable Min	OUTPUT: Variable Max	OUTPUT: Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
1	Today's Date - To Print on Invoice	A			5	12	10	KB	Store To Print on Invoice	X						FEB. 16'69	
																02, 16, 69	
2	Today's Date - Numeric	N	6					KB	Punch 6 Digits - Test To Be							MO., DY., YR.	
									Sure 6 Are There (even 0's)	X	X	6				A149-XX XX XX	
																Card Type 11 - CC 3-8	
3	Beginning Invoice No.	N		1	5	4		KB	Store To Print On Invoice - Provide							12,345	
									To Advance 1 When New								
									Customer No. is Sensed.	X							
4	Cash Discount Date	N	6					KB	1) Store To Punch in CC 9-14 on							031069	
									Card #11 if:								
									Customer Terms Are 2/10 EOM	X							
									3) Insert ins Message - SEQ 39								
5	Select Discount/Price Option																
	1- Variable Price							PK B1	A) Print Character 1, 2 or 3 To							CP - 1	
	2- Variable Discount by Line							B2	identify PK Selection							2	
	3- Variable Bulk Discount Rate							B3								3	
									B) Set Program Flag To Provide								
									Routine Indicated -								
									CC 9 on Customer Card Will								
									be punched 0, 1, or 2								
									Option 1: 0 = Price 1 - CC 30-35								
									on #3								
									1 = Price 2 - CC 36-41								
									2 = Price 3 - CC 42-47								
									Option 2: 0 = No. Line Discount On								
									This Product								
									1 = Use Disc. #1 - CC 48-50								
									2 = Use Disc. #2 - CC 51-53								

CUSTOMER Sales Development - BMG APPLICATION Card I/O Billing
EQUIPMENT L 2301-608 A595/A149
SALESMAN L. Kromling BRANCH Any Branch DATE April 1969

Printed in U. S. America

PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-E

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A) / NUMERIC (N)	INPUT: FIELD DEFINITION INPUT — Fixed Size	Variable Min	Variable Max	Variable Norm	INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R))	PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	PRINT (✓)	PUNCH (✓)	OUTPUT: FIELD DEFINITION OUTPUT — Fixed Size	Variable Min	Variable Max	Variable Norm	OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
5	Continued							Option 3: 0- Selects Stored 5% Rate for Bulk Discount on Total Gross Invoice. 1- Selects 10% Rate 2- Selects 45% Rate Note: CC 9 will also select % Rate of Commission To Be Punched in Card. 0 = 20.0% 1 = 10.0% 2 = 2.5%								

CUSTOMER Sales Development APPLICATION Card I/O Billing
EQUIPMENT L 2301-608 A595/A149
SALESMAN L. Kromling BRANCH Any Branch DATE 4/69

Printed in U. S. America

PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-F

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: Variable Min	INPUT: Variable Max	INPUT: Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	OUTPUT: PRINT (Y)	OUTPUT: PUNCH (Y)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: Variable Min	OUTPUT: Variable Max	OUTPUT: Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
6	Reading From Completed Shipping Order, Operator Enters Order No. Non-Print-	A/N			0	8	5	KB-from shipping order	Store To Print On Invoice - Not in Buffer								
7	List Salesman's No. 1-15 Non-Print	N			1	2		KB-from shipping order	Look up Salesman Name To Print on invoice - Not in Buffer								
8	Ship Via	A			0	8	5	KB-from shipping order	Store To Print on invoice - Do Not HOLD IN BUFFER								
9	At This Point - 1st Card Reads into System - (See Sequence # 40 for 2nd invoice)			80				PC #1	1) Test To See If Card #1 Any other Number - Print "Sequence Error" on Message Pad.	X			0	24		PRINT NAME -	
													0	23		ADDRESS	
													0	23		CITY-STATE-ZIP	
									2) Test "Terms" code - CC 10 - Terms 0 - A) Select "NET 30" Message To Print on invoice		X					A149 - Due Date For Discount Punch CC 9-14	
									B) Set Up Todays Date To Punch in CC 9-14 of output.							As indicated in "Processing Requirements"	
								Also Test Cd 3 (Hi-order digit in Customers No.) for sales Tax 0 = No. Tax 1 = Rate #1 2 = Rate #2 And Store Rate in Working Area For Use at SEQ 32	Terms 1 : A) Select "2/10 EOM" Message To Print from Terms Area B) Set up Cash Discount date (SEQ 4) To Punch in CC 9-14 of output. C) Set Flag to Print "Anticipated" Branch on Totals - SEQ # 39								

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PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-G

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: FIELD DEFINITION INPUT Variable Min	INPUT: FIELD DEFINITION INPUT Variable Max	INPUT: FIELD DEFINITION INPUT Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	OUTPUT: PRINT (✓)	OUTPUT: PUNCH (✓)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: FIELD DEFINITION OUTPUT Variable Min	OUTPUT: FIELD DEFINITION OUTPUT Variable Max	OUTPUT: FIELD DEFINITION OUTPUT Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
9	(Continued)								3) As soon as All of the "Sold To" data is complete – Feed Card # 2 + A) Test for card type #2 or #3 B) Match Customer No's – Error: Print "Cust. No. Error" on Message Pad. C) Other Than Card 2 or 3: Print "Sequence Error" on Pad.								
10	Ship To:	X			4	70		PC	If Card #2:	X			X	70		NAME - 24 ADDRESS - 23 CITY - STATE - ZIP - 23	
									If Card #3 (No "Ship To") Print Stored Constant	X		4				same	
									Space To Ribbon Area								
11	Terms							Memory		X						Terms: Per decision outlined on Page 3 "NCT 30" "2%/10 EOM"	
12	Order No.							Memory		X			0	8	6	Print A/N order no. from Memory (see SEQ 6) AB123456	

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PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-H

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: FIELD DEFINITION INPUT Variable Min	Variable Max	Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	PRINT (V)	PUNCH (V)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: FIELD DEFINITION OUTPUT Variable Min	Variable Max	Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
13	Customer No.							PC		X	X	6				Print: 001234 Punch: 001234 cln CC 15-20 on card 11	
14	Salesman Number							Memory-SEQ #7		X			1	2		Print: 1 (cc 15)	
									Load Punch Area with Commision Rate selected at Sequence 5, page 2		X					SLSM # CC 21-22 (01-15) Rate CC-23-25 (02.5)	
15	Salesman Name							Memory Table		X			0	8		Name of Salesman "Jones"	
16	Ship Via							Memory-SEQ 8		X						"Ship Via" entered at sequence 8- MTFGHT	
17	Invoice DATE							Memory-SEQ 1		X						FEB 16, '69	
									If card #2 was used for "Ship To"- At this time Read In Another Card To get Ready for 1st Billing Line 1) check sequence and customer no.								
18	Invoice No.							Memory-SEQ 3		X			1	6	5	Print: 12,345	
											X	6				Punch: 012345-CC 26-31	
									Space To First Invoice Line								

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PROGRAM DEFINITION CHART

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MKTG. 2402 (6-69)

Example 2-1

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: Variable Min	INPUT: Variable Max	INPUT: Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	PRINT (√)	PUNCH (√)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: Variable Min	OUTPUT: Variable Max	OUTPUT: Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
19	Code								CC 3 & 4 from Type 3 Denotes Major Product groups 1-30 - From this Number The Program should Distribute NET - under Price options 1 & 2 Gross - under option 3 - Bulk Disc. by 30 categories	X			1	2		12	
20	Quantity √	X			1	5	3	KB		X							
								NOTE - Operator could Enter up to 5 or 6 items immediately following Item # 8 entry + the System would not use Until Ready -	Use for QTY. x Price	X						12,345	
									According To Price Select Option Chosen.								
									See Sequence 24 for Calculation options.								
21	Stock no.							PC # 3 CC 5-10		X			1	6		999999	
22	Description							PC # 3 CC 11-26		X			1	15	10	Standard Shear	
23	Price							PC # 3	Per Selection option Chosen	X			3	6		.015, 175.00	
24	Unit of Price							PC # 3 CC-28-29	Possible: EA, C, M, YD, GR, DZ	X			1	2		EA, C	

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PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-J

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT (Fixed Size; Variable Min, Max, Norm)	INPUT: INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader, Memory (M); Data Com: Receive. (R))	PROCESSING: PROCESSING REQUIREMENTS (Accumulations, Formulas, Extensions, Store for later use; Calculations, Formatting for output.)	OUTPUT: PRINT (✓)	OUTPUT: PUNCH (✓)	OUTPUT: FIELD DEFINITION OUTPUT (Fixed Size; Variable Min, Max, Norm)	OUTPUT: OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
						Note: This sequence will follow Price options 1+2 through the entire sequence. See sequence # 43 for Price option # 3 - Bulk or "Bottom Line" Discounts.					
25	Gross				M	Computed -	X		1 8 5		133.50
26	Discount				Memory - (590 or 109.)	If option # 2 is used - Calculate + Print Discount As explained under SEQ 5, ¶ 1	X		1 5 3		12.50
						If option # 1 is used - Calculate a discount.					
						A) subtract from gross to compute NET					
27	Net				Memory	1) store by group code # (SEQ 19) 30 categories	X		1 8 5		121.00
						2) store for Invoice total + Grand +					
28	Cost Price				PC 3-CC-54-59	1) Compute Units x price using Same price unit for sell + cost	X		1 6		.010, 100.00
						2) Read in Next Punched Card Card Type # 1 - set flag to Complete Invoice - SEQ 30 +					set "new invoice" flag.
						Card Type # 2 - out of sequence.					
						Card Type # 3 - set ¶ flag to Branch Back to Seq. 19					
						Card Type # 5 - set flag to complete invoice - SEQ 30 + set "Add-on" ¶ flag -					

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Example 2-K

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: Variable Min	INPUT: Variable Max	INPUT: Variable Norm	INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R))	PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (✓)	OUTPUT: PUNCH (✓)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: Variable Min	OUTPUT: Variable Max	OUTPUT: Variable Norm	OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
29	Cost Extension							Memory	Accumulate for Invoice + Brand Totals.	X			1	8	5	100.00	
									Test Flags To Branch Back for Another Line, SEQ 19 or move to SEQ 30								
30	NET TOTAL							Memory	Hold for final Invoice Total	X		10				Underline Column	
									+/- Add ons + Tax	X			1	8	5	240.00	
											X	8				CC 32-39- 000,240.00	
31	COST TOTAL							Memory	Hold for final Invoice total	X		10				Underline Column	
										X			1	8	5	180.00	
									Test Sales Tax Flag Set At Sequence 9 – OFF = Branch To 34 ON = To 32								
32	SALES TAX							Memory	1) Compute Sales Tax with correct Rate								
									2) Insert Rate in Print Area								
									3) Accumulate Tax by Rate class	X		12				Sales Tax X %	
									4) Add To NET TOTAL								
33	SALES TAX AMOUNT							Memory		X			1	5		111.11	
34	ADD ON's –								Test To see if "Add-on" Flag is on – OFF = Branch to SEQ 37 ON = Continue with 34								

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PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-L

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: Variable Min	INPUT: Variable Max	INPUT: Variable Norm	INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R))	PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (Y)	OUTPUT: PUNCH (Y)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: Variable Min	OUTPUT: Variable Max	OUTPUT: Variable Norm	OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
34	Add-on's (continued)							PC 5 - CC-9-19		X			1	11	5	Postage	
35	Add-on Sell Amount							PC 5 - CC-21-25	1) Add or subtract Amount from invoice total (X Punch CC 25 = Minus) 2) Store total By 4 categories per punch in CC 20 of Type 5 card.	X			1	5	3	1.25— 2.10	
36	Add-on Cost Amount							PC 5 CC-26-30	1) Add/subtract Amount from cost total (X punch CC 30)	X			1	5	3	1.25— 2.10	
									At the end of this routine, Read in the next card- Card Type #5- Back to SEQ 34								
									Card type # 3/2 - out of - seq. Card type # 1 - Branch to sequence 37 - set "new invoice" flag								
								Memory		X		10				Underline Net + Cost	
37	NET INVOICE TOTAL							Memory	Print + Punch Accumulate for Grand total	X			1	8	5	1,123.45	
											X	8				CC 44-47- 001,123.45	
38	COST TOTAL							Memory	Accumulate Grand Total	X			1	8	5	742.00	
											X	8				000,742.00	
									Test flag set at SEQ 9, Page 3 - Off - Halt at seq. 6 + alarm On - continue to Seq. 39								

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Example 2-M

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT — Fixed Size	INPUT: Variable Min	INPUT: Variable Max	INPUT: Variable Norm	INPUT: INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R))	PROCESSING: PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (V)	OUTPUT: PUNCH (V)	OUTPUT: FIELD DEFINITION OUTPUT — Fixed Size	OUTPUT: Variable Min	OUTPUT: Variable Max	OUTPUT: Variable Norm	OUTPUT: OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
39	Anticipated Cash Discount							M	1) Compute 2% of Line 37 2) Add to Total of Anticipated Cash Discounts. 3) Insert Amount in Message								
										X		63				Anticipated Cash Discount of $XXX.XX Allowed Before XX/XX/XX	
											X	5				Cash Discount Amount 1-25 CC -56-60	
40	End of Invoice Routine								Next header card should be in memory— 1) TOF and halt 2) Branch program to SEQ 6 3) Release output card + dup. CC 1-8 Set up halt program to permit Operator entry of 6, 7, + 8, but Branch around card read command in sequence # 9								

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Example 2-N

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT — Fixed Size	INPUT: FIELD DEFINITION INPUT — Variable Min	INPUT: FIELD DEFINITION INPUT — Variable Max	INPUT: FIELD DEFINITION INPUT — Variable Norm	INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R))	PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (V)	OUTPUT: PUNCH (V)	OUTPUT: FIELD DEFINITION OUTPUT — Fixed Size	OUTPUT: FIELD DEFINITION OUTPUT — Variable Min	OUTPUT: FIELD DEFINITION OUTPUT — Variable Max	OUTPUT: FIELD DEFINITION OUTPUT — Variable Norm	OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
									Price Option #3 selected— Program Branches in from Seq. 25								
41	Gross Invoice							Memory	1) Store for Invoice total	X			1	8	5	123.00	
42	Cost Price							PC #3-54-56	QTY x Cost Price - use same Price unit as sell	X			1	6	3	-015, 12.50	
									Read in next Punched card Card type 1 - set flag to complete invoice - Seq. 30 Set new Invoice # flag Card type 2 - out of seq. Card type 3 - set flag to Branch Back To Seq. 19 Card Type 5 - set flag to complete invoice - Seq. 30 + set "Add-on" Flag								
43	Cost Extension							Memory	Store Extension for Totals	X			1	8	5	100.00	
									Test flags to branch To another line - Seq. 19 or move to Seq. 44 - Totals								
44	Gross Total									X		10				Underline Gross Amount	
									Print total - from option 3 described on page 1 + 2, 1) Compute bulk discount rate X Gross Amount Subtract to get Net Invoice +	X			1	8	5	100.00	

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PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-O

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION Fixed Size	INPUT: FIELD DEFINITION Variable Min	INPUT: FIELD DEFINITION Variable Max	INPUT: FIELD DEFINITION Variable Norm	INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R))	PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (✓)	OUTPUT: PUNCH (✓)	OUTPUT: FIELD DEFINITION Fixed Size	OUTPUT: FIELD DEFINITION Variable Min	OUTPUT: FIELD DEFINITION Variable Max	OUTPUT: FIELD DEFINITION Variable Norm	OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
45	Discount Message							Memory	Insert % Rate used in Message	X		16				Less XX% Descount	
46	Discount							Memory		X			1	5	3	2.50	
47	NET							Memory	Hold for Invoice Total	X			1	8	5	111.00	
											X	8				CC 32-39	
48									Branch back to Seq. 31								

CUSTOMER Sales Development APPLICATION

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PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-P

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: Variable Min	INPUT: Variable Max	INPUT: Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	OUTPUT: PRINT (Y)	OUTPUT: PUNCH (Y)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: Variable Min	OUTPUT: Variable Max	OUTPUT: Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
									TOTALLING ROUTINE								
51								PK	1) Select totalling routine								
52	Report Heading							Memory	Type	X		11				Description	
									Read Card	X		5				Today	
									9 IN COL. 1 - Branch to 56	X		7				To Date	
									other than 9 - To seq. 53								
53	Description							PC	Read in first card from Reader	X			1	19		Description	
									Use Group # To select Total To Print -		X	2				Group # - CC - 9/10	
								PC			X	2				Group No. - 91 - 98	
											X		1	19		Description (simultaneous)	
54	Today							Memory	Print Total from Memory Add to Yesterdays TOTAL CC 38 - 45	X			1	8	5	127.50	
55	TO DATE							Memory		X			1	8	5	150.00	
											X	8				000, 150.00	
									Read next card								
									Test for other than 9 in cc 1								
56	Product Heading							Memory		X						Product Sales	
										X						Sell - Today - Cost	
										X						Sell - To - Date Cost	
									Read in card -								
									Other than 9 in CC 1 - HALT								

CUSTOMER Sales Development BMS APPLICATION Totals
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SALESMAN L. Kromling BRANCH Any Branch DATE 4/69

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PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-Q

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT (Fixed Size; Variable Min, Max, Norm)	INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive. (R))	PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (Y)	OUTPUT: PUNCH (Y)	OUTPUT: FIELD DEFINITION OUTPUT (Fixed Size; Variable Min, Max, Norm)	OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
57	Group Coding				PC	Select Totals To Print	X		2	01, 19
								X	2	CC 9+10
58	Description				PC	Test "Gross Profit" Flag	X		1 19	Description
						YES - Branch to 63		X		
						NO - Continue				
59	Sell Today				Memory	1) Accumulate in Sell +	X		1 8 5	200.00
						2) Add To CC 30-37				
60	Cost Today				Memory	1) Accumulate in Sell +				
						2) Add to CC 38-45				
61	Sell To Date				Memory	Accumulate	X		1 8 5	
								X	8	CC -30-37
62	Cost to Date				Memory	Accumulate	X		1 8 5	
								X	8	CC -38-45
						Read In Next Card				
						Test for CC 00				
						Set Flag - Branch to 57				
63	Gross Profit Today					Subtract Sell + Cost	X		1 8 5	200.50
						ADD TO DATE G.P.				
64	Gross Profit To Date						X		1 8 5	1000.00
								X	8	001,000.00

CUSTOMER Sales Development BMG. APPLICATION Totals

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PROGRAM DEFINITION CHART

MKTG. 2402 (6-69)

Example 2-R

CARD TYPE #1 — Customer Header — INPUT

LAYOUT FOR

80 COLUMN PUNCHED CARD

BURROUGHS DATA RECORDING EQUIPMENT

Hi Order Dig it
0 = Non Taxable
1 = TAXABLE - RT. #1
2 = TAXABLE - RT. #2

Selects Discount or Price Rate, and Commission Rate

Selects "Net" or "2/10 EOM"

Purple Band

CD TYPE	CUSTOMER NO.	PRICE DISC	TERMS CD	CUSTOMER NAME	"SOLD TO" ADDRESS

CARD TYPE #2 — CUSTOMER "SHIP TO" CARD — INPUT

LAYOUT FOR

80 COLUMN PUNCHED CARD

BURROUGHS DATA RECORDING EQUIPMENT

Absence of "Ship to" Card = Type "Same"

Yellow Band

CD TYPE	CUSTOMER NO.	"Sold to" Name 24	"Ship to" Address 46

CARD TYPE #3 — PRODUCT DETAIL CARD — OUTPUT

LAYOUT FOR

80 COLUMN PUNCHED CARD

BURROUGHS DATA RECORDING EQUIPMENT

Cols 3 & 4 To Select Major Sales Group 1-30

Odd Lot Factor

Line Discount %
0 = 0% (SKIP)

PLAIN BAND

CD TYPE	STOCK NO GP	DESCRIPTION	PRICE UNIT	SELL PRICE #1	SELL PRICE #2	SELL PRICE #3	LD % # 1	LD % # 2	COST PRICE

Example 2-S

CARD TYPE #5 — ADD-ON CARD

INPUT

LAYOUT FOR

80 COLUMN PUNCHED CARD

BURROUGHS DATA RECORDING EQUIPMENT

	CUST	ADD-ON	TYPE	SELL	COST
	#	DESCRIPTION		ADD-ON	ADD-ON
				X	X

CARD TYPE 11 — BILLING TOTAL CARD

OUTPUT

SAME AS TR. DATE IF "NET"

LAYOUT FOR

80 COLUMN PUNCHED CARD

BURROUGHS DATA RECORDING EQUIPMENT

	DATE OF TR (NUM)	DUE DATE FOR DISCOUNT	CUST NO.	S/L M #	COM RATE	INVOICE NO.	GROSS INVOICE (BEFORE ST. CD, FRT., ETC.)	NET INVOICE	TOTAL COST	CASH DISC ALLOWABLE

IF DISCOUNT OPTION OF "TOTAL INVOICE" APPLIES - AUTO SELCT DISCOUNT % AND COMM. % FROM TABLE - 3 CHOICES

IF DISCOUNT OPTION "TOTAL INVOICE" APPLIES — PUNCH THIS AMOUNT AFTER REMOVING BULK DISCOUNT.

CARD TYPE 30 — GROUP BILLING TOTALS

INPUT/OUTPUT

LAYOUT FOR

80 COLUMN PUNCHED CARD

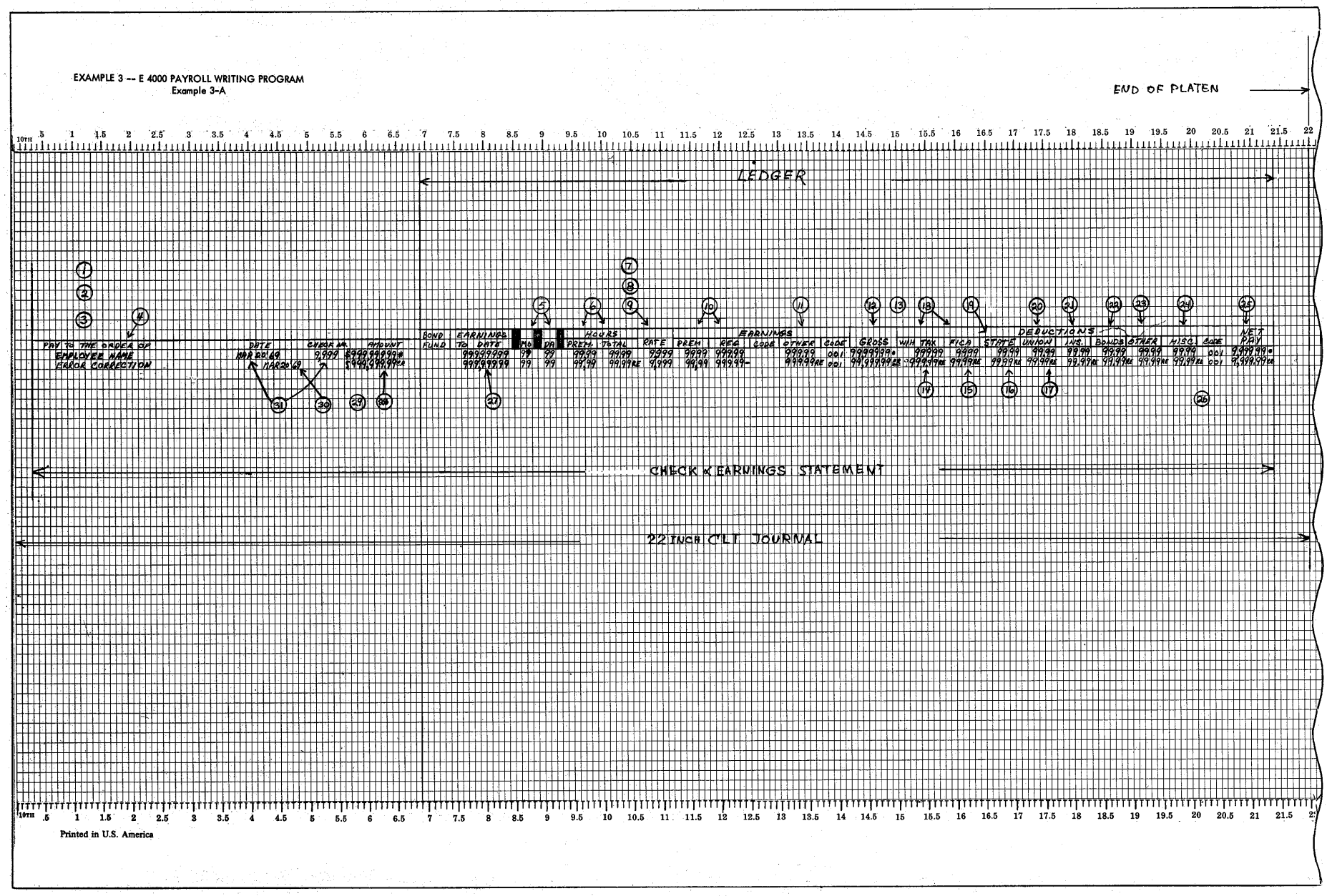
BURROUGHS DATA RECORDING EQUIPMENT

ALSO USE THIS CARD FOR BILLING TOTALS (LIKE E4000)

	CARD TYPE	DATE PUNCHED	GR 0 S/S #	PRODUCT GROUP DISCRIPTION	TOTAL SELL TO DATE	COST TO DATE

EXAMPLE 3 -- E 4000 PAYROLL WRITING PROGRAM
Example 3-A

END OF PLATEN



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Example 3-B

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT Fixed Size	INPUT: FIELD DEFINITION INPUT Variable Min	Variable Max	Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive.	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	OUTPUT: PRINT (✓)	OUTPUT: PUNCH (✓)	OUTPUT: FIELD DEFINITION OUTPUT Fixed Size	OUTPUT: FIELD DEFINITION OUTPUT Variable Min	Variable Max	Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
1	Operator Decision: Automatic calculation and print of deductions. — Sequence 3 Keyboard entry and print of deductions (R) — Sequence 2																
2	Alternate operation of some type. Then enter clock number and insert earnings ledger.	N		1	12	6		KB (Timecard) SL	Create and store codes to stop carriage at appropriate place and allow deductions to be entered on the keyboard. Verify clock number								
3	Enter clock number and insert earnings ledger and check	N		1	12	6		KB (Timecard) SL	Verify clock number								
4	Type employee name	A		0	30	25		KB (Timecard)		✓		0	30	25		CP typewriter	
5	Print period ending date	N		3	4	4		M	Test if hourly or salary Hourly - sequence 6 Salary - sequence 10	✓		3	4	4		CP month, day between stages	
6	Enter premium + regular hours Use RE for reversal	N		0	12	6		KB (Timecard) Prem (Col 12-7) Reg (Col 6-1)	Store for earnings calculation and hash total	✓		0	12	6		CP Prem (Col 12-7) Reg (Col 6-1)	
7	Operator Decision: Automatic hourly rate — Sequence 9 Temporary hourly rate — Sequence 8																
8	Enter temporary rate	N		0	8	4		KB (Timecard)	Store for print and earnings calculation								
9	Print hourly rate							M	Calculate and store premium and regular earnings Reg Earn. = Reg. Hrs × Hr. Rate Prem. Earn. = Prem Hrs × Hr. Rate × 1.5	✓						CP 99,999.00	

CUSTOMER ABC Mfg. Co. APPLICATION Payroll Writing

EQUIPMENT E4173

SALESMAN Any Salesman BRANCH Any city DATE Apr 15, 1969

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PROGRAM DEFINITION CHART

PAGE 1

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Example 3-C

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT — Fixed Size	INPUT: Variable Min	INPUT: Variable Max	INPUT: Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive(R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	PRINT (✓)	PUNCH (✓)	OUTPUT: FIELD DEFINITION OUTPUT — Fixed Size	OUTPUT: Variable Min	OUTPUT: Variable Max	OUTPUT: Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
10	Operator Decision: Other pay - sequence 11 Gross pay - sequence 12 Hours - sequence 6 Enter temporary salary and print salary or premium and reg earnings	N						M		✓			0	12	8	CP Prem. Earn. (col 12-7) Reg Earn. (col 6-1) 9,999.99 999.99-	
11	Enter other pay. Use RE for reversal.	N			0	12	4	KB (Time card)	Store for net and dept. total	✓			0	12	4	CP print MA code 9,999,999,999.99 001	
12	Print gross	N						M	Reg + Prem. + Other Earn. = Gross Store for net and dept. totals Calculate and store tax deductions	✓			0	12	6	CP 9,999,999,999.99 •	
13	Test for deduction code. Automatic ded. - sequence 17 Entered ded. sequence 14								Test for code from sequence 2								
14	Enter W/H tax deduction Use RE for reversal. Provide a means to automatically print calculated deductions instead of entering them, sequence 14 - if operator desires.	N			0	6	4	KB (Chart)	Store for net and dept. total	✓			0	6	4	CP 9,999.99 RE	
15	Enter FICA. Use RE for reversal.	N			0	6	4	KB (chart)	Store for net and dept total	✓			0	6	4	CP 9,999.99 RE	
16	Enter state tax. Use RE key for reversal.	N			0	6	4	KB (chart)	Store for net and dept. total	✓			0	6	4	CP 9,999.99 RE	
17	Enter Union dues. Use RE key for reversal. See sequence 21 next	N			0	6	4	KB (Ledger heading)	Store for net and dept. total	✓			0	6	4	CP 9,999.99 RE	

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Example 3-D

		INPUT							PROCESSING	OUTPUT							
SEQUENCE	DATA DESCRIPTION OR OPERATION	ALPHANUMERIC (A)	NUMERIC (N)	FIELD DEFINITION INPUT Fixed Size	Variable Min	Variable Max	Variable Norm	INPUT SOURCE Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive (R)	PROCESSING REQUIREMENTS Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.	PRINT (V)	PUNCH (V)	FIELD DEFINITION OUTPUT Fixed Size	Variable Min	Variable Max	Variable Norm	OUTPUT DETAIL Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T)	INSTRUCTIONS
18	Print W/H tax and FICA	N						M	Store for net and dept. total	✓			0	12	8	CP W/H (Col 12-7) FICA (col 6-1)	
19	Print state tax	N						M	Store for net and dept. total	✓			0	6	4	CP 9,999.99	
20	Print union dues	N						M	Store for net and dept. total	✓			0	6	4	CP 9,999.99	
21	Enter insurance. Use RE key for reversal.	N			0	6	4	KB (Ledger heading)	Store for net and dept. total	✓			0	6	4	CP 9,999.99 RE	
22	Enter bond. Use RE key for reversal	N			0	6	4	KB (Ledger heading)	Store for net and dept. total	✓			0	6	4	CP 9,999.99 RE	
23	Enter other. Use RE key for reversal.	N			0	6	4	KB (Ledger heading)	Store for net and dept total	✓			0	6	4	CP 9,999.99 RE	
24	Enter misc. + code. Use RE key for reversal.	N			0	6	4	KB	Accumulate in three categories Store for net and dept total	✓			0	6	4	CP 9,999.99 RE 001	
25	Print net	N						M		✓			0	12	6	CP 9,999,999,999.99•	
26	Test for credit check Credit check - sequence 14 Line Reversal - sequence 27																
27	Print earnings to date	N						M		✓			0	12	6	CP 9,999,999,999.99	
28	Print net pay	N						M		✓			0	12	6	CP $9,999,999,999.99*	
29	Test for credit check Normal - sequence 31 Credit - sequence 30																

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Example 3-E

SEQUENCE	DATA DESCRIPTION OR OPERATION	INPUT: ALPHANUMERIC (A)	INPUT: NUMERIC (N)	INPUT: FIELD DEFINITION INPUT — Fixed Size	Variable Min	Variable Max	Variable Norm	INPUT: INPUT SOURCE (Keyboard (KB), Specify Media, Specify MB, OCK, PK, etc., only if particular one required; Punched Card (PC); Edge Punched Card (EPC); Punched Tape (PT); Striped Ledger (SL), Specify Reader; Memory (M); Data Com Receive.(R))	PROCESSING: PROCESSING REQUIREMENTS (Accumulations; Formulas; Extensions; Store for later use; Calculations; Formatting for output.)	OUTPUT: PRINT (V)	OUTPUT: PUNCH (V)	OUTPUT: FIELD DEFINITION OUTPUT — Fixed Size	Variable Min	Variable Max	Variable Norm	OUTPUT: OUTPUT DETAIL (Print: Specify Printer and Format Console (CP),, Line Printer (LP); Punch: Specify Adjunct, Format, Special codes, etc.; Striped Ledger: Data Com Transmit. (T))	INSTRUCTIONS
30	Print date and no check no.								Update all striped ledger bal.							CP MAR 29'69 on red	
	Return to sequence 1	N							before ejecting ledger	✓						Eject ledger and check	
31	Print date and check no								Update all striped ledger bal.	✓			1	12	6	CP MAR 29'69 9,999(.00)	
	Return to sequence 1	N							before ejecting ledger								
	Striped Ledger Contents:															Totals:	
	Clock Number															Regular Hours	
	Earnings Y.T.D.															Premium Hours	
	Salary / Rate															Regular Pay	
	W/H Tax T.D.															Premium Pay	
	FICA T.D.															Other Earnings	
	State tax T.D.															Gross Pay	
	Earn. Prev. Quar.															W/H Tax	
	Exempt $ State - Fed.															FICA	
	Union dues															State tax	
																Union	
																Insurance	
																Bond	
																Other	
																Misc.	
																Salary	
																Net pay	

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