

**Equipment Reference Manual
for Users of...**

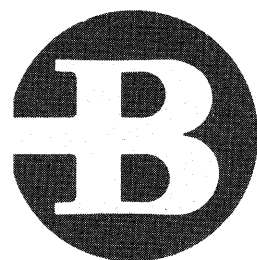
Burroughs

E 6000

ELECTRONIC

ACCOUNTING

SYSTEMS



EQUIPMENT
REFERENCE MANUAL
FOR USERS OF...

Burroughs
SERIES E 6000
ELECTRONIC ACCOUNTING SYSTEMS

CUSTOMER EDUCATION PROGRAM

Burroughs Corporation
Detroit, Michigan 48232



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SECTION 1

SYSTEM DESIGN

1-1. INTRODUCTION

This manual contains the description of the Burroughs E 6000 Electronic Accounting System. It is intended as a training textbook for the Customer Education Program and as a reference work for installations of the E 6000. For additional information regarding installation of the E 6000, reference should be made to the publication "E 6000 Electronic Accounting System, Systems Reference Manual, Customer Education Program." This manual may be obtained from Burroughs Corporation, Detroit, Michigan, 48232, or from the local Burroughs branch office. (Order by form number 1038437.)

1-2. BASIC ELEMENTS OF A SYSTEM

GENERAL

The Burroughs E 6000 Electronic Accounting System is a solid state, magnetic core storage system that combines hard copy ledger record accounting capabilities with high-speed electronic arithmetic and data storage. Control of logic and arithmetic functions through storage of the operating program in magnetic core memory increases the system flexibility and application range.

The E 6000 system performs a series of operations on specific data for the purpose of achieving a desired result. To perform these operations, the system requires five basic functions: Input, Output, Storage, Arithmetic, and Control (see Figure 1-1).

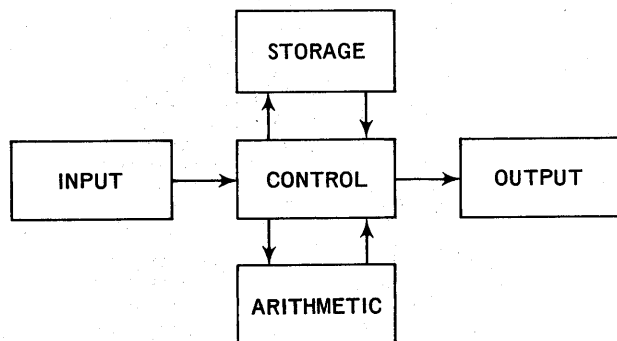


Figure 1-1. Functions of a System

INPUT

The Input function transmits data to the system. On the E 6000 system, input may come from the following sources (depending upon the configuration of the system):

1. Console keyboard, either numeric or alphabetic.
2. Punched cards.
3. Magnetic striped ledger cards.

OUTPUT

The Output function receives data transmitted from the system. This data may be "final" data in the form of management reports, or it may be "intermediate" data which may, in turn, be handled again in the E 6000 system in further processing. Output may take the following forms (depending upon the configuration of the system):

1. Hard copy ledger cards, plain or magnetically striped.
2. Printed report forms and/or journals.
3. Punched cards (for further processing).
4. Punched paper tape (for further processing).

Under most circumstances, these methods of output can and will be combined to achieve maximum results from the system.

STORAGE

The Storage function enables the system to retain or remember information. This information may be:

1. Data necessary to solve the problem; factors, variables, constants, intermediate results, and answers.
2. Programing or commands which instruct the system in the operations to be performed, in order to solve the problem.

Within the E 6000 system, storage may be accomplished (depending upon the system configuration) in the following areas:

1. 4,800 positions of magnetic core storage.

2. Magnetic striped ledger cards, with up to 240 positions of data, constant, or instruction storage.
3. Console numeric keyboard.

ARITHMETIC

The Arithmetic function handles the actual processing, or manipulation of the problem data. This is the computing unit of the system that accomplishes all of the mathematical aspects of problem solving. In addition to the normal functions of addition, subtraction, multiplication and division, the arithmetic unit has the capability of changing the position and arrangement of data in memory to provide the most efficient output functions.

CONTROL

The Control function activates the systems and its elements, directing the system in the orderly processing of data to solve the problem. Control and decision-making in the E 6000 system come from two main sources:

1. The program of the system.
2. The direction of the operator through the Console keyboard.

The unique combination of operator-equipment control provides the maximum automatic routine problem solving capability within the stored program, while, at the same time, permitting maximum operator decision-making regarding exceptions and unusual circumstances.

The result of the combinations of these five elements is the E 6000 Electronic Accounting System.

1.3 SYSTEMS ORGANIZATION

GENERAL

The E 6000 Electronic Accounting Systems offer low-cost, high-speed information processing with a wide variety of configurations. Major configurations that are possible within the E 6000 series are:

1. E 6414 and E 6419.
2. E 6493 and E 6498.
3. E 6494 and E 6499.

BASIC CONFIGURATION

The basic elements of any E 6000 system are the electronic processor and the simplified operator control console (see Figure 1-2).

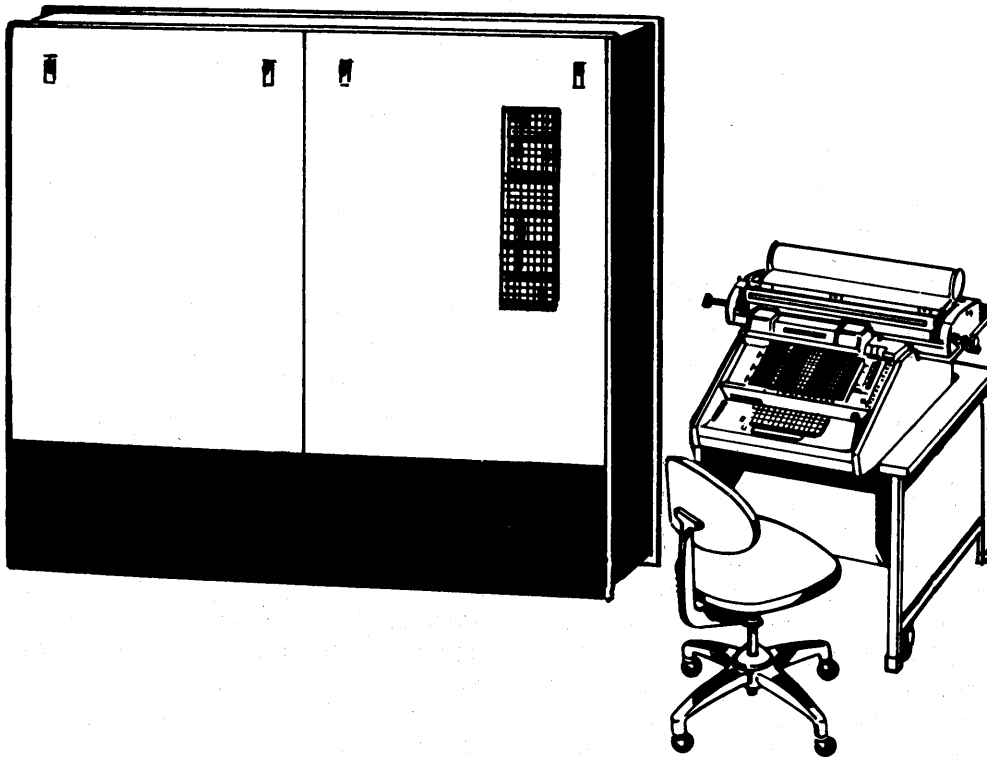
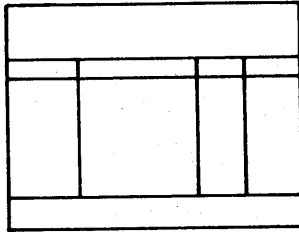


Figure 1-2. Basic E 6000 Configuration

LEDGER RECORD SYSTEMS

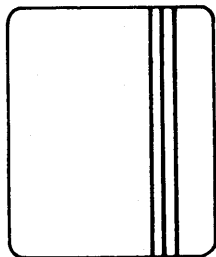
The choice of console units depends upon the choice of visible hard copy ledger record systems. Two choices are available, depending upon the system requirements (see Figure 1-3):

1. Conventional ledger systems.
2. Alphanumeric Magnetic Striped Ledger Systems. These ledgers permit form alignment, storage and pickup of 240 positions of alphanumeric information.



CONVENTIONAL LEDGER SYSTEMS

These systems accommodate a variety of sizes of conventional ledgers and report forms. Console provides complete alphabetic and numeric description.



ALPHANUMERIC MAGNETIC STRIPED LEDGER SYSTEMS

Three magnetic ink stripes on ledgers permit automatic form alignment, and provide 240 positions for storage and pickup of alphanumeric data.

Figure 1-3. Ledger Record Systems

MODULARITY

Each of the two major configurations has the ability to "plug in" various peripheral units, depending upon the choice of basic systems. The systems are equipped with multiple outlets on the side panel of the processor, permitting the addition of peripherals at any time during the life of the system without engineering, rewiring or adjustment of the system (see Figure 1-4).

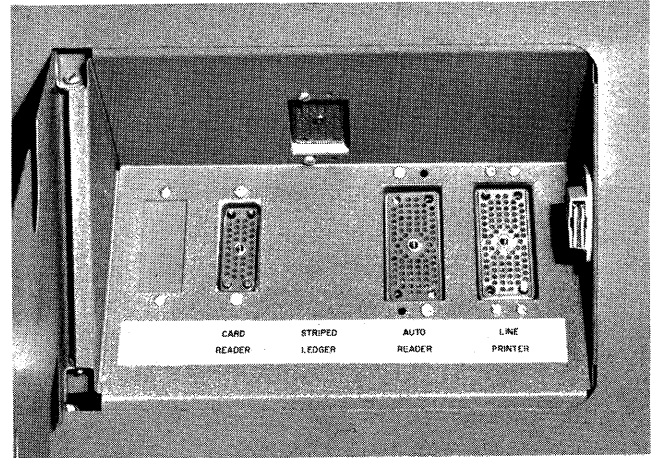


Figure 1-4. Plug-In Modularity

E 6414 AND E 6419 SYSTEM ORGANIZATION

The E 6414 system consists of an electronic processor and a conventional ledger console capable of handling a variety of sizes of conventional ledger forms. The E 6419 also has a continuous forms carriage as a basic element of the console. The following capabilities may be added to expand these systems:

1. Alphanumeric punched card input.
2. Alphanumeric line printer output.
3. Alphanumeric punched card or paper tape output.

E 6493 AND E 6498 SYSTEM ORGANIZATION

The E 6493 system consists of an electronic processor and a magnetic striped ledger console capable of reading alphanumeric magnetic striped ledgers of various sizes. The E 6498 also has a continuous forms carriage as a basic element of the console. The following may be added to expand the basic capabilities of these systems:

1. Alphanumeric line printer output.
2. Alphanumeric punched card or paper tape output.
3. Automatic magnetic ledger card reading input.

E 6494 AND E 6499 SYSTEM ORGANIZATION

The E 6494 system consists of an electronic processor and a magnetic striped ledger console capable of reading alphanumeric magnetic striped ledgers of various sizes. The E 6499 also has a continuous forms carriage as a basic element of the console. The following may be added to expand the basic capabilities of these systems:

1. Alphanumeric punched card reader input.
2. Automatic magnetic ledger card reader input.
3. Alphanumeric line printer output.
4. Alphanumeric punched card or paper tape output.



Figure 1-5. E 6419 System Organization

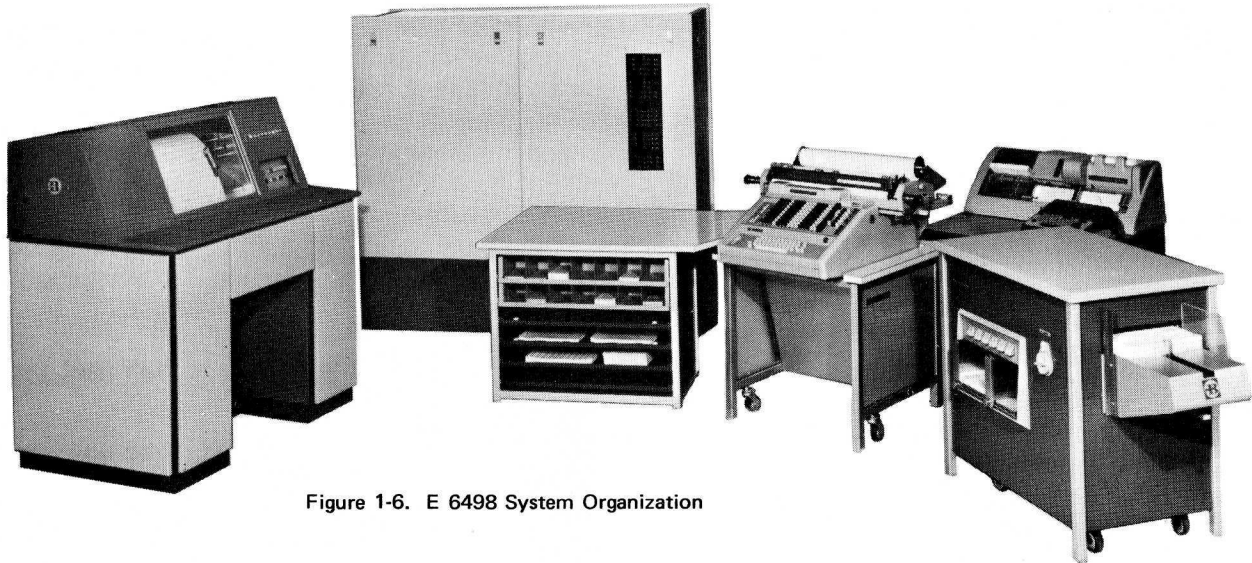


Figure 1-6. E 6498 System Organization



Figure 1-7. E 6499 System Organization

SECTION 2

SYSTEM COMPONENTS

2.1. ELECTRONIC PROCESSOR

GENERAL

The Electronic Processor of the E 6000 system is a completely transistorized solid state computer with 4,800 positions of magnetic core memory. All of the logic for the performance of arithmetic (addition, subtraction, multiplication and division) is contained within the processor. In addition to this, the logic for handling striped ledger read/write operations, and the typing directly into and out of magnetic core memory is contained within the processor.

DESCRIPTION

The Control Console is cable-connected to the Electronic Processor through a series of cables coming in at the bottom of the Control Console and the Electronic Processor.

The electronic processor is provided with a display panel located on the upper right side. The display lights inform the operator of various systems operations; additional lights are for use by field engineering representatives.

The Electronic Processor is also provided with connector outlets at the rear of the processor for coupling (see Figure 2-2):

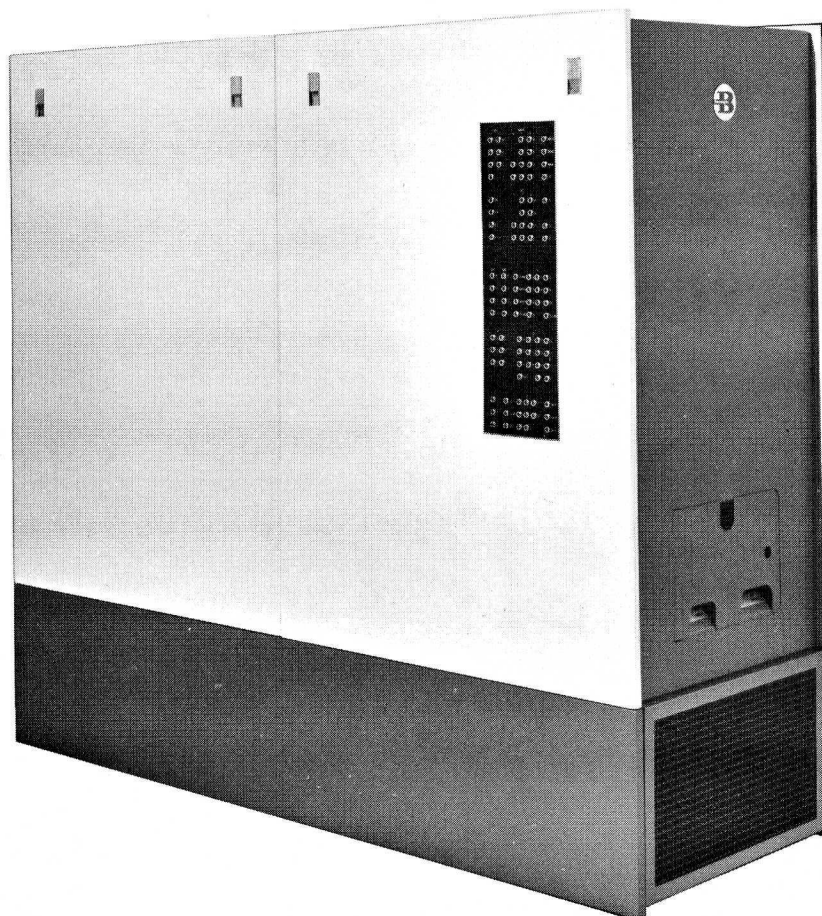


Figure 2-1. E 6000 Electronic Processor

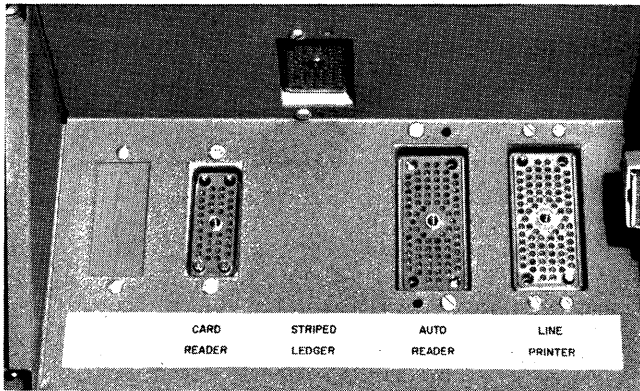


Figure 2-2. Connector Outlets

1. A 594 Punched Card Reader.
2. A 4004 Automatic Magnetic Ledger Reader.
3. A 988 Line Printer.
4. Magnetic Striped Ledger Carriage Control.

MAGNETIC CORE MEMORY

All data accumulation is in ferrite magnetic cores located in the Electronic Processor.

Using magnetic core memory provides one of the fastest methods known for accessing data in memory.

With all E 6000 systems, all arithmetic is completed in millisecond timings, due primarily to the utilization of magnetic core memory for data storage.

The core memory in the E 6000 is a binary coded decimal configuration (numeric only) with thirteen columns (twelve digits plus sign) for each word of memory. The capacity of the E 6000 magnetic core memory is 400 12-digit words, or 4,800 positions of magnetic core storage.

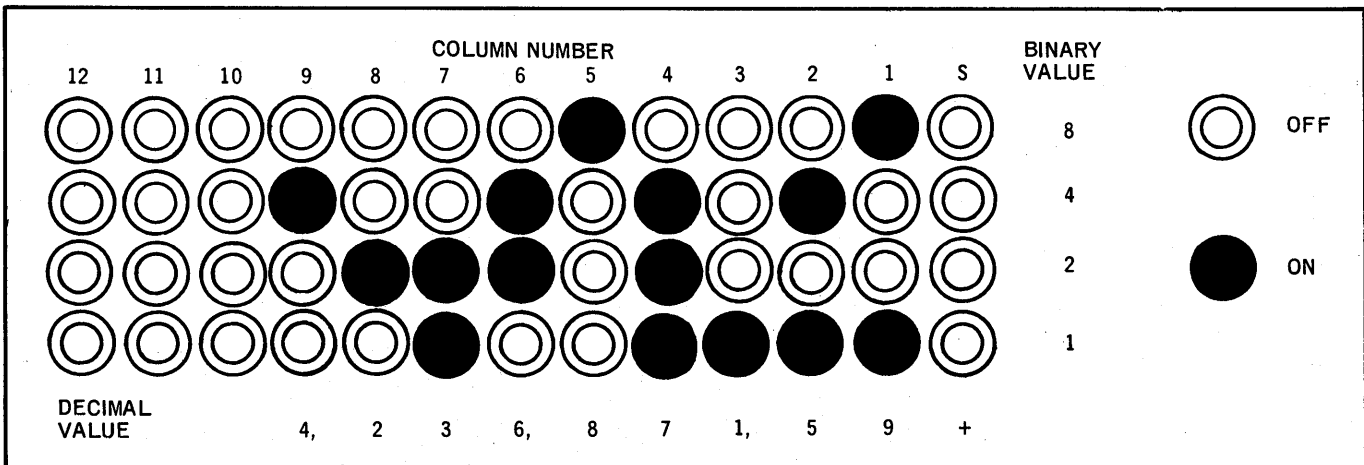


Figure 2-3. Magnetic Core Storage - 1 12-Digit + Sign Word

The individual cores are turned "on" or "off" by passing an electrical impulse along a group of wires passing through the center of the magnetic cores.

2.2. CONTROL CONSOLE

GENERAL

The simplified Control Console represents the primary communication between the system and the operator. Data input, output, and storage, as well as operator decision making and control are all accomplished in this area.

To achieve maximum operator efficiency, the color, slope and angle of both the keyboard and keys have been "human engineered" for maximum convenience. Forms handling has been made as simple and speedy as possible (see Figure 2-4).

POWER ON-OFF SWITCH AND LAMP

At the extreme left end of the alphanumeric keyboard is the ON-OFF switch. The Power On lamp, directly above the switch, glows when power is on in the Control Console and Electronic Processor.

TYPEWRITER KEYBOARD

The typewriter keyboard of the Series E 6000 is comprised of an electrically operated standard typewriter that activates an 84-character unit printer; three individual return keys (K1, K2, K3); a programable selective tab/return key (K4) for positioning the carriage after typing; a vertical space key; a space bar; a shift key (to select upper case characters); and a backspace key (see Figure 2-6).

The E 6000 Series is equipped with the feature "Type to Memory/Type from Memory", the typing of alphanumeric information to core

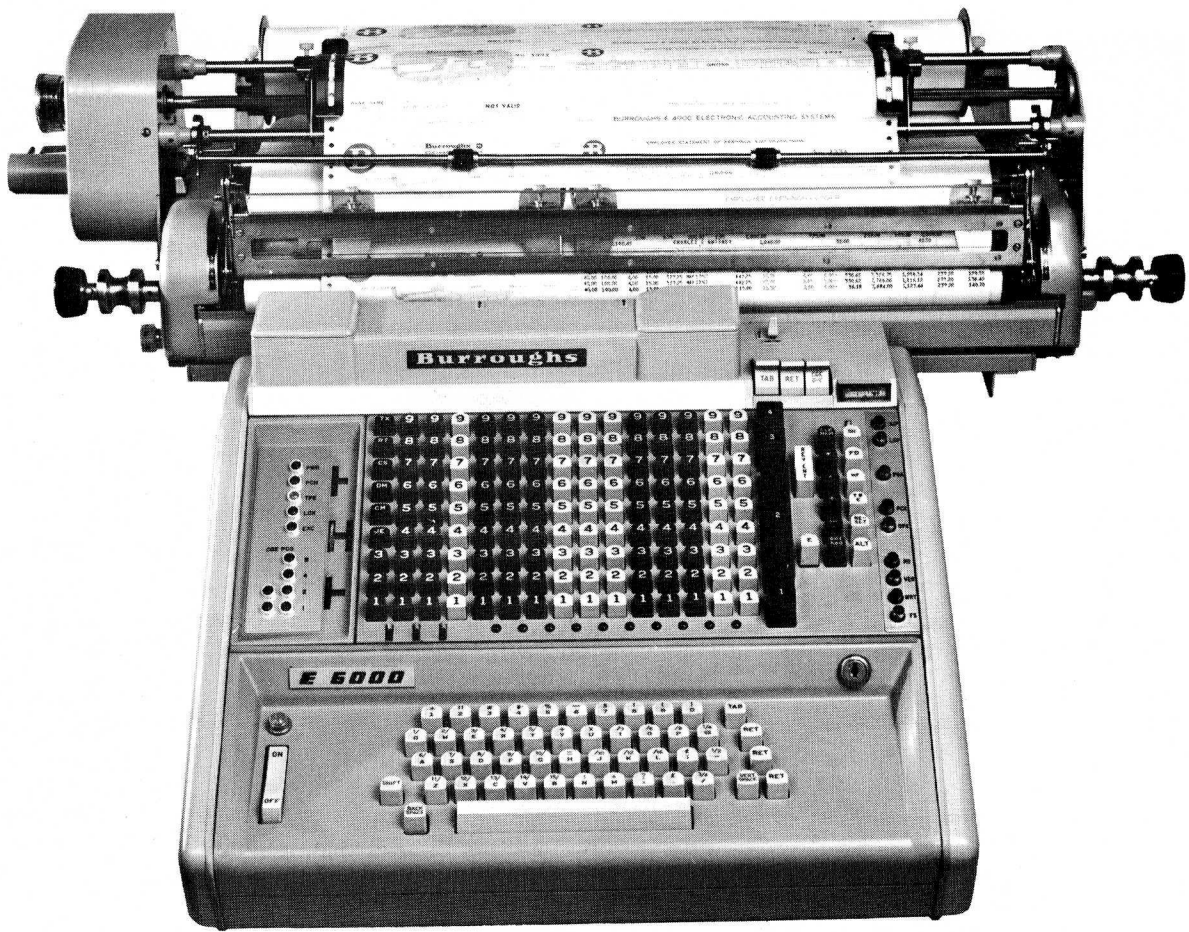


Figure 2-4. E 6499 Control Console

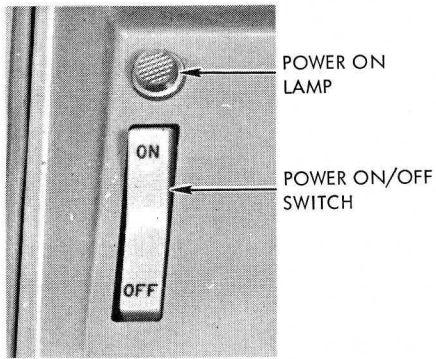


Figure 2-5. Power ON-OFF Switch and Lamp

memory or the typing of alphanumeric information from core memory is under control of the central processor. When programed for "Type to Memory", the depression of typewriter keys will encode alphanumeric information in core memory. When programed for "Type from Memory", the alphanumeric writer section types the information without operating the typewriter keys.

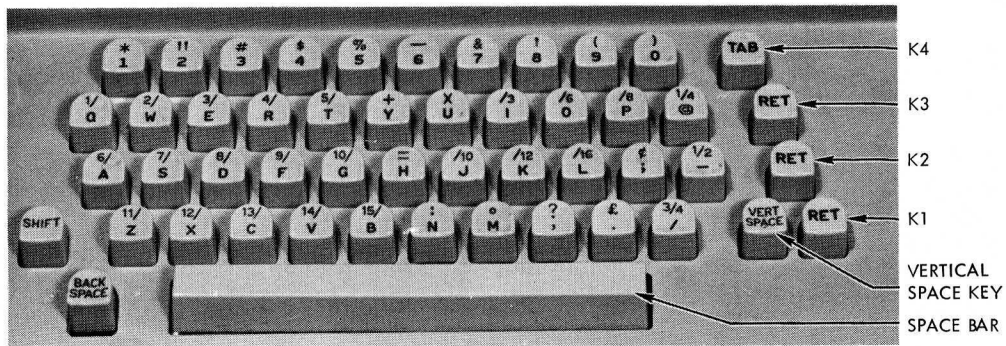
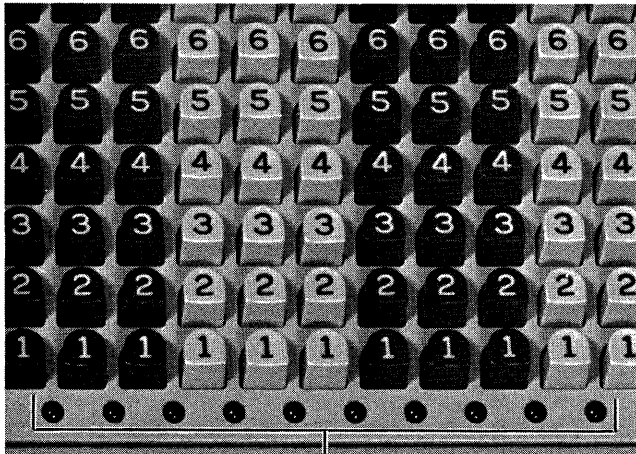


Figure 2-6. Alphanumeric Typewriter Keyboard

DECIMAL INDICATOR LIGHTS

Ten Decimal Indicator Lights are provided at the bottom of the numeric keyboard to facilitate easy indexing of amounts over the correct decimal location.

The Decimal Indicator Lights are arranged between adjacent columns for correct decimal punctuation of the amounts.



DECIMAL INDICATOR LIGHTS

Figure 2-7. Decimal Indicator Lamps

DATE SECTION

The date section of the E 6000 Electronic Accounting System is located at the left of the amount keyboard on the control console and consists of four quick-set dials (see Figure 2-8).

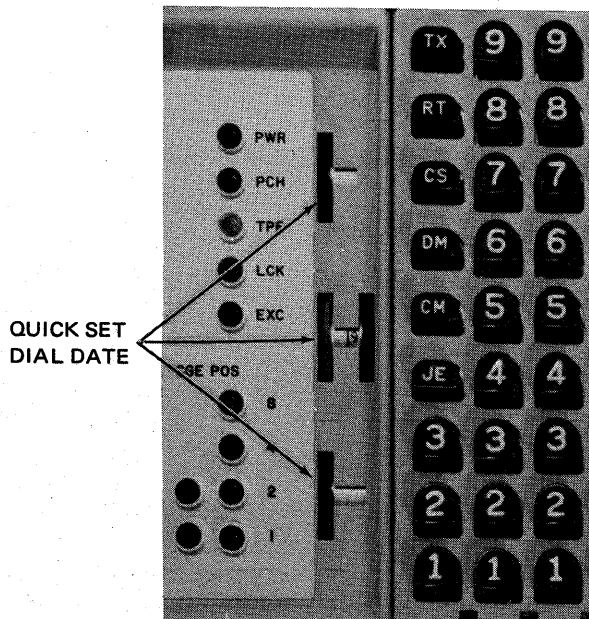


Figure 2-8. Date Section

The lower dial (at the bottom of the keyboard) indexes the month to be printed.

The two middle dials index the day of the month to be printed. The left dial indexes 10, 20, or 30 and the right dial indexes 1-9 and 0. It is necessary to set both dials when it is desired to print 10, 20, or 30.

The upper dial (at the top of the keyboard) indexes the year to be printed.

Any unmarked positions will not print.

MEMORY ADDRESS KEYS

The Memory Address keys are located in columns 13, 14 and 15 of the Control Console (see Figure 2-9). Keys in column 15 are used to address those memory locations 100 through 399. Keys in columns 13 and 14 are used by themselves or with a key in column 15 to address any memory location 01 through 399.

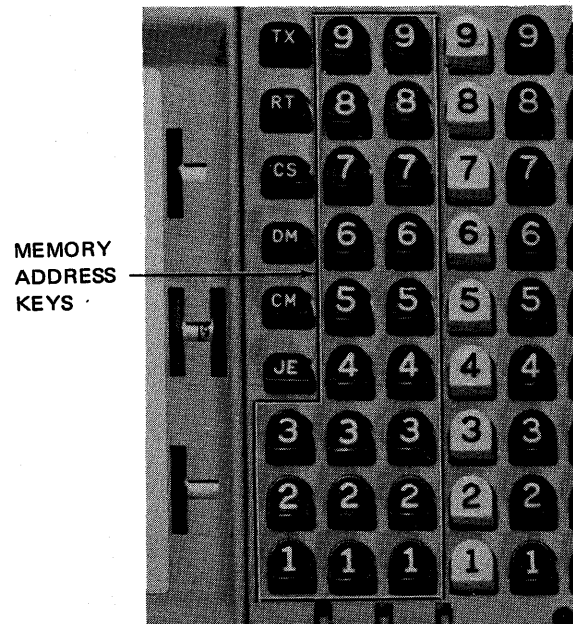


Figure 2-9. Memory Address Keys

When a Memory Address key is depressed, it causes activation of the selected memory location for processing in that machine cycle.

Positive programming must be provided to permit the E 6000 to recognize an address selected from the keyboard; a position not programmed for this recognition would ignore erroneous Memory Address key depressions.

To provide more positive assurance that the operator uses the Memory Address keys correctly,

positive control may be programmed to enforce the use of the Memory Address keys in any given position. The E 6000 would then refuse to operate without at least one key depressed in this section.

Whenever one of the Manual Program keys is depressed to override a program or check the contents of a memory location, the selection of a Memory Address key is automatically enforced.

Memory Address keys will normally restore on each machine cycle, unless positive programming control is provided to hold the selection on the keyboard for two or more machine cycles.

CHARACTER KEYS

There are 6 keys in column 15, the extreme left hand column, which may be used for a fast means of printing an abbreviated description (see Figure 2-10). For the printing position of these characters in relationship to the rest of the keyboard, see Numeric Semi-gang Printing, Figure 2-31. The standard characters furnished on these 6 keys are:

- TX Tax
- RT Return
- CS Cash
- DM Debit Memo
- CM Credit Memo
- JE Journal Entry

These keys may be replaced with any two-letter character to fit any application. (The letters "M" and "W" may not be furnished on the same keytop.)

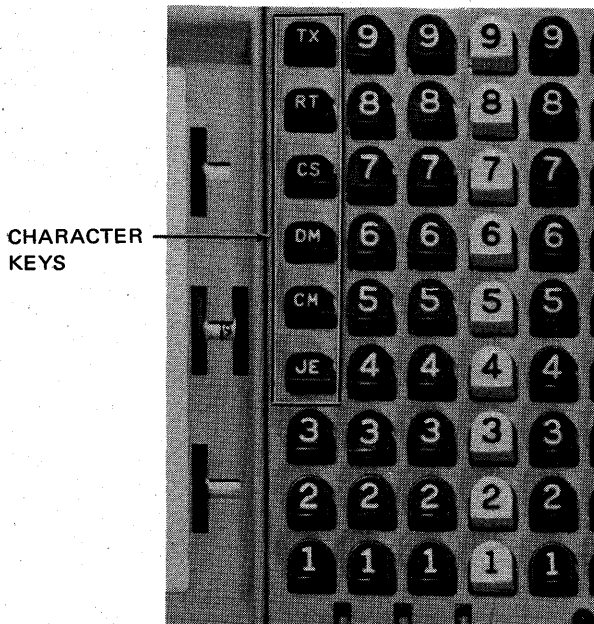


Figure 2-10. Character Keys

CARRIAGE POSITION LIGHTS

The carriage position lights display binarily the carriage position (0-39) the program is calling for each time it encounters a control console instruction. If the programmed position does not agree with the actual position of the console carriage, the system will lock. If the system locks, all the operator need do is move the carriage to the position indicated by these lights.

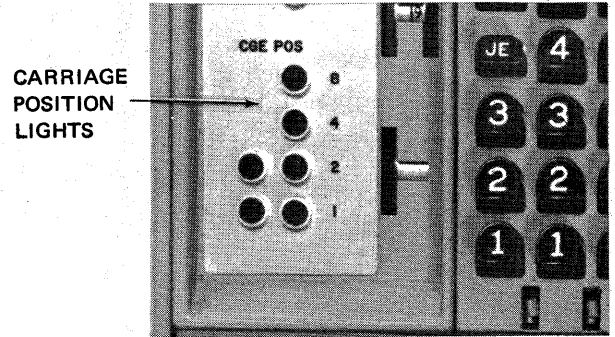


Figure 2-11. Carriage Position Lights

DATA INPUT KEYS

There are twelve (12) columns of Data Input keys on the numeric keyboard of the E 6000 system. To promote accuracy, these keys are color coded, following the decimal orientation of the monetary system.

Positive programming control must be provided to permit recognition of any amount listed in this section of the keyboard. Without this control, listed amounts will be ignored.

Data Input keys will normally restore after each machine cycle, unless positive programming control

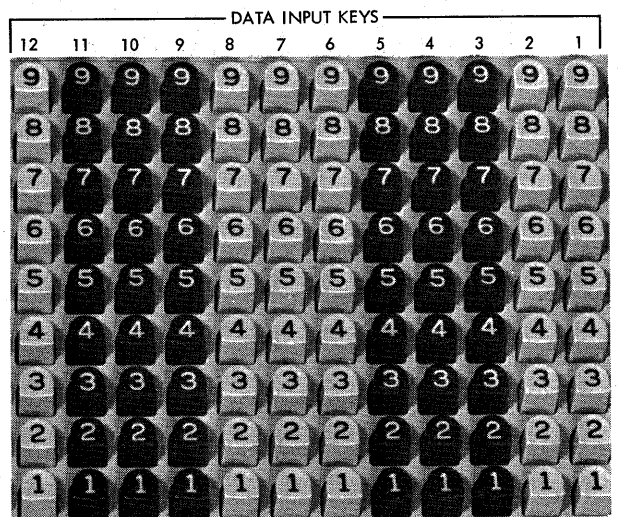


Figure 2-12. Data Input Keys

is provided to hold the Data Input keys depressed on the keyboard for two or more machine cycles.

PROGRAM START BARS

The E 6000 Electronic Accounting System is equipped with four Program Start bars (see Figure 2-13). These Program Start bars have two basic functions:

1. Cause a complete cycle of the Control Console to occur.
2. Control and direct movement of the forms carriage.

The four Program Start bars can control several optional means of carriage movement, depending upon the result desired. To reduce operator decision, these options are pre-programmed and only a choice of start bars is required. In those cases where carriage movement is fixed, or if the input can be used to determine optional results, any of the four program start bars may be automatically activated to eliminate operator decision all together.

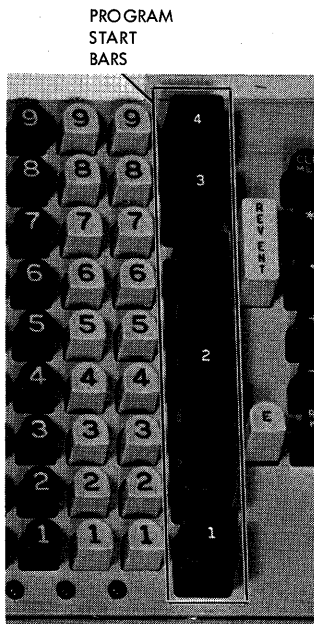


Fig. 2-13. Program Start Bars

REVERSE ENTRY PROGRAM MODIFIER

The Reverse Entry Program Modifier is located directly to the right of the Program Start bars and is marked "REV ENT" (see Figure 2-14). Depression of the Reverse Entry Program Modifier will not cycle the machine; a Program Start bar must be depressed to cycle the Control Console. The Reverse Entry Program Modifier key will always restore after each cycle of the Control Console.

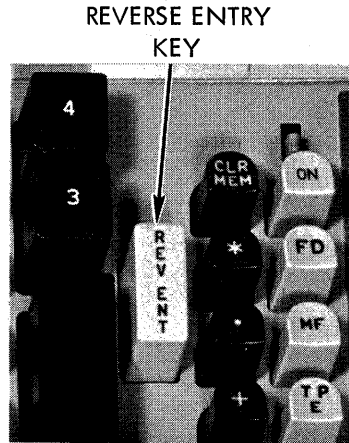


Figure 2-14. Reverse Entry Program Modifier

When the Console is cycled, the symbol "RE" will print and the normal color of printed data in that position will be reversed.

The Reverse Entry Program Modifier permits easy program alteration for reverse entries or other program changes. The function of this key is to change the sign of data.

Since the E 6000 uses algebraic rules to determine signs, subsequent programing can be provided to reverse or alter desired results based upon a previous depression of the Reverse Entry Program Modifier key.

MANUAL PROGRAM KEYS

The Read and Clear (Total), Read, Plus, and Minus keys located to the right of the Program Start bars on the Control Console provide manual control of

	Example 1		Example 2	
Normal Print	5.00	(Black)	10.00	(Red)
With "REV ENT" key	5.00RE	(Red)	10.00RE	(Black)

Color and symbol print with and without Reverse Entry Program Modifier Key depressed.

arithmetic functions. Depressing any one of these keys will disable all programming with the exception of form spacing, carriage movement, and printing format controls.

The depression of a Manual Program key will not cause a cycle of the Control Console. A Program Start bar must also be depressed to accomplish the desired console cycle and resulting carriage movement.

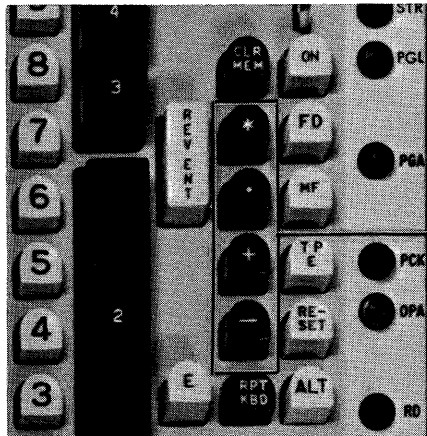


Figure 2-15. Manual Program Keys

To encourage proper program override, a Memory Address key must always be depressed with a Manual Program key to permit a machine cycle.

Table 2-1 lists the functions of the four Manual Program keys.

MISCELLANEOUS KEYS

Error Key

This key is marked "E" and when depressed will restore any key or Program Start bar with the exception of the Repeat Keyboard key when it is latched down.

Repeat Keyboard Key

This key is marked "RPT KBD" and when depressed and latched down will prevent any indexed amount, character and memory address keys from restoring on a machine cycle.

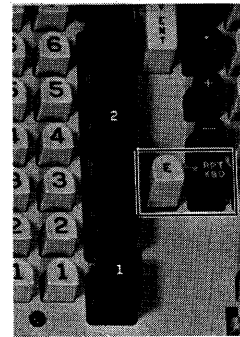


Figure 2-16. Miscellaneous Keys

CLEAR MEMORY KEY

To provide a fast, positive means of clearing memory that leaves an unmistakable audit trail, the Clear Memory key is provided on all E 6000 systems. Under control of the lock indicated in Figure 2-17, the Clear Memory key is depressed in specified operating positions. In those positions, the first machine cycle will:

1. Instantly clear the first 2,400 positions of magnetic core storage.
2. Print a delta (Δ) symbol immediately to the right of the clear signal. Example: .00 Δ

A second machine cycle in which the clear memory and reverse entry program modifier keys are used will clear the last 2,400 positions of core storage and cause the clear signal to print in red.

Depression of the Clear Memory key will have no effect in other than the specified clearing positions.

Table 2-1

Manual Program Key Functions

Key	Marking	Function
Read and Clear (Total)	*	The keyboard selected Memory Address will be read and then cleared. (Totaled)
Read	•	The keyboard selected Memory Address will be read, but not cleared.
Plus	+	The amount indexed on the keyboard will be added to the keyboard selected Memory Address.
Minus	-	The amount indexed on the keyboard will be subtracted from the keyboard selected Memory Address.

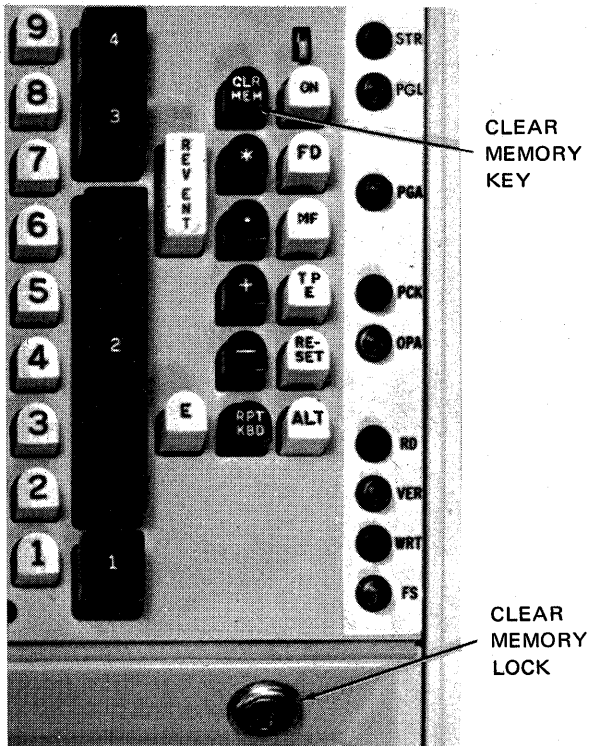


Figure 2-17. Clear Memory Key and Lock

provide control over the following two possible output adjuncts:

1. A 525 Tape Perforator.
2. A 545 Card Punch Control Unit.

For additional information on these components, refer to Sections 2-6 and 2-7 of this manual.

A 525 TAPE PERFORATOR CONTROL KEYS

The 6 keys illustrated in Figure 2-18 provide complete manual control over the Style A 525 Tape Perforator. (See Section 2-6 for further description of this unit.) Table 2-2 indicates the marking and function of these keys.

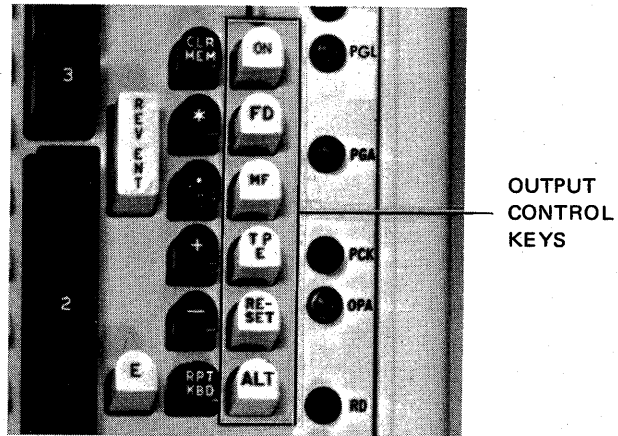


Figure 2-18. A 525 Tape Perforator Control Keys

OUTPUT CONTROL KEYS

These are special purpose keys located on the right of the Control Console numeric keyboard and

Table 2-2

A 525 Tape Perforator Control Key Functions

Key	Marking	Function
On Key	ON	When the E 6000 Power ON/OFF switch is ON, this key will turn power ON in the A 525 Tape Perforator. The small slide above the key will hold this key depressed until released.
Feed Key	FD	When the Feed key is depressed, the A 525 Tape Perforator will punch one character in the tape. This character is programable to punch any desired code.
Multiple Feed Key	MF	This key will cause Tape Feed codes to be punched for as long as the key is depressed.
Tape Error Key	TP E	This key is a programable key and is normally wired to punch a single error code in the tape.
Reset Key	RE- SET	This key is a programable key and is normally wired to release a tape punching lock. (See A 525 Output Communication Lights.)
Alternate Key	ALT	This key is a programable key and may be used at the programmer's discretion to accomplish any desired result.

A 545 CARD PUNCH CONTROL UNIT CONTROL KEYS

Complete console control over the Style A 545 Card Punch Control Unit and the keypunch unit is provided by 6 keys located in the same position as the A 525 Tape Perforator Control keys illustrated in Figure 2-18. (See Section 2-7 for further description of this unit.) Table 2-3 indicates the marking and function of these keys.

OUTPUT CONTROL COMMUNICATION LIGHTS

The Output Control Communication Lights consist of Power On light, Punch On light, Tape Warning light, Lock light, Exceed Capacity light for the

A 525, and Power On light, Alternate Program light, Lock light, Auxiliary Alternate Program light, and Position Check light for the A 545.

Figure 2-19 shows the Output Control Communication Lights for the A 525 Tape Perforator.

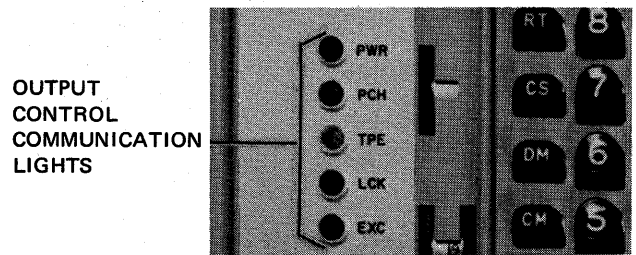


Figure 2-19. Output Control Communication Lights

Table 2-3

A 545 Card Punch Control Unit Control Key Functions

Key	Marking	Function
On Key	ON	When the E 6000 Power ON/OFF switch is On, depression and latching of this key with the latching slide located directly above the key will transfer control of the keypunch to the Control Console keyboard.
Feed Key	FD	To provide control of automatic feeding of cards from the console where there are no cards in the card bed and/or punching station, the feed key is provided. Depression of this key will feed one card from the feed hopper to the card bed, and any card in the bed will be moved to the punching station.
Release Key	REL	With the Auto Feed switch on the keypunch "ON", depression of this key will place a new card in the punching station and advance all cards accordingly through the other keypunch stations. When the Auto Feed switch on the keypunch is "OFF", all cards will move, but not be positioned. The Feed key must be depressed once to ready the keypunch for punching.
Skip Key	SKP	This is a programable key, normally wired to skip the field or remainder of the field in the card which is in the punching station.
Duplication Key	DUP	When this key is depressed, the punching in the card field of the card in the reading station will be duplicated in the card in the punching station. If the key is manually held depressed, duplication will continue until the key is released. When released, duplication will stop at the end of the field, or card, whichever occurs first.
Alternate Program Key	ALT	This is a programable key and is normally wired to cause a change in the format of punching. This permits selective card format changes during a single run without touching the keypunch.

Table 2-4

A 525 Output Communication Light Functions

Key	Marking	Function
Power On Light	PWR ON	When lighted, it is a signal to the operator that power has been turned on to the punch.
Punch On Light	PCH ON	When lighted, it is a signal to the operator that the tape perforator is turned on. Both Power On and Punch On must be on to permit punching.
Tape Warning Light	TPE	When this light is on, an audible alarm sounds and is a signal to the operator that the tape is broken, threaded improperly, nearing depletion or the rewind spool is nearing capacity. The light is extinguished and the audible alarm turned off when the above condition(s) is corrected.
Lock Light	LCK	When lighted, it signals the operator that the parity checking circuit has detected a parity error or that plugboard programing has signaled a lock. The machine cycle is blocked at the next carriage position. As a means of releasing this lock, the Reset key is usually programed through plugboard wiring for lock release. When programed, depression of the Reset key will release the machine block and extinguish the Lock light.
Exceed Capacity Light	EXC CAP	When this light is on, it signals the operator that the programed capacity of the field punched has been exceeded.

Tables 2-4 and 2-5 give the markings and functions of the lights for the A 525 Tape Perforator and the A 545 Card Punch Control Unit, respectively.

OTHER COMMUNICATION LIGHTS

These system/operator communication lights located on the extreme right side of the keyboard on the Control Console of the E 6000 Electronic Accounting Systems are divided into three major categories:

1. Basic Communication Lights.
2. Program Control Switch/Lights.
3. Striped Ledger Communication Switch/Lights.

The Program Control Switch/Lights and Basic Communication Lights are on all models of Series E 6000 Electronic Accounting Systems; the Striped Ledger Communication Switch/Lights are on those models equipped with the magnetic striped ledger carriage. The Communication Lamps are provided to inform the operator of operating conditions. (See Figure 2-20.)

The Program Control Lights and the Striped Ledger Communication Lights are switch/lights — when the switch/light is depressed, the lamp is turned on or off and the condition indicated by the lamp is set or reset to normal. The Output Control and Basic Communication Lights are not switch/lights, they merely give a visual signal to the operator of the system's condition.

Communication lights may flash during machine operation. This does not signify trouble and is a normal condition. The condition indicated by the light exists only if the light remains on at the end of a machine cycle.

BASIC COMMUNICATION LIGHTS

The basic communication lights consist of the Position Check light and the Operator Action light.

Position Check (PCK) Light

The Position Check light illuminates and the machine cycle is blocked whenever the carriage is not in the position called for by the program and indicated by the carriage position lights. (See

Table 2-5

A 545 Output Communication Light Functions

Key	Marking	Function
Power On Light	PWR ON	When this light is on, it is a signal to the operator that power is on to the keypunch and the control console and that the control console has control over the keypunch.
Alternate Program Light	ALT PRG	When this light is on, it is a signal to the operator that the keypunch is operating under Alternate Program control.
Lock Light	LCK	When this light is on, an audible alarm sounds and the machine cycle is blocked if the carriage is in a punching position. This is a signal to the operator that one of the following conditions exist: <ol style="list-style-type: none"> 1. Cards not feeding properly in the keypunch. 2. Card supply exhausted. 3. A machine lock has been activated from the programming.
		The lock is released and the light and alarm turned off when conditions 1 and 2 have been corrected. Condition 3 requires depression of a control that is programmed for lock release.
Auxiliary Alternate Program	AAP	When this light is on, it is a signal to the operator that the keypunch is operating under Auxiliary Alternate Program control.
Position Check	POS CHK	When this light is on, it signals the operator that carriage position and card punching position are out of sequence. The card being punched will be in error.

Figure 2-11.) The light will be extinguished and the block removed when the carriage is moved to the position called for by the program.

Operator Action (OPA) Light

The OPA light illuminates and the system stops processing when operator action is required. The operator action required could be inserting a ledger, typing, indexing an amount or depressing a motor bar.

PROGRAM CONTROL SWITCH/LIGHTS

The Program Control switch/lights consist of the start internal programming, program load and program advance switch/lights.

Start Internal Programming (STR) Switch/Light

The function of the STR switch/light when used in conjunction with a manual machine cycle is to

begin internal processing. Processing will begin at the first word of memory unless one or more of the memory address keys (Figure 2-9) is also used. If the memory address keys are used, processing will start at the selected address. Once the E 6000 is in the internal mode, it will remain as such until the end of an accounting function.

Program Load (PGL) Switch/Light

The function of the PGL switch/light is to activate the A 594 punched card reader. When used in conjunction with a program start bar (Figure 2-13) punched cards will be read at a rate of 300 cards per minute until an end of card in code is sensed. The PGL switch/light is normally used at the beginning of an accounting function to load a program, after which the start internal programming (STR) switch/light is used to begin internal processing of the program just loaded.

Program Advance (PGA) Switch/Light

The PGA switch/light has three basic functions:

1. If a striped ledger error condition is indicated on one of the striped ledger communication switch/lights, depression of the PGA switch/light followed by a depression of the illuminated striped ledger communication light will advance the internal program to the appropriate correction routine.
2. The PGA switch/light used in conjunction with one of the manual program keys (Figure 2-15) will cause the processor to stop internal processing.
3. The PGA switch/light may also be depressed to stop an automatic machine cycle called for by the program.

STRIPED LEDGER COMMUNICATION SWITCH/LIGHTS

General

The Striped Ledger Communication Switch/Lights consist of the Read, Verify, Write and Filled Sheet Switch/Lights.

Read Switch/Light

When illuminated, this light is a signal to the operator that the magnetic striped ledger was read incorrectly.

To eject the ledger and restore the system to normal, the operator depresses the "RD" switch/light. To reconstruct the data, the operator would depress the PGA and RD switch/light.

Verify Switch/Light

When illuminated, this light signals the operator that the amount indexed on the keyboard and the amount read into MA 20 do not agree. When this occurs, the machine cycle is blocked.

If the wrong ledger card was selected, the operator merely depresses the "VER" switch/light. This will eject the ledger and extinguish the "VER" light. The operator must then depress the Error key to restore the motor bar. The system has been restored to normal and the operation can continue with the selection of the correct ledger.

If it is determined that the amount on the keyboard is incorrect, the operator needs only to depress the Error key to restore the keyboard and motor bar, then index the correct amount on the keyboard and again depress the motor bar. If it verifies, the system will cycle.

Write Switch/Light

When the Write light is illuminated it signals the operator that the ledger may have been written incorrectly. When this occurs, processing halts. The correct information remains available in memory. To restore the system to normal the operator must depress the PGA switch/light and reinsert and eject the ledger a second time.

Filled Sheet Switch/Light

When this light remains on, it signals the operator that there are no more available lines for posting on the magnetic striped ledger card.

This condition can occur with a ledger card in the carriage or during the read-in operation.

Ledger Card in Carriage

When the "FS" light comes on with a card in the carriage, the operator must depress the error key to make certain an amount or motor bar is not indexed, depress the "PGA" and FS switch/light to extinguish the light and release the machine cycle block. The system will then automatically balance out that ledger card.

Read-In Operation

When the "FS" light remains on during the read-in operation, the ledger card will be automatically ejected; however, all of the data will be in core memory.

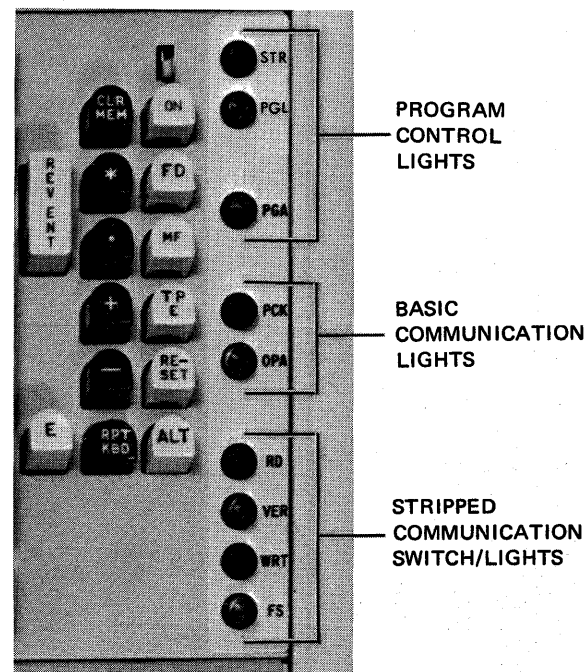


Figure 2-20. Control and Communication Lights

To transfer this data to a new ledger card it will be necessary to depress the "PGA" switch/light and "FS" switch/light at which time a blank ledger is inserted and the posting completed according to the program.

COLUMN SELECTOR KEYS

The Column Selector key on the left, marked "TAB", when depressed, will cause the carriage to move to the left. The carriage will continue to move as long as the "TAB" key is depressed or until the carriage reaches its extreme limit. Once the "TAB" key is released, the carriage will stop at the next stop position. The "TAB" key cannot be depressed during a machine operation.

The Column Selector key on the right, marked "RET", when depressed, will cause the carriage to move to the right. The carriage will continue to move as long as the "RET" key is depressed or until the carriage reaches its extreme limit. Once the "RET" key is released, the carriage will stop at the next stop position. The "RET" key cannot be depressed during a machine operation.

CARRIAGE OPEN/CLOSE KEY

This key, located to the right of the Column Selector "TAB" key, is marked "CGE O-C". When depressed it will cause the carriage to open if the carriage is closed, or to close if it is open.

NOTE

On all striped ledger models of the Series E 6000 this key is interlocked against opening the carriage once a magnetic striped ledger has been read-in and the carriage closed.

CARRIAGE POSITION INDICATOR

The Carriage Position Indicator is a 1/10" calibrated scale visible through a clear plastic window located to the right of the Column Selector keys. The Carriage Position Indicator moves in direct relationship to the carriage and will indicate to the

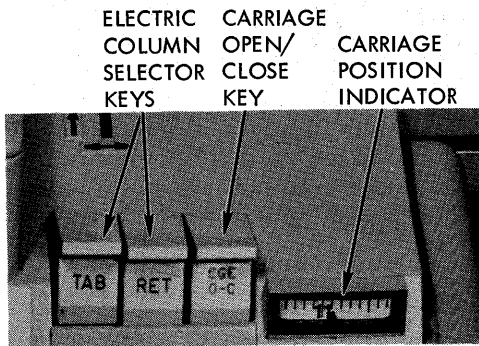


Figure 2-21. Carriage Control Keys and Position Indicator

system operator at all times the exact carriage position on a 1/10" scale.

ALL SUBTOTALS LEVER

The All Subtotals lever is located behind the Column Selector keys. This lever is a two-position lever, the forward position (toward front of machine) is the normal position, the rearward position (toward rear of machine) is the active position (see Figure 2-24).

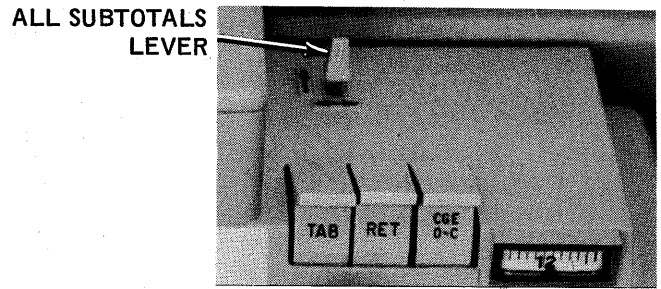


Figure 2-22. All Subtotals Lever

With the All Subtotals lever in the rearward position and proper All Subtotals programming in the position, each memory address will be automatically selected and printed beginning with MA 00 through 399. Either a vertical or a horizontal print-out may be obtained from the All Subtotals operation. The machine will not operate in any position not programmed for All Subtotals with the All Subtotals lever in the rearward position.

The E 6000 stops as soon as all memory positions have been cycled through. To restore the machine operation, the operator must first depress the Error key and then restore the All Subtotals key to the normal, or forward position.

BASIC CONVENTIONAL LEDGER CARRIAGE

Certain models of the E 6000 Electronic Accounting System are equipped with a 22" front feed carriage. This carriage features 1/10" tabulation with a visible 220 character printing line, one hand gravity feed form insertion and the ability to handle several forms simultaneously. Continuous roll journals or cut journals may be inserted around the platen with front feed ledgers, statements, etc., inserted in front of the journal.

Visible Line Finder

Across the front of the carriage is the Visible Line Finder. This is used to properly align forms for the

next print line by placing the form in the carriage with the last line of print immediately above the Visible Line Finder.

Form Heading Holder

Attached to the front edge of the Visible Line Finder is a removable Form Heading Holder. This Form Heading Holder accommodates heading inserts to indicate the carriage printing position.

Form Space Adjustment Lever

Form non-spacing and form spacing of 1 to 6 spaces is controlled by the setting of the Form Space Adjustment lever located just to the left of the right end carriage housing. Forms in the carriage will be spaced when the programing calls for space and the Form Space Adjustment lever is set for spacing. With this lever in the "0" position the platen will non-space, even though programed to space.

This lever must be set when the carriage is open; if the lever is set with the carriage closed, an incorrect number of spaces will result.

Platen Twirlers

Platen Twirlers are located on each end of the platen and are used to manually space forms in the carriage. Standard spacing is in increments of 1/6".

Variable Form Spacer

The Variable Form Spacer is located to the left of the right platen twirler. When pulled out, partial spacing of the forms can be accomplished.

When the pressure rolls are closed, they lock the form against the platen.

The pressure rolls can be restored to normal only by closing and opening the carriage. This can be done with either the CGE O-C key or under program control.

Alignment Protector Lever

The Alignment Protector lever located just to the right of the left end carriage housing and behind the front form guide is used for opening and closing the journal pressure rolls which hold forms inserted around the platen. With the Alignment Protector lever in the rearward position, the journal pressure rolls may be used as a fixed limit for elongated forms (payroll checks, etc.).

Roll Journal Holders

Roll Journal holders are located on the carriage cover and are easily adjusted to accommodate various width roll journals.

Journal Guides

Journal guides are located on the carriage cover and are easily adjusted to accommodate various width journals.

Form Guide Assemblies

This carriage is equipped with a removable Front Form Guide assembly and a Removable Rear Form Chute assembly. Fast, accurate changes in forms handling capability can be made by quickly moving

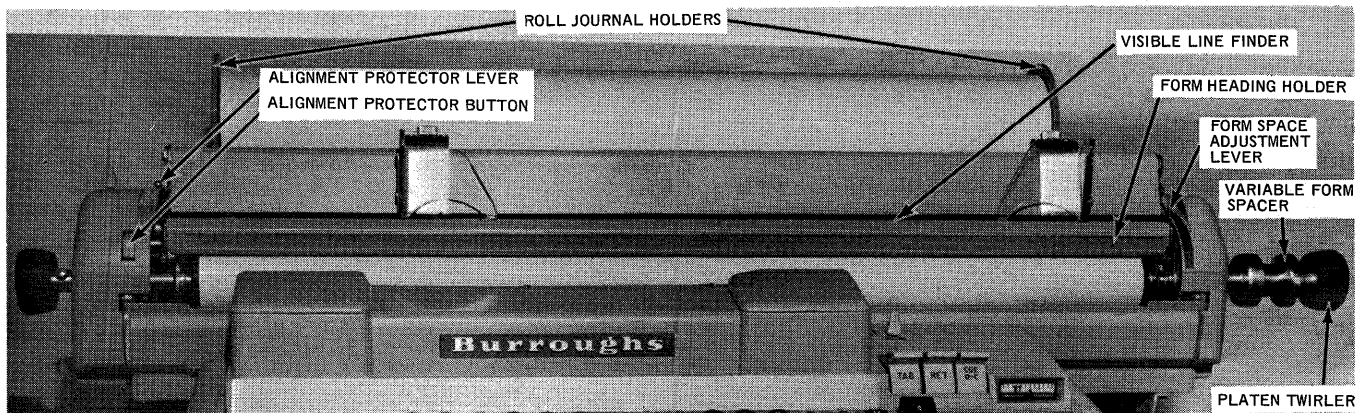


Figure 2-23. Basic Conventional Ledger Carriage, 22"

Alignment Protector Button

The Alignment Protector button located at the left end carriage housing permits the operator to close the front pressure rolls prior to a machine cycle.

an existing guide, or exchanging the entire assembly.

These guides provide the left and right edge guides for the ledger cards or checks inserted into the carriage and assure accurate, four-point alignment.

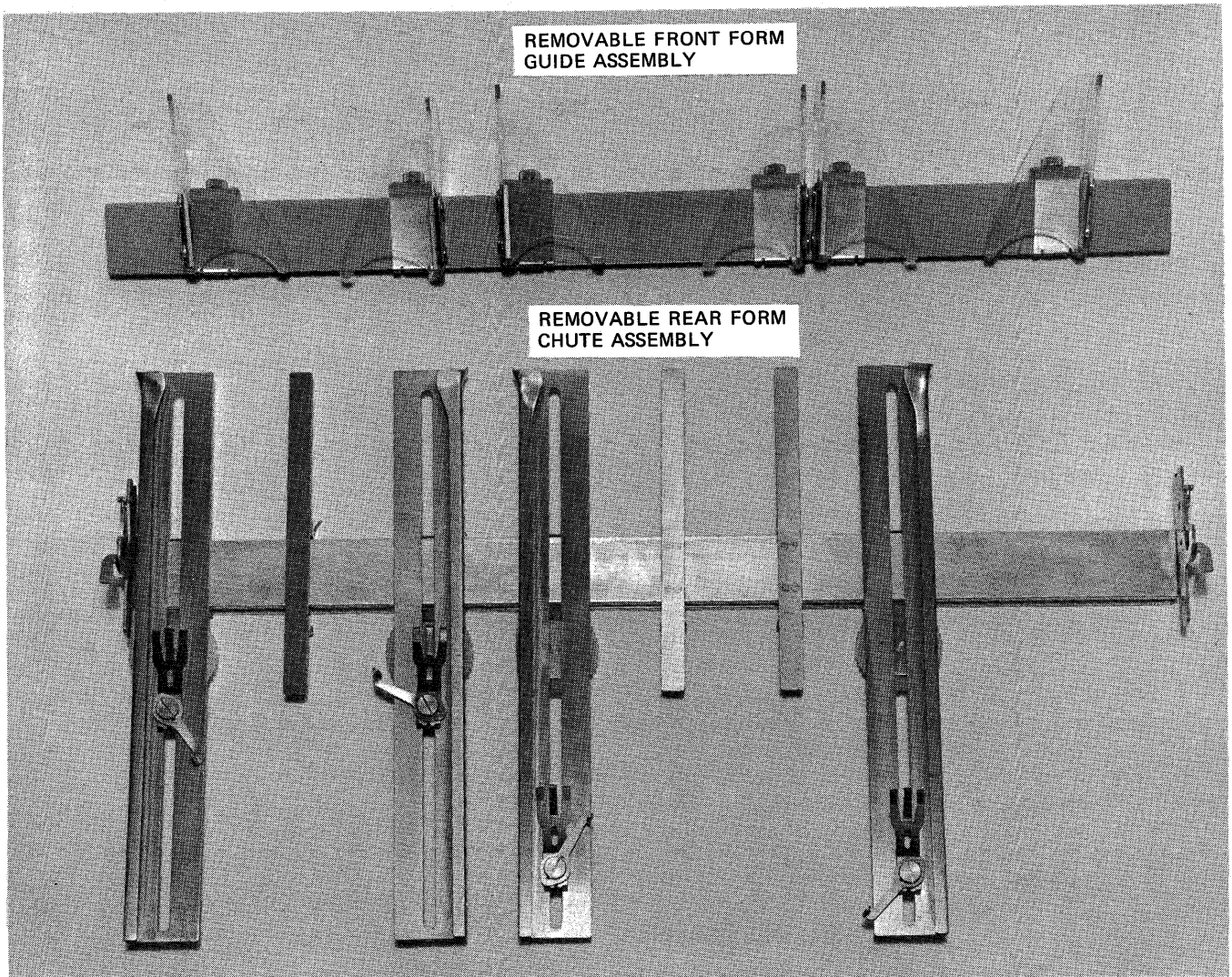


Figure 2-24. Form Guide Assemblies, Front and Rear

MAGNETIC STRIPED LEDGER CARRIAGE

General

To provide a further degree of automaticity to the E 6000 Electronic Accounting System, a carriage is available with certain models of the E 6000 which will:

1. Automatically square and align a magnetic striped ledger.
2. Read binary coded decimal information from the magnetic stripe on each ledger.
3. Process data and recode the stripe with new data while automatically ejecting the form for the operator.

To provide proper squaring of magnetic striped ledgers as they are read and aligned, front and rear form guides are provided on the carriage. Both

manually inserted and magnetic striped forms may be used in this carriage. Seven sizes of magnetic striped ledgers are available, in widths of 6", 8", 10", 12", 14-1/2", 16-1/2", and 19". Various combinations of manually aligned forms are possible, depending upon the size of the magnetic ledger used in a given job.

The Form Aligning Table extends across the front of the carriage (see Figure 2-25) and carries the movable Front Form Guides, plus a special Check Chute (see that subject). The remaining features indicated in Figure 2-25 are the same as those found on the conventional ledger carriage (see subject "Conventional Ledger Carriage").

The Read/Write heads are permanently installed in the carriage of the E 6000 in approximately the position indicated in Figure 2-25. All magnetic striped ledgers must have their stripes located in this area in order to be read by the E 6000.

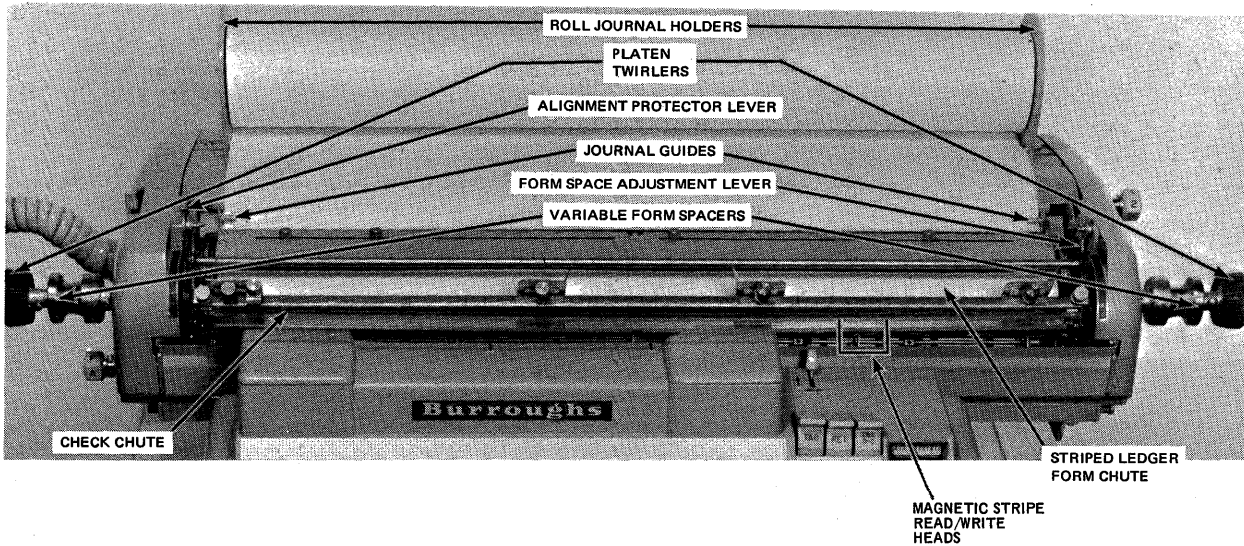


Figure 2-25. Magnetic Striped Ledger Carriage

Forms Adjustment Capabilities

To provide complete installation flexibility, the choice of ledger sizes is operator controlled and may be changed easily from job to job. In addition, the use of manually aligned forms is unrestricted, as long as they do not overlap the striped ledger when inserted. There are three basic carriage controls which make this flexibility possible (see Figure 2-26).

Manually Retractable Rear Guides

These guides are set according to the width of

Magnetic Striped Ledger used. The settings are indicated in Table 2-6, Striped Ledger Carriage Settings. The desired guide is moved in, toward the front of the machine, and all the rest remain out, toward the rear of the machine.

Striped Ledger Selection Knob

The number facing the operator selects the form size used, according to the settings indicated in Table 2-6, Striped Ledger Carriage Settings. Note that this number matches the number setting for the retractable rear guides in all cases, except

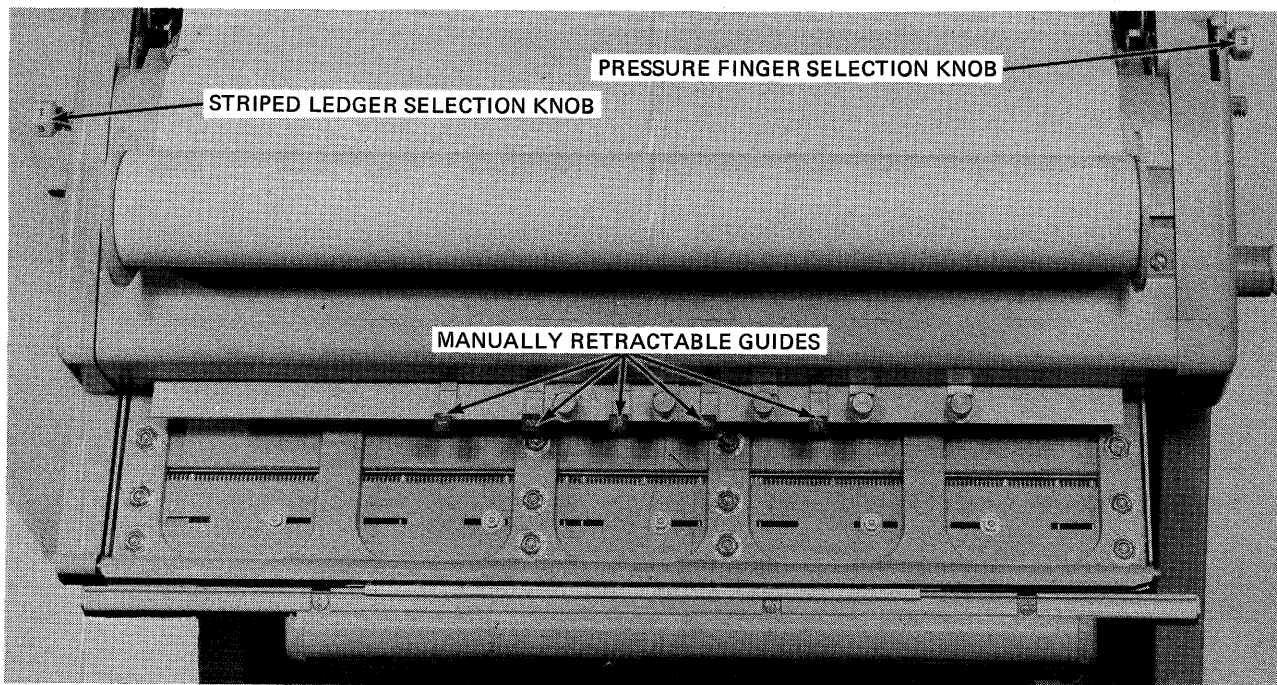


Figure 2-26. Form Adjustment Controls

Table 2-6

Striped Ledger Carriage Settings

Striped Ledger Form Width	Rear Guide Setting	Striped Ledger Selection Knob	Pressure Finger Selection Knob
6"	1	1	Any setting
8"	2	2	A, B, D, or F
10"	3	3	A, B, D, or F
12"	4	4	A, D, or F
14½"	5	5	A or F
16½"	Pre-set	6	A
19"	Pre-set	6	A

number 6, which is pre-set in the Rear Guides section.

Pressure Finger Selector Knob

Manually aligned forms must be supported when inserted in the carriage, and the Pressure Finger Selection Knob is set to accomplish this support according to Table 2-6, Striped Ledger Carriage Settings. The letter of the alphabet facing the operator is the desired setting.

If no manual forms are desired on any application, the Pressure Finger Selection Knob should be set at A.

ADJUSTABLE FIXED LIMITS

Adjustable Fixed Limits are provided for limiting

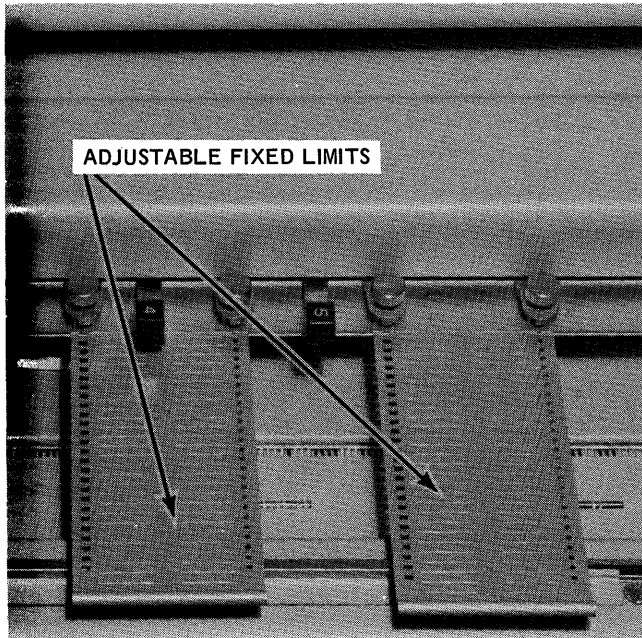


Figure 2-27. Fixed Limits

manually aligned forms. This limit is inserted from the rear of the carriage and may be set for any line of posting from line 1 through line 38. This will provide an adjustable fixed limit in 1/6" increments on any line located at 9 1/12" to 3 1/4" from the bottom of the form.

The adjustable Fixed Limit is held in place by thumbscrews that are mounted on the rear of the carriage.

CHECK LIMIT/FORM HEADING SWITCH

The Check Limit is an operator settable device that permits fixed alignment of an elongated form, such as a payroll check to a fixed printing line of 1½" or 1¾" from the bottom of the form (see Figure 2-28). With this switch in the rear position, the check limits will be automatically positioned when a striped ledger is inserted. When in the forward position, the check limit will be inactive.

Form Heading

The forward position of the Check Limit switch activates the ability to align Magnetic Striped Ledgers to the heading area. When opening new accounts, it may be desirable to place the heading data on the card with the E 6000 to assure that the heading data and the magnetic stripe data are in agreement. Manual typing would not provide this visible proof. When in the rear, or Check Limit position, this switch will align any blank card to the first posting line.

PROGRAM CONTROL CENTER

A removable, side-inserted Program Control Center with 220 programmable stop positions is used on all E 6000 systems. The Program Control Center controls printing format, some carriage movement and carriage opening.

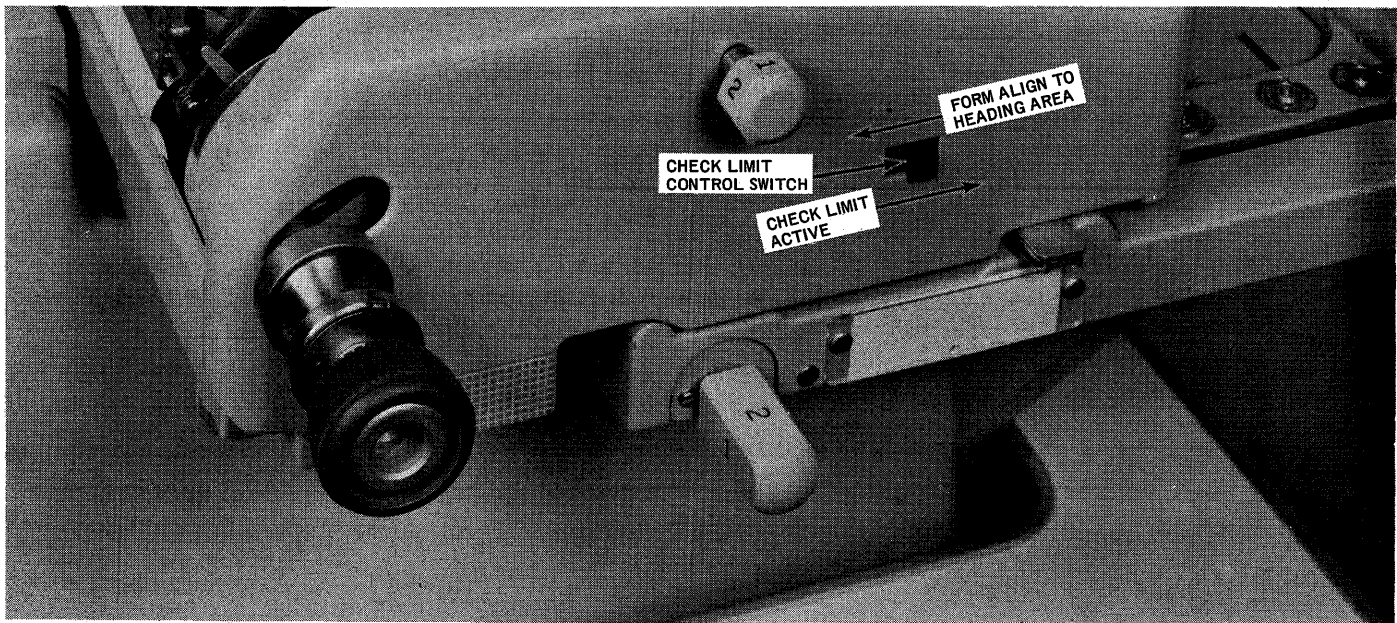


Figure 2-28. Check Limit Switch

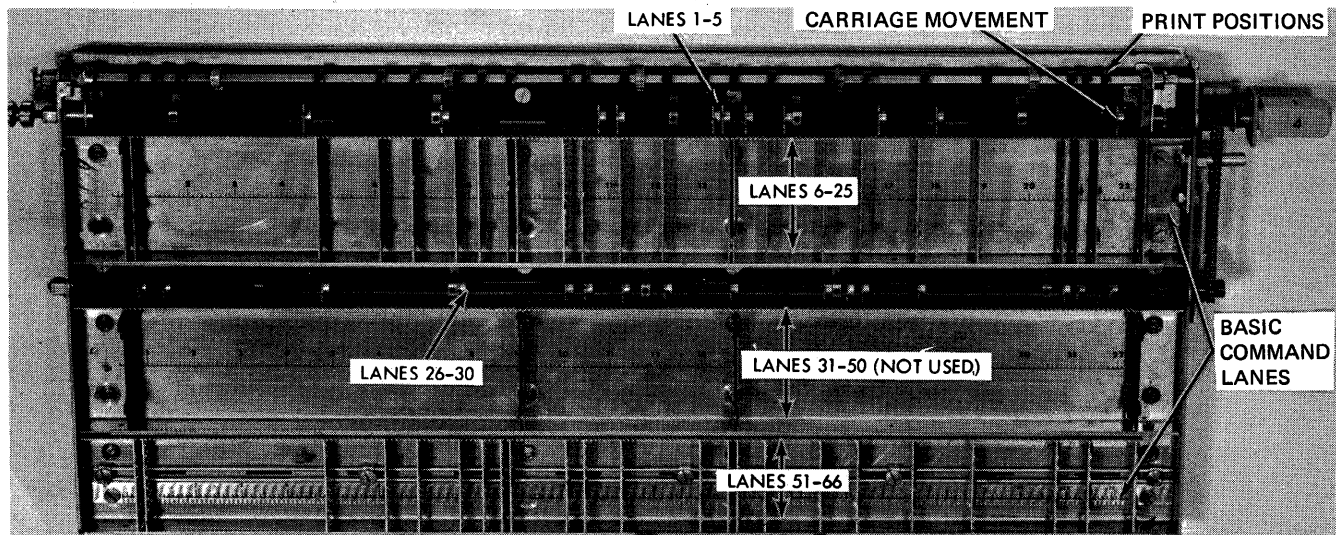


Figure 2-29. Program Control Center

The Program Control Center may be removed from the machine with two simple steps:

1. Move the carriage to the extreme right.
2. Move the Program Control Center Release Lever to the rear and slide the panel to the right to remove it from the carriage (see Figure 2-30).

To replace that Program Control Center (or any other) the reverse procedure is followed, except that the Release Lever will restore automatically.

NUMERIC SEMI-GANG PRINTING

The E 6000 Electronic Accounting System provides simultaneous, semi-gang printing of the date,

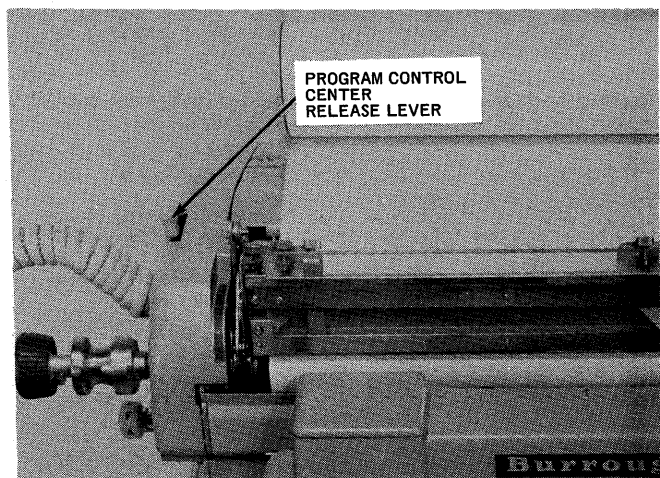


Figure 2-30. Program Control Release Lever

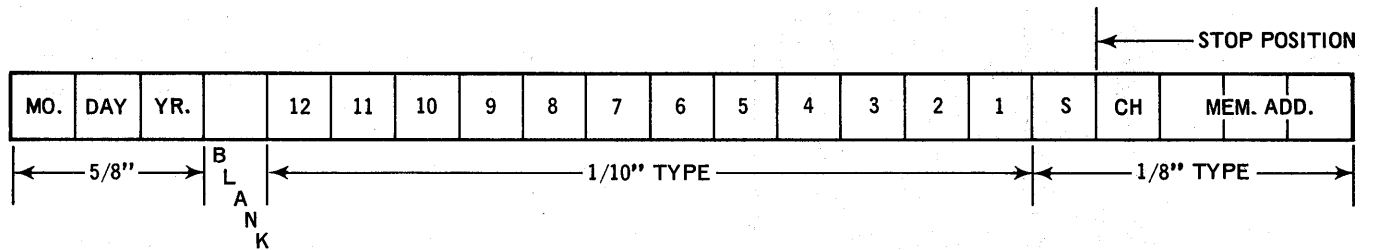


Figure 2-31. Numeric Printing Size and Arrangement

12 digits of numeric data, a symbol, a character, and a 3-digit memory address.

The type in the numeric section (12 digits) is spaced ten (10) numerals per inch; all other type is spaced eight (8) numerals to the inch in the symbol, character, and memory address locations. The date section requires 5/8".

All special symbols print from the Symbol section (S) located to the left of the stop position location in the Program Control Center.

The Character keys in keyboard column 15 (see Figure 2-10) cause printing of their respective characters from the Character section (CH) located immediately to the right of the stop position.

The Memory Address keys print their designations from the Memory Address section (MEM. ADD.) located to the right of the Character section.

SYMBOL PRINTING

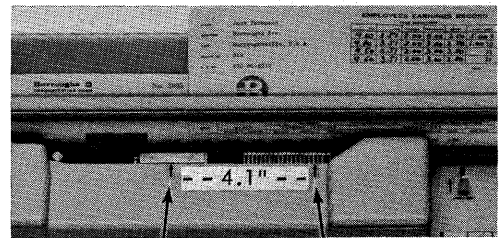
The special symbols which print from the Symbol section (S) are listed and described in Table 2-7, Symbol Description.

TYPEWRITER PRINTING

Rapid alphanumeric output is provided through the removable 84 character unit printer located to the left of the carriage stop position 4.1".

Printing from the typewriter is in 1/10" increments and may be performed at a maximum rate of 450 CPM, or 7.5 CPS, under control of automatic typing routines.

Figure 2-33 shows the removable unit printer cartridge to illustrate the 84 characters and their location in the E 6000 system.



UNIT PRINTER STOP POSITION

Figure 2-32. Typewriter Printing Location

Table 2-7

Symbol Description

Symbol	Description	Function
*	Read and Clear Plus	Selected MA will be read and cleared
CR	Read and Clear Minus	Selected MA will be read and cleared
•	Read Only – Plus	Selected MA will be read, not cleared
<u>cr</u>	Read Only – Minus	Selected MA will be read, not cleared
-	Minus	Minus amount
+	Plus	Plus amount
RE	Reverse Entry	Only when REV ENT key is depressed (see Figure 2-14)
Δ	Clear Memory	Only when CLR MEM key is depressed (see Figure 2-17)

LOWER CASE												UPPER CASE											
6	0	2	4	S	I	0	1	*	W	\$	%	3											
P	O	N	M	K	L	-	1	0	1	0	:	8											
G	F	E	D	B	A	8	1	2	1	8	2	0											
X	W	V	U	2	\	0	(4	\	X	1	1											
,	.	:	L	2	T	C	1	2	#	0	3	3											
Σ	I	R	Q	H	e	Y	+)	=	1	2	1											

Figure 2-33. Series E 6000 Unit Printer Cartridge

2-3. A 594 PUNCHED CARD READER

DESCRIPTION

The A 594 Card Reader is a serial card reader capable of reading alphabetic or numeric data from 80-column punched cards into the core memory of the E 6000 system at a rate of 200 or 300 cards per minute (see Figure 2-34).

The A 594 Card Reader has the following controls:

1. Program Switch and Indication Light – The indication light will illuminate to indicate failure to load the card format register with a program or on a lamp failure in the card reader. This light will also illuminate when the card format register program is lost by power turn off or a fluctuating power supply.
2. Power Switch – This is a two-position switch used to turn the power on or off in the card reader.
3. Feed Switch – This is a two-position switch used to stop and start card feeding. With this switch, card reading may be stopped any time, and restarted, without losing any data or program instructions. It will not affect the card format register.
4. Feed Light – Illuminates when a card read command is received from the E 6000 system. The light goes out after the card read command is executed. When the supply of cards in the feed hopper is

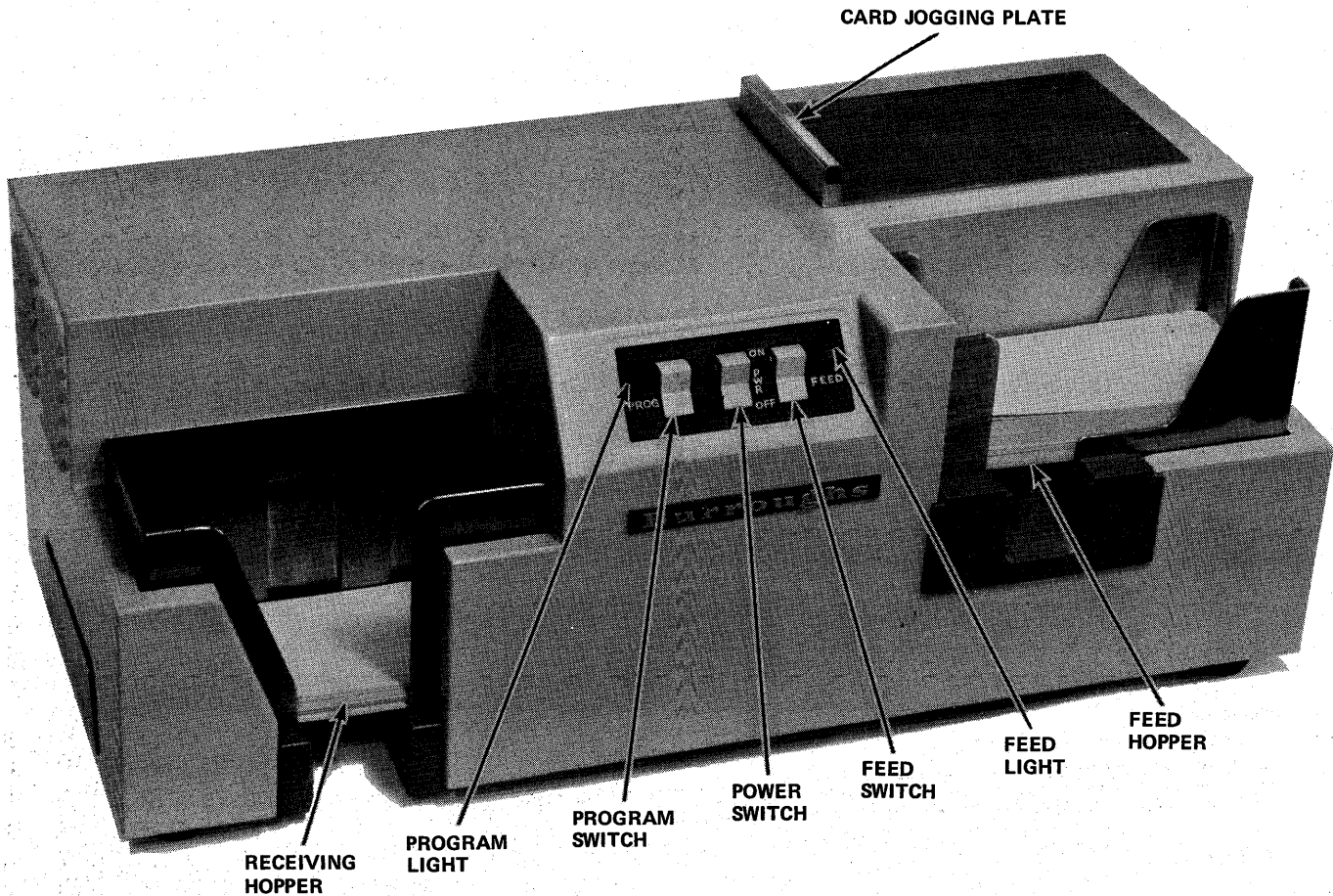


Figure 2-34. A 594 Punched Card Reader

exhausted, with the program still calling for a card read, the system will halt with the "feed" light illuminated. The cards in the receiving hopper may be removed and loading additional cards in the feed hopper will automatically restart the system.

The Feed and Stacking Hoppers will hold approximately 350 punched cards. Punched cards are placed face down in the Feed Hopper, with column 1 next to the reading station, and are automatically stacked face down in the same sequence in the receiving or stacking hopper.

The Card Reader reads sequentially, column 1 through column 80. The reading station is a series of photoelectric cells that reads the entire column as it passes the read area (see Figure 2-35).

Programing requirements, and codes required to control card reading, are explained in the E 6000 Basic Assembler Reference Manual.

2-4. A 4004 MAGNETIC LEDGER READER

GENERAL

To extend the reporting capabilities of the E 6000 Electronic Accounting System, the A 4004 Mag-

netic Ledger Reader may be attached to those E 6000 systems with magnetic ledger capabilities.

Striped ledgers are fed automatically through the Magnetic Ledger Reader and 240 digit positions of data can be transferred from all selected ledgers

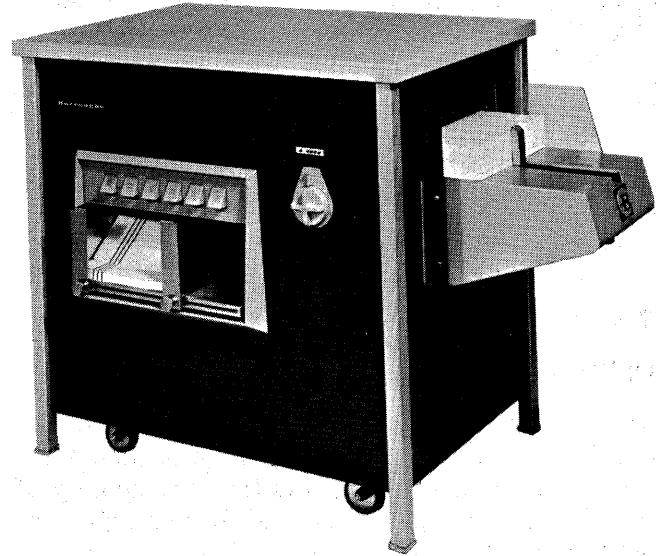


Figure 2-36. A 4004 Magnetic Ledger Reader

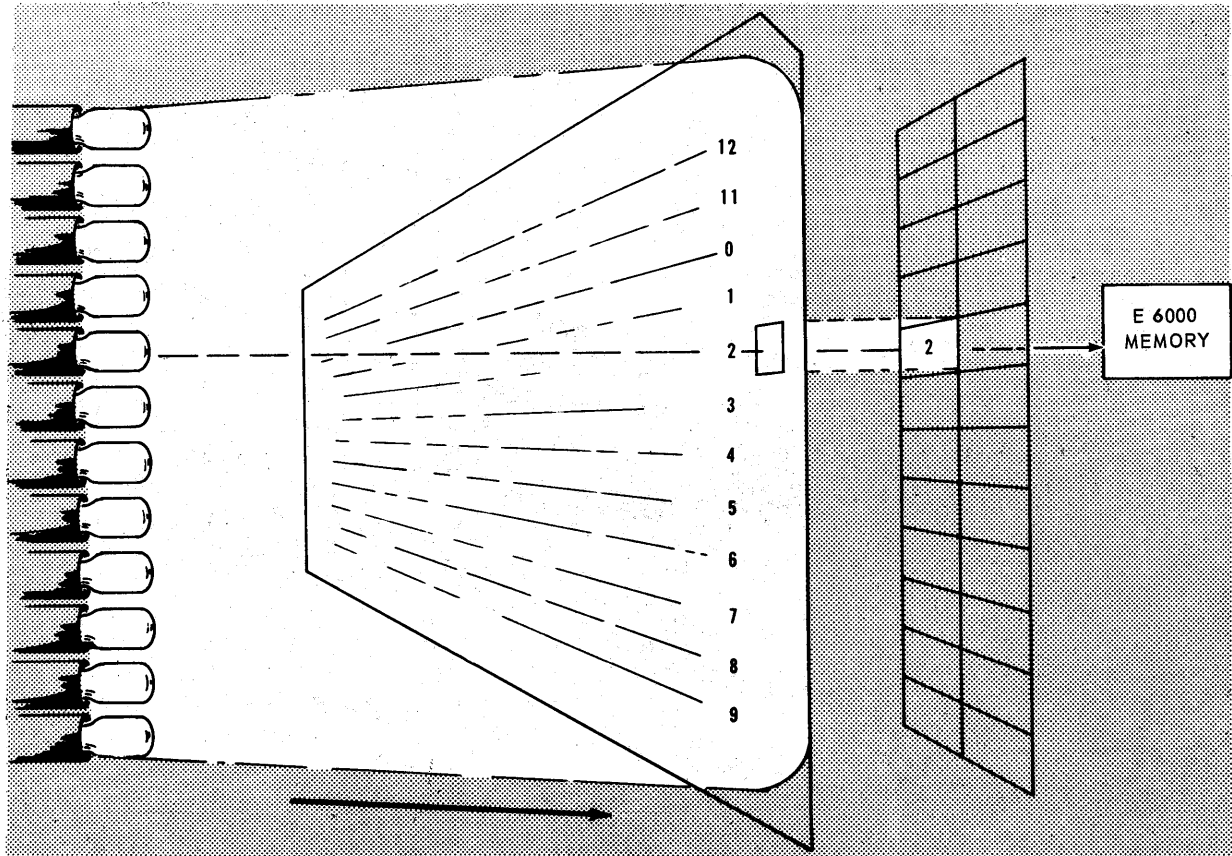


Figure 2-35. Serial Photoelectric Reading

directly into magnetic core memory for report processing. The Magnetic Ledger Reader is easily added to the E 6000 system at any time through the concept of "plug-in" modularity.

LEDGER TRANSPORT SYSTEM

Figure 2-37 illustrates the features of the ledger transport system of the A 4004 Magnetic Ledger Reader.

Feed Table and Form Limit Post

Ledgers are placed on the Feed Table face up, with the top of the ledger toward the operator, in stacks of approximately 500 accounts at a time. To accommodate the various widths of forms available for use in the E 6000 systems, the Form Limit Post may be adjusted to hold the stack firmly in place during automatic feeding.

Feed Table Elevating Knob and Release

The Feed Table may be quickly adjusted to any size stack of ledgers by raising the table with the Feed Table Elevating Knob. To lower the hopper, the Feed Table Release is used.

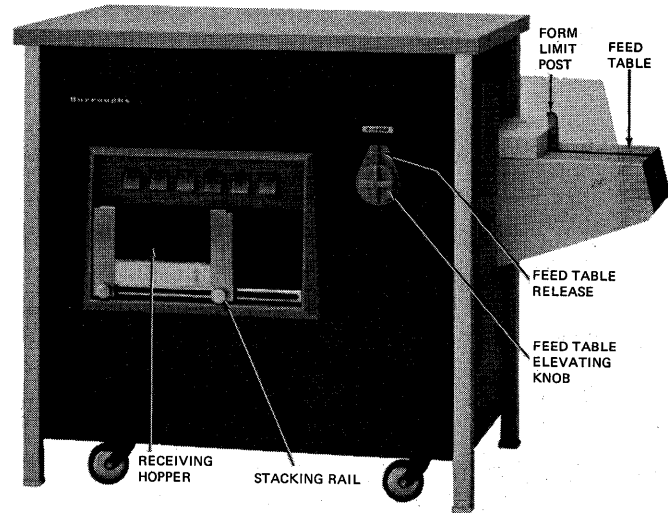


Figure 2-37. A 4004 Ledger Transport System

Receiving Hopper

Ledgers are stacked face down, sequentially, in the Receiving Hopper. The stacking rail on the right side may be quickly moved to fit any of the optional form widths possible on the E 6000 Series up to 14½".

Table 2-8

A 4004 Control Console Switch/Lamp Functions

Switch/Lamp	Function
On/Off	Turns power On or Off to the A 4004; light will be illuminated with power On.
Auto Feed	Causes continuous feeding of the ledgers until the end of the stack is sensed, or until the operator intervenes.
Single Feed	Causes feeding of one ledger each time the Switch/Lamp is depressed. Inactive when Auto Feed has been depressed.
Stop Feed	Completes the processing on the active ledger, halts the feed operation and illuminates the Stop Feed switch/lamp. This switch will go out when the Auto Feed or Single Feed switch is again depressed.
Double Form	Illuminates whenever two forms have been improperly fed into the transport system. The Double Form switch/lamp must be depressed to complete the cycle and stack the ledgers in the Receiving Hopper. These ledgers will not have been read by the E 6000 system and must be reprocessed through the transport system.
No Feed	This lamp illuminates when the "end of stack" condition is sensed; or when the feed mechanism cannot reach the top ledger due to failure to adjust the Feed Table correctly when loading. This lamp will turn off when the Single Feed or Auto Feed switch/lamp is depressed.

The Receiving Hopper slides out toward the operator to permit easy removal of ledger cards after reading.

CONTROL PANEL SWITCH/LAMPS

Table 2-8 details the functions of the controls which are located on the control panel of the A 4004 Magnetic Ledger Reader.

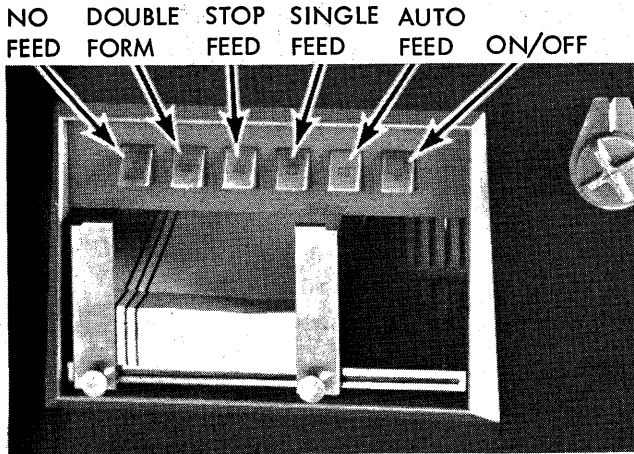


Figure 2-38. A 4004 Control Panel

SELECTIVE LEDGER READING

This feature provides for automatic selection of accounts by category for obtaining a trial balance without the necessity of removing and refiling the accounts.

A hole, punched in a specified location at the top of the form, is used to select the card for reading by the Automatic Reader. An adjustable switch setting is changed for each category read. Only the cards with a hole punched in a location corresponding to the switch setting would be read by the Ledger Reader. If the movable switch is set to read hole number 3, then all cards punched in this position would be read, except cards with a clipped upper right-hand corner. Cards with a

clipped upper right-hand corner would not be read under any condition.

An extra switch (Non-selection switch) within the Ledger Reader is provided that will disable the Selective Reading switch, and return the Ledger Reader operation to normal. The positioning of this switch in the "ON" position will permit a complete trial balance or balance transfer.

The Selective Reading switch can be positioned in any one of twenty-four (24) different positions. The reading is effected by a photoelectric cell reading through holes placed across the top of the ledger card. The holes for reading will be $\frac{1}{4}$ " in diameter with the center of the hole $\frac{1}{4}$ " below the top edge of the ledger. These holes will be spaced $\frac{3}{8}$ " apart, center to center, with the first hole being placed $\frac{1}{2}$ " from the right edge of the ledger. The location of each hole may have a $\pm \frac{1}{32}$ " tolerance from the right edge of the ledger.

2-5. A 988 LINE PRINTER

GENERAL

The Series A 988 Line Printer is a buffered chain type printer, capable of printing a line up to 120 characters (alpha, numerals, punctuation, symbols and blank spaces) at the rate of 164 lines per minute on continuous pin feed forms, 10 characters to the inch.

The line printer is easily added to the E 6000 system at any time through the concept of "plug-in" modularity.

CONTROL SWITCHES AND SWITCH/LIGHTS

On-Off Switch

The On-Off Switch turns power on or off in the line printer. In the on position, printer ON is illuminated. The power should be turned on for approximately 5 minutes before operating the

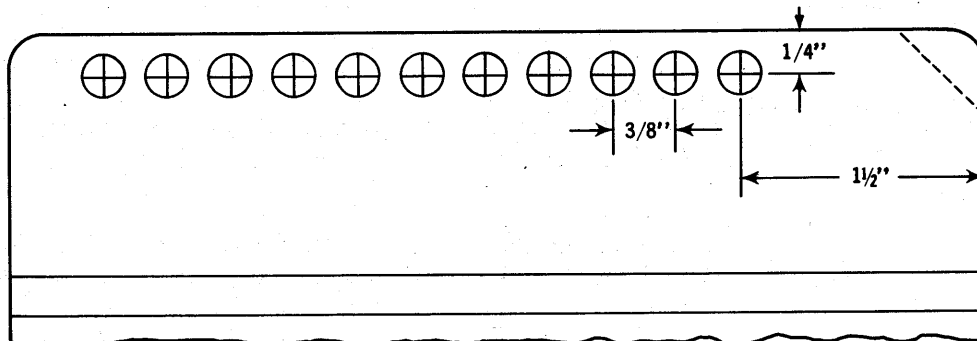


Figure 2-39. Selective Read Positions



Figure 2-40. A 988 Line Printer

printer and the reset switch should be depressed while the printer is in a “not ready” condition.

Reset Switch

Depression of the Reset Switch clears the unit and resets all logic to the “normal” condition. If the reset switch is held depressed, the ribbon will traverse completely onto one spool. In order to use the reset switch, the printer must be in “not ready” condition and if depressed in “ready condition” a line of print could be lost. Depression of the print start switch/light places the printer in a “ready” condition, and depression of the print stop switch/light places the printer in a “not ready” condition.

Print Start Switch/Light

Depression of the Print Start Switch/Light conditions the printer to accept printer commands from the series E 6000; the light remains illuminated, and the printer is placed in the “ready” condition.

Print Stop Switch/Light

Depression of the Print Stop Switch/Light stops the printer and places the printer in a “not ready” condition. The light remains illuminated until the start switch light or off switch is depressed. The series E 6000 system will continue processing until reaching the next print instruction at which time it will be held up until the start switch/light on the line printer is depressed.

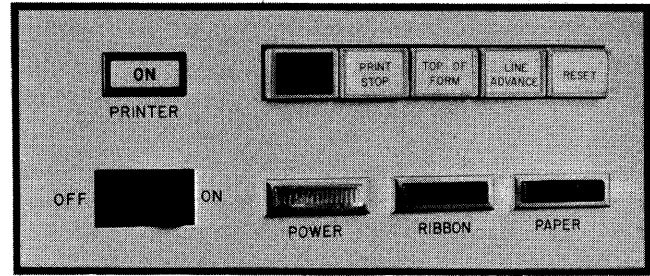


Figure 2-41. Switches and Switch/Lights

The print stop light will also be illuminated and a “not ready” condition will exist if:

1. End of paper is indicated. (“Paper” light is on.)
2. The forms slew for more than one and one-half seconds. (Blank vertical format tape or no tape.)
3. Ribbon out. (“Ribbon” light is on.)
4. The start switch/light has not been depressed.

Top of Form Switch/Light

The depression of this switch with the printer in a “not ready” condition, will cause the forms to slew until the top of the next form is sensed by the vertical format tape.

Line Advance Switch/Light

The depression of this switch with the printer in a “not ready” condition will cause the forms to advance according to the normal spacing indicated by the vertical format tape; usually one space at a time.

COMMUNICATION LIGHTS

Printer On

The Printer On light is illuminated whenever D.C. power is on.

Power

The power light is illuminated when the A.C. power is on. The A.C. power circuit breaker switch is on the back of the line printer in the lower left-hand corner. Always turn off the control console before turning off the line printer.

Ribbon

The Ribbon light is illuminated when the ribbon is not properly functioning.

FORMS

The line printer will handle continuous forms (pin feed) only. The forms may vary from a minimum of 3" wide to a maximum of 18½" wide including a ½" margin on each side for pin feed holes. The maximum length is 22". The pin feed holes must have a diameter of 5/32" and be ½" center to center and ¼" center to edge of form. In general, legible copies can be obtained on forms up to .020" in overall thickness.

The thinnest form of multiple part forms to be processed must be at least .0025" thick. When changing to forms of a different thickness, the paper thickness knob may require adjustment (see Figure 2-42).

PRINTING AREA

Continuous forms are fed by pin feed tractors which also keep the forms in position. The tractors can be moved horizontally, right or left, to adjust for form width.

The print area is a fixed location 12" wide for 120 characters. Print position 1 is 2.4" from the left edge of maximum paper width. Print position 120 is 4.1" from the right edge of maximum paper width.

For applications using less than 120 print positions, the location and arrangement of print is determined by:

1. Location of tractors.
2. Formatting of data in memory.

SET UP AND FORMS LOADING

Forms are usually fed directly from the packing carton placed under the print area in the front of the cabinet, up through the print area, over the tractors, and out the rear. Form racks and receiving basket can be adjusted to the best position for automatically folding and stacking the finished work.

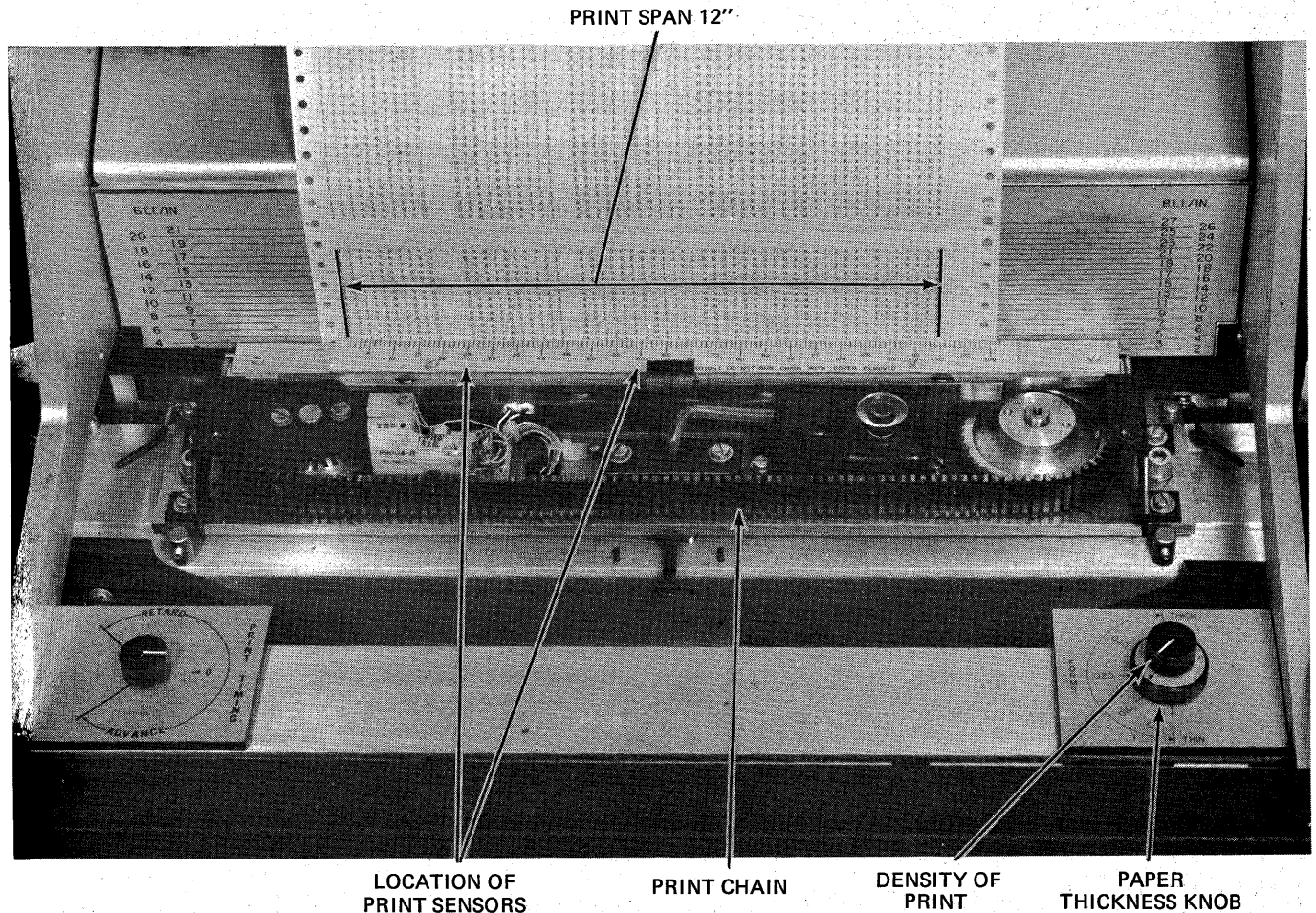


Figure 2-42. A 988 Print Area

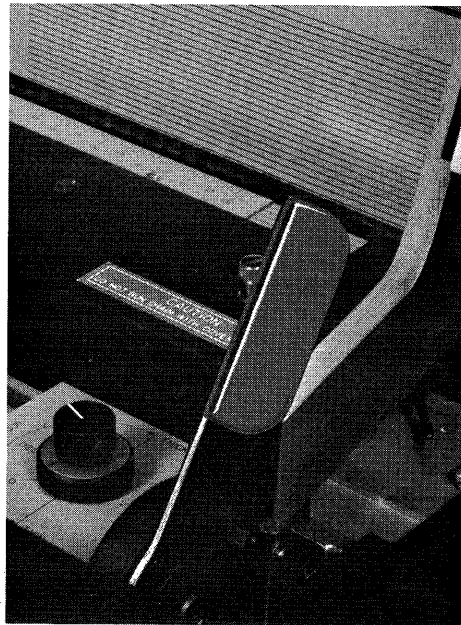
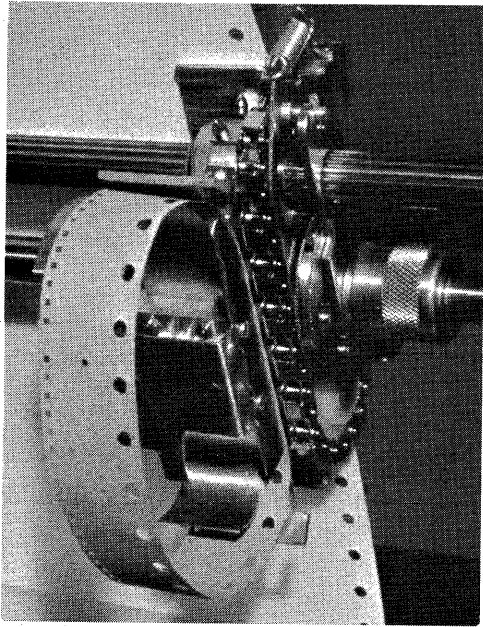
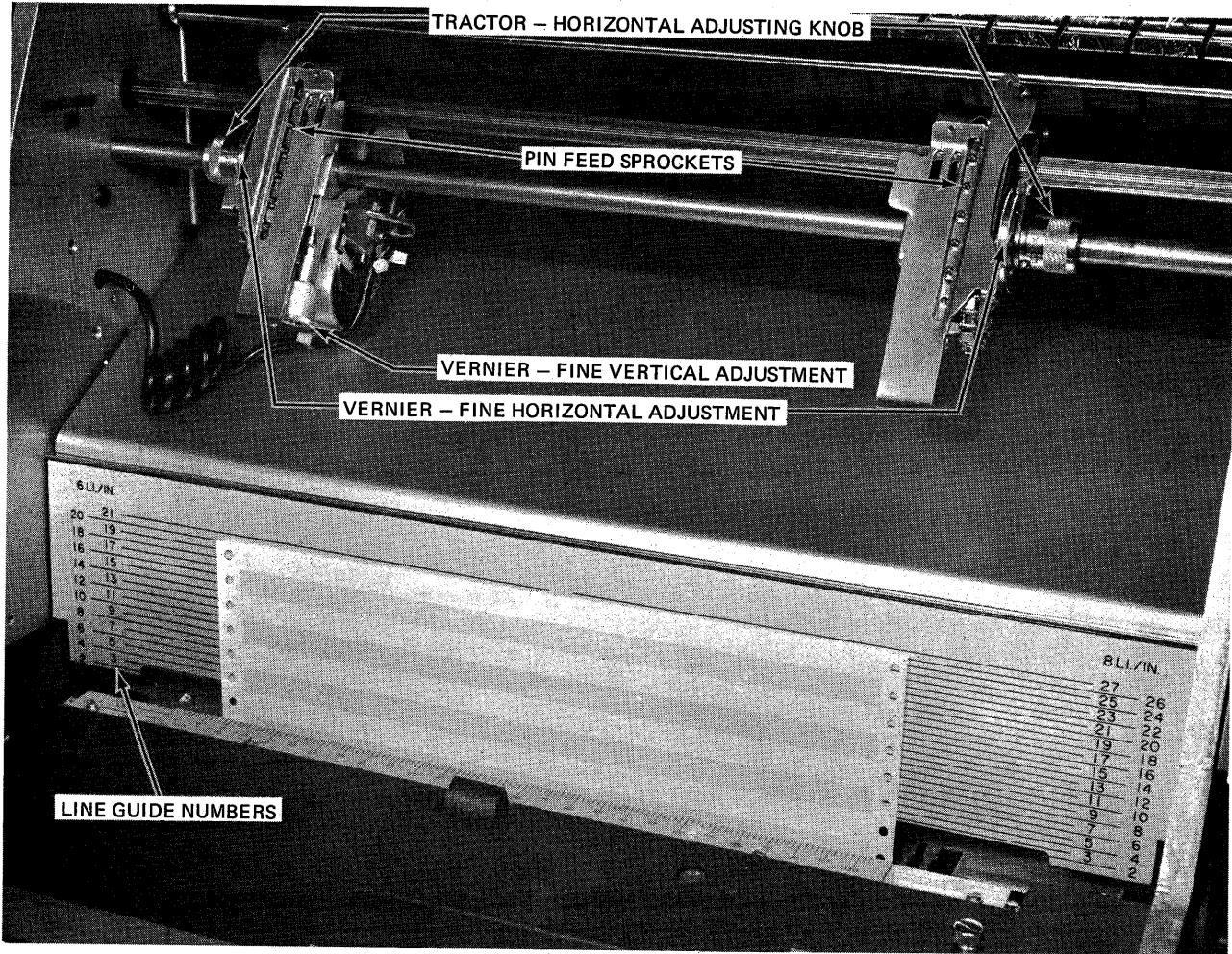


Figure 2-43. Set Up and Forms Loading Controls

Removing Forms

The printer lever is pulled forward to open the print area. The clamps over the tractor sprockets are then opened. The forms may then be removed and dropped into the supply box.

The clamp behind the left tractor sprocket is opened to remove the program tape (unless the same tape is to be used).

Installation of Vertical Format Tape

With no forms on the tractors, the vertical format tape may easily be placed on the pins of the vertical format tape tractor. The side of the tape having the sprocket feed holes is toward the left of the printer. The clamp is then closed to hold it in place.

If forms are in the tractors, the vertical format tape can be installed from the rear.

Installing Forms

The box of forms is placed under the printer, in the front of the A 988 cabinet.

With the printer lever forward (print area open), forms are fed up through to the tractor sprockets. If the sprockets require set up, they are moved to position by first loosening the knurled knobs and re-tightening when tractors are in position. If additional (minor) tractor horizontal adjustment is needed, the vernier (2 in illustration) may be used.

Before securing forms on the tractors, the top of form location should be established. The top of form button should be used to "home" the vertical format tape. A perforation between forms should be aligned to the line number guide that corresponds to the line number on the vertical format tape. This number is the number of lines from the perforation to the first printing line. Holding the form at this location, the form may then be placed on the tractors, and clamped in place. Should a further minor adjustment be needed, the vernier for fine vertical adjustment may be used. Movement of the form should be tested by using the Top of Form button.

The printer lever should be restored to normal location by gently moving the lever rearward and the machine cover lowered.

FORMS SPACING AND SLEWING

The standard vertical spacing is 6 lines per inch. Spacing and slewing are controlled by 4 punches in the vertical format tape. All spacing is programable from internal instructions.

Forms will slew at approximately $16\frac{1}{2}$ " per second, to the next hole in the channel selected. Slewing will terminate in $1\frac{1}{2}$ seconds if not stopped by appropriate punch in the vertical format tape.

2-6. A 525 TAPE PERFORATOR

GENERAL

The A 525 Tape Perforator is designed to work with all Series E 6000 Electronic Accounting Systems. It will produce 5, 6, 7, or 8 channel tapes in the appropriate format for input into communications, computational, or data processing systems capable of receiving punched paper tape. It is small in size, operates quietly and punches at the fast rate of 22 codes per second.

The A 525 consists of two cable-connected units (see Figure 2-44) the A 560 Punching unit and the A 550 Control unit. The Control unit is housed in a matching cabinet approximately 21" x 21" x 5".

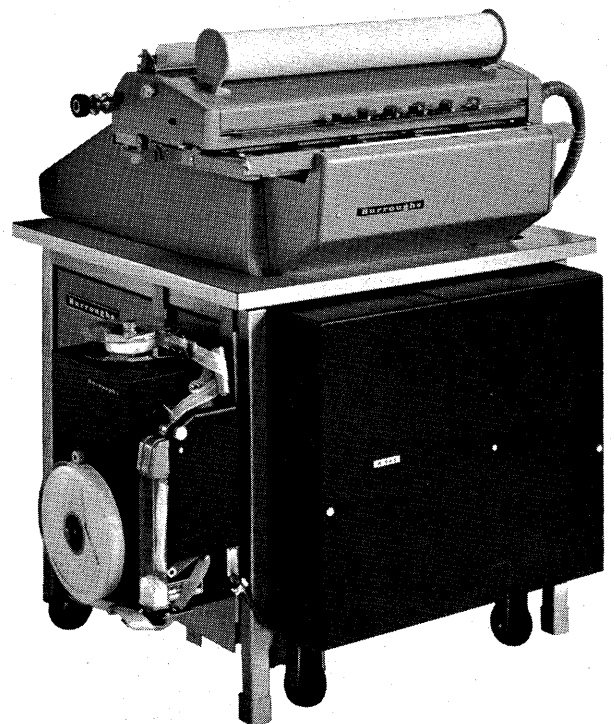
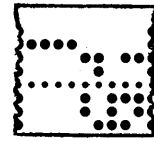
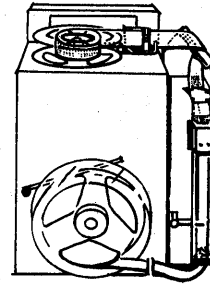
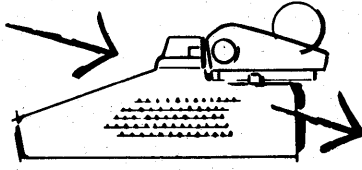
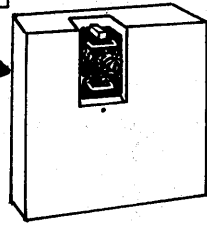
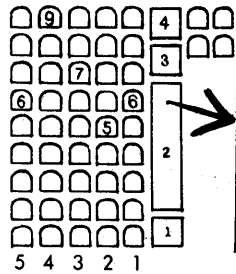


Figure 2-44. A 525 Tape Perforator

The Punching unit is housed in a harmonizing package approximately $12\frac{1}{4}$ " x $16\frac{3}{8}$ " x 7". Although both units are shown mounted on the Series E stand, they may be placed wherever it is most practical to have them. If a remote location for the Punching unit is required, a small diameter cable allows the Punching unit to be located up to 300 feet away.

Keyboard of Series E 6000



69756

- 1 Index \$697.56 on keyboard columns 5-1 of the Series E and depress the program start bar.
- 2 This selects a code, which, in turn, causes reading of columns 5, 4, 3, 2, & 1 from the keyboard.
- 3 The punch control will read and interpret the indexed number.
- 4 The Tape Perforator punches the proper codes into the tape.

Figure 2.45. Punching of Data

PUNCHING OF DATA

Program control determines the information which is to be captured in the punched tape. Programing is accomplished through the plugboard in the Control unit of the A 525 to read and/or non-read some or all columns as required. Both alphabetic and numeric data, plus special codings may be captured in the tape.

LOADING THE TAPE

Before loading a new roll of tape, the Chad Chute should be removed for easy access to the tape loading area (see Figure 2-46).

The tape must first be placed on the Feed Reel. To accomplish this, unscrew the knurled knob and remove the outer half of the reel. The roll of tape is placed over the spindle so that it unwinds from the bottom of the roll. The outer half of the reel and the knurled knob are then replaced. Be sure the Feed Reel Arm is positioned on the outside of the tape roll.

Feed the tape through the Lower Tape Guide and around the Guide Plate as shown. The tape is then fed around Tape Rollers A and B.

The tape is then ready to be placed in the Punching Head. In order to slide the tape into the punching

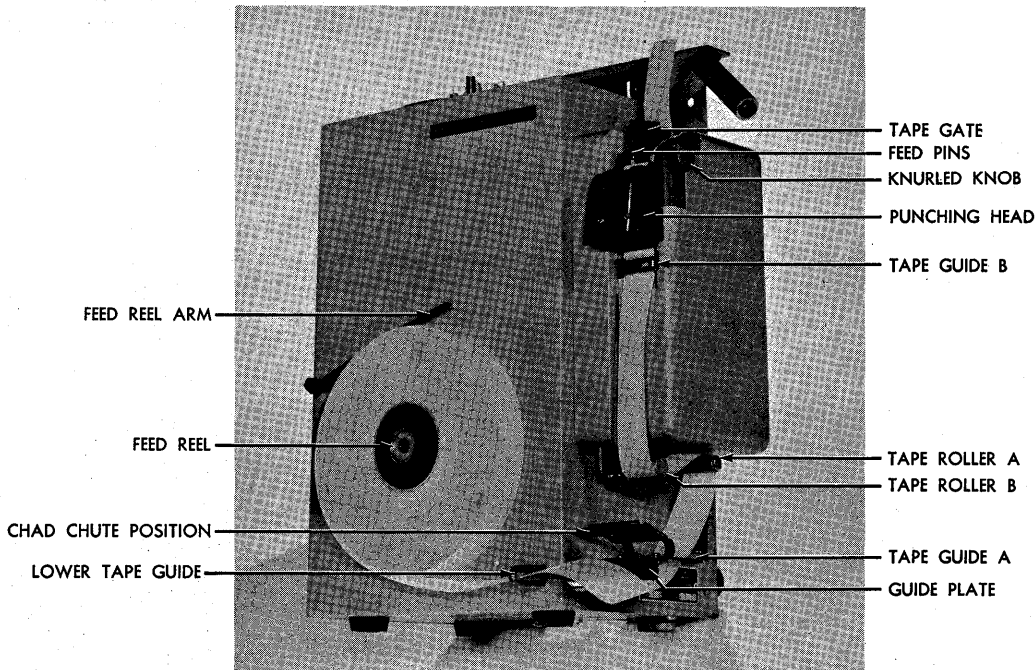


Figure 2-46. Tape Perforator

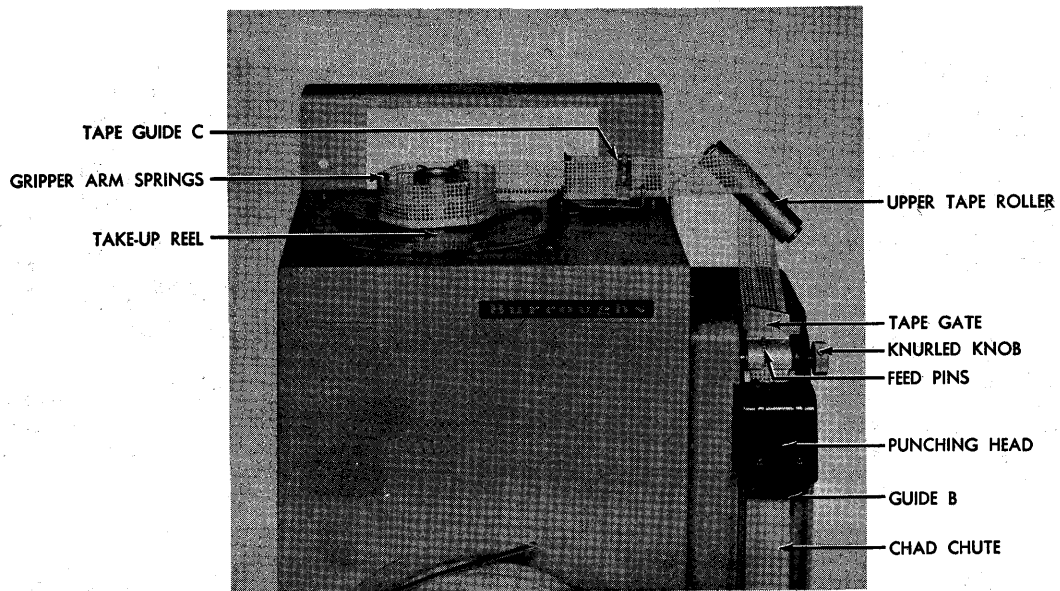


Figure 2-47. Tape Threading

head, the Tape Gate is raised. By raising the Tape Gate, Tape Guide B below the Punching Head is also released and the tape may be inserted into the Punching Head and over the Feed Pins.

After slipping the tape in the punching Head, the Tape Gate is closed. Closing the Tape Gate will depress the tape over the Feed Pins and also close Guide B below the Punching Head. The Chad Chute may then be placed under the Punching Head. To obtain sufficient tape to continue the loading, hold down the Tape Feed key on the Series E.

The tape is then fed over the Upper Tape Roller and through Tape Guide C. Tape Guide C has an arm that activates the Tape Supply Communication Light on the Series E 6000 if the proper amount of tension is not maintained on the tape, due to breakage or other malfunction.

The tape may now be wound around the inside half of the Take-up Reel. It should be placed around the Springs and under the little Gripper Arm, then wound back as illustrated. The outer half of the Take-up Reel may then be replaced.

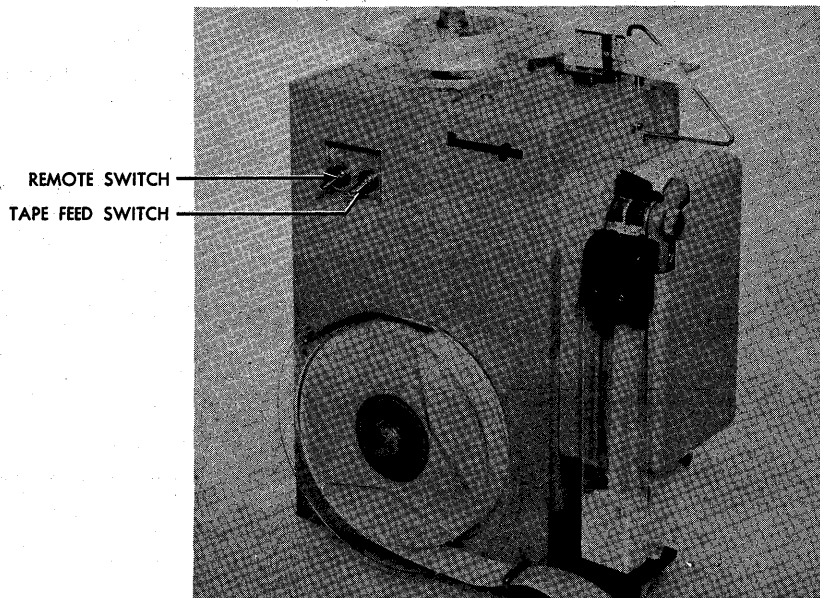


Figure 2-48. Remote Switches

REMOTE OPERATION PUNCH UNIT

The A 560 Punching Unit of the A 525 Perforator has two Control Switches on the front of the unit in addition to the regular controls.

The Remote Switch has an "On" and "Off" position that will disable the Series E. This switch is normally used to enable the completed tape to be removed or new tape loaded without interrupting the posting cycle.

The Tape Feed Switch is used to punch Tape Feed codes at the beginning and end of tapes.

2-7. A 545 CARD PUNCH CONTROL UNIT

GENERAL

Figure 2-49 shows the Series A 545 Card Punch Control unit and the companion punching unit, an 026 B keypunch. The A 545 is designed to work



Figure 2-49. A 545 Card Punch Control Unit and 026 B Keypunch

with all styles of Series E 6000 machines. The 026 B has a special Read-In device especially for Burroughs equipment to permit operation of the two units merely by plugging in a cable. This

combination results in the best possible reliability, speed, and control. The A 545 is mounted on the back of the Series E Control Console. The unit is housed in an attractive cabinet approximately 21" x 21" x 5". The 026 B keypunch may be located in the most convenient position for the operator, since the cable between the two units is over 6 feet in length.

CABLE CONNECTION AND BY-PASS PLUG

Figure 2-50 illustrates the 2-plug cable connection to the Read-in device located in the 026 B keypunch. To permit independent keypunch

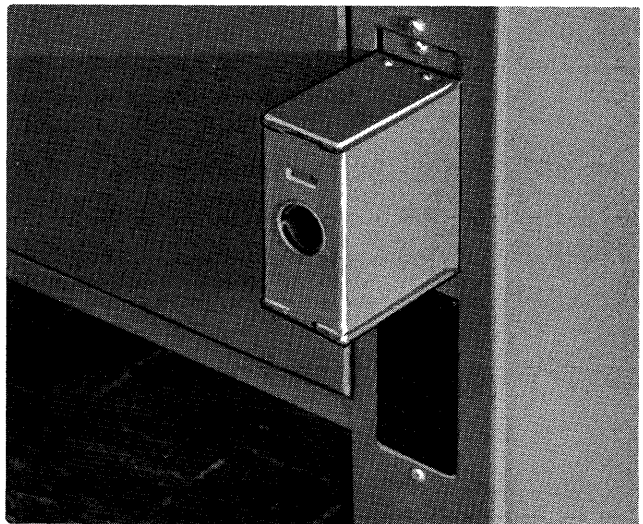
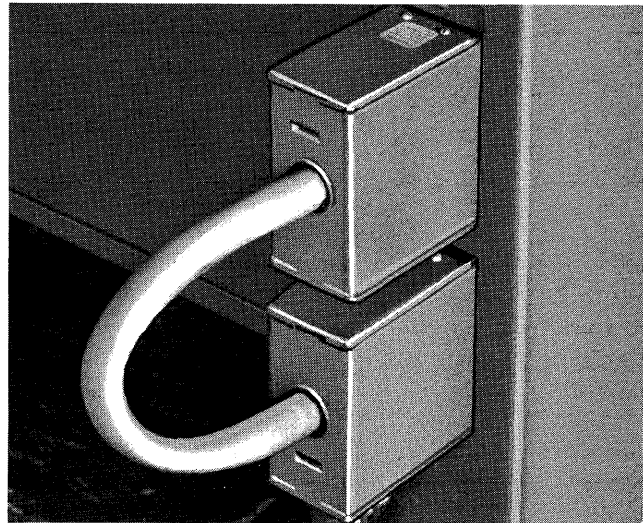


Figure 2-50. Keypunch Read-In Cable Connection and By-Pass Plug

operation for off-line keypunching and engineering service without disrupting normal posting, a By-pass Plug is illustrated which permits the keypunch operation in any other area away from the Series E. This plug serves to close the necessary circuits to permit independent operation. It is not

necessary to disconnect the keypunch to operate independently of the E 6000 as long as the unit is not moved.

PUNCHING OF DATA

Program Control determines the information which is to be captured in the punched card. Programming is accomplished through the wiring board in the A 545 and through the Program Drum Cards on

the 026 B keypunch. Both alphabetic and numeric data, as well as special codings, may be punched into the card as programed.

OPERATION DATA

Control of this unit, when active, is from the Control Console of the Series E. For a further description of the keypunch functions, refer to the Operator's Guide for the 026 B keypunch.

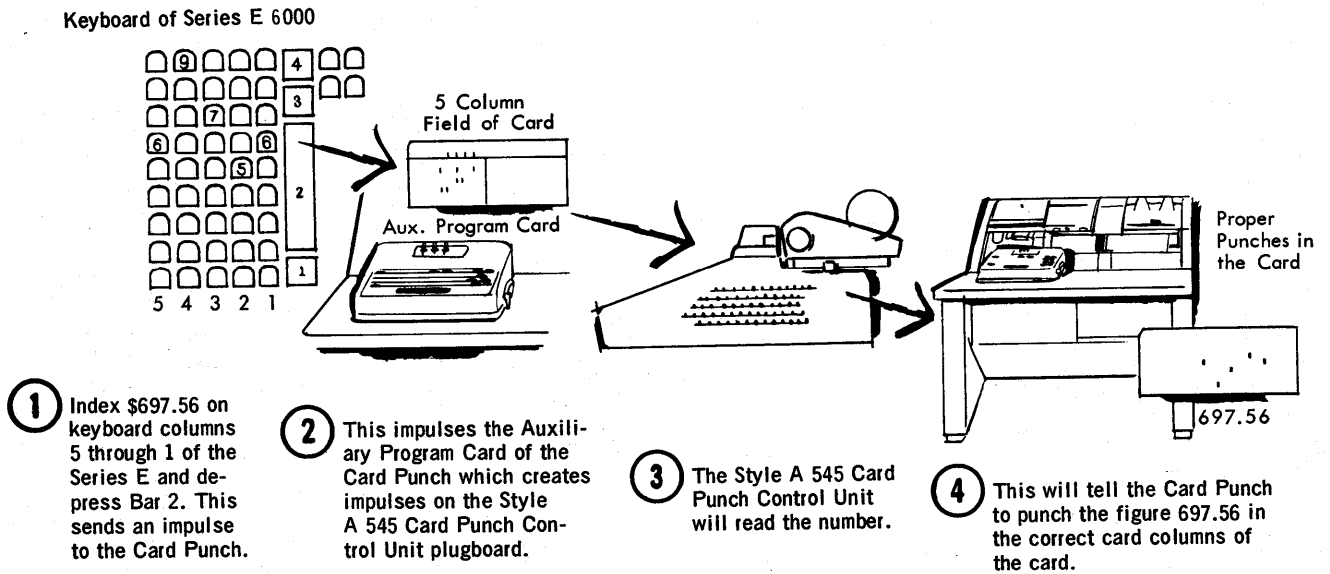


Figure 2-51. Operation Sequence for Series E Card Punching



*Wherever There's
Business There's*

Burroughs