SPERRY RAND

UNIVAC

1700
SERIES

1701 VP
1710 VIP
OPERATING
INSTRUCTIONS

REFERENCE

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OPERATING INSTRUCTIONS

UNIVAC 1701 VP

VERIFYING PUNCH

UNIVAC 1710 VIP

VERIFYING INTERPRETING PUNCH

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INTRODUCTION

The UNIVAC 1701 (VP) Verifying Punch and the UNIVAC 1710 (VIP) Verifying Interpreting Punch are trim and attractive in their styling. The appearance however is only an incidental part of the design. The primary purpose is ease and convenience of operation.

This ease and convenience of operation plus the highly versatile and unique abilities of the VP and VIP will assist you to obtain high-volume punched-card production with the minimum of fatigue.

The UNIVAC Verifying Punch and the UNIVAC Verifying Interpreting Punch, as their names imply, are multi-function (multi-use) machines.

The UNIVAC 1701 VP, Verifying Punch, is:

    A Key Punch
    A Verifier

The UNIVAC 1710 VIP, Verifying Interpreting Punch, is:

    A Key Punch, with or without Printing
    A Verifier, with or without Printing
    An Interpreter

To convert from one use to another, merely operate one or two switches. These switches are right at hand on the Keyboard.

As you see, the VIP has the ability to print (interpret) on the cards; the VP does not. This is the big difference in the two machines.

Because the Verifying Interpreting Punch has more abilities than the Verifying Punch and because we believe you would like to know as much about this equipment as possible, the VIP is used as the basis of this manual. If you are to use the Verifying Punch in your work, you know that any reference to printing or interpreting is of no immediate concern to you.

With the multi-use abilities of these machines, your learning will be easier and more thorough if you progress from one use to another in this manner:

            First --- As a Key Punch
            Next ---- As a Verifier
            Last ---- As an Interpreter

The principal use of a VP or VIP is as a Key Punch. Most of the features used for Key Punching apply to the other uses. Your knowledge of these features for Key Punching leads directly to your understanding of their use for Verifying and Interpreting.

On this basis, this manual is divided into three major sections; Key Punching, Verifying, and Interpreting. We wish first to let you know about the individual features as they apply to Key Punching and then to tell you how these features are used both individually and in combination in the Key Punching operation. The same procedure is then followed for Verifying and then Interpreting.

CORE STORAGE

One of the internal parts you should know of right at the start is the magnetic CORE STORAGE. It is introduced to you at this time because it is the feature around which all operations are centered.

For those of you who know other types of Key Punches, things happen differently - to your advantage - with a VP or VIP because of the Core Storage.

There are three parts in the Core Storage; Program Storage, Data Input Storage, and Data Output Storage. Each of these parts has the same capacity as an 80-Column card, that is, 80 columns with 12 positions in each column.

There is a magnetic core for each of the 960 positions in each part. Each of these cores can be made to represent the same thing as either a punched or a blank position.

Through the use of the Core Storage, the Key Punching operation is done in these two steps:

1. An image of the card to be punched is made by entering all of the information for that card into the magnetic cores of Data Input Storage. This is usually done by pressing the proper character keys on the Keyboard.

   Because no punching of the card takes place as yet, you are free to make any corrections or changes to this image - usually called a "setup" - either as it is being made or after it is finished.

2. Only after you are satisfied with the setup you have made do you start the punching into the card. At this time:

   ⊠ The setup in Data Input Storage is transferred automatically at the electronic speed of 12.8 milliseconds to Data Output Storage. 12.8 milliseconds is 0.0128 seconds or 128 ten-thousandths of a second.

   ⊠ A card is fed and punched (and printed) automatically with the information contained in Data Output Storage.

Thus, after you have finished the setup for one card, the VP or VIP is ready in an instant for you to start the entry for the next card in the Data Input Storage while the punching of the last card and the feeding of the next card proceeds independently. There is no waiting while the cards are moving.

INSTANT CORRECTION

When you feel that you have made an error while making a setup, all you have to do is backspace, press the correct key or keys to erase the old entry and make the new. You then go ahead with the rest of the setup.

If after a setup is finished and you believe it to be partially or completely wrong, return to the point of error and correct it or make a new setup.

Because the card is not punched at the time the character keys are pressed, the card in the machine is not changed -- it remains blank; the card is not spoiled nor do you lose all of your effort of having to repeat the information from the beginning.

As you can see, this way of operating helps you to do away with wasted effort and spoiled cards. It gives you a real good chance, without extra effort, to produce accurately punched cards on the first try.

Furthermore even after a card has been punched, the setup for that card still remains in storage. If you think the card you just punched is wrong, it is only necessary to correct the error in the storage and punch another card.

INSTANT DUPLICATING and SKIPPING

Information entered into the Core Storage remains there until changed by the entry of new information or erased. Because it stays, it can be completely or partially punched, "duplicated," in the next card or as many other cards immediately following as you wish. This DUPLICATING feature is used like this:

▪ A complete setup is made in storage for the first card of a group of cards that will contain fields of like information.

▪ For each following card in the group, you will enter into storage only the new, "variable," information for the fields that need to be changed. You pass right through the fields in storage containing the information to be Duplicated.

▪ For example: These two cards, shown on the following page, were punched for two items on an invoice. The same Invoice No., Salesman, and Customer No. were punched in both cards.

 - For the first card, this information is entered manually from the Keyboard.

 - For the second card, this information is Duplicated.

 NOTE: The Date, the same for all cards punched from a batch of invoices, is also Duplicated from a setup made earlier. Information of this sort, because it remains for one or more batches, is usually called, "constant."

⊠ Duplicated in all cards

▦ Duplicated in second and following cards
   for each invoice

In addition to the fields to be Duplicated, most card punching applications include fields to be partially or completely blank (unpunched). The SKIPPING operation is used to pass through these fields in the Core Storage with an erasing action that clears any information they might contain.

For example: This card is also punched from the same invoice as those in the preceding example. This card, however, contains only Date, Invoice No., C (Code), and Amount.

For this card, Skipping from Invoice No. to the C field (Column 55) erases all information in Columns 11 - 54.

The Duplicating and Skipping operations are started at the first column of a field either by pressing a control key on the Keyboard or automatically by programming (see below). Once started, they are performed at the electronic speed of 80 microseconds for each column duplicated or skipped. 80 microseconds is 0.000080 seconds or 80 millionths of one second.

With this speed, most Duplicating and Skipping operations are completed without a break in your usual operating rhythm.

AUTOMATIC RIGHT JUSTIFYING

Because of the Core Storage, RIGHT JUSTIFY is included in all machines. With this feature, it is only necessary for you to enter the significant characters for a field (usually an amount field) and press a control key on the Keyboard.

Instantly, the characters you entered are shifted automatically to the extreme right in that field while zeros (or blanks) are inserted automatically in the columns to the left of the first character you entered for that field.

There is no limit to the size of individual fields Right Justified or to the number of these fields within the 80 columns of the card. Also, the operation is completed at electronic speed.
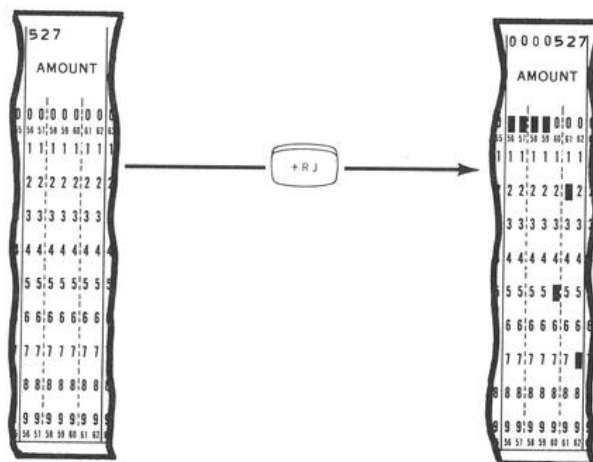
For example: Starting with the first column of the Amount field, Column 56, you would enter the significant digits of the amount; these are 5-2-7 in that order. When you have entered all of these digits, you press the +RJ key on the Keyboard.

At that moment, all of the digits you have entered shift automatically to the right in the Amount field and zeros enter automatically to the left in that field.

NOTE: If you have looked at the Keyboard, the -RJ key is for negative amounts.

We will tell you more about Right Justifying later on.

INSTANT PROGRAMMING

Another use of the Core Storage is to house the PROGRAM for individual punching applications. This is the machine control setup. Among other things, automatic Duplicating and Skipping are controlled by the Program.

The Program setup is made quickly and accurately merely by the automatic reading of a prepunched PROGRAM CARD. Just one automatic reading of this card, completed in a couple of seconds, enters the controls - the PROGRAM CODES - into Program Storage to remain there without change until the application is finished. After entering the Program, the Program Card is then filed for future use.

The basic control (usually Program 1) for the card punching thus established from a Program Card can give full automation to the operation but can be varied for the punching of individual cards within an application by the use of controls on the Keyboard and by an alternate Program (usually Program 2).

Detail Card
Program Card
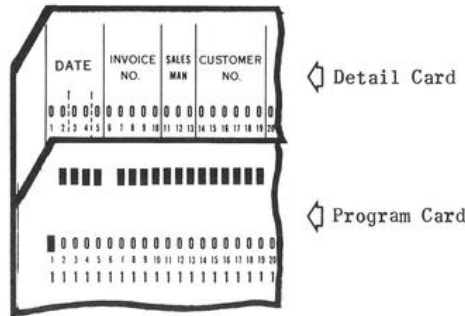
Just to give you an idea of programming, this shows you how the fields Duplicated in the previous example might be programmed. In the Program Card:

☒ The zero punched in Column 1 is the Program Code (Code 0) used to obtain the Duplicating operation automatically.

☒ The 12 (Program Code 12) punched in Columns 2 - 5 will continue the operation through the Date field. Program Code 12 is called "Field Definition." Once an operation (Duplicating, Skipping, and others) has been started, Code 12 in following columns of the Program keeps that operation going automatically through the "field" or for as many columns as desired.

☒ Column 6 in the Program Card is blank and Columns 7 - 19 have Program Code 12.

REMEMBER the term FIELD DEFINITION!

For the first card in that previous example, the Date in Columns 1 - 5 will be Duplicated automatically. When Column 6 is reached, you would enter the Invoice, Salesman, and Customer Numbers.

For the second card in the example, the Date will again be Duplicated automatically. At Column 6, you would press the DUP (Duplicate) key on the Keyboard. Because of the Code 12 (Field Definition) in Columns 7 - 19, Invoice, Salesman, and Customer Numbers will Duplicate.

You will be told much more about Programming in the pages that follow.

CORE STORAGE BENEFITS

The Core Storage serves you in many ways including the following:

◾ The Data Input Storage is ready in an instant for you to start the entry of the information for the next card while card feeding and punching (and printing) proceed automatically. This allows you to set your own pace and rhythm between sets of card data without being concerned with the movement of the card.

◾ The ability to correct errors immediately, quickly, and easily makes it possible for you to maintain a high degree of punching efficiency with a minimum of error and effort.

◾ The withholding of punching until you are satisfied with the setup eliminates most card spoilage and saves you both the effort of re-doing work already correctly performed with the frustration and the fatigue that accompany wasted work.

◾ The electronic speed of Duplicating and Skipping allow you to maintain uniform rhythm without confusing interruptions.

◾ The use of the Right Justify saves you time and effort by reducing the number of key depressions. It helps assure your accuracy by automatically locating the characters in a field.

◾ The automatic and positive control you get through the stored Program reduces your work and helps to guide you to an accurate setup.

MODES OF OPERATION

The VP and VIP operate in one of four "Modes" at any one time. This is another important bit of information you should know here at the start.

Two switches on the Keyboard set the MODE OF OPERATION. You can switch from one mode to the other at will. The Modes of Operation are:

◾ Load Program Mode - The Program Codes punched in a Program Card are read automatically and entered into Program Storage.

◾ Load Data Mode - The information in a prepunched "Master Card" is read automatically and entered into Data Input Storage.

◾ Automatic Mode - The automatic starting and control of operation is obtained from the Program. Operations can also be started and controlled from control keys on the Keyboard.

◾ Manual Mode - Operations are started from control keys on the Keyboard.

In the "Load Modes," Load Program and Load Data, entry is made into Program or Data Input Storage only from prepunched cards.

In the "Operating Modes," Automatic and Manual, entry is made only into Data Input Storage and only from the character keys and space bar on the Keyboard.

REMEMBER these four MODES OF OPERATION and the general purpose of each of the modes.

EXTERNAL FEATURES
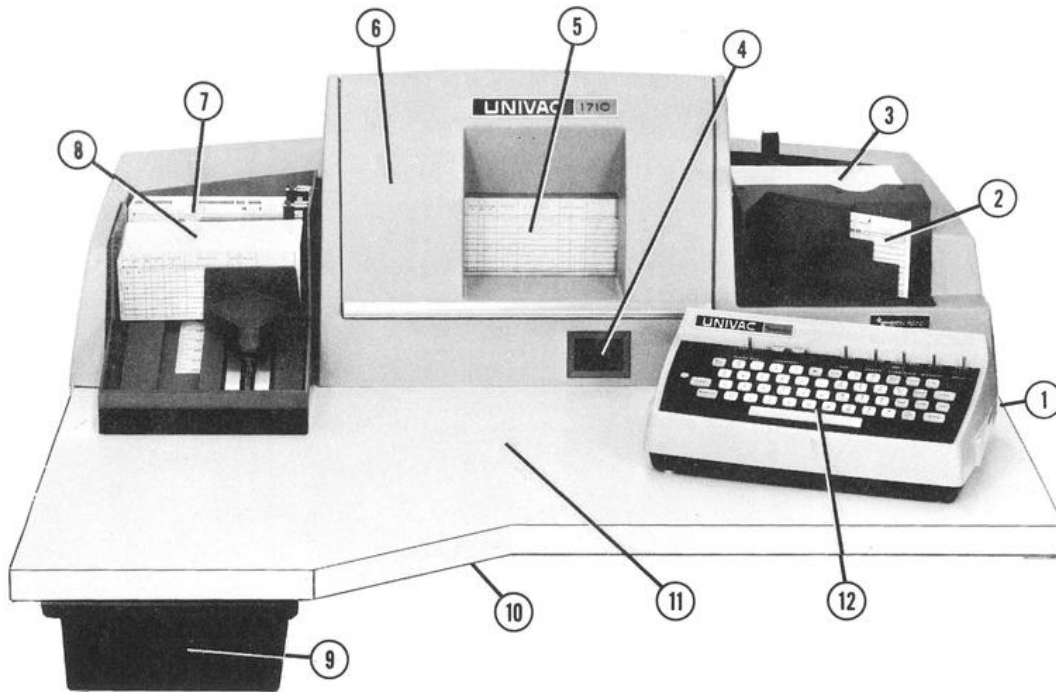
Included in your first view of the UNIVAC VP or VIP are these features:

1. Power Switch
   (beneath Reading Board)
2. Auxiliary Input
3. Input Magazine
4. Column Indicator
5. Visible Station
6. Access Cover
7. Select Stacker
8. Output Stacker
9. Drawer
10. Chip Receiver
    (beneath Reading Board)
11. Reading Board
12. Keyboard

With the exception of the Keyboard, most of the items pointed out in this picture are described in this section.

> NOTE: The Read, Punch (and Print) Stations are inside the machine behind the Access Cover. They are described in the section following this. For the moment, you should know:

- The Read Station is between the Input Magazine and the Visible Station.

- The Punch (and Print) Stations are between the Visible Station and the Stackers.

The Keyboard, because of its primary interest and importance to you, has a section of its own. We also believe you will have a better understanding of the Keyboard if you know the features described in this section and the section immediately following.

CARD FEEDING CYCLE

In the UNIVAC 1701 VP and UNIVAC 1710 VIP when a "Card Feeding Cycle" is taken, the following happens:

⊠ A card in the Visible Station is fed through the Punch (and Print) Stations to either the Output Stacker or the Select Stacker.

⊠ A card from either the Input Magazine or the Auxiliary Input is fed through the Read Station to the Visible Station.

A Card Feeding Cycle thus includes card movement from the Visible Station and card movement to the Visible Station. There are several ways of causing this cycle:

⊠ By pressing the FEED key on the Keyboard.

⊠ In the Automatic Mode, with an AUTOMATIC FEED when the right end (right margin) of the card is reached.

⊠ For the VIP, by a programmed EARLY FEED.

We will tell you more about these various means of producing a Card Feeding Cycle later on.

A "Card Eject Cycle" means the feeding of a card from the Visible Station to the Select Stacker without feeding a card to the Visible Station. The EJECT key on the Keyboard is used to obtain this cycle.

Much more about these cycles later on, especially the CARD FEEDING CYCLE. We just want to let you know of these terms at this time.

POWER SWITCH

The Power Switch is located just beneath the right-rear corner of the Reading Board.

The Power Switch with the Circuit Breaker just above it.

■ To turn ON the power, press in on the upper half of this switch.

■ To turn OFF the power, press in on the lower half of the switch.

The Power Cord enters the bottom of the machine. If the current does not turn on, be sure this power cord is plugged into the power supply socket provided for it.

The red button, just above the Power Switch, is for the circuit breaker. If electrical trouble developes in the machine, the circuit breaker turns off the power immediately. To turn on the power, press in on this switch. If the power turns off again, see your Supervisor.

INPUT MAGAZINE

The supply of cards to be punched is placed face forward with the bottom (9) edge down in the Input Magazine. This magazine will hold about 600 cards.

Before you put cards in the Magazine, move the FOLLOWER ARM all the way back. It will stay in this position and free the front part of the Magazine for the insertion of the cards.
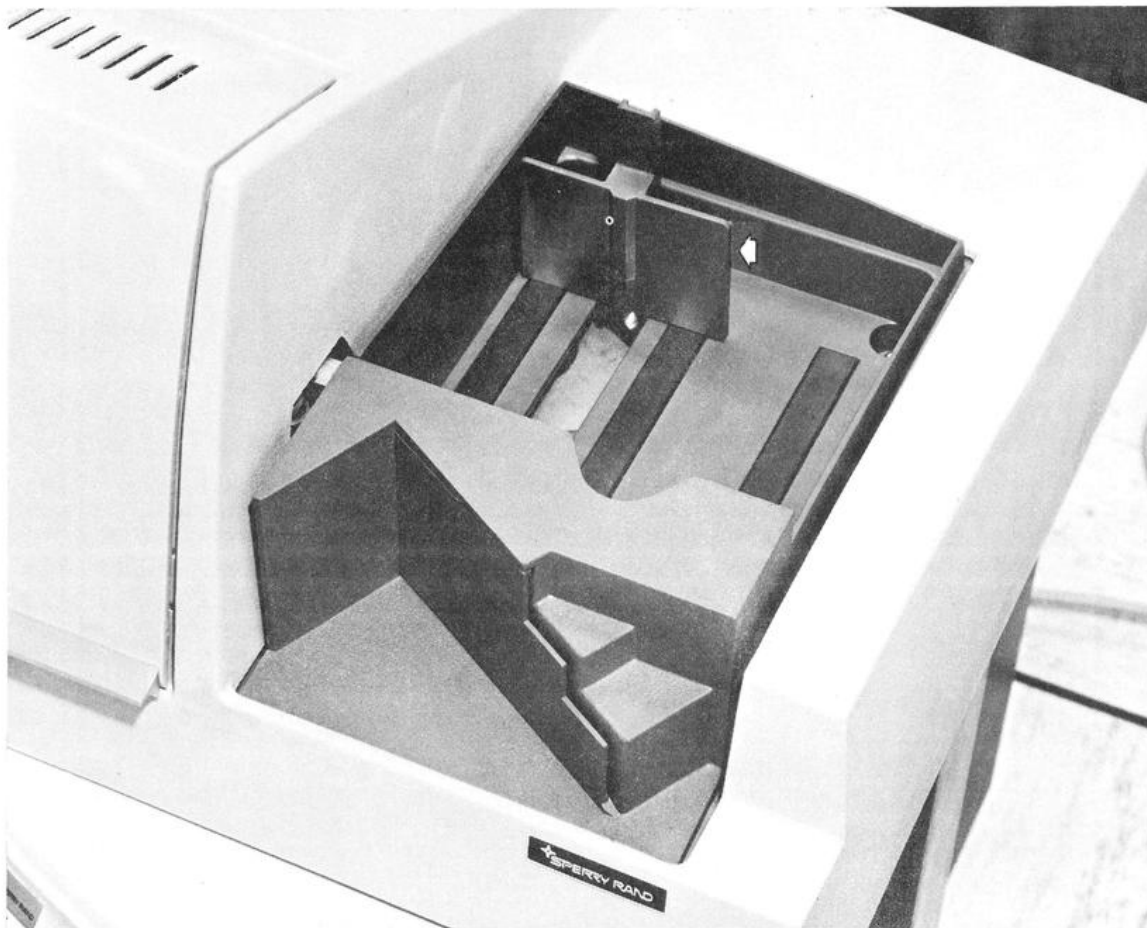
The Input Magazine ready to receive a supply of cards.
Follower Arm (arrow) is locked in its rear position.

When you put cards in the Magazine, be sure that they are vertical and that the front cards are snug against the front of the Magazine.

IMPORTANT: Before you put any cards in the Magazine, be certain that you "fan" them and stack them properly so that they will feed freely. If they are warped, they should be straightened.

The proper preparation of cards for use is most important. If you do not know already, be sure you are shown by your Supervisor. It will save you much unnecessary trouble.

With the Magazine supplied, hold the stack vertical while you release the Follower Arm. The Follower Arm will then press against the rear of the stack to assure proper feeding down to and including the last card.

When a Card Feeding Cycle is taken, the card at the front of the Magazine feeds to the Visible Station. The card passes through a Read Station while feeding to the Visible Station. A little later, in the Internal Features section, you will be given the detailed information about the Read Station.
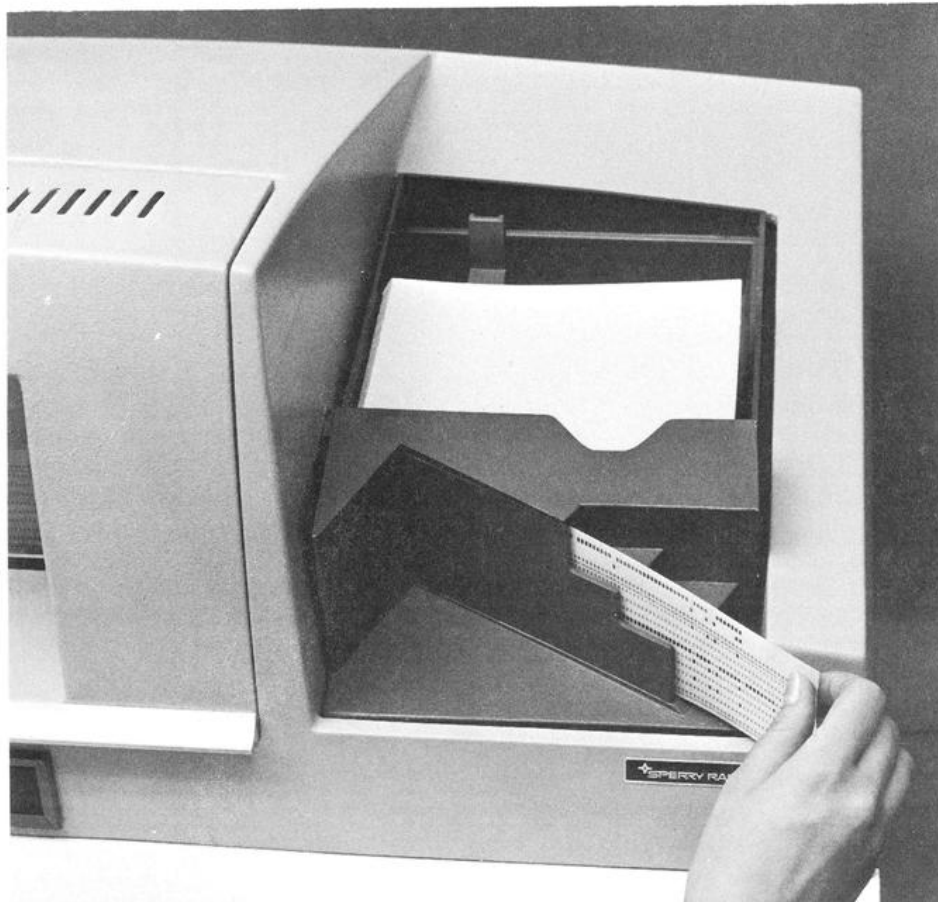
The Input Magazine and the Auxiliary Input. A card is being inserted in the Auxiliary Input.

AUXILIARY INPUT

This slot, right in front of the Input Magazine, is used to inject individual cards into the machine without disturbing the cards in the Input Magazine. Inserting a card in the Auxiliary Input prevents card feeding from the Magazine.

IMPORTANT: When you insert a card in the Auxiliary Input, there must either be cards in the Magazine or the Follower Arm must be forward. If this is not done, the card will not be fed from the Auxiliary Input.

On a Card Feeding Cycle, a card from the Auxiliary Input passes through the Read Station on its way to the Visible Station.

The Auxiliary Input is very valuable to you. Among its uses are:

■ Entering a Program -- In the Load Program Mode, insert the Program Card in the Auxiliary Input and press the FEED key.

In two automatic cycles; the Program Card is read, the Program entered into both Data Input and Program Storage, and the Program Card fed through to the Select Stacker.

■ Entering constant data -- In the Load Data Mode, insert in the Auxiliary Input the card punched with the data to be Duplicated (Master Card) and press the FEED key.

In two automatic cycles; the Master Card is read, the data entered into Data Input Storage, and the Master Card fed through to the Select Stacker.

■ Remaking a damaged card -- In the Load Data Mode, insert the damaged card in the Auxiliary Input and press the FEED key.

After the entry is made, switch to the Manual Mode and insert a blank card in the Auxiliary Input. Press the FEED key twice to punch (and print) the new card and feed it to the Output Stacker.

■ Correcting a card -- In the Load Data Mode, all of the information from the incorrect card is entered into Data Input Storage by inserting the card in the Auxiliary Input and pressing the FEED key.

After the original entry is made, switch to the Manual Mode and correct the setup. Insert a blank card in the Auxiliary Input and press the FEED key twice to punch (and print) the new, correct card and feed it to the Output Stacker.

This gives you an idea of how useful the Auxiliary Input can be to you. More complete procedures for these and other uses of the Auxiliary Input will be given you later on.

VISIBLE STATION

When you are "keying" (manually entering) information into Data Input Storage by pressing the keys on the Keyboard, the card to be punched with that information is usually in the Visible Station at that time.

This "current" card is at rest behind plate glass with its surface visible to you.

> NOTE: In many applications, the information to be punched into a card is recorded on its surface. We usually call these "Dual Cards." The card stands completely still while you read and key in this information. This is most helpful to you especially if the characters are small or hand written.

If you need a close examination of a Dual Card or an answer to doubtful information on that card, just press the EJECT key. That card will scoot out to the Select Stacker without being punched or printed. You can then do either of these:

1. If you are sufficiently satisfied so that you can go ahead with that card, insert it in the Auxiliary Input and press the FEED key. The card goes right back into place in the Visible Station so you can continue where you left off.
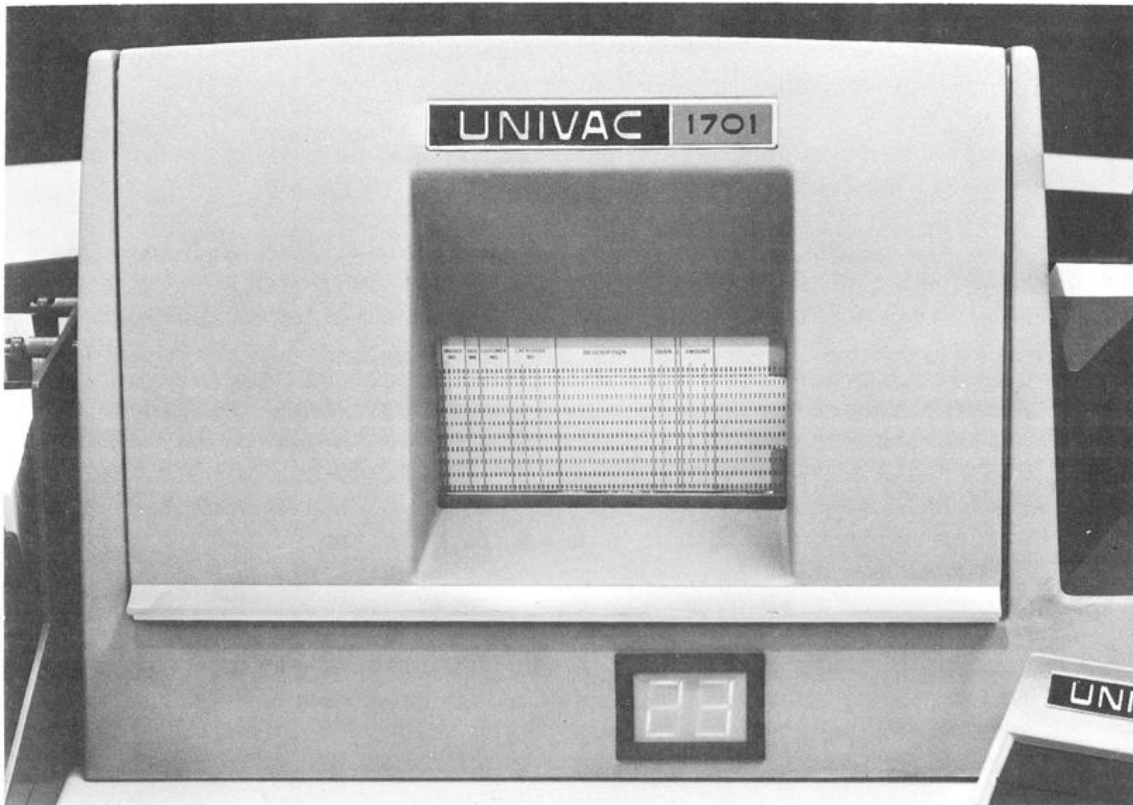
The Visible Station

2. If you are still doubtful, turn the card around and put it at the back of the cards in the Output Stacker so that you can take care of it later. Press the FEED key to bring the next card from the Magazine to the Visible Station.

On a Card Feeding Cycle, the card at the Visible Station is fed through the Print (VIP) and Punch Stations to the Output Stacker.

An important point to remember about the card in the Visible Station is that nothing happens to that card until a Card Feeding Cycle is taken. Up to that time, you are working with the setup in Data Input Storage, making any changes or corrections you desire.

   NOTE: It really is not necessary to have a card in the Visible Station when making a setup; it can be empty. When the setup is completed, the next card fed from the Visible Station will be punched with that setup.

In fact even after a Card Feeding Cycle and before starting the next entry, the entire setup for the last card remains in Data Storage so that you can make one or more duplicate cards or change or correct any part of that setup you wish.

In the section after this, Internal Features, you will be told more about the Visible Station and given the details of the Print and Punch Stations.

COLUMN INDICATOR

The two-digit Column Indicator is just below the Visible Station. This indicator shows the numbers from 1 to 80 in bold, 1 inch high characters.

This indicator shows the Data Input Storage column with which you are working at any given instant. We say, "It shows the Storage column being indexed."

The Column Indicator (actual size)

When you press a character key, the entry for that key is made in the Data Input Storage column shown by the Column Indicator at the time that key is pressed. Thus, if the Column Indicator reads "10" and you press the "8" character key, an 8 will be entered into Column 10 of Data Input Storage and, at the time of card punching, be punched in Column 10 of the card.

If you use a control key, the action caused by that key takes place on the column indexed at that time.

Each depression of a character key or the space bar (see the Keyboard section) advances the storage indexing and the Column Indicator automatically to the next higher column and number.

A backspace key causes the indexing to go back (retract) one column with each depression.

Certain control keys can start an operation, such as Duplicating and Skipping, which can then be continued for a multiple column advance. When the advance ends, the Column Indicator shows the number of the column immediately after the last column Duplicated or Skipped.
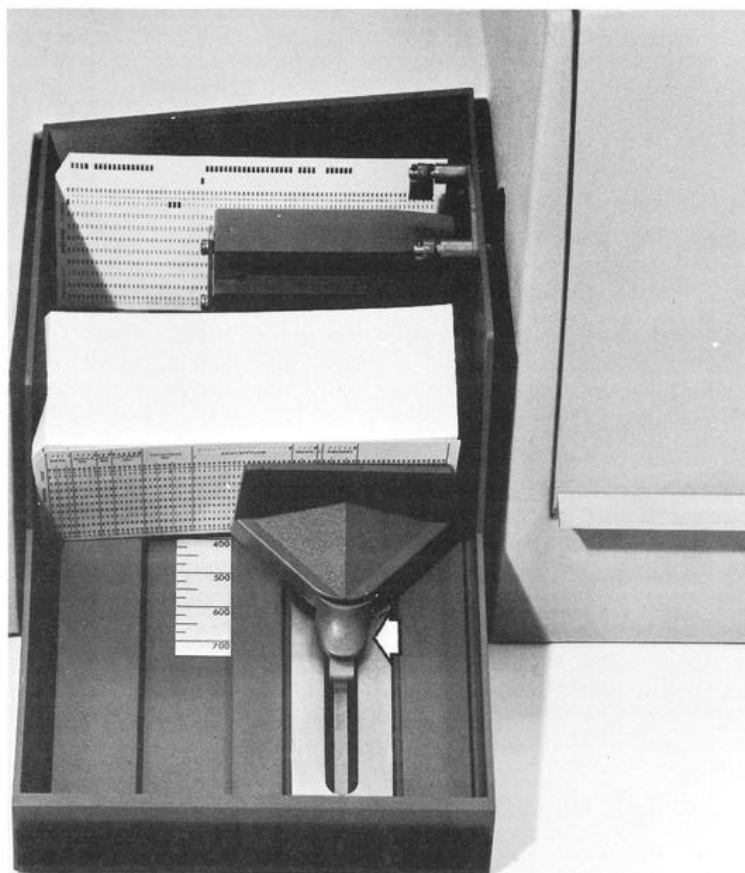
The Select and Output Stackers. A Program Card is in the Select Stacker with punched cards in the Output Stacker. The arrow indicates the release knob for the Follower Block.

STACKERS

There are two Stackers at the left side to receive the cards fed through the machine.

■ The larger of the two Stackers, the one at the front, is the OUTPUT STACKER.

■ The smaller Stacker at the rear is the SELECT STACKER.

Separating the two Stackers is a Stacking Device. This device operates automatically on each cycle to direct each card to its Stacker and to stack the cards properly.

The OUTPUT STACKER will hold about 600 cards. In the Automatic and Manual Modes, this Stacker receives the cards punched (and printed) during a Card Feeding Cycle.

The Output Stacker contains a FOLLOWER BLOCK. Before you start operating, be sure to see that this block is pushed all the way back toward the Stacking Device.
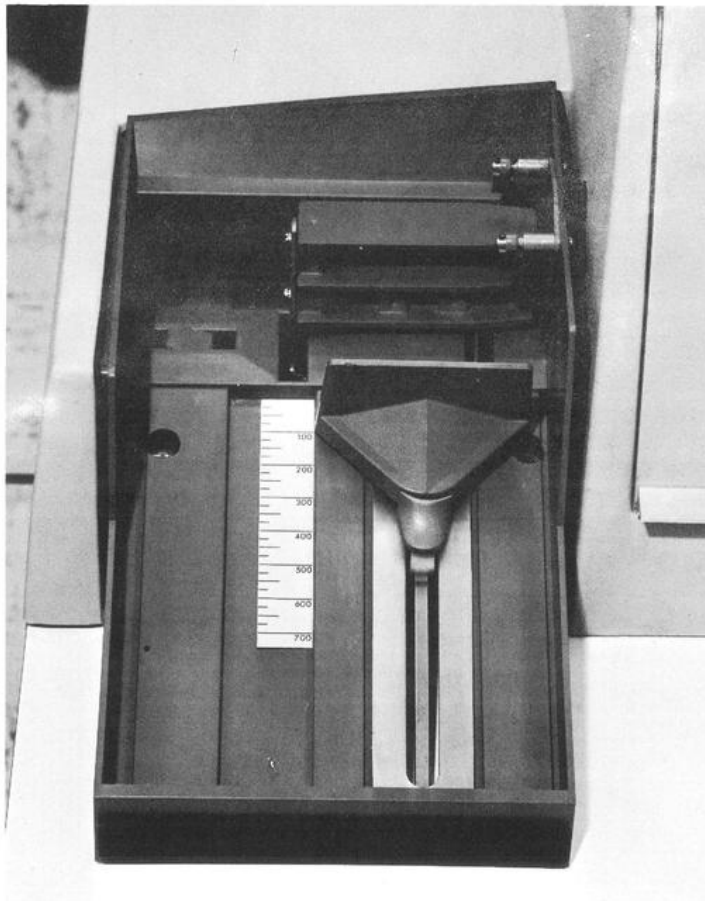
The Stackers, empty of cards, showing the Stacking Device and the Follower Block.

To return the block after it has been moved, press down on the re-
lease knob at its base as you push the block back to its starting
position.

As the first card is fed into the Output Stacker, it is received
with its bottom edge down and face forward. It is held vertical by
the Follower Block. Each following card comes in behind the preced-
ing card and pushes the other cards received and the block forward.

A FULL STACKER condition happens automatically when the capacity of
the Output Stacker is reached. An arm in the base of the Follower
Block closes a switch.

When there is a Full Stacker, you get what we call a "Keyboard In-
terlock." Here is what happens:

▪ A red light, INTERLOCK INDICATOR, at the left of the NUMERIC key
  on the Keyboard is lit.

▪ The Keyboard is inoperative; the character and control keys do
  not work, you cannot feed a card.

Here is what you do:

▪ Take the cards from the Output Stacker.
▪ Push the Follower Block back to the Stacking Device.
▪ Press the CLEAR key on the Keyboard. This turns out the red
    light and removes the Keyboard Interlock.

You can resume Key Punching.

The SELECT STACKER holds about 20 cards. It has no Full Stacker signal.

In the Load Program and Load Data Modes, the Program and Master Cards
feed to the Select Stacker.

In the Automatic and Manual Modes, a card in the Visible Station is
fed to the Select Stacker when:

▪ A card is fed from the Auxiliary Input <u>or</u>
▪ The EJECT key is pressed.

If you allow more than one card to remain in the Select Stacker,
each following card directed to this Stacker feeds in <u>front</u> of the
preceding card.

Should a card fail to feed properly to the Stackers, you get what we
call a "Card Feed Interlock." The red Interlock Indicator may or may
not turn on, however, no card feeding can take place. The FEED key,
EJECT key, Automatic Feed, and Early Feed (VIP) will not function.

The usual evidence of this interlock is that a card has not fed com-
pletely into a Stacker. At this time, raise the Access Cover and ex-
amine the Punch Station (see Internal Features, Punch Station) and the
balance of the card path for any additional misfed cards.

When the cause of the interlock is corrected and the card path cleared, close the Access Cover tightly, if it was opened. Card feeding can then be resumed after pressing the CLEAR key.

READING BOARD

The Reading Board is conveniently shaped so that you have an ample working surface, about 14" deep, extending the full width of the machine. The top of the Reading Board is about 26" above the floor.

A DRAWER is just beneath the left end of the Reading Board. It is intended for those items for which you have immediate need in your work.

So that you can do your best work with the minimum of fatigue, a good posture chair, properly adjusted to you, is strongly recommended. With the proper chair, these adjustments include:

▪ The height of the chair seat should be such as to allow both of your feet to rest flat and comfortable on the floor. If you are rather short, a foot rest should be provided. In any case, there should be no tension in your legs and very little pressure behind your knees.

▪ The height of the back rest should be adjusted so that it is centered around your waistline with all of its surface flat against your back.
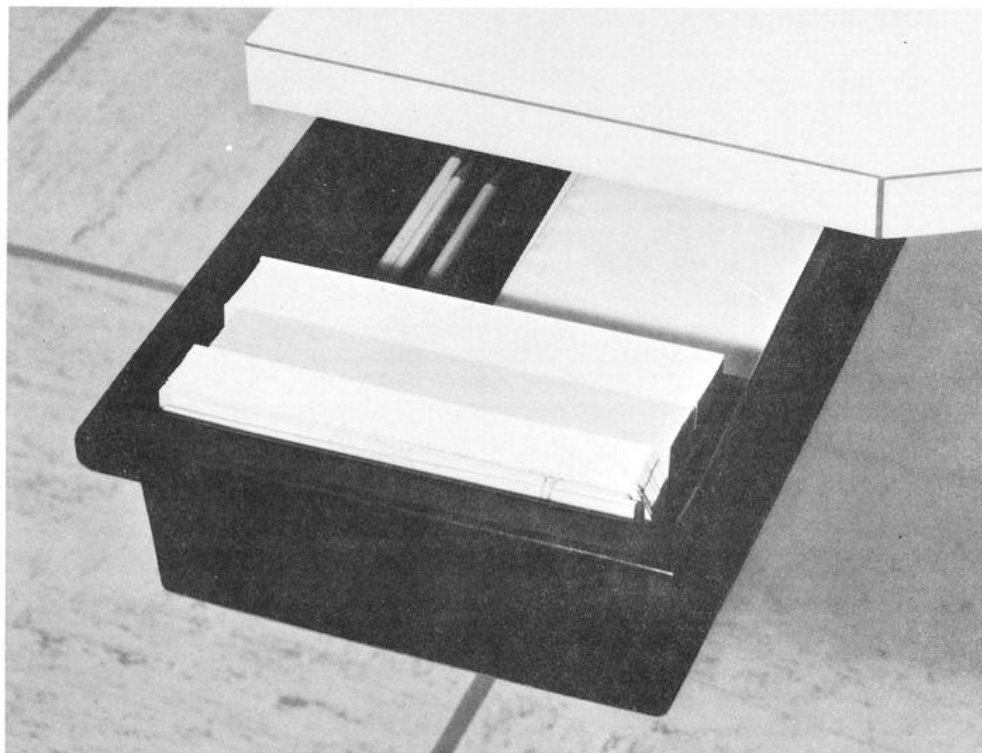
The Drawer beneath the left end of the Reading Board is pulled out in this view.

KP-2	SECTION
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UNIVAC 1700 SERIES
1701 VP & 1710 VIP
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☒ The incline of the back rest should be far enough forward so that
there is slight pressure against your back while you are <u>fully</u> seat-
ed in an erect position.

When you are seated in a proper operating position, you should have
erect posture and be quite comfortable. The chair will then be doing
its job of supporting you rather than your body muscles doing all that
work. You can then give your best concentration and effort to the task
at hand.

CHIP RECEIVER

The box that receives the chips punched out of the cards is in the mach-
ine below the level of the Reading Board. It is just to the right of
the Drawer.

To empty the receiver; put a finger in the hole in its front, lift a
little, and pull out. Dump the contents in a waste basket or the re-
ceptacle designated by your Supervisor.

When emptied, insert the receiver in its opening and push it all of the
way in.

You should set up a schedule so that you empty the Chip Receiver at
regular intervals. We suggest; either at the end of the day or at the
start of work in the morning, then the first thing after lunch.

If the Chip Receiver is not emptied, excess chips fall out through the
hole in the front to remind you that the job has to be done.
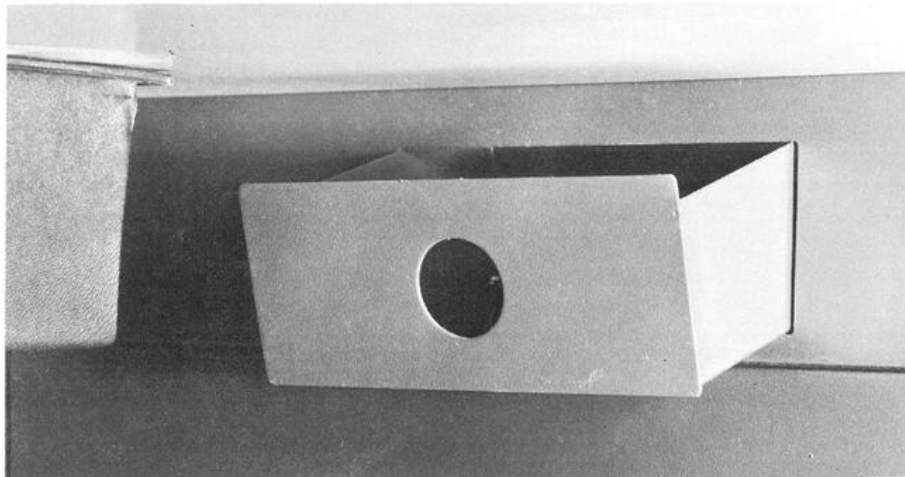
The Chip Receiver has been pulled out of its proper
position for this view.

INTERNAL FEATURES

The two views here at the start of this section show you the features of interest under the covers. A VIP was used for these photographs so that the Print Station would be included. The VP does not have this station.

To obtain the first photograph, the Access Cover was raised; the full top cover remained down. For the second photograph (next page), the top cover was raised.

With the Access Cover raised, you see:
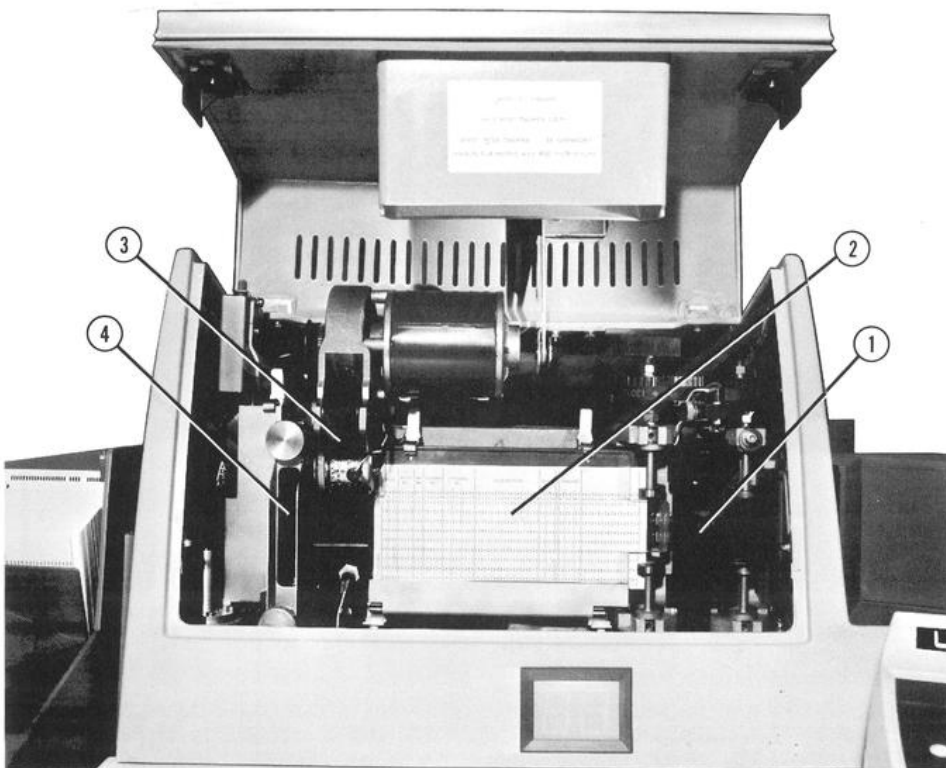
1. Read Station   3. Print Station (VIP)
2. Visible Station   4. Punch Station

ACCESS COVER

You have these reasons to open the Access Cover:

✗ To clear a card jam.
✗ To clean the inside of the machine at regular intervals.
✗ To change the Inking Roll in the Print Station (VIP).

Use the metal molding extending across the bottom as a handle to raise and lower this cover.

✗ When the cover is raised, a friction hinge holds it up.

✗ When you lower the cover, just pull forward to release it; then bring it down carefully.

For your protection, when the Access Cover is raised, the electrical current to the motors in the machine is shut off. No internal movement can take place. When the Access Cover is fully closed, this current is turned back on automatically.

Always be sure to close the Access Cover tightly. If you do not, the machine will not operate.

IMPORTANT: The grille in the top of the Access Cover allows free air circulation inside the machine. Never put anything on this cover. If you do, you will block the air circulation and cause the machine to overheat.
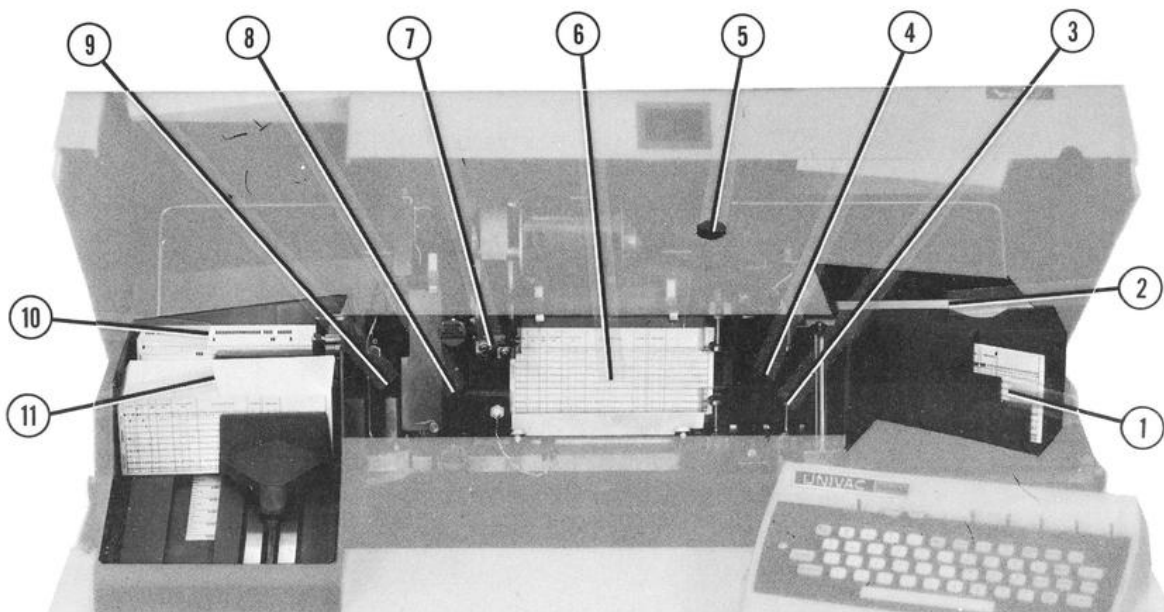
With the top cover raised, you get a full view of the various elements in the card path from Input Magazine to Output Stacker. The items pointed out on this illustration are mentioned in this section:

1. Auxiliary Input
2. Input Magazine
3. Input Feed Rolls
4. Read Station
5. Hand Wheel
6. Visible Station
7. Print Station (VIP)
8. Punch Station
9. Eject Rolls
10. Select Stacker
11. Output Stacker

READ STATION

The Read Station is just to the right of the Visible Station. As a card is fed from either the Input Magazine or the Auxiliary Input, it passes through this station without stopping on its way to the Visible Station.

In the Key Punching use of a VP or VIP, the Read Station functions only:

- In the Load Program Mode to enter the Program into Data and Program Storage from a Program Card.

- In the Load Data Mode to enter data into Data Input Storage from a prepunched card.

This "reading" is done in serial fashion from Column 1 through Column 80. As the card starts passing through the Read Station, the reading starts at Card Column 1 with the image of that column entered into Storage Column 1:

- If the card column is blank, the storage column is blank.

- If a position in the card column is punched, the storage column records this punching in the magnetic core for that position.

This reading (recording) continues column-by-column through Column 80 until an exact image of the card is obtained in the Storage.

The Read Station

KP-3	SECTION
4	PAGE

UNIVAC 1700 SERIES
1701 VP & 1710 VIP
Key Punching
Internal Features

OPERATING
INSTRUCTIONS

UP-7631 Rev.1
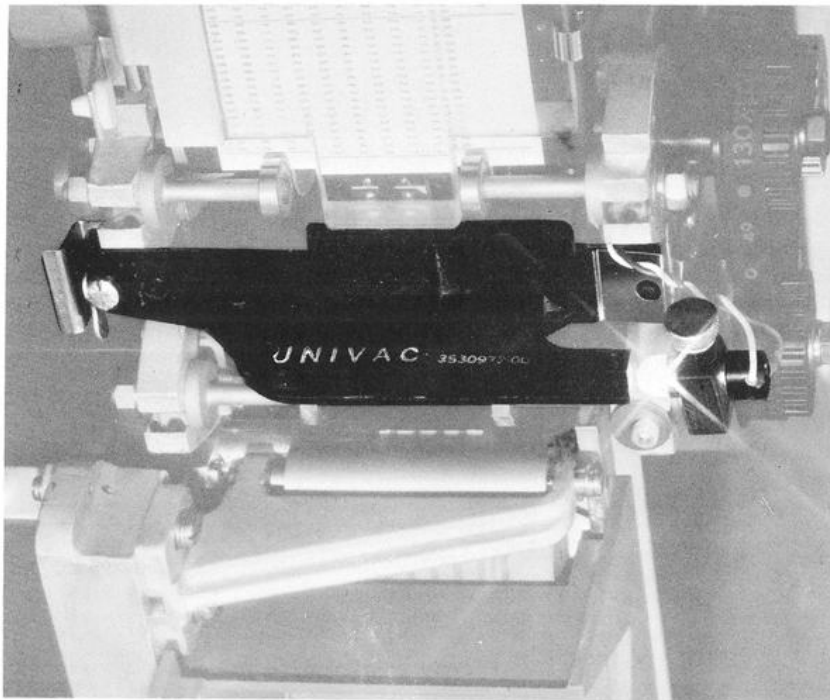
The reading is done by "photo-optics." This is the scientific word for the following:

⊠ The light from the small lamp above the Read Station is carried by thin glass threads (called optical fibers) to 12 outlets on the inside of the station. There is an outlet for each of the 12 positions in a card column.

⊠ Opposite each of these 12 light outlets is a small electric "eye."

⊠ The card passes between the light outlets and the electric eyes:

- The light shines through the hole in a punched position to register in the related magnetic core the fact that a hole was present.

- The light does not, of course, shine through an unpunched position. The fact that a hole was not present is, however, also recorded in the related magnetic core.

On a Card Feeding Cycle, a card must enter and pass through the Read Station properly even when the Read Station is not functioning. If it does not, a Keyboard Interlock is created.

⊠ The red Interlock Indicator on the Keyboard is lit.

⊠ The Keyboard is inoperative.
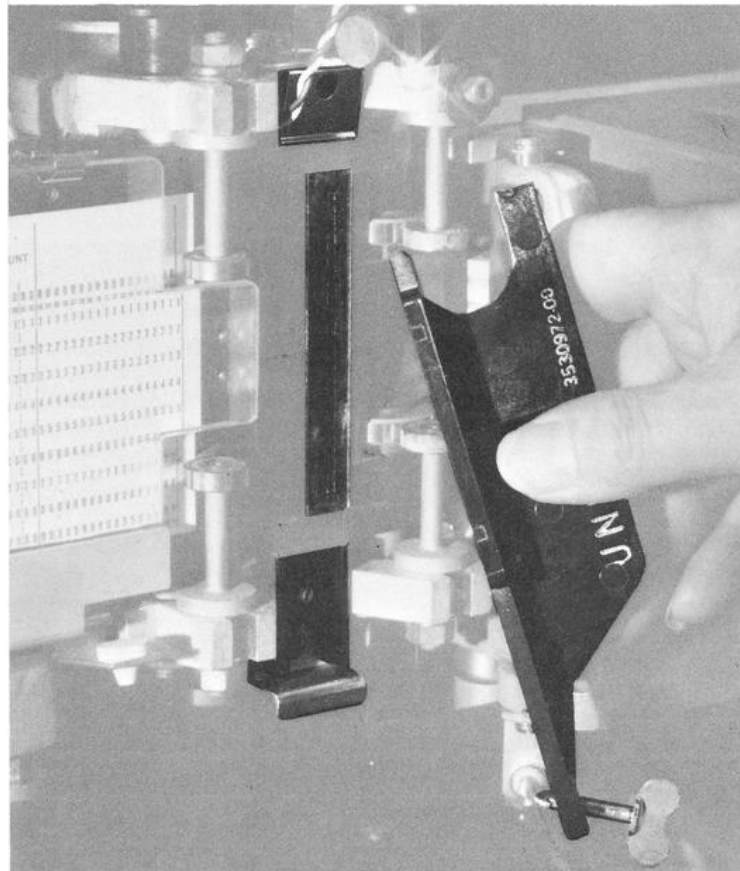
The front part of the Read Station is being held ready to be returned to its position in the machine.

Evidence to you of this failure of a card to feed through the Read Station is the lack of a card at the Visible Station. This may be due to:

☒ An empty Magazine or the failure of a card to feed from the Magazine.

☒ The misfeeding or jamming of a card in the Read Station.

If a card should have fed but did not, find out why not before you do anything else.

☒ Raise the Access Cover to see if a card jammed at or in the Read Station, if not ---

☒ Check the cards in the front of the Magazine; perhaps no card was fed. Poorly stored cards can become so badly warped as to be almost impossible to feed through any machine. Also, they stand a good chance of jamming even when they do feed.

> NOTE: As we said in the previous section under Input Magazine, the proper preparation of cards before you place them in the Magazine is most important.

If a card is jammed at the Read Station, it can be pulled back from the station or pulled forward through the station depending on its original position. You can use the Hand Wheel above the Input Feed Rolls (see below) to help you move the card forward.

To further help you clear a jam, the front part of the Read Station is easily removed. It is held in place by a spring clip at the top and a wing fastener at the bottom.

☒ To remove this part; turn the wing fastener a quarter turn to the left, lower the part until it is free of the spring clip at the top.

☒ After clearing the jam, return the front part; place the part flat against the inner surface of the station, move it up until its top is fully clamped beneath the spring clip, turn the wing fastener to the right to hold the part in place.

If you are punching Dual Cards and have a jam, we advise removing the front part of the Read Station to clear the jam. By doing this, you stand little chance of tearing or mutilating the card.

If you do not remove the front part of the Read Station when clearing a jam, be sure you remove all parts of the card if it becomes torn. To be sure that the Read Station is clear, pass the end of a card through it.

When you have found the cause of the Keyboard Interlock and have fixed it, close the Access Cover and press the CLEAR key on the Keyboard to turn out the red light and remove the interlock -- You can then resume Key Punching.

☒ If you have removed a misfed or jammed Dual Card and if it is not too badly damaged, put it back in its proper sequence in the Visible Station by inserting it in the Auxiliary Input and pressing the FEED key.

⋈ If you were punching blank cards, press the FEED key to bring a card from the Magazine into the Visible Station.

You should remove the front part of the Read Station at regularly sched-uled intervals so that you can clean both inner surfaces of the station. This keeps the reading efficiency at its maximum. This and other clean-ing procedures are described later on in the Machine Care section.

INPUT FEED ROLLS and HAND WHEEL

The Feed Rolls to the right and left of the Read Station draw a card from either the Input Magazine or the Auxiliary Input and pass it to and through the Read Station to the Visible Station.

The HAND WHEEL on top of the Input Feed Rolls can be turned to the right to rotate these rolls. You will find this helpful when removing card jams.
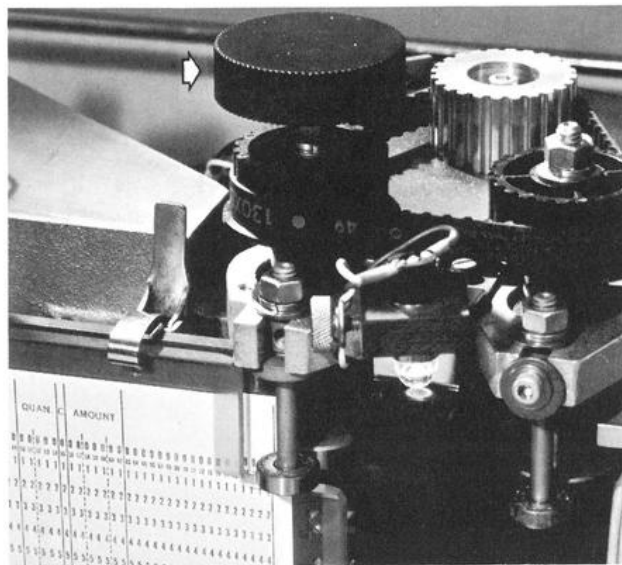
The arrow indicates the Hand Wheel.

VISIBLE STATION

You were given the basic information about the Visible Station in the External Features section. Here is what you can learn about this sta-tion when the Access Cover is raised.

The glass plate covering the Visible Station is hinged at its base and held in position by two spring clamps at its top.

⋈ To lower the plate, release the clamps by pulling forward on the arm above each clamp, raise the clamps, and lower the plate gently.

⋈ To return the plate to its closed position; swing it fully up, pull out on the arm of each spring clamp, hold down each spring clamp over the top of the plate while pressing each clamp arm to its lock-ed position.
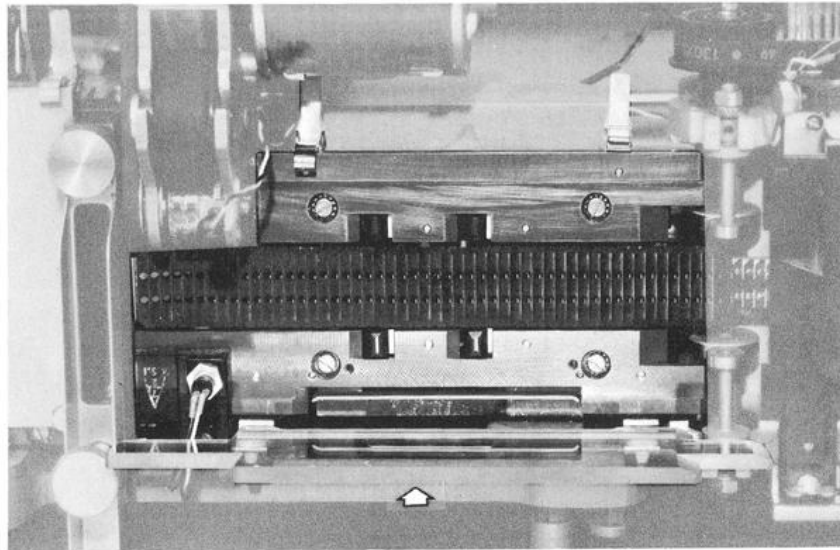
The glass plate (arrow) has been lowered to expose the inside of the Visible Station.

The row of card feeding blades you see across the center of the Visible Station move back and forth very rapidly on each Card Feeding Cycle and each Card Eject Cycle to feed a card from the Visible Station through the Print (VIP) and Punch Stations two columns at a time.

You will need to open the Visible Station for these reasons:

■ To clean both sides of the glass plate and to brush card lint, dust, and dirt from the station at scheduled intervals. If you do much work with Dual Cards, we suggest frequent cleaning of the glass to keep the card visibility at its best.

■ Lowering the glass plate may help in the removing of a card jam either in or to the left or right of the Visible Station area. NOTE: Be careful not to force a card against the card feeding blades when you are working in this area. This can result in off-punching of the cards.

If a card fails to feed from the Visible Station, a Card Feed Interlock can occur. The red Interlock Indicator may or may not turn on; however, no card feeding can take place. The FEED key, EJECT key, Automatic Feed, and Early Feed (VIP) will not function.

The usual evidence of this interlock is that the card in the Visible Station is not in its right position or that there are two cards in this station. The glass plate is lowered to remove the card or cards from the station. At this time, look at the rest of the card path to the Stackers to be sure it is free of cards.

After you have corrected the cause of the interlock and are sure the card path is cleared; close the Access Cover tightly. Card feeding can then be resumed after pressing the CLEAR key.

PRINT STATION (VIP)

The Print Station is just to the left of the Visible Station. As many as 80 characters can be printed in a row between the 12 positions and the top edge of the card. Each character is printed above a card column and is for the code punched in that column.

The printing occurs on a Card Feeding Cycle in the Automatic or Manual Mode as the card is fed from the Visible Station through the Print and Punch Stations to the Stackers.

The characters printed are from the information in Data Output Storage. As you recall, the information entered into Data Input Storage is transferred immediately to Data Output Storage at the start of a Card Feeding Cycle.

The data to be punched in a card will be printed on that card. In the Program sections, you will learn of "print editing." Among other uses, print editing can prevent printing in individual columns or fields.

The printing is done by a constantly rotating Type Wheel located in front of the card. When the proper character is opposite the card, a hammer located back of the card is fired to cause the printing of that character. This happens very quickly.

An INKING ROLL, mounted in front of the Type Wheel, keeps the rotating Type Wheel supplied with the ink necessary for the printing. The Inking Roll rotates freely on a shaft. The shaft, in turn, is loose in its mounting.

   NOTE: The only purpose of the triangular nut at the right end of
         the shaft is to allow the roll to be removed from the shaft when
         a roll change is made.
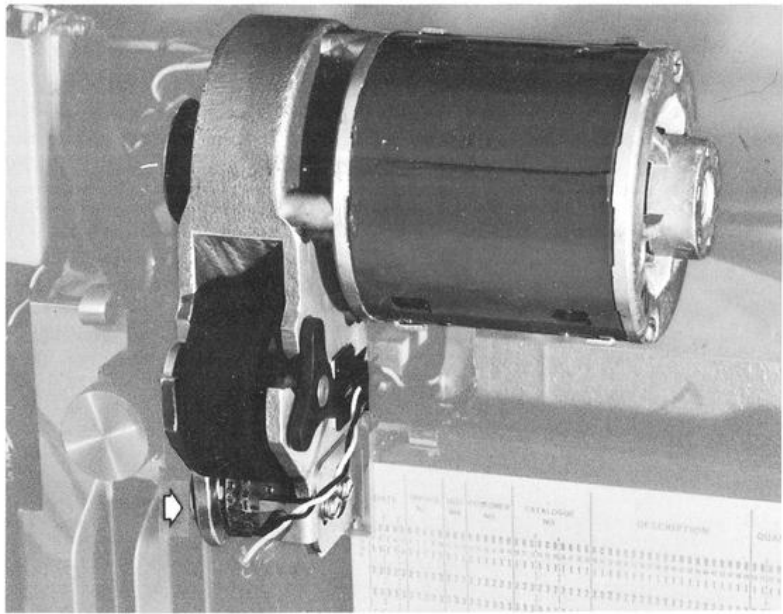
The Print Station. The arrow indicates the Type Wheel.

Once installed, an Inking Roll is used until its supply of ink is exhausted. The used roll is then discarded and a new roll installed.

When the Inking Roll needs to be replaced, you can do it quickly and easily like this:
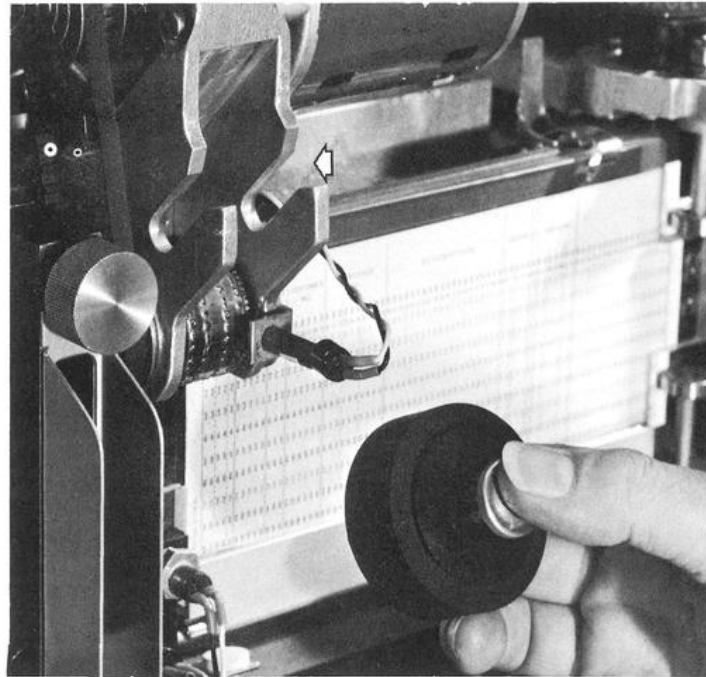
The Inking Roll is installed in the slots indicated by the arrow.

This is the Inking Roll with its shipping case.

⊠ To remove the old roll; lift the roll and shaft from the mounting, remove the nut, drop the roll into a wastebasket or onto a piece of paper.

⊠ To install the new roll; place the roll on the empty shaft, return and tighten the nut on the shaft. With the nut side to the right, merely drop the roll and shaft into the mounting slots. Check to see that the shaft is fully seated in the mounting slots.

You will need to clean the Type Wheel at scheduled intervals or at least each time you change the Inking Roll. The ink on the Type Wheel causes card lint, dust, and dirt to adhere to the wheel in sufficient quantity to cause poor printing; so it must be cleaned to allow good printing.

When the Inking Roll is removed, the Type Wheel is cleaned with a dry brush. So that you can clean all of the wheel, rotate it by means of its drive shaft. When you have done this, wipe or brush away any dust or dirt in and around the Print Station (see the Machine Care section).

PUNCH STATION

The Punch Station is to the left of the Visible Station. The punching is done, in the Automatic or Manual Mode, two columns at a time on a Card Feeding Cycle as the card is fed from the Visible Station through the Punch Station to the Stackers.

A card is punched with all of the information in the Data Output Storage at the time the card is fed.
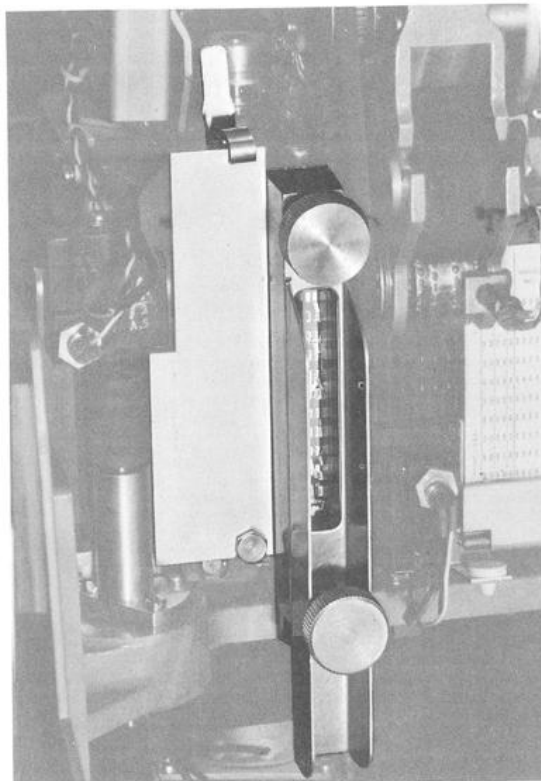
The Punch Station with the metal plate to its left.

Should a card fail to feed to or through the Punch Station in the Automatic or Manual Mode, a Keyboard Interlock occurs.

◼ The red Interlock Indicator on the Keyboard is lit.

◼ The Keyboard is inoperative.

Evidence to you of this failure is that a card does not feed out to the Stackers. This may be due to:

◼ An empty Visible Station.

◼ The misfeeding or jamming of a card in the Punch Station.

If a card should have fed but did not, raise the Access Cover to see if a card has jammed at or in the Punch Station.

To help clear a jam and when cleaning this area of the card path, you can remove the metal plate to the left of the Punch Station. Also, if necessary, you can remove the outer part of the Punch Station.

The metal plate at the left of the Punch Station is held in place by a slot at the bottom and a spring clamp at the top.
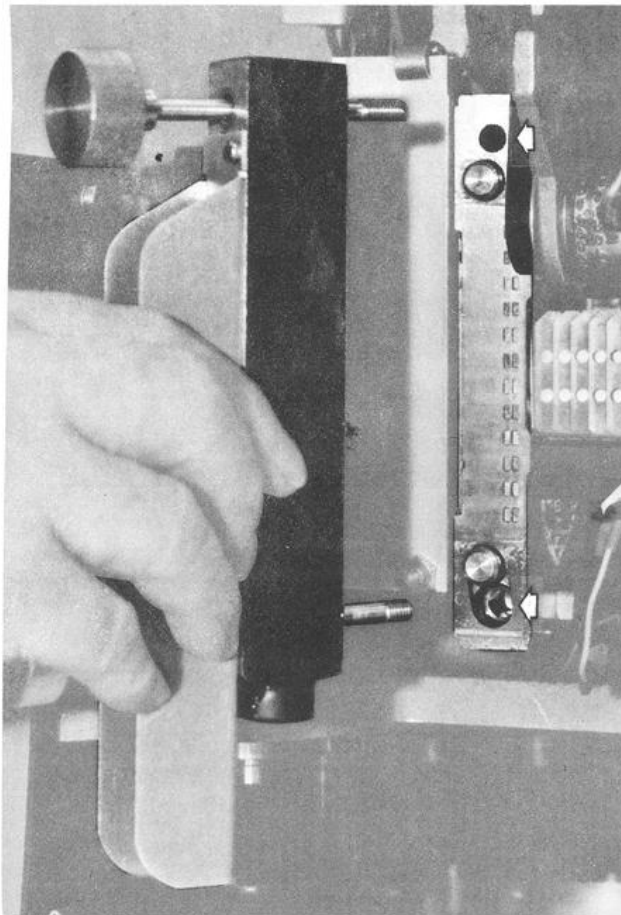
When returning the outer unit of the Punch Station, the thumb screws are inserted in the holes indicated by the arrows.

⊠ To remove this plate; release the clamp by pulling forward on the arm extending above the clamp, lift the plate from the stud at the bottom.

⊠ To return the plate; insert the notch in the bottom of the plate on the stud, pull out on the arm of the spring clamp, hold down the spring clamp over the top of the plate while pressing back on the clamp arm to its locked position.

The outer part of the Punch Station is held in place by two thumb screws.

⊠ To remove this unit, turn both thumb screws so that they are free of their inner threads. This unit is a tight fit. Move it slightly at the top and bottom while you draw it out.

⊠ To return the unit; place it squarely on its mounting studs, insert both thumb screws and <u>tighten</u> them <u>evenly</u> and <u>securely</u>.

If a card becomes torn during jam removal, be sure you remove all of its parts. To be certain that the Punch Station is clear, pass the end of a card through it.

After clearing a jam and returning all parts to their proper position, close the Access Cover and press the CLEAR key on the Keyboard to turn out the red light and remove the interlock.

Before you resume, remember! --- If you didn't press any of the Keyboard keys except the CLEAR, the setup for the last card fed from the Visible Station is still in Data Storage. To take advantage of this, all you do is:

⊠ Press the FEED key once to feed a card from the Magazine to the Visible Station.

⊠ Press the FEED key again to punch that card with the last setup and to feed another card from the Magazine to the Visible Station. You can now continue operation right where you left off.

KEYBOARD

The VP Keyboard

All of the keys and switches for the full control and operation of a Verifying Punch or a Verifying Interpreting Punch are on the top surface of the Keyboard. Except to insert and remove cards, it is not necessary for your hands to leave this surface.

For your convenience, the Keyboard is not fastened to the Reading Board. A cable connects it to the inside of the machine. You can place it anywhere from the extreme left end of the Reading Board to the extreme right end or at any angle.

When moving the Keyboard: If you need more cable, pull it out from the inside of the machine; if you have too much, push it back into the inside of the machine.

The best location of the Keyboard for you may change from time to time according to the way you wish to operate and to the type of work you are doing. Rubber pads in the base of the Keyboard hold it in place once you have it in the position you like. Here are some reasons for moving the Keyboard:

▪ You may wish to operate with your left hand rather than your right.

▪ It may be better to have the documents you are reading placed to the right of the Keyboard rather than the left.

☒ When the work you are doing contains a good deal of alphabetical in-
formation, you may wish to place the Keyboard square on to you. On
the other hand, if the information is all or mostly all numerical,
you may want the Keyboard at an angle.

There keys can be operated as fast as 50 keystrokes a second. This key
action is positive, yet light and effortless. To assure you of proper
operation, a clicking sound is heard when a key is pressed. This sound
will not be heard for improper operation.

Color is used to classify the keys; the numerical keys and the space
bar are off-white, the operating control keys are light gray, and the
balance of the keys are white.

To help your touch operation, the tops of the following keys have more
of a depression in the center than the others:

> For the left hand ---- A, S, D, and F
> For the right hand --- J, K, L, and SKIP

The switches and keys of interest to you right now for the Key Punching
use of the machine are described in the following pages.

FUNCTION CONTROL SWITCHES
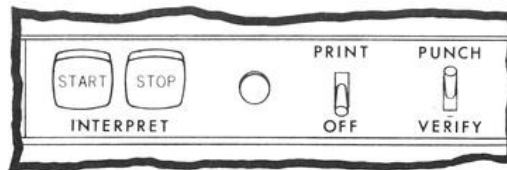
Set the PUNCH-VERIFY switch at PUNCH. The VP or VIP will function as a Key Punch.

Set the PRINT switch of a VIP at PRINT if the cards are to be printed. Set it OFF if they are not. If you change the switch setting, the new setting will be effective for the next card fed through the Print Station.

If you have a VIP, the INTERPRET, START and STOP are discussed in the Interpreting portion of this manual.

MODE CONTROL SWITCHES
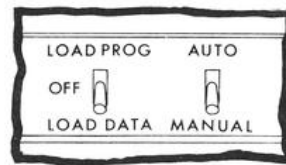
These two switches determine the Mode of Operation:

▪ The switch to the left is called the LOAD MODE switch.

▪ The switch at the right is the OPERATING MODE switch.

Make one of these three settings of the Load Mode switch:

▪ LOAD PROG (Load Program Mode) - Set the switch at this setting when you want to enter a Program from the Program Card into the Data Input and Program Storage.

▪ LOAD DATA (Load Data Mode) - Set the switch here when you want to enter information into Data Input Storage from a prepunched card.

▪ OFF - For either the Manual or Automatic Mode, set this switch at this center position.

With the Load Mode switch set OFF, make either one of these two settings of the Operating Mode switch:

▪ AUTO (Automatic Mode) - You can enter data from the Keyboard. The Program will be in full effect and automatic operation will take place.

▪ MANUAL (Manual Mode) - You can enter data from the Keyboard. Only the Field Definition codes (Code 12) in the Program will be in effect.

You will generally have the most use of these two switches at the be-
ginning of a Key Punching operation; to enter the Program, to enter
data to be Duplicated, and then to set the Mode of Operation (Automatic
or Manual) for the punching of the cards.

PROGRAM SELECTION SWITCH
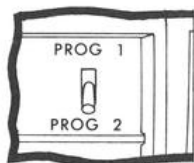
Set this switch at PROG 1 or PROG 2 to determine whether Program 1 or
Program 2 will provide the basic Program control over the operation.
You generally have no need to change this switch setting during a job.

When you change this switch setting, the new setting does not take ef-
fect until after you have taken a Card Feeding Cycle or have pressed
the HOME key (see Operating Control Keys below).

Most applications use only one Program. When two different Programs
are to be used during one job, the usual means of switching from one
Program to the other is by pressing the PROG ALT key (see Operating
Control Keys below).
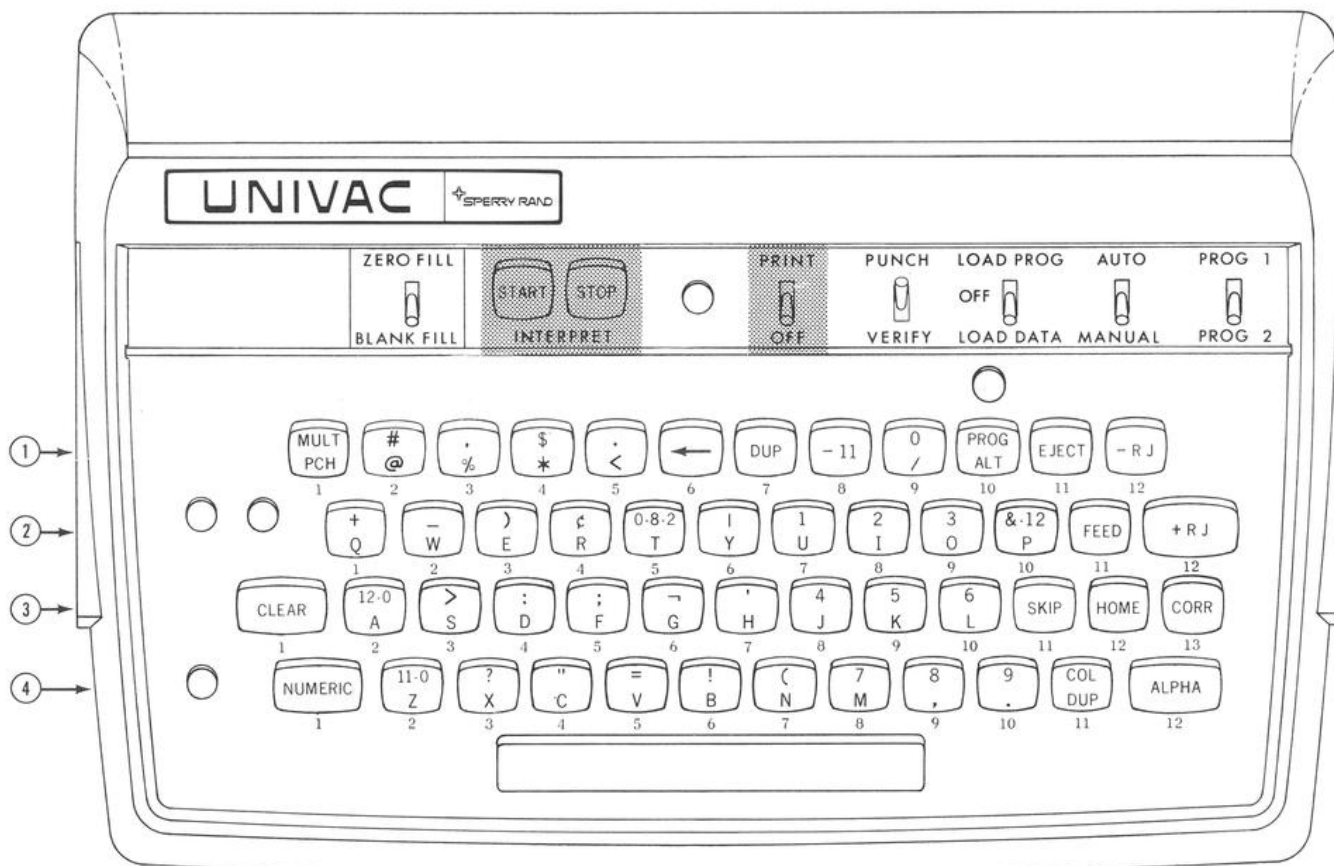
VIP only

On a VIP, the setting of this switch determines the Program that will govern the printing (print editing) regardless of any use of the PROG ALT key.

When Program 2 is in control, the green PROGRAM 2 Indicator will be lit. It is not lit when Program 1 is in control. This indicator is just above the top row of the keybank over the PROG ALT key.

RIGHT JUSTIFY FILL SWITCH
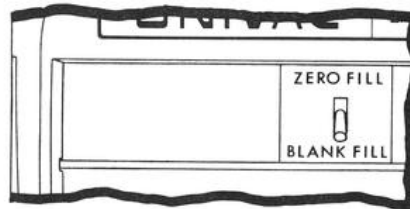
If you are to use Right Justify for one or more fields, be sure to make the proper setting of this switch before starting operation. This switch setting determines whether zeros or blanks will be automatically inserted (filled) in the columns to the left of the most significant character in each field.

ZERO FILL - Zeros will be inserted.

BLANK FILL - The columns will be blank.
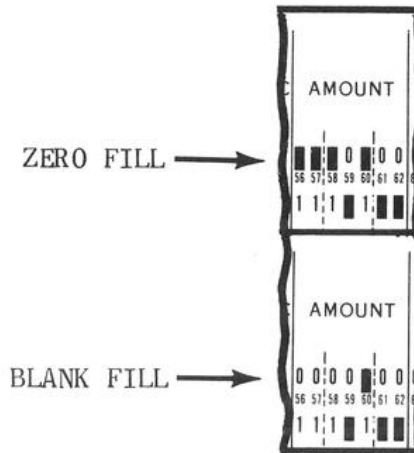
CHARACTER KEYS and SPACE BAR
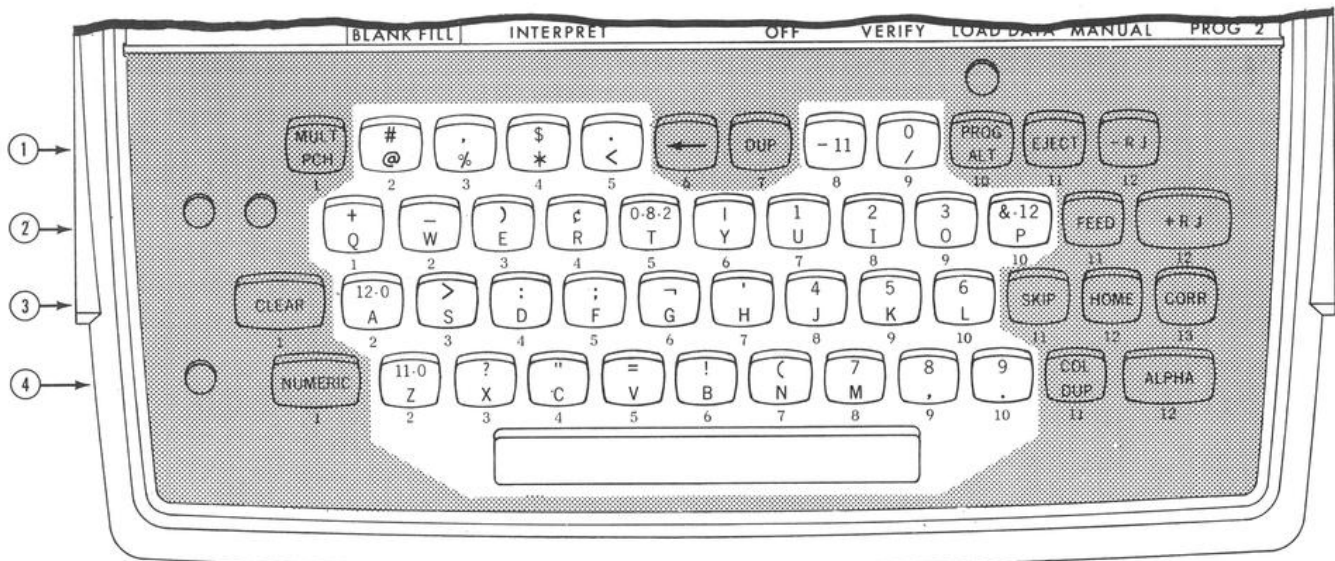
The thirty-four Character keys and the Space bar in the four row key-bank are used by you to manually enter the 63 character and space codes into the Data Input Storage.

The keys containing the numbers (12, 11, 0 - 9) and the Space bar are off-white in color, the balance of the Character keys are white. NOTE: The gray keys are called "Operating Control" keys and are described below.

Keyboard Types

The Keyboard used to illustrate this section of the manual is called the UNIVAC 9000 Keyboard. It may or may not be the one provided with your machine. The various Standard Keyboards with their codes are shown in the Standard Keyboards section of the Reference Manual for the VP and VIP (UP-7642, Rev. 1).

The Standard Keyboards differ from one another usually only in the Special Characters, their location, and the 80-Column code related to those characters.

To locate each key on the diagram including the Operating Control keys:

▪ The Key Rows are numbered 1 - 4 at the left from top to bottom.

▪ The Key Locations within each row are numbered below each key from left to right starting with "1" at the left.

For example, the "6,L" key is Row 3, Key 10.

Keyboard Shift

The majority of the Character keys will produce two codes; one code in the "NUMERIC" Shift, the other in the "ALPHA" Shift.

■ Because the <u>numerical</u> characters are printed in the upper half of their key tops, all other characters printed in this upper half are also included in the NUMERIC Shift or Upper Case.

■ Because the <u>alphabetical</u> characters are printed in the lower half of their key tops, all other characters printed in the lower half are also included in the ALPHA Shift or Lower Case.

The characters, other then the 12 numerical and 26 alphabetical, are called Special Characters. Most of these characters are in the NUMERIC Shift.

The Keyboard Shift functions in the following manner:

■ In the Manual Mode:

- The keybank will go into the NUMERIC Shift and remain there when the NUMERIC key on the Keyboard is pressed; the green light in the top-center of the Keyboard will <u>not</u> be lit. This green light is called the ALPHA Indicator.

- When the ALPHA key is pressed, the keybank will go into the ALPHA Shift and remain there; the ALPHA Indicator is lit.

■ In the Automatic Mode:

- The keybank is automatically in the NUMERIC Shift and the green ALPHA Indicator is off.

- Individual columns can be programmed (Program Code 1) to go into the ALPHA Shift and turn on the ALPHA Indicator.

- With this automatic shifting, entry is made from the opposite shift by holding down the NUMERIC or ALPHA key when pressing a Character key.

Keyboard Entry

When a Character key or the Space bar is pressed, the code related to that key and shift is entered into the column of Data Input Storage shown by the Column Indicator at that time. Any code in that storage column is replaced with the new entry.

To help you guard against an accidental entry into storage, a Keyboard Interlock will occur and the red Interlock Indicator will light if you press a Character key, the Space bar, or an Operating Control key at the following times:

1. When you are loading a Program or Data. This is while the information from a Program or Master Card is being entered into storage. The entry from the Keyboard will not be made. The loading operation continues without interruption despite the interlock.

2. During the interval between cards (12.8 milliseconds) while the card image is being transferred from Data Input Storage to Data Output Storage. The Keyboard entry is not made. The transfer operation continues without interruption despite the interlock.

3. If you attempt to start the entry for a new card before the first of two preceding cards is delivered to a Stacker. These things can happen at one time when you have a very few columns of manual entry:

⊠ The first card is passing through the Punching Station.
⊠ The setup for the second card has been completed and the FEED key pressed.
⊠ You then press a Character key, the Space bar, or an Operating Control key.

No entry from the Keyboard is made. Although the Keyboard will be interlocked, the machine proceeds to:

⊠ Finish punching the first card and deliver it to the Output Stacker.
⊠ Punch the second card and deliver it to the Stacker.

In these three cases, it is only necessary for you to press the CLEAR key to release the Keyboard Interlock. You can then resume operation according to the reading of the Column Indicator.

OPERATING CONTROL KEYS
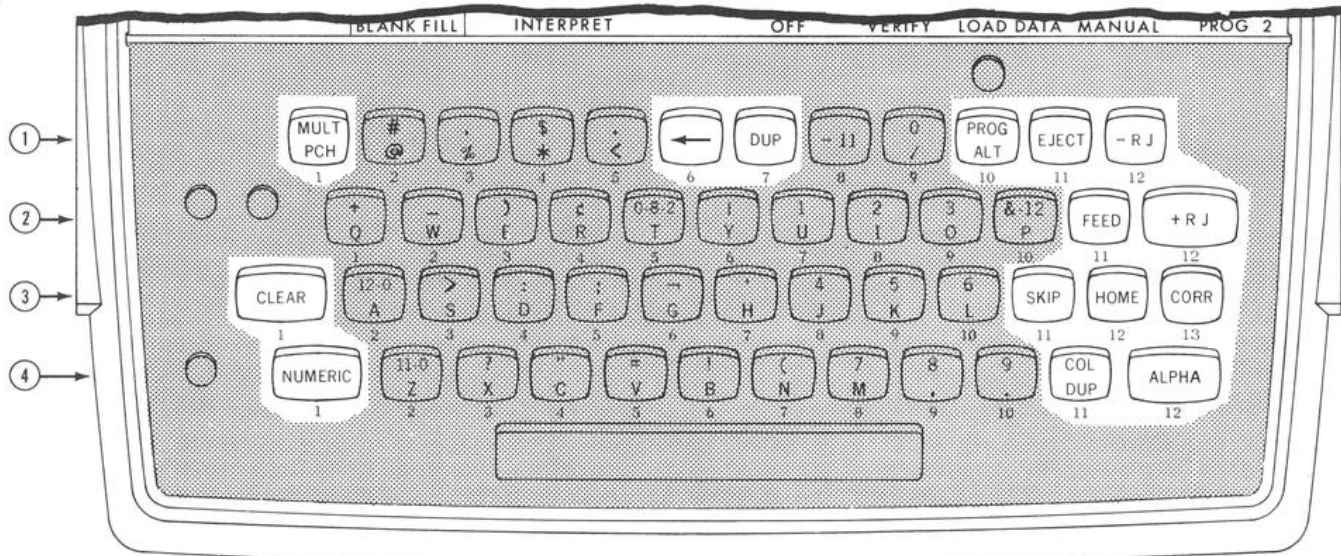
The fifteen gray colored Operating Control keys are in the top row and at the left and right sides of the keybank. These keys give you full control over the Key Punching operation from the Keyboard.

The purpose and use of these keys is as follows. NOTE: The Row and Key numbers following the name of each key refer to the numbers on the Keyboard Charts.

FEED - Row 2, Key 11

The basic purpose of this key is to cause a Card Feeding Cycle.

Just to remind you --- during a Card Feeding Cycle:

⊠ A card in the Visible Station is fed through the Punch (and Print) Stations to either the Output Stacker or the Select Stacker.

⊠ A card from either the Input Magazine or the Auxiliary Input is fed through the Read Station to the Visible Station.

Exactly what happens on a Card Feeding Cycle depends on the Mode of Operation and whether the card is fed from the Input Magazine or the Auxiliary Input.

In the MANUAL MODE, the FEED key is the only means of causing a Card Feeding Cycle.

⊠ If the card is fed from the Input Magazine, a card in the Visible Station is punched (and printed) with all of the information in Data Input Storage at the time and is delivered to the Output Stacker while the card from the Magazine feeds to the Visible Station without being read.

⊠ If the card is fed from the Auxiliary Input, a card in the Visible Station at that time is punched with all of the information in Data Input Storage at the time (but is not printed) and is delivered to the Select Stacker while the card from the Auxiliary Input feeds to the Visible Station without being read.

In the AUTOMATIC MODE, there are several ways of causing a Card Feeding Cycle:

⊠ The AUTOMATIC FEED starts a Card Feeding Cycle when the Data Storage is indexed through Column 80 to the right margin to punch all of the information in Data Input Storage at the time.

⊠ With a VIP, an EARLY FEED can be programmed (Program Code 3) to start a Card Feeding Cycle at any column to the left of Column 80. (See the Program Codes section.)

⊠ The FEED key may be used at any other time to obtain a Card Feeding Cycle as described above for the Manual Mode.

NOTE: In the Automatic Mode, the printing can be controlled by the Program as described in the Program Codes section.

In the LOAD PROGRAM and LOAD DATA MODES, the FEED key is the only way to get a Card Feeding Cycle.

⊠ If the card is fed from the Input Magazine, the card in the Visible Station is delivered to the Output Stacker while the card from the Magazine is read as it feeds to the Visible Station.

⊠ If the card is fed from the Auxiliary Input, one depression of the FEED key will cause two automatic cycles:

   - On the first cycle, a card in the Visible Station is fed to the Select Stacker while the card from the Auxiliary Input is read as it feeds to the Visible Station.

- On the second cycle, the card in the Visible Station is al-
so fed to the Select Stacker. There is no feeding from the
Input Magazine during this second cycle.

⊠ There is no card punching (or printing) in either the Load Pro-
gram or Load Data Mode.

You will notice that when a card is fed from the Auxiliary Input, re-
gardless of the Mode of Operation, the card at the Visible Station
at that time feeds to the Select Stacker.

You can GANGPUNCH as many cards as you wish by repeated depressions
of the FEED key in the Manual Mode. Each card produced will contain
all of the information in Data Input Storage at the time the opera-
tion started. You may wish to punch only one position or a field in
blank cards or cards already punched. On the other hand, you may
produce two or more cards exactly alike with complete information.

NOTE: You will be told a little later how to do Gangpunching
automatically under Program control.

At the conclusion of any of these feeding operations:

⊠ The Column Indicator is indexed to Column 1.

⊠ The Data Storage remains unchanged until a new entry is started.

⊠ In the Automatic Mode if Column 1 is programmed to start an auto-
matic operation such as Duplicating or Skipping, that operation
will take place.

The FEED key, Automatic Feed, and Early Feed (VIP) are inoperative
when there is a Keyboard or a Card Feed Interlock. They become op-
erative when the reason for the interlock is corrected and the CLEAR
key pressed.

Here are two important points about the operation of the FEED key
that you should know:

1. You will notice that the operation caused by pressing the FEED
   does not start until you release the key. This is also true of
   the EJECT key. When you press and hold down either of these keys,
   nothing happens until you lift your finger.

   For the other Operating Control keys, the operation starts as the
   key is fully pressed.

2. If you press the FEED key while one Card Feeding Cycle is taking
   place, the next cycle will start immediately after the first is
   finished. You do not have to wait for a cycle to end before you
   press the FEED key for the next.

   When you use the FEED key to Gangpunch, press the FEED key for
   the next cycle while a card is being fed through the Punching Sta-
   tion on the current cycle.

EJECT - Row 1, Key 11

Pressing this key will cause a Card Eject Cycle regardless of the Mode of Operation:

🗙 A card in the Visible Station is fed to the Select Stacker without being punched (or printed).

🗙 No card feeds from either the Input Magazine or Auxiliary Input.

At the end of this operation:

🗙 The Column Indicator is indexed to Column 1.

🗙 The Data Storage remains unchanged until a new entry is started.

🗙 In the Automatic Mode if Column 1 is programmed to start an automatic operation such as Duplicating or Skipping, that operation will take place.

As we pointed out in previous sections, the EJECT key is the quick way of clearing a card from the Visible Station without feeding in a new one.

In the External Features section under Visible Station, we mentioned the use of this key when punching Dual Cards. At other times, you may wish to feed out the card in the Visible Station before you begin the next job.

The EJECT key is inoperative when there is a Keyboard or a Card Feed Interlock. It becomes operative when the reason for the interlock is corrected.

As mentioned above under FEED key, the operation caused by pressing the EJECT key does not start until you release the key.

HOME - Row 3, Key 12

Pressing the HOME key indexes the Column Indicator to Column 1.

There is no card feeding nor any change to Data Storage.

In the Automatic Mode if Column 1 is programmed to start an automatic operation, that operation will take place.

If you find you have made a mistake when entering a setup but do not know exactly where, just press the HOME key to start again.

Because the HOME key gives you this opportunity to restart a setup, it functions to put the machine in the same condition that it was before you started that setup. The machine is "reset." You can then use the same procedure you would follow for a new setup.

← (Backspace) - Row 1, Key 6

One depression of the Backspace key turns back (retracts) the storage indexing and the Column Indicator reading one column each time it is pressed. Thus, if the indicator reads 11 before the key is pressed, it will read 10 after the key is pressed.

You can backspace as many columns as you wish until Column 1 is reached. There will be no change to the contents of Data Storage.

In the Automatic Mode if you backspace to a column programmed to start an automatic operation such as Skipping or Duplicating, that operation will not take place. It can be obtained however by pressing the proper Operating Control key. If, however, you backspace into a column programmed for ALPHA Shift, that shift will take place.

COL DUP (Column Duplicate) - Row 4, Key 11

One depression of the COL DUP key advances the storage indexing and the Column Indicator reading one column each time it is pressed. Thus, if the indicator reads 10 before the key is pressed, it will read 11 after it is pressed.

If you hold the COL DUP key depressed, you can advance at the rate of about 10 columns a second until you release the key.

The action of the COL DUP key has no effect upon the contents of Data Storage; what is already in a column stays there.

In the Automatic Mode if you advance by means of the COL DUP key into a column programmed to start an automatic operation such as Skipping or Duplicating, that operation will <u>not</u> start automatically. It can, however, be obtained by pressing the proper Operating Control key.

On the other hand if you advance with the COL DUP key into a column programmed for ALPHA Shift, that shift will take place.

In either the Manual or Automatic Mode, use of this key will not start a Duplicating operation (see DUP key below).

The COL DUP key is one way of Duplicating information already in Data Storage. It is usually used for this purpose when you want to disregard the Program.

DUP (Duplicate) - Row 1, Key 7

This key is used to start a Duplicating operation in either the Manual or Automatic Mode. Field Definition in the Program is used to cause the Duplicating operation to continue for more than one column.

When you press this key, the column shown by the Column Indicator at that time will be Duplicated.

■ If the next column and a number of columns immediately after contain Code 12 (Field Definition) in the Program, the Duplicating continues automatically through the last column of that Field Definition.

⊠ If the next column in the Program does not have the Field Defini-
tion code, only the column on which the key is pressed will be
Duplicated.

As you know, the Duplicating operation has no effect upon the con-
tents of Data Storage.

In the Automatic Mode, the presence of Code 0 (Duplicate) in a col-
umn of the Program will start the Duplicating operation automatic-
ally although the DUP key can still be used to start the operation
from the Keyboard. When we get into the details of Programming, we
will tell you more about Duplicating.

One of the most frequent uses of the DUP key is for those card
fields where you do this:

⊠ Enter the information for that field from the Keyboard for the
first card of a group.

⊠ Press the DUP key when you index into the first column of that
field when making the setup for the second and all following
cards which are to have that same information in that field.

SKIP - Row 3, Key 11

This key is used to start a Skipping operation to erase and thus to
create blanks (Space codes) in the Data Storage columns included in
the Skip.

What happens when you press this key depends upon the Mode of Opera-
tion at that time: In the Automatic Mode, the operation is under
Program control; in the Manual Mode, it is not.

Automatic Mode

When you press the SKIP key, the column shown by the Column Indi-
cator at that time will be Skipped.

⊠ If the next column and a number of columns immediately after
contain Code 12 (Field Definition) in the Program, the Skip-
ping continues automatically through the last column of that
Field Definition.

⊠ If the next column in the Program does not have the Field Defi-
nition code, only the column on which the key is pressed will
be Skipped.

NOTE: Pressing the Space bar is the way you usually get a
single-column Skip (Space).

The presence of Code 11 (Skip) in a column of the Program will
start the Skipping operation automatically. You will be told
more about this when we cover Programming.

Quite often for a certain card field in an application you will
have to do this:

- ⊠ Enter information from the Keyboard into that field for the first card.

- ⊠ Duplicate that information in one or more of the immediately following cards with the DUP key.

- ⊠ Clear all information from that field for the last cards. You would use the SKIP key at this time instead of the DUP key.

You were shown this type of operation in the Introduction.

Another frequent use of the SKIP key is for description or name fields where the number of characters to be entered in the field will vary from card to card. After entering the last character, press the SKIP key to Skip out of the field. This will assure you that all columns in the field following the last character you entered are blank.

Manual Mode

When you press the SKIP key, the Skip will be all of the way through Column 80 to the right margin regardless of the Program.

There are many times when you need to clear all of Data Storage or, at least, you want to make sure that it is clear. Two depressions of the SKIP key will do this instantly. The first depression is to assure yourself that the Column Indicator will be at Column 1 for the second Skip.

Among the occasions when you would usually clear Data Storage in this manner are:

- ⊠ After entering a Program but before you start the work.

- ⊠ If your regular work is interrupted for the punching of other cards.

- ⊠ If there is a possibility of others using your machine when you are away from it.

+RJ (Right Justify, Positive) - Row 2, Key 12
-RJ (Right Justify, Negative) - Row 1, Key 12

Both of these keys perform the Right Justify operation. The -RJ key does one small, but important, thing that the +RJ key does not; it causes Position 11 to be punched in the units column of a field that is Right Justified.

NOTE: It is the usual practice in data processing to use Position 11 in the units column of a field to identify an amount as negative or minus.

For a field to be Right Justified, all columns, except the first, in the Program for that field must have Code 12 (Field Definition).

As we have said before, when you use Right Justify, you first enter the significant digits or characters in the field. You then press the +RJ key if you are entering a positive amount or the -RJ key if the amount is negative.

▪ The characters you have entered then shift automatically to the extreme right columns of the field. An entry is made automatically in Position 11 of the units column if the -RJ key was pressed.

▪ Zeros or blanks, depending on the setting of the Right Justify Fill Switch, enter the empty columns to the left of the first significant character in the field.

NOTE: To fill a field with zeros or blanks according to the setting of the Right Justify Fill Switch, merely press an RJ (+ or -) key. The -RJ does not enter Position 11 in this case.

Usually the setting of the Right Justify Fill Switch you make at the start of a job is not changed. On some applications however, this switch setting may have to be changed for individual fields during a run. When this is necessary, the change can be made at any time before you press the RJ key for that field.

When there is the possibility in an application that the number of characters entered by you will exactly fill the field, the Program for that application can provide for stopping the advance with the Stop Right Justify code at the units column until you press an RJ (+ or -) key (see the Program Codes section).

In the Automatic Mode if the Stop Right Justify is used, this will happen if you try to exceed the capacity of the field:

▪ One excess character will be allowed to enter the units column.

▪ The yellow Non-Match indicator (see below) will light and the Keyboard will interlock. This warns you that you have tried to enter more characters in the field than it will hold.

When this happens, press the CLEAR key to turn off the Non-Match indicator and release the Keyboard Interlock. Make the proper entry in the field. Then press an RJ key to advance from the field.

Incidentally, the Right Justify works equally well with alphabetical and special characters as it does with numerals.

NOTE: If any Space codes are entered after the first significant character is entered, those spaces will be eliminated during the Right Justifying, leaving only the character codes in the final (justified) result.

CORR (Correction) - Row 3, Key 13

This key is used only when Verifying.

PROG ALT (Program Alter) - Row 1, Key 10

When two different Programs are to control the operation during one job, this key is usually used to switch from one Program to the other. You would press this PROG ALT key before starting certain cards or when the machine is stopped at specific columns while indexing through storage.

Before you start your manual entry for a card, the operation is under the control of the Program determined by the setting of the Program Selection Switch. This can be called the "Basic Program."

⊠ A single depression of the PROG ALT key at this time or later on during the entry will switch the control at once to the other Program, called the "Alternate Program."

⊠ A second depression of this key during the entry for the card will switch the control back to the Basic Program.

During the entry for one card, you can switch from one Program to the other as many times as required.

The Program control returns automatically to the Basic Program (Program Selection Switch setting) following; a Card Feeding Cycle or a depression of the HOME key.

> NOTE: The Basic Program can be either Program 1 or 2. The Alternate Program will then be Program 2 or 1.

When Program 2 is in control, the green Program 2 indicator will be lit. When Program 1 is in control, this indicator is not lit.

MULT PCH (Multiple Punch) - Row 1, Key 1

Hold the key depressed while you make the entry from two or more Character keys in one column. The Character Keybank will be conditioned automatically in the NUMERIC Shift while this key is being held.

There are those times when you are to make the entry in one column from more than one Character key such as the case given above for Right Justify. It usually includes a numerical digit, 0 - 9, and either the 11 or 12 or both 11 and 12. To do this:

⊠ When the Column Indicator is at the column, press down on the MULT PCH key.

⊠ Hold the MULT PCH key down while you press all of the Character keys necessary, one key at a time.

⊠ After you have pressed the last Character key, release the MULT PCH key. The Column Indicator will advance to the next column.

- In the Manual Mode, the keybank returns to the shift it was in before the key was pressed.

- In the Automatic Mode, the shift programmed for the column will be in effect.

The MULT PCH key prevents the advance that usually happens when you press a Character key. If you press the MULT PCH key and do not press a Character key, there is no advance when the key is released.

CLEAR (Clear Interlock) - Row 3, Key 1

This key is pressed to release a Keyboard Interlock and to turn off the red Interlock Indicator light. When a Keyboard Interlock occurs:

▪ The Keyboard is inoperative.

▪ The red light just to the left of the NUMERIC key is lit in most of these cases.

The various causes and the ways to correct the cause of a Keyboard Interlock were described to you in the External and Internal Features sections. To review these causes of a Keyboard Interlock; they include:

▪ An empty Magazine or the failure of a card to feed from the Magazine (Internal Features, Read Station).

▪ The misfeeding or jamming of a card in the Read Station (see Internal Features, Read Station).

▪ An empty Visible Station in the Automatic and Manual des (see Internal Features, Punch Station).

▪ The misfeeding or jamming of a card in the Punch Station (see Internal Features, Punch Station).

▪ A full Output Stacker (see External Features, Stackers).

When you know what caused the Interlock and have corrected that cause, press the CLEAR key to make the Keyboard again operative.

In addition, the Keyboard will interlock and the Interlock Indicator will light but no storage entry will occur if you press a Character key, the Space bar, or an Operating Control key:

▪ When you are loading a Program or Data.

▪ During the interval between cards (12.8 milliseconds) while the card image is being transferred from Data Input Storage to Data Output Storage.

▪ If you attempt to start the entry for a new card before the first of two preceding cards is delivered to a Stacker.

Pressing the CLEAR key is all that is necessary at this time.

NUMERIC (Upper Case) Shift - Row 4, Key 1
ALPHA (Lower Case) Shift - Row 4, Key 12

We have already discussed the use of these keys in the preceding
portion of this section under Character Keys and Space Bar. As a
review:

In the Manual Mode:

☒ When the NUMERIC key is pressed, the codes related to the charac-
ters printed on the upper half of the Character keys will be en-
tered into Data Storage. The green ALPHA Indicator at the top of
the Keyboard is not lit. The keybank remains in the NUMERIC
Shift until the ALPHA key is pressed.

☒ When the ALPHA key is pressed, the codes related to the charac-
ters printed on the lower half of the Character keys will be en-
tered. The ALPHA Indicator is lit. The keybank remains in the
ALPHA Shift until the NUMERIC key is pressed.

In the Automatic Mode, the Character Keybank is always in the NUMER-
IC Shift except for those columns that are programmed for ALPHA
Shift. The opposite shift is obtained for a column by holding
the desired Shift key (NUMERIC or ALPHA) pressed while making the
Character key entry. You will be given more information about
ALPHA Shifting when programming is discussed.

Incidentally, the keybank will be in the NUMERIC Shift when you turn
on the power.

INDICATORS

Four of the Indicator lights are of interest to you in the Key Punching
use of a VP or VIP. These indicators have already been mentioned.

INTERLOCK - The red indicator to the left of Row 4 in the keybank.

This indicator turns on and remains lit when the Keyboard is inter-
locked (inoperative). The CLEAR key releases the Keyboard and turns
off this indicator.

NON-MATCH - The yellow indicator to the left of Row 2 in the keybank.

When the Stop Right Justify is programmed for a field, this indica-
tor turns on and the Keyboard interlocks if an attempt is made to
enter an excess number of characters in that field. The CLEAR key
releases the Keyboard and turns off the indicator.

PROGRAM 2 - The green indicator above Row 1 in the keybank.

This indicator remains lit as long as Program 2 is in control. It
is off for Program 1. This indicator will turn on regardless of
whether Program 2 control was obtained by the setting of the Program
Selection Switch or by pressing the PROG ALT key.

ALPHA - The green indicator at the top center of the Keyboard.

This indicator is lit when the Character Keybank is in the ALPHA Shift. It is off during the NUMERIC Shift.

The red indicator to the left of Row 2 operates only during the Verifying use of a VP or VIP. The function of this indicator and of the yellow, Non-Match, indicator are explained later on when Verifying is discussed.
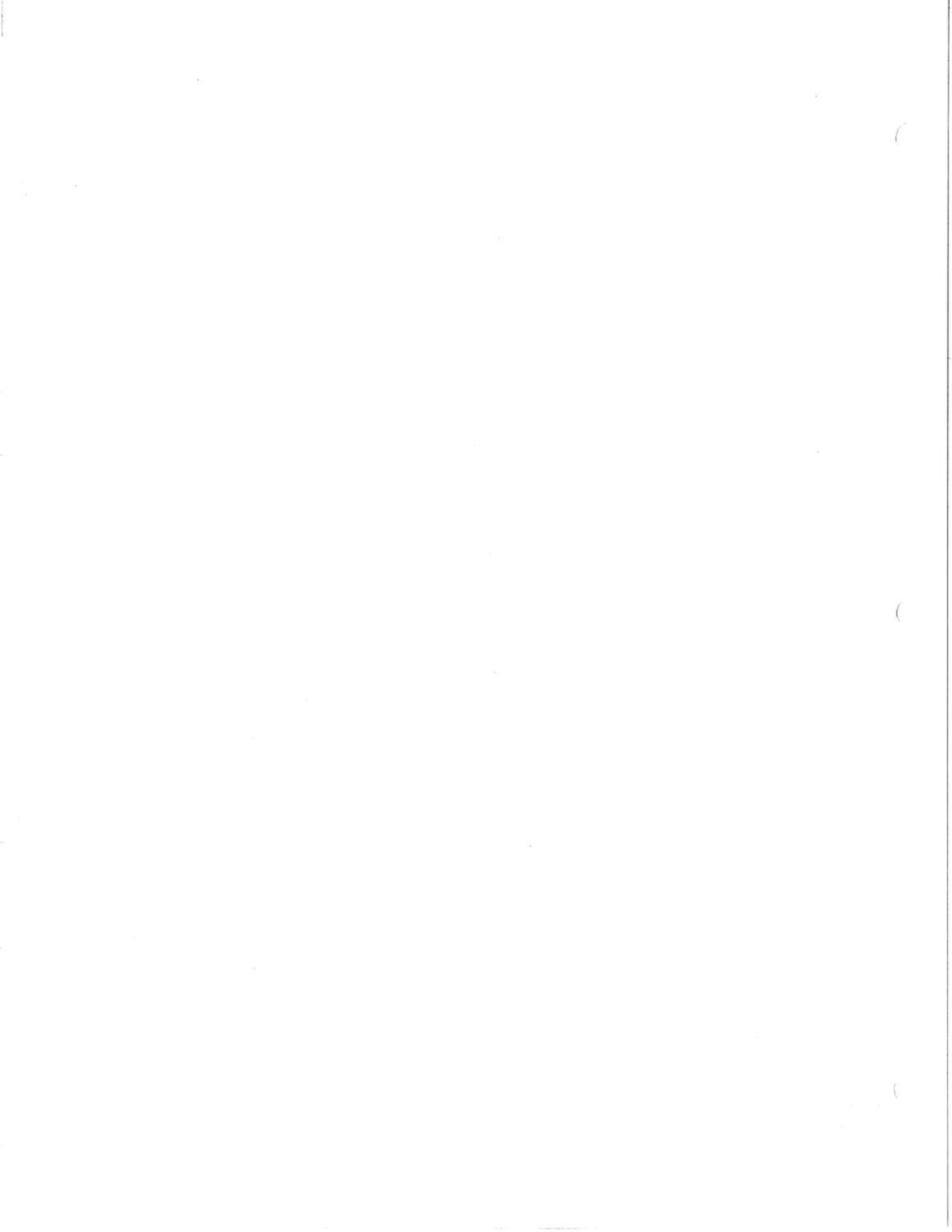
PROGRAM CODES

You have already been given some ideas of programming for Key Punching in the Introduction and the sections after that. These Program items include; Field Definition, Skipping, Duplicating, ALPHA Shift, and Early Feed (VIP).

We also told you that Program Storage will hold two different Programs, called Program 1 and Program 2. Both Programs have the same ability to control the operation. The usual job requires only one Program. Many jobs, however, use two Programs because what is punched in some of the cards is much different from that punched in the others:

■ When only one Program is needed for the job, either Program 1 or Program 2 can be used. The Program Selection Switch would be set for that Program.

■ When two Programs are needed to control one job, both Programs are punched in one Program Card so that they both enter Program Storage at the same time. You would then usually make the selection of the Program you want at any instant by pressing the PROG ALT key.

The Program Storage, just like a card, has 80 columns with twelve positions in each column. As with a card, the positions are numbered; 12, 11, 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.
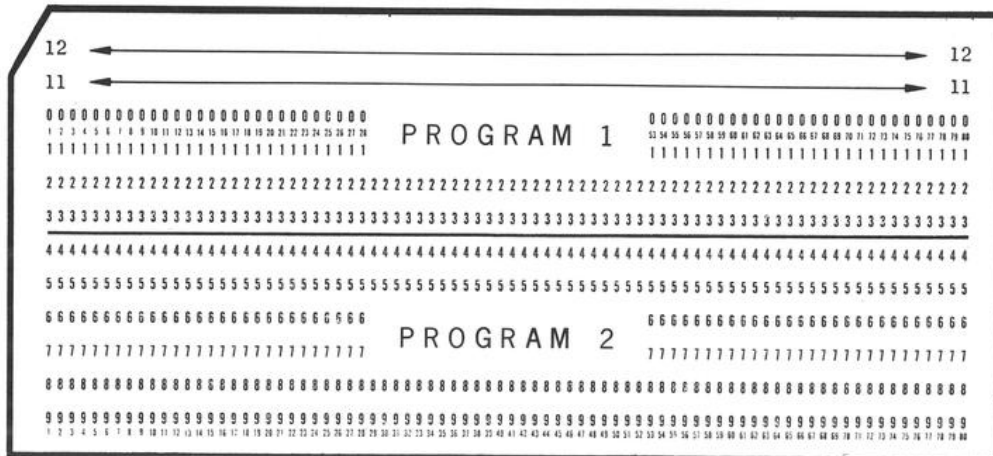
Program 1 uses the six Storage and Card Positions 12, 11, 0 - 3.
Program 2 uses the other six Storage and Card Positions 4 - 9.

Most of the Program Codes use only one position; others use two or even three positions.

With a VP, the Program Codes control the entering of data into Data Input Storage. These operations include; Skip, Duplicate, ALPHA Shift, and Stop Right Justify.

With a VIP, the Program Codes control at two different times, during the entering of data into Data Input Storage and, again, during the printing of data from Data Output Storage.

⊠ The operations affecting the entry of data are the same as those for a VP and, in addition, Early Feed.

⊠ The operations controlling printing (print editing) are; Non-Print, Suppress Left Zero Print, 11/12 Print Elimination, and Early Feed.

In the case of two Programs being used during one job, the Program for which the Program Selection Switch is set (Program 1 or Program 2) is called the, "Basic Program." The other Program (Program 2 or Program 1), obtained by pressing the PROG ALT key is called the, "Alternate Program."

With a VIP when you are using two Programs (Basic and Alternate) to control one Key Punching application and are using the PROG ALT key to switch to the Alternate Program:

⊠ Each entry operation is under the control of the Program (Basic or Alternate) that is in effect at the time you are making that entry.

⊠ The printing is always under the control of the Program determined by the setting of the Program Selection Switch.

By the way, the Program Codes we gave you before were those for Program 1. There is another set for Program 2. Both sets of Program Codes are included in the following explanations, the Program 2 code is given in parentheses.

VP PROGRAM CODES

The VP Program Codes for Key Punching are shown in the unshaded part of the VP Program Code Chart.

CODES		WHERE PUNCHED in a PROGRAM CARD FIELD	FUNCTION	
PROG. 1	PROG. 2		KEY PUNCHING	VERIFYING
12	4	Each column except first	Field Definition	Field Definition
11	5	First column only	Start Skip	Start Bypass
0	6	First column only	Start Duplicate	Start Duplicate
1	7	Each column required	ALPHA Shift	ALPHA Shift
2	8	Each column required	Not significant	11/12 Verify Elimination
11-1	5-7	First column only	Not significant	Start Right Justify
12-11-1	4-5-7	Last column only	Stop Right Justify	Stop Right Justify

Code 12 (4) - Field Definition

This code is needed in both the Manual and Automatic Modes to continue an operation once it has been started either by a Program Code or by an Operating Control key. Field Definition also determines the number of columns included in the operation.

Multiple column Skipping and Duplicating as well as Right Justifying require Field Definition.

For Field Definition to work, Code 12 (4) must be in the Program column immediately following the column on which the operation is started; then in each column after that for as many columns as are needed to complete the operation.

Field Definition usually includes only one card field although it can include two or more adjacent card fields.

Code 11 (5) - Start Skip

Skipping is used when a column or field is to be blank.

In the Automatic Mode, a Skipping operation starts automatically when the Column Indicator and storage are advanced into a column containing Code 11 (5) in the Program. Field Definition continues the operation through the field.

In the Manual Mode, the presence of this code in the Program has no effect. The SKIP key is used to start a Skipping operation which will continue through to the right margin regardless of any Field Definition.

All of the columns Skipped are erased to the Space code (made blank).

Code 0 (6) - Start Duplicate

Duplicating is used when the data in a column or field is to be the same as that of the preceding card.

In the Automatic Mode, a Duplicating operation starts automatically when the Column Indicator and storage are advanced into a column containing Code 0 (6) in the Program.

In the Manual Mode, the presence of this code in the Program has no effect. The DUP key is used to start a Duplicating operation.

In either case, Field Definition continues the operation.

None of the columns Duplicated is erased, they remain the same.

Code 1 (7) - ALPHA Shift

This is the code mentioned in the previous section in the description of the Character keys and the NUMERIC and ALPHA Operating Control keys.

This code functions only in the Automatic Mode; it has no effect in the Manual Mode.

Code 1 (7) must be in every one of the Program columns where ALPHA Shift is wanted.

In the Automatic Mode as you remember, the Character Keybank will be in the NUMERIC Shift (upper half key characters) for all columns except those programmed for ALPHA Shift (lower half key characters).

When you are making the Program Card for an application, you will know that some fields will always have mostly alphabetical information for all columns of the field; there may be some numerical characters. Name, Address, and Description are fields like this. In the Program Card, all columns for these fields will have Code 1 (7).

On the other hand, within some fields, certain columns will always or almost always be alphabetical while the other columns in the same field will be numerical. Many Catalogue Number fields are like this. In this case, only the "alphabetical" columns for that field will have Code 1 (7).

Code 12-11-1 (4-5-7) - Stop Right Justify

This code holds the Column Indicator and storage entry in the units (last) column of a Right Justified field until an RJ key is pressed. It functions only in the Automatic Mode.

In the Manual Mode, this code acts as Field Definition.

In the design of a card form, the number of card columns provided for an amount field is usually determined by the largest amount that may be found in the documents from which that card is punched. You may not find these large amounts very often in the documents you are given.

When you do find these large amounts, the use of the Right Justify Stop code in the Program allows you to enter them just as you would any other amount.

If the number of characters you attempt to enter exceeds the capacity of the field, the code for the first excess character will be allowed to enter. At that time, the Non-Match indicator will light and the Keyboard will interlock.

The Stop Right Justify will <u>not</u> stop the advance at the units column of a field if the advance is obtained by the use of either the SKIP, DUP, or COL DUP key.

NOTE: On the VP Program Code Chart, Code 11-1 (5-7) is listed under Key Punching but is shaded. This code is for Verifying a Right Justified field. More about that when we describe Verifying.

For many applications, the same Program Card is used when Key Punching and when Verifying. When Key Punching, Code 11-1 (5-7) in the Program Card has no effect.

VIP PROGRAM CODES

The VIP Program Codes for Key Punching are shown in the unshaded part
of the VIP Program Code Chart.

CODES		WHERE PUNCHED in a PROGRAM CARD FIELD	FUNCTION		
PROG. 1	PROG. 2		KEY PUNCHING	VERIFYING	INTERPRETING
12	4	Each column except first	Field Definition	Field Definition	Field Definition
11	5	First column only	Start Skip and Non-Print	Start Bypass and Non-Print	Start Non-Print
0	6	First column only	Start Duplicate	Start Duplicate	Start Duplicate
1	7	Each column re-quired	ALPHA Shift	ALPHA Shift	Not significant
2	8	First column only	Start Suppress Left Zero Print	Start Suppress Left Zero Print	Start Suppress Left Zero Print
2	8	Each column re-quired except first	11/12 Print Elimination	11/12 Print Elimination	11/12 Print Elimination
3	9	First column fol-lowing last column to be used	Start Early Feed Non-Print balance of card	Start Bypass and Non-Print balance of card	Start Early Feed Non-Print balance of card
11-2	5-8	First column only	Start Skip and Print	Start Bypass and Print	Start Print
11-1	5-7	First column only	Not significant	Start Right Justify	Not significant
12-11-1	4-5-7	Last column only	Stop Right Justify	Stop Right Justify	Field Definition

As you know, the important difference between a VP and a VIP is the
ability of the VIP to print. If the Print switch is set at PRINT, the
characters for each code in Data Output Storage will print in the same
column as its code is punched. There is no printing for a blank column.

The VIP Program Codes provide for controlling ("editing" as we call it)
this printing. In addition, Early Feed is included in the VIP Program
codes.

The basic codes; Field Definition, Start Skip, Start Duplicate, ALPHA
Shift, and Stop Right Justify do the same thing in a VIP Program as
they do with a VP Program.

Code 11 (5) - Start Skip and Non-Print
Code 11-2 (5-8) - Start Skip and Print

Although any column Skipped would be blank anyhow, the difference in
the print editing part of these two codes allows for a two Program
(Basic and Alternate) application where the PROG ALT key is used to
switch Programs.

When the columns to be Skipped in the Basic Program are to be punched in the Alternate Program, you would make a choice in the Basic Program between Code 11 (5), Non-Print and Code 11-2 (5-8), Print according to whether those columns of the card for the Alternate Program are to be printed or not.

Code 2 (8) - Start Suppress Left Zero Print or
          11/12 Print Elimination

In the Automatic Mode, this code can serve either one of two purposes:

Start Suppress Left Zero Print

In many cases, especially Quantity and Amount fields, zeros will be punched to the left of the most significant character in the field. This will happen automatically when Right Justify with Zero Fill is used. When printing however, only the significant characters are to print; not the zeros to the left. Like this:

> Punch ---- 0 0 0 1 2 8
>
> Print ----   1 2 8
>
> Code 2 (8) ⬆

To do this, the first column of the field has Code 2 (8) in the Program.

- When the first column is zero and for each zero column immediately following, there will be no zero printing.

- When a column containing a code other than zero is found, printing resumes even for following zeros.

11/12 Print Elimination

There are times when either Position 11, Position 12, or both Positions 11 and 12 are punched in the same column as a code using Positions 0 - 9. This latter would usually be a numeral.

This happens automatically when the –RJ key is used to enter Position 11 in the units column of a field Right Justified. When printing however, only the character for the code punched in Positions 0 - 9 is to be printed. Like this:

>   11
> Punch ---- 0 0 0 1 2 0
>
> Print ---- 0 0 0 1 2 0
>
> Code 2 (8) ⬆

Code 2 (8) can be used for both of its purposes in one field. Again, Right Justify can be used as the example:

```
                                      11
                    Punch ---- 0 0 0 1 2 0

                    Print ----         1 2 0

              Code 2 (8) ────────┴──────┘
```
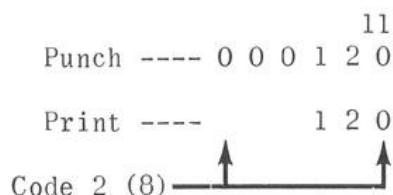
Code 2 (8) serves no function in the Manual Mode.

When Code 2 (8) is used in a two Program (Basic and Alternate) appli-
cation where the PROG ALT key is used to switch Programs, the code
in the Basic Program controls print editing for both Programs:

▪ When Code 2 (8) is specified in the <u>first column</u> of a field in
the Basic Program, it will, of course, act as Start Suppress Left
Zero Print when the Basic Program is in effect.

  - It will act as Start Suppress Left Zero Print if that same col-
    umn of the Alternate Program is also specified as the first
    column of a field.

  - If that column of the Alternate Program is not the first col-
    umn of a field but is punched with a zero in a card related to
    the Alternate Program, Left Zero Print Suppression will start
    and continue for all following columns punched with zeros in
    that field of that card.

  - If that column in a card related to either the Basic Program
    or the Alternate Program contains a code other than the zero
    only, Code 2 (8) has no effect.

▪ When Code 2 (8) is specified in the Basic Program in any column
of a field except the first, it will perform 11/12 Print Elimina-
tion in that column of the cards related to both the Basic and
Alternate Programs.

  In this case if an alphabetical or special character using the 11
  or 12 position is punched in this column of the card related to
  the Alternate Program, the true character will not be printed.

Code 3 (9) - Start Early Feed and Non-Print

  In the Keyboard section when we were describing the FEED key (Oper-
  ating Control Keys), we mentioned that Early Feed could be program-
  med to cause a Card Feeding Cycle in the Automatic Mode.

  There are many applications when you will have entered all of the
  data necessary for the card punching at a column well before Column
  80 is reached.

  In these cases, Early Feed should be programmed for the column imme-
  diately after the column where the data entry ends. Then, just as
  soon as the last column of entry is made, a Card Feeding Cycle will
  start. This saves a Skipping operation through Column 80 to get the
  Automatic Feed or pressing the FEED key.

The Start Early Feed code causes these operations during the entry and output for a card:

☒ If effective during entry:

- An automatic Skip occurs from the column programmed for Early Feed through Column 80. Any data in those columns is erased.

- A Card Feeding Cycle is started.

☒ If effective during output:

- A Non-Print operation is started on the column programmed for Early Feed and continues through Column 80.

- Punching stops on the column programmed for Early Feed. Eject rolls grab the card immediately and send it to the Output Stacker. This action occurs regardless of whether the PRINT switch is On or Off.

These two phases of the Early Feed operation should be kept in mind when planning a two Program (Basic and Alternate) application where the PROG ALT key is to be used to switch Programs and Early Feed is to be used.

KP-5 SECTION

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Program Code Combinations

When you are preparing a Program, there are times when more than one operation is to be performed on one column. The following charts show the Program Codes that may be combined. There is a chart for the VP and another for the VIP.

VP – Verifying Punch

12 4	11 5	0 6	1 7	2 8	3 9	Program 1 Program 2
X			X			Field Def. & ALPHA
X				X		Field Def. & 11/12 VE
X			X	X		Field Def. & ALPHA & 11/12 VE
			X	X		ALPHA & 11/12 VE
	X		X	X		Start RJ & 11/12 VE
X	X		X	X		Stop RJ & 11/12 VE

VIP – Verifying Interpreting Punch

12 4	11 5	0 6	1 7	2 8	3 9	Program 1 Program 2
	X		X	X		Start RJ & Supp. LZP
X	X		X	X		Stop RJ & 11/12 PE
X			X			Field Def. & ALPHA
X				X		Field Def. & 11/12 PE
X			X	X		Field Def. & ALPHA & 11/12 PE
		X		X		Start Dup. & Supp. LZP

The combination of Code 0 (6) – Start Duplicate and Code 1 (7) – ALPHA Shift in one column is not valid for both the VP and VIP. If this 0 & 1 (6 & 7) combination is used, it will act as Stop Right Justify.

The combination of Code 1 (7) – ALPHA Shift and Code 2 (8) – Start Suppress Left Zero Print is not valid for a VIP. If this 1 & 2 (7 & 8) combination is used, it will act as Early Feed.

PROGRAMMED OPERATIONS

In this section, the various Key Punching operations that can be programmed are explained with examples showing some of the uses for each operation. At the end of the section are examples of complete Programs.

When you do your own programming, it is best to plan on using the Automatic Mode to take advantage of all of the operations that are done for you including the Automatic Feed.

If the application includes special or different punching for some of the cards, either a second Program can be used or a switch to the Manual Mode can be made for them.

An incidental advantage to the use of the Automatic Mode, but an advantage that is most important to you, is that it helps maintain the accuracy of your work.

▨ The use of the automatic ALPHA Shift helps keep you in the proper shift so that you enter the right character codes.

▨ The use of operations such as Duplicating and Skipping started automatically by Program control helps you to keep your entries in the proper columns. When a field is followed by an automatic Skipping or Duplicating operation or, with the VIP, an Early Feed:

- If the operation starts before you have finished your entry for that field, too many columns or data have been entered.

- If you finish your entry and the operation does not start, one or more columns of data are missing.

▨ The Stop Right Justify can be used to prevent you from exceeding the capacity of a field and also to warn you if you try.

NOTE: In the examples of the individual operations, Program 1 codes are used. Program 2 codes will produce the same results.

SKIPPING

In the Automatic Mode, Skipping may be started by Code 11 (5), Code 11-2 (5-8), or by pressing the SKIP key. As a general rule:

▨ When Skipping is always to start at a definite card column, use Code 11 (5), Non-Print or Code 11-2 (5-8), Print. Refer to the description of these codes in the previous section if you are programming a VIP with a two Program application using the PROG ALT key.

▨ When other operations in addition to Skipping may be started or performed at a definite card column or where the starting column is not fixed, use the SKIP key.

Skipping can be Program controlled in the Automatic Mode and may be started by Skip code or by pressing the SKIP key. In the Manual Mode, pressing the SKIP key always causes a Skipping operation clear through to the right margin.

1. The DESCRIPTION (Columns 30 - 49) and C (Column 55) fields are never to be punched and should be blank. In the Program Card:

- ⊠ Code 11 in Column 30 starts the Skip.
- ⊠ Code 12 in Columns 31 - 49 continues the operation through the Description.
- ⊠ Code 11 in Column 55 causes a Space.

2. In this case, the Description field is to be punched but the length of the description will vary from card to card. Incidentally, the description is alphabetical. In the Program Card:

- ⊠ Column 30 does not have the Skip code so that the Description can be entered.
- ⊠ Columns 31 - 49 contain Code 12 to continue a Skip once it is started by the SKIP key.
- ⊠ Columns 30 - 49 contain Code 1 to put the Character Keybank in the ALPHA Shift for the field.

When a description is shorter than the length of the field, the SKIP key is pressed to Skip through the rest of the field. This makes sure that any setup remaining from the previous card in the unfilled columns will be erased.

For example: This is a 20-column Description field. If the description in the previous card used 19 columns (Columns 30 - 48) and that for the present card uses only 10 columns (Columns 30 - 39), The Skip clears out the setup that would have remained in storage for Columns 40 - 49.

3. The punching is to start at Column 20 (CATALOGUE NO) rather than Column 1. In the Program Card:
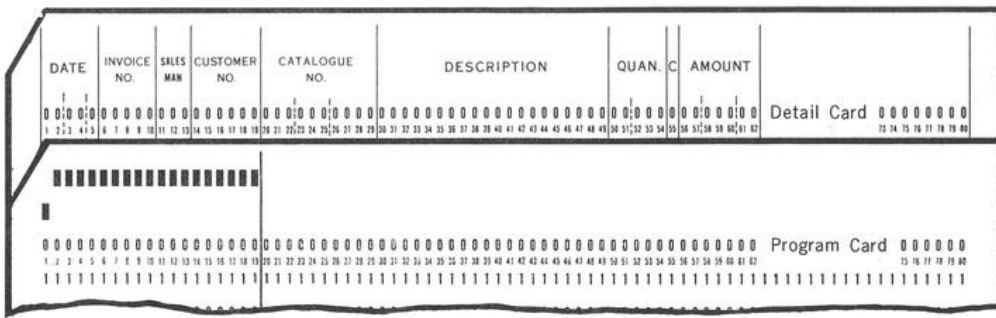
▣ Code 11 in Column 1 starts the Skip.
▣ Code 12 in Columns 2 - 19 continues the operation to the first column of the Catalogue No. field.

On a Card Feeding Cycle, Card Eject Cycle, or after pressing the HOME key, as soon as the Column Indicator and storage are indexed to Column 1, they will immediately index to Column 20.

4. With the VP, when the punching ends at a column to the left of Column 80, a Skip can be programmed so that you get the Card Feeding Cycle with the Automatic Feed rather than by pressing the FEED key.

With a VIP, this would be done with the Early Feed.

In this example, the punching ends with the Amount field. In the Program Card:
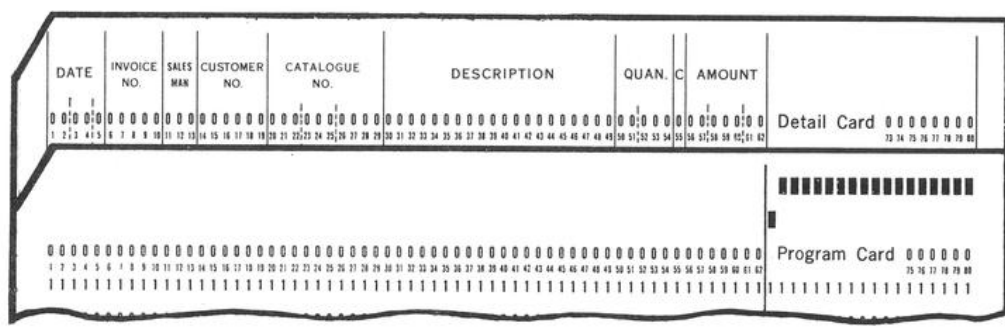
▣ Code 11 in Column 63 starts the Skip.
▣ Code 12 in Columns 64 - 80 continues the operation to the right margin.

5. The automatic Skip is used to Space very rapidly to a fixed point within a field. You would then use either the Space bar or the Backspace key, if necessary, to index to the column you want.

In this example, the Amounts are usually in the one dollar range. In the Program Card:

▣ Code 11 in Column 56 starts the Skip.
▣ Code 12 in Columns 57 - 59 continues the Skip to Column 60.

You would usually do this type of operation by using Right Justify with Blank Fill (see below).

DUPLICATING

Duplicating can be started automatically by Code 0 (6) in the Automatic Mode. Pressing the DUP key will start the operation in both the Automatic and Manual Modes. The number of columns Duplicated is determined by the Field Definition in both modes.

1. The same DATE (Columns 1 - 5) and C (Column 55) are to be Duplicated in all cards for a batch. In the Program Card:

⊠ Code 0 in Column 1 starts the Duplicating operation.
⊠ Code 12 in Columns 2 - 5 continues the operation through Date.
⊠ Code 0 in Column 55 causes single-column Duplicating.

Before starting to punch the cards for each batch, set the VP or VIP in the Manual Mode. Enter the Date and C for that batch. Set in the Automatic Mode for the card punching.

2. For the documents within a batch, certain like information is punched in all of the cards for each document but will change from document to document.

The same INVOICE, SALESMAN, and CUSTOMER Numbers are punched in all of the cards for one document (invoice). In the Program Card:

⊠ Column 6 is blank so that you can enter the information for the first card of each document and then can use the DUP key to Duplicate that information in the following cards for that document.
⊠ Code 12 in Columns 7 - 19 continues the Duplicating operation once it has been started.

This programming applies to both the Automatic and Manual Modes.

3. For the individual documents within a batch, certain information is to be duplicated in all of the cards while other information will be Duplicated in most of the cards but will not be punched in the rest. All information can change from document to document.

The same INVOICE and SALESMAN Numbers are punched in all of the cards for an invoice. The CUSTOMER Number is punched in all cards except one or two at the end of some of the invoices. In the Program Card:

▪ Column 6 is blank so that the Invoice and Salesman Numbers can be entered for the first card and the DUP key can be used to Duplicate this information for the following cards.
▪ Code 12 in Columns 7 - 13 continues this Duplicating operation once it has been started.
▪ Column 14 is blank so that the Customer Number can be entered for the first card and:

- The DUP key can be pressed for all following cards to Duplicate the Customer Number entered, or

- The SKIP key can be pressed to clear out the Customer Number field for those cards where this field is to be blank.

▪ Code 12 in Columns 15 - 19 continues the Duplicating or Skipping.

This programming applies to both the Automatic and Manual Modes.

4. For the automatic GANGPUNCHING we mentioned before, a Program Card containing Code 0 in Column 1 and Code 12 in Columns 2 - 80 is used.

ALPHA SHIFT

In example 2 under Skipping, you are shown the programming of ALPHA Shift for a card field (Description). In this example, the Catalogue Number will usually have alphabetical characters in Columns 23, 24, and 25. The characters entered into Columns 20 - 22 and 26 - 29 will usually be numerical. In the Program Card:

⊠ Code 1 is in Columns 23 - 25.
⊠ Columns 20 - 22 and 26 - 29 do not contain Code 1.

As you index through the Catalogue Number; Columns 20 - 22 will be in the NUMERIC Shift, Columns 23 - 25 will be in the ALPHA Shift, and Columns 26 - 29 back in the NUMERIC Shift.

⊠ If you must enter a numerical character in Columns 23, 24, or 25, hold the NUMERIC key pressed while you press the Character key.

⊠ If an alphabetical character is to be entered in Columns 20 - 22 or 26 - 29, hold the ALPHA key pressed while pressing the Character key.

This programming applies only to the Automatic Mode.

RIGHT JUSTIFY

For Right Justifying in a field when Key Punching in either the Manual
or Automatic Mode, all of the programming required is Field Definition
in all columns of that field except the first column. In addition in
the Automatic Mode however, you have the option of using the Stop Right
Justify code in the last column of the field.

The digits entered into the AMOUNT field (Columns 56 - 62) are to be
Right Justified. Once the digits are entered and the RJ (+ or -) key
is pressed, the operation is continued and completed automatically by
the Code 12 (Field Definition) in Columns 57 - 62.

Whenever possible, you should use the Stop Right Justify; no keystrokes
or time are saved by not using it. It gives uniformity of operation
and provides you with an automatic warning of an error.

When Stop Right Justify is used, you cannot advance out of that Field
until an RJ key is pressed:

☒ For this reason, you use the same operations for that field of en-
   tering the digits and pressing an RJ key regardless of the number of
   digits you are required to enter. You are not concerned with look-
   ing out for a full field.

☒ If you try to enter more characters than the field will hold, this
   will happen:

   - The first one of the extra characters will enter.

   - The Non-Match indicator lights and the Keyboard interlocks right
     after this extra entry is made.

   After you have found out whether you are wrong or the document is in
   error, you press the CLEAR key so that you can proceed with whatever
   action you wish to take.

In the following example, the field is programmed to include the Stop
Right Justify code. An attempt is made to enter an 8-digit amount
(1426829<u>0</u>) in the 7-column AMOUNT field. The excess digit (0) enters
the units column together with the preceding digit (9). The Non-Match
indicator then turns on to indicate the improper entry.

EARLY FEED (VIP only)

The Early Feed requires only that its Program Code (3 or 9) be in the Program column immediately after the last column to be punched. Refer to the description of this code in the previous section if you are programming a two Program application using the PROG ALT key.

In this example, the AMOUNT (Columns 56 - 62) is the last field in the card. Just as soon as the last digit of the Amount is entered, the Early Feed (Column 63) will start a Card Feeding Cycle.

PRINT EDITING

When Key Punching in the Automatic Mode with a VIP, print editing is
included in the Skip and Early Feed codes already mentioned. In addi-
tion, print editing uses Code 2 (8) for either Start Suppress Left Zero
Print or for 11/12 Print Elimination or for both purposes.

Refer to the description of these codes in the previous section if you
are programming a two Program application using the PROG ALT key.

In this example, Right Justify is used to enter either a plus or minus
Amount. In the Program Card:

- ☒ Code 2 in Column 56 starts Left Zero Print Suppression.
- ☒ Code 12 in Columns 57 - 61 continues this operation as well as the
   Right Justify.
- ☒ Code 12-11-1 in Column 62 -- Stop Right Justify.
- ☒ Code 2 in Column 62 performs 11/12 Print Elimination for negative
   Amounts to allow the code punched in Positions 0 - 9 to print a
   numerical character.

PROGRAM EXAMPLE 1

This is an example of the programming for the Key Punching of Detail Cards from a typical sales invoice. Each invoice would usually have more than one item. Here is what you should know to make a Program Card for this application:

⊠ A VIP is to be used.

⊠ The invoices would be given to you in batches. The same Date is to be punched in all of the cards for each batch.

⊠ The same Invoice, Salesman, and Customer Numbers are to be punched in all of the cards for each invoice.

⊠ The characters in Columns 23, 24, and 25 of the Catalogue No. will be alphabetical.

⊠ The Description field is not to be punched.

⊠ The Quantity and Amount fields are to be Right Justified. Both the Quantity and the Amount can be plus or minus.

⊠ A code is to be punched in the "C" field.

⊠ The punching ends with the Amount field.

⊠ The Automatic Mode and Program 1 are to be used.

In the Program Card:
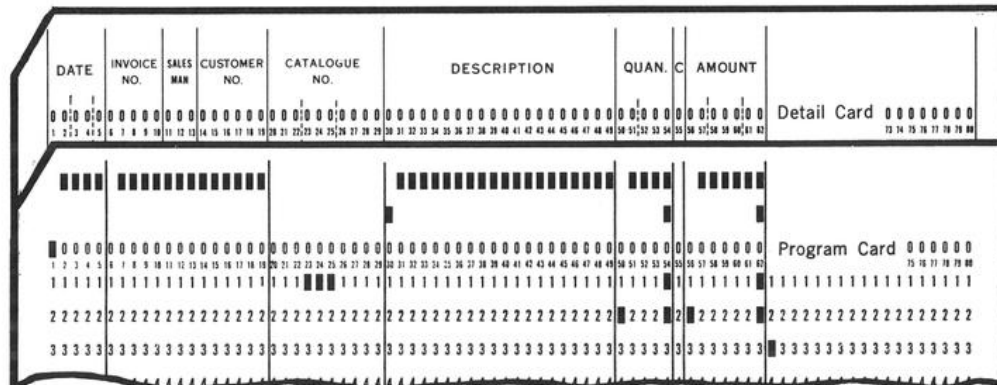
Date (Columns 1 - 5) - The Date would be entered in the Manual Mode before starting the punching of the Detail Cards for each batch.

  ⊠ Column 1, Code 0 starts the automatic Duplicating of the Date.
  ⊠ Columns 2 - 5, Code 12 continues the operation.

Invoice, Salesman, and Customer Numbers (Columns 6 - 19)

  ⊠ Column 6 is blank to allow:
    - Entry of these numbers for the first card of each invoice.
    - Pressing the DUP key for each following card of an invoice.
  ⊠ Columns 7 - 19, Code 12 continues a Duplicating operation started by the DUP key.

Catalogue Number (Columns 20 - 29)

- Columns 23, 24, and 25, Code 1 puts the Character Keybank in the ALPHA Shift for these columns.

Description (Columns 30 - 49)

- Column 30, Code 11 starts the automatic Skip.
- Columns 31 - 49, Code 12 continues the operation.

Quantity (Columns 50 - 54)

- Column 50, Code 2 starts Left Zero Print Suppression.
- Columns 51 - 53, Code 12 continues this operation and the Right Justify.
- Column 54, Code 12-11-1 -- Stop Right Justify.
- Column 54, Code 2 does 11/12 Print Elimination to let a number print in this column.

Amount (Columns 56 - 62)

- Column 56, Code 2 starts Left Zero Print Suppression.
- Columns 57 - 61, Code 12 continues this operation and the Right Justify.
- Column 62, Code 12-11-1 -- Stop Right Justify.
- Column 62, Code 2 does 11/12 Print Elimination to let a number print in this column.

Early Feed - Column 63, Code 3 starts a Card Feeding Cycle immediately.

NOTE: With a VP, an automatic Skip to the right margin will give you the Automatic Feed -- Code 11 in Column 63 and Code 12 in Columns 64 - 80.

PROGRAM EXAMPLE 2

Name and Address Cards are to be punched. The source for the punching lists the names of all of the companies by city. The address may or may not include a ZIP Code.

When the ZIP Code is not known, that field is to be blank.

Either a VP or VIP is used with the Automatic Mode and Program 2.

In the Program Card:

☒ Columns 7 - 75, Code 7 (ALPHA Shift). The majority of the characters in these fields will be alphabetical.

☒ Columns 1 - 6 are blank for the manual entry of the Customer Number.

☒ Column 7 is blank to allow entry of the Company Name.

☒ Column 32 is blank to allow entry of the Street Address.

☒ Column 57 is blank to allow a City and State to be entered or the DUP key to be pressed when the City and State is repeated.

☒ Column 76 is blank to allow the ZIP Code to be entered, the DUP key to be pressed when this code is repeated, or the SKIP key to be used when the ZIP Code is not known.

☒ Code 4 (Field Definition) is in all other columns to continue a Skipping or Duplicating operation once it is started.

With this card and Program design using all 80 columns, Automatic Feed will cause the Card Feeding Cycle.

PROGRAM EXAMPLE 3

This is a variation of Program Example 1 in that it provides a second Program for the punching of some special charges or credits that appear as the last items on some of the invoices. This gives you a typical example of switching Programs by pressing the PROG ALT key.

Program 1 (the Basic Program in this example) provides the control for the punching of the complete information required for the Detail Data Cards on the invoices. For the special Charge or Credit Data Cards however, only the Date, Invoice No., C (Code), and Amount are required. This is controlled by Program 2, the Auxiliary Program in the example.

Program 1 also provides the print editing control for both types of cards.

> NOTE: These two types of cards are shown in the Introduction under the title of Instant Duplicating and Skipping.

A VIP in the Automatic Mode is used for this example.

Detail Data Card - Program 1 (Program Selection Switch setting - PROG 1)

This Program is the same as that for Program Example 1 except for the addition of the Skip Code 11-2, Start Skip and Print in Column 55.

The Detail Data Cards are to be blank in Column 55 whereas a code will be punched in this column for the Charge or Credit Data Cards. The Skip Code 11-2 in this column of Program 1 makes certain the Column 55 of the Detail Data Cards will be blank but allows the code punched in this column of the Charge or Credit Data Cards to print.

Charge or Credit Data Card - Program 2

Date (Columns 1 - 5)

⊠ Column 1, Code 6 starts automatic Duplicating.
⊠ Columns 2 - 5, Code 4 continues the operation.

Invoice Number (Columns 6 - 10)

⊠ Column 6, Code 6 starts automatic Duplicating.
⊠ Columns 7 - 10, Code 4 continues the operation.

Salesman through Quantity (Columns 11 - 54)

⊠ Column 11, Code 5 starts automatic Skipping.
⊠ Columns 12 - 55, Code 4 continues the operation.

Amount (Columns 56 - 62)

⊠ Columns 57 - 61, Code 4 continues the Right Justify operation.
⊠ Column 62, Code 4-5-7 -- Stop Right Justify.

The print editing is controlled by the codes in Program 1, the Basic Program in this case:

⊠ Column 56, Code 2 starts Left Zero Print Suppression.
⊠ Columns 57 - 62, Code 12 continues the operation.
⊠ Column 62, Code 2 causes 11/12 Print Elimination.

Early Feed - Column 63, Code 9

When there is a charge or credit item on the invoice, this procedure is used:

⊠ After punching the last Detail Data Card on the invoice, the Column Indicator will be at Column 6 with Program 1 in control.

⊠ The PROG ALT key is pressed to switch to Program 2. This happens immediately and automatically:

- The Invoice Number in Columns 6 - 10 is Duplicated.

- Columns 11 - 54 are Skipped.

NOTE: With Code 6 (Start Duplicate) in Column 6 of Program 2, the switch to Program 2 by means of the PROG ALT key at this column causes the automatic operation to take place.

⊠ The code for the charge or credit is entered in Column 55.

⊠ The Amount of the charge or credit is entered (Columns 56 - 62) and the +RJ or -RJ key is pressed to Right Justify the entry. This happens.

- The Early Feed, Code 9 in Column 63, causes a Card Feeding Cycle.

- The Column Indicator will be at Column 6 and the Program Control will have switched back automatically to Program 1.

⊠ At this point:

- If there is another charge or credit on the invoice, press the
  PROG ALT key to switch to Program 2 and repeat the procedure.

- If there are no more items on the invoice, enter the number of
  the next invoice.

PROGRAM EXAMPLE 4

In this example, Program Example 1 and Program Example 2 are combined
with the Programs for both examples in one Program Card for use during
one application. The purpose of this example is to show the switching
of Programs by the use of the Program Selection Switch rather than the
PROG ALT key.

The application calls for the use of two card forms, Detail Card (Pro-
gram 1) and Name & Address Card (Program 2), during the punching from
sales invoices. All cards are to be printed.

The reason for punching the two card forms is to bring the Name & Ad-
dress file up to date at the time the Detail Cards are being punched.
Invoices for which there is no Name & Address Card are signalled so
that the operator knows that a Name & Address Card, as well as the De-
tail Cards, for those invoices are to be Key Punched.

As you know, the Program determined by the setting of the Program Sel-
ection Switch governs the Printing operation:

⊠ With card forms as different as these if the PROG ALT key is used,
   the print editing for the Basic Program (Program 1 in this case) may
   not be right for the printing of the card produced under the control
   of the Alternate Program.

⊠ By using the Program Selection Switch for the Program switching, the
   printing for each card is under the same Program control as its
   punching.

A VIP in the Automatic Mode is used for this example.

Detail Card - Program 1

   This Program is the same as that in Program Example 1.

   Although a setup will remain in Columns 63 - 80 from a Name & Ad-
   dress Card, these columns of storage will be cleared by the automa-
   tic Skip that occurs with the Early Feed of the first Detail Card
   immediately following.

Name & Address Card - Program 2

   This Program is the same as that in Program Example 2.

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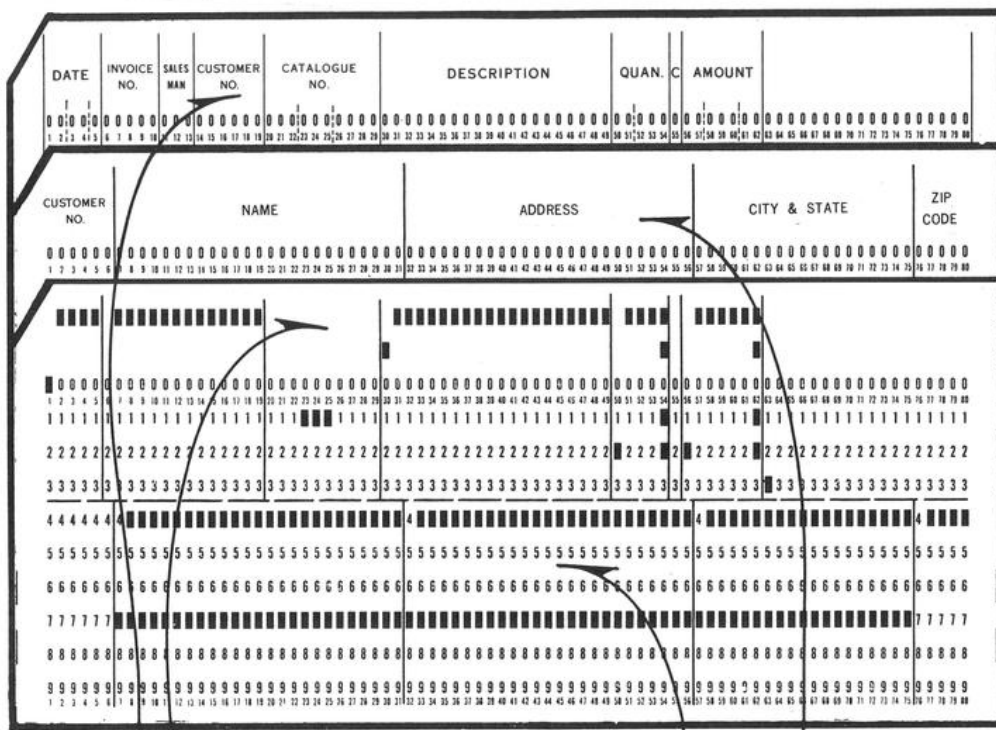
DETAIL CARD

NAME & ADDRESS CARD

PROGRAM 1 - Detail Card

PROGRAM 2 - Name & Address Card

To show you how these two Programs would work, this procedure is used:

⊠ When an invoice requiring a Name & Address Card is reached, the set-
ting of the Program Selection Switch is changed to Program 2 (PROG 2)
while the VIP is at rest on Column 6.

Although the switch setting has been changed, the Program control
will not be switched internally (Program 1 to Program 2 in this case)
until a Card Feeding Cycle is taken or the HOME key is pressed.

⊠ A blank Name & Address Card is inserted in the Auxiliary Input and
the FEED key pressed. As this card feeds to the Visible Station,
the Detail Card from the Visible Station is punched and fed to the
Select Stacker. This is an excess card.

At this time, the Program switches internally from Program 1 to Pro-
gram 2. The Column Indicator and storage are indexed to Column 1.

⊠ The setup for the Name & Address Card is made and the card punched
by the Automatic Feed. A Detail Card feeds from the Magazine to the
Visible Station.

⊠ The Program Selection Switch is returned to Program 1 (PROG 1) while
the VIP is at rest on Column 1.

Despite the fact that Column 1 contains Code 6 (Start Duplicate) in
Program 1, the automatic Duplicating operation will not start. The
Program control has not, as yet, switched internally to Program 1.

☒ The Date is reentered in Columns 1 - 5 and the HOME key is pressed:

- At this time, the Program switches internally from Program 2 to Program 1.

- The Date is Duplicated automatically.

- The Detail Card punching is resumed at Column 6.

OPERATION

This section tells you how to do some of the operations required of you as a VP or VIP Key Punch operator. We cannot say that this is exactly the way these operations must be done by you at all times. You may find a better way to do the job or a different method may be needed. Your Supervisor is the final authority.

With the many abilities of the Verifying Punch and the Verifying Interpreting Punch, you can find the best way to do any job if you know your machine well enough.

If you have a question about the detail of any of the controls mentioned in these procedures, you are given the source (in parentheses) of that information in the preceding sections.

PREPARING FOR OPERATION

At the start of a Key Punching operation, here is a suggested series of steps to be followed:

1. Load the Magazine with a supply of the cards to be punched. (See External Features, Input Magazine)

2. Turn on the power by pressing in on the upper half of the Power Switch. (See External Features, Power Switch)

3. Set the Punch-Verify Switch at PUNCH.
   Set the Print Switch of a VIP at PRINT if the cards are to be printed. (See Keyboard, Function Control Switches)

4. Set the Program Selection Switch at PROG 1 or PROG 2. (See Keyboard, Program Selection Switch)

5. If Right Justify is to be used, set the Right Justify Fill Switch at ZERO FILL or BLANK FILL. (See Keyboard, Right Justify Fill Switch)

6. Enter the Program. Do this:

   ⊠ Set in the Program Mode. (See Keyboard, Mode Control Switches)

   ⊠ Insert the Program Card in the Auxiliary Input. (See External Features, Auxiliary Input)

   ⊠ Press the FEED key. (See Keyboard, Operating Control Keys, FEED)

   ⊠ Remove the Program Card from the Select Stacker. (See External Features, Stackers)

7. Clear Data Input Storage. Do this:

   ⊠ Set in the Manual Mode. (See Keyboard, Mode Control Switches)

- ☒ Press the SKIP key <u>twice</u>. (See Keyboard, Operating Control Keys, SKIP)

    NOTE: This clears the Program from Data Input Storage.

8. Enter any Constant Data. This is the data to be Duplicated in one or more of the batches or groups. This may be done in several ways:

   a. Master Card Entry - If you are provided with prepunched cards (Master Cards) containing the data to be Duplicated, do this:

      - ☒ Set in the Load Data Mode. (See Keyboard, Mode Control Switches)

      - ☒ Insert the Master Card in the Auxiliary Input.

      - ☒ Press the FEED key.

      - ☒ Remove the Master Card from the Select Stacker.

   b. Keyboard (Manual) Entry - If the information to be Duplicated is to be entered manually, do this:

      - ☒ Set in the Manual Mode.

      - ☒ Enter the data in the proper columns by means of the Character keys.

      - ☒ To be sure the entry you made is right; press the FEED key to feed a blank card from the Magazine, press the CLEAR key to remove a Keyboard Interlock, press the FEED key again to punch (and print) the card, and to deliver it to the Output Stacker. Remove the card and check it.

      - ☒ If you find a mistake; just go to the column in error, press the right Character key, press the FEED key again so that you get another card to check to be sure you are now right.

   c. Master Card and Manual Entry - You may need to add to the data entered from a Master Card or make some change to that data. Do this:

      - ☒ Use procedure 8a to make the Master Card entry.

      - ☒ Use the COL DUP key to index the Column Indicator to the first column of the added or changed entry. (See Keyboard, Operating Control Keys, COL DUP)

           IMPORTANT: Never use the Space bar to make this advance; you will erase data already entered from the Master Card.

      - ☒ Check the completed entry (see 8b above).

9. Set the Mode of Operation (Automatic or Manual) to be used for the Key Punching.

If there is no card in the Visible Station, press the FEED key to feed a card from the Magazine. Press the CLEAR key to release any Keyboard Interlock.

The VP or VIP is ready for operation.

INTERSPERSED MASTER CARD ENTRY

Some applications require that the Constant Data be changed from group
to group by means of Master Cards given to you with the documents. When
a change is to be made to the Constant Data, do this at that time:

1. Leave the supply of cards in the Input Magazine.

2. Enter the Constant Data from the Master Card. Do this:

   ⊠ Set in the Load Data Mode. (See Keyboard, Mode Control Switches)

   ⊠ Insert the Master Card in the Auxiliary Input. (See External Fea-
     tures, Auxiliary Input)

   ⊠ Press the FEED key. The Master Card is read and fed to the Select
     Stacker. (See Keyboard, Operating Control Keys, FEED)

       NOTE: The blank card in the Visible Station at the time the
              FEED key is pressed will also feed to the Select Stacker
              without being punched (or printed).

   ⊠ Remove the Master Card and the blank card from the Select Stacker.
     (See External Features, Stackers)

   ⊠ The entry of the Master Card clears all previous data from Data
     Storage. If any of the data that was in storage before entering
     the Master Card must be reentered, enter that data from the Key-
     board in the Manual Mode.

       IMPORTANT: Any advance of the Column Indicator to the first
                   column of entry at this time is made with the COL DUP key
                   rather than the Space bar. (See Keyboard, Operating Con-
                   trol Keys, COL DUP)

3. Returning to Key Punching. Do this:

   ⊠ Reset the Operating Mode switch to the original Mode of Operation.

   ⊠ Insert the blank card from the Select Stacker in the Auxiliary
     Input.

   ⊠ Press the FEED key to feed that card to the Visible Station.

   ⊠ Press the CLEAR key to release the Keyboard Interlock. This in-
     terlock occurs because no card fed from the Visible Station at
     that time. (See Keyboard, Operating Control Keys, CLEAR)

Continue with the Key Punching.

REMAKING DAMAGED CARDS

You will be called on at times to interrupt your regular work to remake cards damaged during processing by other machines. This card remaking can be done either automatically or manually. You will soon be able to judge, better than we can tell you, which method to use for individual cards.

If the card is in one piece and not very severely torn, straighten it out as well as you can and do this:

1. Leave the supply of cards for you regular work in the Input Magazine.

2. Enter the data from the damaged card automatically like this:

   ☒ Set in the Load Data Mode. (See Keyboard, Mode Control Switches)

   ☒ Insert the damaged card in the Auxiliary Input. (See External Features, Auxiliary Input)

   ☒ Press the FEED key. The damaged card is read and fed to the Select Stacker. (See Keyboard, Operating Control Keys, FEED)

      NOTE: The blank card in the Visible Station at the time the FEED key is pressed is also fed to the Select Stacker without being punched (or printed).

   ☒ The setup read from the damaged card is in Data Storage.

   ☒ Remove the damaged card and the blank card from the Select Stacker. (See External Features, Stackers)

3. Punch a new card. Do this:

   ☒ Set in the Manual Mode. (See Keyboard, Mode Control Switches)

   ☒ Insert a blank card in the Auxiliary Input. If the blank card from the Select Stacker is the same card form as the damaged card, use it.

   ☒ Press the FEED key once to feed the blank card from the Auxiliary Input to the Visible Station.

   ☒ Press the CLEAR key to release the Keyboard Interlock which happens because no card fed from the Visible Station to the Output Stacker. (See Keyboard, Operating Control Keys, CLEAR)

   ☒ Press the FEED key again. The blank card is punched (and printed) and fed to the Output Stacker. A card feeds from the Magazine to the Visible Station.

4. Check the remade card. Do this:

   ☒ Remove the remade card from the Output Stacker and compare it with the damaged card. If the damage to the card caused misreading, correct the setup and punch a new card.

⊠ When you are sure the remade card is the same as the original, damaged card, return both the original and the remade card to the person who gave you the damaged card.

5. Return to your regular work. If you were Duplicating part of the data, you can restore that setup this way before you start:

⊠ Set in the Load Data Mode.

⊠ Take the last punched card of your regular work from the Output Stacker and insert it in the Auxiliary Input.

⊠ Press the FEED key. The punched card is read and fed to the Select Stacker together with the blank card in the Visible Station at that time.

⊠ Return the punched card to its place in the Output Stacker. Insert the blank card in the Auxiliary Input and press the FEED key to feed that card to the Visible Station.

⊠ Press the CLEAR key to release the Keyboard Interlock.

If the card is not in one piece or it is very badly torn, the procedure is the same as that you just read with the exception of paragraphs 2 and 3. Instead of that part of the procedure, do this:

⊠ Set in the Manual Mode.

⊠ Enter the entire setup from the damaged card manually from the Keyboard.

⊠ If the card form is the same as that of the blank card already in the Visible Station, press the FEED key to punch (and print) and deliver that card to the Output Stacker.

⊠ If the card form differs from that in the Visible Station, insert the proper blank form in the Auxiliary Input. Press the FEED key twice to punch (and print) and deliver that card to the Output Stacker.

CORRECTING CARDS

One of your routine jobs is to interrupt your regular work to make card corrections. When a punched card is found to be in error, a common practice is to note the correct information on the surface of that card and to relate it to the column or columns to which it applies so that you know where to make the change. Your Supervisor will show you how this is done.

1. If the incorrect cards are punched in a different card form than that you are using for your regular work, you can either remove the cards from the Input Magazine and put in a sufficient supply of the different card form or feed the blank cards through the Auxiliary Input. This would depend on the number of cards to be corrected at one time.

2. Enter the data from the incorrect card automatically like this:

   ◻ Set in the Load Data Mode. (See Keyboard, Mode Control Switches)

   ◻ Insert the incorrect card in the Auxiliary Input. (See External Features, Auxiliary Input)

   ◻ Press the FEED key. The incorrect card is read and fed to the Select Stacker. (See Keyboard, Operating Control Keys, FEED)

      NOTE: A blank card in the Visible Station at the time the FEED key is pressed is also fed to the Select Stacker.

   ◻ The setup read from the incorrect card is in Data Storage.

   ◻ Remove the incorrect card and the blank card from the Select Stacker. (See External Features, Stackers)

3. Correct the setup and punch a new card. Do this:

   ◻ Set in the Manual Mode. (See Keyboard, Mode Control Switches)

   ◻ With the marked incorrect card as your guide, index the Column Indicator to where the correction is to be made and enter the proper data.

      IMPORTANT: Use the COL DUP key for this advance rather than the Space bar so as not to erase the correct portion of the setup. (See Keyboard, Operating Control Keys, COL DUP)

   ◻ Insert the proper card form in the Auxiliary Input.

   ◻ Press the FEED key to feed that card to the Visible Station.

   ◻ Press the CLEAR key to release the Keyboard Interlock caused by no card feeding from the Visible Station to the Output Stacker. (See Keyboard, Operating Control Keys, CLEAR)

   ◻ Press the FEED key again. The blank card is punched (and printed) and fed to the Output Stacker. A card feeds from the Magazine to the Visible Station.

4. Check the new card. Do this:

   ⊠ Remove the new card from the Output Stacker and compare it with
   the incorrect card. If the new card is not correct, correct the
   setup and punch another card.

   ⊠ When you are sure the new card is right, keep it with the origi-
   nal incorrect card so that both cards are returned to the proper
   person.

At this point, if more cards are to be corrected, repeat steps 2, 3,
and 4.

5. Return to your regular work when all of the corrections are made.

   See that you have a supply of the regular card form in the Input
   Magazine.

   If you were Duplicating part of the data, you can restore that setup
   this way before you start:

   ⊠ Set in the Load Data Mode.

   ⊠ Take the last punched card of your regular work from the Output
   Stacker and insert it in the Auxiliary Input.

   ⊠ Press the FEED key. The punched card is read and fed to the Sel-
   ect Stacker together with the blank card in the Visible Station
   at that time.

   Return the punched card to its place in the Output Stacker.

If you have a quantity of cards to be corrected at any one time or if it
is your assignment to make card corrections, we suggest you make a Pro-
gram Card for the purpose. This Correction Program can be either of
these:

⊠ If one card form is used more than others, leave the first column of
each field blank and punch Code 12 (4), Field Definition, in all of
the other columns.

⊠ For an all purpose Program, leave every 10th column blank (10, 20, 30,
etc.) and punch Code 12 in all other columns except Column 1.

With such a Program in the machine, use the DUP key in step 3 of the
above procedure instead of the COL DUP key to advance to the area re-
quiring correction. Then use the Backspace or COL DUP key to index to
the desired column.

GANGPUNCHING

A task performed frequently is called "gangpunching" or repeat-punching. This is an operation with the sole purpose of punching the same setup into a group of cards. This may be one or more positions or columns of data into cards already punched or into blank cards.

The data may be entered manually from the Keyboard or automatically from a prepunched Master Card.

Once the data is entered, the cards can be punched manually in the Manual Mode by repeated depressions of the FEED key or automatically in the Automatic Mode by the Automatic Feed.

Manual Entry

⊠ Set in the Manual Mode. (See Keyboard, Mode Control Switches)

⊠ Clear Data Storage by pressing the SKIP key <u>twice</u>. (See Keyboard, Operating Control Keys, SKIP)

⊠ Enter the data to be gangpunched into Data Storage.

⊠ Punch a test card to be certain the setup is correct.

Automatic Entry

⊠ Set in the Load Data Mode. (See Keyboard, Mode Control Switches)

⊠ Insert the prepunched card (Master Card) in the Auxiliary Input. (See External Features, Auxiliary Input)

⊠ Press the FEED key. (See Keyboard, Operating Control Keys, FEED)

⊠ Remove the Master Card from the Select Stacker. (See External Features, Select Stacker)

Manual Punching

⊠ Put the cards to be gangpunched in the Input Magazine.

⊠ Set in the Manual Mode.

⊠ Press the FEED key to advance the first card to the Visible Station.

⊠ Press the CLEAR key to release the Keyboard Interlock.

⊠ Press the FEED key once for each card you wish to feed, punch, (and print).

To make the best time, press the FEED key while a Card Feeding Cycle is going on rather than waiting until it is finished.

Automatic Punching

Enter the Program. Do this:

☒ Prepare or use a Program Card already punched containing Code 0 in Column 1 and Code 12 in Columns 2 - 80.

  With a VIP when less than 80 columns are to be punched, the Early Feed can be used to speed the operation. The Program Card would be much the same with Code 0 in Column 1, Code 3 (Early Feed) in the column immediately following the last column to be punched, and Code 12 in all of the columns in between.

☒ Set in the Program Mode. (See Keyboard, Mode Control Switches)

☒ Insert the Program Card in the Auxiliary Input.

☒ Press the FEED key.

☒ Remove the Program Card from the Select Stacker.

Make the Data Storage entry as described above either manually or from a Master Card automatically.

Start the Automatic Punching. Do this:

☒ Set in the Automatic Mode.

☒ Put the cards to be gangpunched in the Input Magazine.

☒ Press the FEED key to advance the first card to the Visible Station.

☒ Press the CLEAR key to release the Keyboard Interlock.

☒ Press the FEED key again to start the automatic operation.

The gangpunching operation will continue automatically until stopped by:

Setting the Operating Mode switch to MANUAL.
A full Output Stacker.
An empty Input Magazine.

INTRODUCTION

As we said in the Introduction to Key Punching, your knowledge of the features and operation of a UNIVAC Verifying Punch (VP) or UNIVAC Verifying Punch (VIP) as a Key Punch leads directly to your understanding of the machine as a Verifier.

With your basic knowledge of the machine, you only need to learn how the individual features apply to Verifying, or more to the point, how these features apply to the one-pass UNIVAC Card Verifying Method.

In the traditional methods of punched-card verifying, three steps are used:

1. The cards are punched from the documents by one operator.
2. All or part of the punching in these cards is verified by a second operator. This operator notes the errors detected.
3. A third operator corrects the errors.

With the UNIVAC Card Verifying Method, because the VP or VIP is both a Key Punch and a Verifier, the card verifying and correcting are performed in one pass of the cards through the machine. Here is how it is done:

▪ As a punched card fed from the Magazine passes through the Read Station on its way to the Visible Station, all of the punching in that card is read to enter a complete image of that card in the Data Input Storage.

▪ With the card at the Visible Station, the manual verifying of that card is performed by a comparison you make by Keyboard entry with its stored image.

▪ If no error is found, the card is identified as "OK" and fed to the Output Stacker.

▪ When you discover an error in the image, the "Verifier" automatically becomes a "Key Punch" to allow you to correct that column of storage. When that column is corrected, the machine again becomes a "Verifier" automatically to allow you to continue verifying the rest of the card.

▪ With the verifying of a "CORRECTED" card completed, the machine again becomes a "Key Punch" automatically. A blank card is fed from the Auxiliary Input. This card is punched with the corrected image and identified as "CORRECTED." It is then fed to the Output Stacker while the original card is segregated into the Select Stacker as an Error card. The machine again becomes a "Verifier" automatically for the next card fed from the Magazine.

As a Verifier operator, you end your work with the cards verified, corrected, and ready for use.

Core Storage

As you can see from the above description of the UNIVAC Card Verifying Method, the Core Storage is as important when Verifying as it is when Key Punching. It is used, however, in a different way.

As a card to be verified passes through the single-column Read Station on its way to the Visible Station, these operations happen automatically for each of the 80 columns:

☒ The code read from a card column is compared with the code stored in the related Data Input Storage column from the previous card.

☒ During the comparison when a non-match occurs (the code in the card column does not agree with the code already in the same Data Input Storage column), an electronic "Non-Match Mark" is entered into the related Data Output Storage column.

☒ After the comparison for a column is completed, the new code read from the card enters Data Input Storage to replace the old code.

Thus when a card reaches the Visible Station:

☒ The data in that card has been automatically verified by comparison with the data from the previous card. Any differences between the two cards is noted by a Non-Match Mark. The Non-Match Marks are used only when Duplicate Verifying (see below).

☒ The data from that card is in storage so that it can be verified and, if necessary, corrected.

All of these automatic operations are completed in 800 milliseconds (0.8 second). At this time, the Manual Verifying (see below) of the card at the Visible Station can be started.

When the verifying of a card is completed, the contents of Data Input Storage is transferred to Data Output Storage.

☒ With a VP and VIP, a Corrected card is punched with the contents of Data Output Storage.

☒ With a VIP, both the OK and Corrected cards can be printed with the information contained in Data Output Storage.

Verifying Operations

With the card at the Visible Station and its image in storage, individual columns and fields of that image are subject to one of the following four operations:

☒ Manual Verifying - This operation is used for the information that varies from one card to the next.

As you read the information from the documents and press the Character keys, you compare the information you read against that entered into storage from the card. When what you enter differs from what is in storage, a Non-Match is signalled.

⊠ Duplicate Verifying - This operation is used to determine if the information in a field of the current card is the same as it was in the preceding card.

This is a programmed operation started automatically or by pressing the DUP key. During the advance through the field, a search is made for any Non-Match Marks for that field. This operation uses the automatic verification made when the card is read.

Duplicate Verifying can also be obtained without program control by means of the COL DUP key.

⊠ Bypassing - This operation is used for fields not to be verified.

This is a programmed operation started automatically. During the advance through the field, no comparison is made and any Non-Match Marks are disregarded.

⊠ Skipping - This operation is used to verify fields that should be blank.

This is a programmed operation started manually by pressing the SKIP key. During the advance, an automatic comparison is made for Space codes (blank columns). If a storage column contains a code other than the Space, a Non-Match is signalled.

When a Non-Match is created or a Non-Match Mark is found in a column, the advance is stopped at that column and the yellow Non-Match indicator on the Keyboard is lit. Two attempts can then be made from the Keyboard to reach a Match (agreement).

⊠ If there is a Match on one of these attempts, verifying continues on the next column.

⊠ If there is still a Non-Match after the second attempt:

- An ERROR condition is signalled for the column (the red ERROR indicator on the Keyboard is lit). Storage entry is automatically allowed (Key Punch function).

- You then enter the correct character. The machine advances to the next column and changes back automatically to the Verify function of comparing. The Verifying is continued.

- The original card is identified as an ERROR card; its image is labelled as CORRECTED.

When a column or field is known to be wrong, a Correction key on the Keyboard allows you to correct the original image directly and at once.
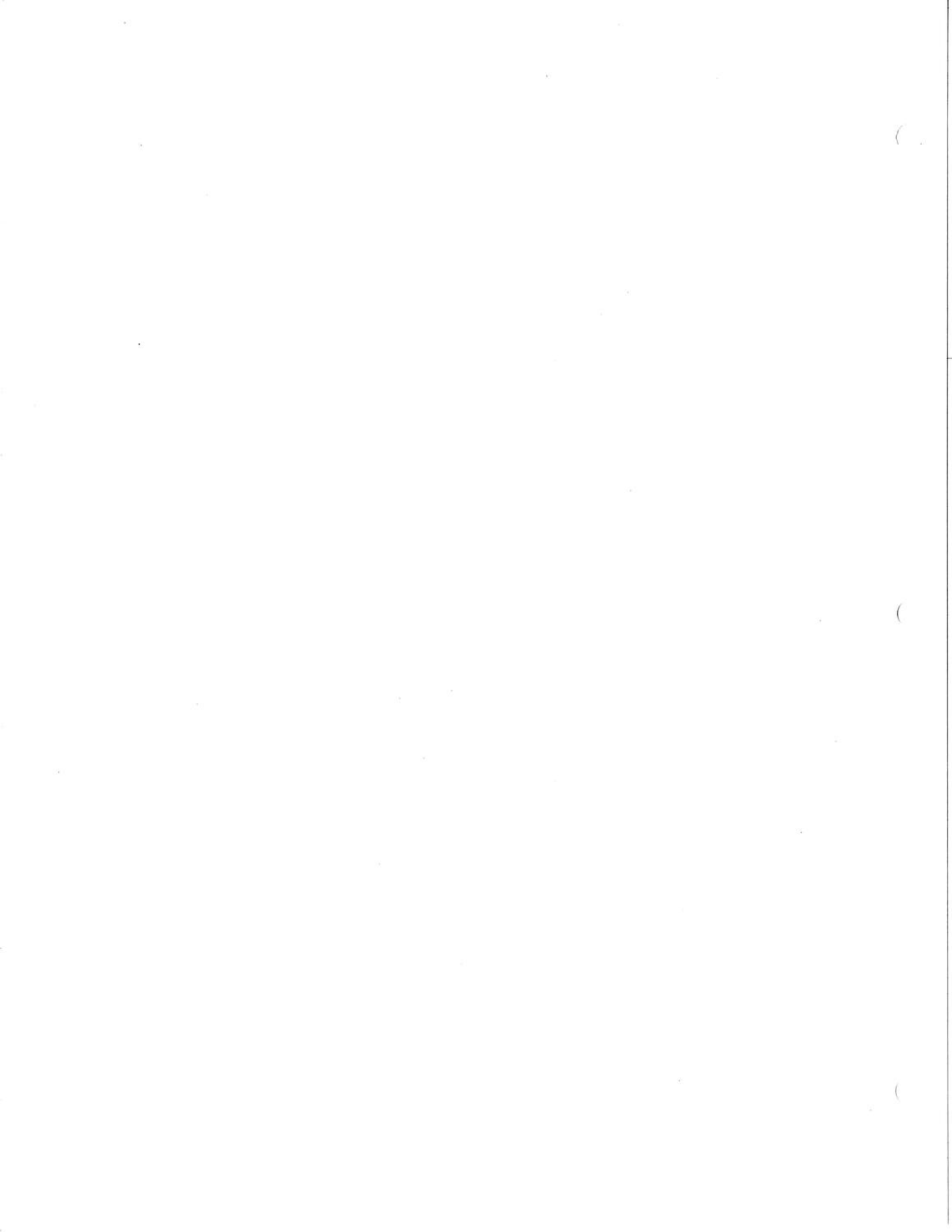
FEATURES

With only a few exceptions, all of the features of the UNIVAC Verifying
Punch and the UNIVAC Verifying Interpreting Punch have been described in
the preceding External and Internal Features sections. These descrip-
tions, of course, told how these features were used when Key Punching.

Rather then repeat the full description of all of these features, we
will tell you how they are used when Verifying. The few features di-
rectly related to Verifying, not described before, are included here.

CARD FEEDING CYCLE

A Card Feeding Cycle when Verifying is about the same as when Key Punch-
ing. All 80 columns of a card must be verified, however, by one or a
combination of the Verifying Operations just described before a Card
Feeding Cycle can take place. At this time:

⊠ In the Manual Mode, the FEED key is used.

⊠ In the Automatic Mode, the AUTOMATIC FEED is used.

We have more to tell you about this subject later on.

A Card Eject Cycle can be taken at any time by means of the EJECT key.
The card delivered to the Select Stacker from the Visible Station is
called an ERROR card.

INPUT MAGAZINE

The punched cards to be Verified are placed face forward with the bot-
tom (9) edge down in the Input Magazine just as you would do when Key
Punching.

AUXILIARY INPUT

In addition to its use when entering a Program or constant data, the
Auxiliary Input has a very important function during Verifying.

When a Correction has been made to one or more columns of the stored
image of the card being verified, a Card Feeding Cycle cannot be taken
when the verifying of that card is completed until a blank card is in-
serted in the Auxiliary Input.

At this time, a blank card is inserted in the Auxiliary Input and the
FEED key is pressed; two automatic cycles then take place:

⊠ The original card is fed from the Visible Station to the Select Stack-
   er as an ERROR card.

◘ The blank card from the Auxiliary Input is punched (and printed) with the Corrected setup and delivered to the Output Stacker as a CORRECT-ED card.

◘ The next card to be verified is fed to the Visible Station from the Magazine.

READ STATION

The Read Station is active automatically when Verifying. As a card to be verified is fed through the Read Station on its way from the Magazine, each of the 80 columns of the card is read and these operations take place automatically:

◘ The contents (punched and blank positions) of the card column is compared with the setup remaining in the same Data Input Storage column from the previous card. If they differ, an electronic Non-Match Mark is entered into the related column of Data Output Storage.

◘ The contents of that column of the card is then entered into the related column of Data Input Storage to replace the old setup.

After a card has passed through the Read Station, all of its information is in Data Input Storage.

VISIBLE STATION

The card in the Visible Station has its image in Data Input Storage. It is the image of this card that is verified.

PRINT STATION (VIP only)

When the PRINT switch on the Keyboard is set at PRINT, an OK verified card and the blank card to be punched with a Corrected setup are printed as they pass through the Print Station.

Just as during Key Punching, the characters printed are from the information in Data Output Storage. The information in Data Input Storage is transferred to Data Output Storage at the time a card is fed from the Visible Station.

PUNCH STATION

The OK verified cards and the Corrected cards are identified by punching in the left margin as they are fed into the Punch Station.

The OK Punching is in two positions, Position 0 and 1. A card receives this identifying punching when:

⊠ The entire card was verified as correct through Column 80, and

⊠ The card is fed from the Visible Station by means of the FEED key in the Manual Mode or by the Automatic Feed in the Automatic Mode.

The CORRECTED Punching is in but one position, Position 1. The card to be punched with a corrected setup receives this identifying punching when:

⊠ The original card was completely verified through Column 80 with correction made to the setup, and

⊠ The card to be punched with the corrected data is fed from the Auxiliary Input.
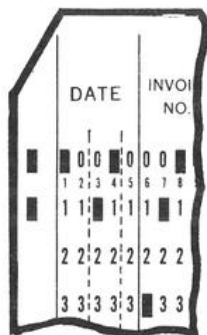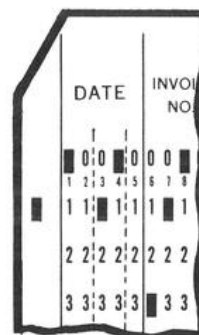
OK Punched   CORRECTED Punched

An ERROR card does not receive any identifying punching in its left margin. An Error card is:

⊠ The original card for which the setup was corrected.

⊠ A card fed from the Visible Station by pressing the EJECT key.

After this identifying operation:

⊠ An OK card passes through the Punch Station without further punching.

⊠ A CORRECTED card is punched with the corrected information.

STACKERS

The Output and Select Stackers function as follows when Verifying:

⊠ The OK and CORRECTED cards are delivered to the Output Stacker.

⊠ The ERROR cards are segregated into the Select Stacker.

KEYBOARD

You have already been given the basic description of the Keyboard. At this time, we need only describe the various switches and keys as they apply to Verifying.
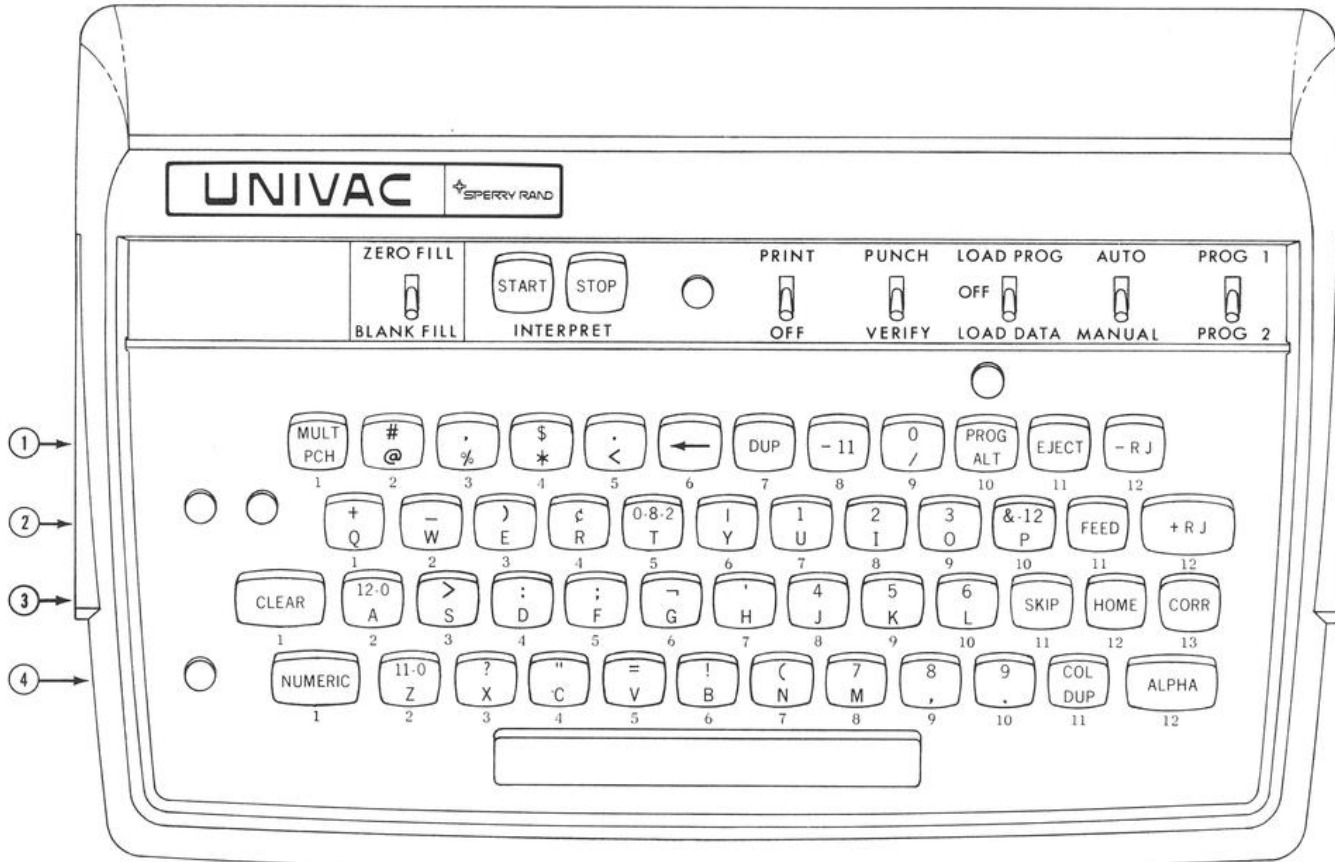
FUNCTION CONTROL SWITCHES
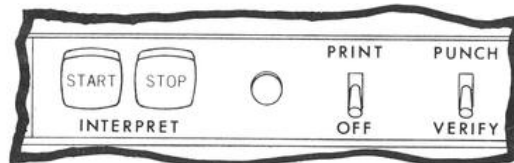
Set the PUNCH-VERIFY switch at VERIFY. The VP or VIP will function as a Verifier.

Set the PRINT switch of a VIP at PRINT if the cards are to be printed. Set it OFF if they are not. If you change the switch setting, the new setting will be effective for the next card that feeds through the Print Station.

MODE CONTROL SWITCHES
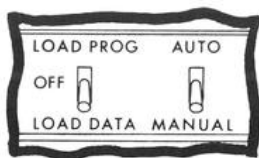
These two switches function in the same manner as they do when Key
Punching to determine the Mode of Operation.

PROGRAM SELECTION SWITCH
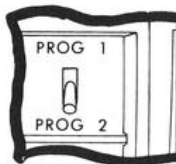
This switch serves the same purpose as it does when Key Punching to de-
termine whether Program 1 or Program 2 will be in effect.

RIGHT JUSTIFY FILL SWITCH

If one or more of the fields in the cards to be Verified have been
Right Justified during Key Punching, make the same setting of this
switch as was used during the Key Punching.

The setting of this switch determines whether a zero or a blank compar-
ison will be made in the columns to the left of the most significant
character in each field:

◙   ZERO FILL - A comparison for zeros is made.

◙   BLANK FILL - A blank column comparison is made.

CHARACTER KEYS and SPACE BAR

During the Manual Verifying operation, pressing a Character key or the Space bar causes the code related to that key and shift to be compared with the code in the column of Data Input Storage shown by the Column Indicator at that time.

- When the two codes are in agreement (Match), the storage indexing advances to the next column.

- When the two codes do not agree, a Non-Match is created; the yellow Non-Match Indicator to the left of Row 2 of the Keybank is lit, the storage indexing does not advance.

When the machine is ready to accept a Correction, pressing a Character key or the Space bar causes the code related to that key and shift to enter the column of Data Input Storage shown by the Column Indicator at that time. The code in that column is replaced with the new entry.

To prevent an accidental entry into storage, a Keyboard Interlock will occur and the red Interlock Indicator will light if you press a Character key, the Space bar, or an Operating Control key during the interval between cards (800 milliseconds) while the next card is being read and the automatic verifying is taking place:

- The Keyboard entry is not recognized. The reading and automatic verifying are completed despite the interlock.

- It is only necessary to press the CLEAR key to release the Keyboard Interlock and then to resume operation according to the Column Indicator reading.

OPERATING CONTROL KEYS
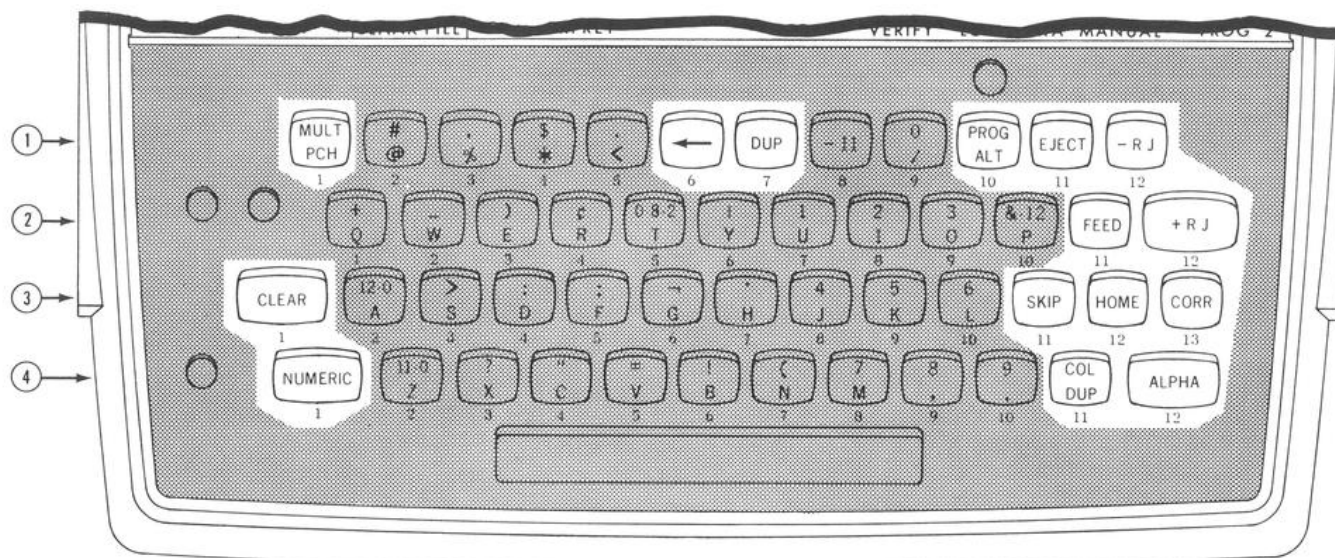
FEED - Row 2, Key 11

The FEED key does not operate while a card is being verified.

A Card Feeding Cycle can only be taken when all 80 columns of the card have been verified by one or a combination of the four Verifying Operations (Manual Verifying, Duplicate Verifying, Bypassing, and Skipping). At this time:

☒ For an OK card (no correction made):

- In the Manual Mode, the FEED key becomes operative and is used.

- In the Automatic Mode, the Automatic Feed causes the Card Feeding Cycle.

☒ For a Corrected card, no Card Feeding Cycle can take place unless a blank card is inserted in the Auxiliary Input. This is to insure the punching of a new card with the Corrected data. The FEED key is used at this time.

What happens on a Card Feeding Cycle depends upon the result of the verification:

☒ OK - The card at the Visible Station is fed, (printed), OK Punched, and delivered to the Output Stacker.

The next card is fed from the Magazine, read as it passes through the Read Station, and delivered to the Visible Station.

☒ CORRECTED - Two cycles are taken automatically:

- First Cycle - The original, incorrect card is fed to the Select Stacker as an Error card.

The blank card from the Auxiliary Input is fed to the Visible Station.

The VP or VIP switches automatically from the Verifying function to the Key Punching function.

- Second Cycle - The blank card is fed, (printed), CORRECTED Punched, punched with the corrected information, and delivered to the Output Stacker.

The VP or VIP switches back automatically to the Verify function.

The next card is fed from the Magazine, read as it passes through the Read Station, and delivered to the Visible Station.

EJECT - Row 1, Key 11

The EJECT key can be pressed at any time to deliver the card at the Visible Station to the Select Stacker. That card will not be printed or punched. No card is fed from the Magazine to the Visible Station at this time.

A card fed by the EJECT key is called an Error card.

The next card to be verified is fed to the Visible Station from the Magazine by pressing the FEED key.

HOME - Row 3, Key 12

The HOME key performs the same function when Verifying as it does when Key Punching.

If the yellow Non-Match Indicator only is lit, the HOME key does not operate. The Non-Match Indicator is to the left of Row 2 in the key-bank (see Indicators below).

← (Backspace) - Row 1, Key 6

The Backspace key performs the same function when Verifying as it does when Key Punching.

COL DUP (Column Duplicate) - Row 4, Key 11

This key functions in much the same manner when Verifying as it does when Key Punching.

The COL DUP key performs a Duplicate Verifying operation that is not under Program control (see DUP key below).

If there is a Non-Match Mark in a storage column on which this key is pressed, the advance will stop at that column and the Non-Match Indicator will light.

DUP (Duplicate) - Row 1, Key 7

> This key is used to start a Duplicate Verifying operation in either
> the Manual or Automatic Mode. A multiple column advance is obtained
> by Field Definition in the Program.
>
> If a Non-Match Mark is found when the DUP key is pressed or during
> the advance, the advance is stopped on that column and the Non-Match
> Indicator is lit.
>
> After making any necessary correction, the advance is resumed by
> again pressing the DUP key.
>
> Duplicate Verifying can also be started in the Automatic Mode by a
> Program Code. If this advance is stopped by a Non-Match Mark, it is
> resumed after making the correction by pressing the DUP key.

SKIP - Row 3, Key 11

> This key is the only means of starting a Skipping operation when Ver-
> ifying. The advance obtained is determined by the Mode of Operation:
>
> ⊠ In the Automatic Mode, the number of columns Skipped is determin-
>   ed by the Field Definition in the Program.
>
> ⊠ In the Manual Mode, the Skip is uncontrolled to the right margin;
>   any Field Definition is disregarded.
>
> On each column Skipped, a Space code (blank) is generated for compar-
> ison with the contents of the storage column. If anything other
> than a blank storage column is met during the Skip, the operation
> stops on that column with the Non-Match Indicator lit.
>
> After making any necessary correction, the Skip is resumed by again
> pressing the SKIP key.

+RJ (Right Justify, Positive) - Row 2, Key 12
-RJ (Right Justify, Negative) - Row 1, Key 12

> The Right Justify functions when Verifying only when the VP or VIP
> is operating in the Automatic Mode.
>
> The only function of the RJ keys during Verifying is to allow you to
> check for the presence or absence of punching in Position 11 of the
> last column of a field Right Justified.
>
> For a field to be Right Justified, the Program must contain the fol-
> lowing Program Codes for that field:
>
>> Start Right Justify for the first column.
>> Field Definition for all columns except the first.
>
> If you must verify Position 11 in the last column of the field by
> pressing the RJ keys, the Stop Right Justify code is used in the
> Program for that column to prevent the advance after verifying the
> units digit until an RJ key is pressed.

When you index to the first column of a field programmed for the Right Justify:

▶ An automatic comparison (verification) of zeros or blanks, depending on the setting of the Right Justify Fill Switch, starts and continues until a column containing a significant character is met. That column and all following columns in the field are then manually verified.

▶ If the job requires that you change the Right Justify Fill Switch setting for individual fields during a run, the change should be made before you enter the field. If this is not done; the automatic comparison (zeros or blanks) will not be initiated, a Non-Match can occur. In this case, you can do either of these:

- Start the manual comparison at once, after pressing CLEAR, with zeros or spaces as required, or

- Reenter the field in this manner:

> Make the switch setting change
> Press CLEAR
> Press Backspace
> Press DUP

The automatic comparison will then take place.

▶ If you get a Non-Match during either of these two verifications, the automatic (zero or blank) or the manual, the desired action is taken to make any correction found necessary.

▶ After verifying the last character in the field, the action depends on whether or not the Stop Right Justify code is being used:

- Without Stop Right Justify, the storage and the Column Indicator advance out of the field.

- With Stop Right Justify, the storage and the Column Indicator remain indexed on that column. You would then press either the +RJ or the -RJ to check for the absence or presence of punching in Position 11 of that column:

.. If the field is to be "positive" (Position 11 blank), the +RJ key is pressed.

.. If the field is to be "negative" (Position 11 punched), the -RJ key is pressed.

If a Match is created when an RJ key is pressed, the storage indexing advances. If a Non-Match is created at this time, the desired action is taken to make any correction necessary.

With a "full" field, the Manual Verifying starts with the first column and continues through the last column. At that time if the Stop Right Justify is programmed, the RJ keys are used to verify Position 11.

When the job has very few negative amounts entered in a field, the MULT PCH key (see below) can be used to verify the digit and Position 11 in the units column. Neither the Stop Right Justify nor the RJ keys would be used.

CORR (Correction) - Row 3, Key 13

This key can be used to correct a column or field of Data Storage.

Pressing the CORR key on the first column of a field or a column within a field will permit storage entry from the Keyboard with a Character key or the Space bar (Punch function) into that column of Data Storage.

▪ This ability to enter storage will continue in effect through the last column of that field if Field Definition for the field is present in the Program.

▪ After the last column of the field, the ability to enter storage ends. The machine changes back automatically to the Verify function of comparing.

If there is no Field Definition for a column or field, the CORR key is pressed before making the correction in each column.

Pressing the CORR key turns on the red Error Indicator (see below). This indicator will stay lit as long as the Correction ability remains in effect.

Use of this key at any time when verifying a card will label that card as Error and its image in storage as Corrected. The new card punched from that image will be CORRECTED Punched.

PROG ALT (Program Alter) - Row 1, Key 10

This key functions in the same manner when Verifying as it does when Key Punching.

MULT PCH (Multiple Punch) - Row 1, Key 1

While this key is being _held_ depressed; the Character Keybank is conditioned automatically in the NUMERIC (Upper Case) Shift, a multiple number of Character keys can be pressed individually. All of the codes generated will be compared with the related positions in the Data Storage column shown by the Column Indicator at the time.

When the MULT PCH key is released; the storage indexing will advance if all of the comparisons are in agreement, the indexing will not advance and the Non-Match Indicator will light if there is any disagreement.

When the advance occurs:

▪ In the Manual Mode, the keybank returns to the shift it was in before the key was pressed.

▪ In the Automatic Mode, the shift programmed for the column will be in effect.

CLEAR (Clear Interlock) - Row 3, Key 1

This key is used to release a Keyboard Interlock when Verifying as it does when Key Punching. The interlock would be for the same reasons as those given for Key Punching (see Key Punching, Keyboard, CLEAR). This is the type of interlock usually signalled by the lighting of the red Interlock Indicator.

In addition, the Keyboard will interlock and the Interlock Indicator will light if you try to start Manual Verifying while the next card is being read and the Automatic Verifying is taking place. This is the 0.8 second interval between cards. It is only necessary to press the CLEAR key at this time to release the Keyboard Interlock.

When Verifying, a Non-Match condition also causes a Keyboard Interlock. This interlock is signalled by the lighting of the yellow Non-Match Indicator located to the left of Row 2 in the keybank.

When a Non-Match is created or a Non-Match Mark is sensed, the Non-Match Indicator lights and the Keyboard interlocks. This procedure is then used:

⊠ The CLEAR key is pressed to turn off the Non-Match Indicator and release the interlock. An attempt is then made to reach a Match by pressing the proper Character key or the Space bar.

⊠ If a Non-Match results, the CLEAR key is again pressed to allow a second try.

If a Match results on either the first or second attempt, the storage indexing will advance.

⊠ If a Non-Match is again created on the second try, both the Non-Match Indicator and the red Error Indicator to its right will light.

⊠ At this time, the VP or VIP is conditioned automatically to allow storage entry from the Keyboard (Punch function). The proper Character key is pressed to correct the setup in that column of storage. Both indicators will turn off and the storage indexing will advance to the next column; the Verifying function of comparing will resume.

If an Error occurs in the last column of a negative Right Justified field when the Stop Right Justify is used, the MULT PCH key is held depressed while the "11" key and the proper Character key are pressed. The -RJ key is then used to advance to the next column.

NOTE: When a Non-Match is created with the +RJ or -RJ key during the verifying of Position 11 in the last column of a Right Justified field:

⊠ The two tries, given above, at reaching a Match are made.

⊠ At this time, the VP or VIP is conditioned to accept the desired entry from either the +RJ or -RJ key.

When storage is corrected by the use of these procedures, the original card is identified as Error and its image in storage as Corrected. The new card punched from that image will be CORRECTED Punched in its left margin.

NUMERIC (Upper Case, "Numerical," Shift) - Row 4, Key 1
ALPHA (Lower Case, "Alphabetical," Shift) - Row 4, Key 12

The NUMERIC and ALPHA Shifting during Verifying is controlled in exactly the same way as when Key Punching.

INDICATORS

All five of the Indicator lights function in the Verifying use of a VP or VIP.

The red INTERLOCK, the green ALPHA, and the green PROGRAM 2 Indicators serve the same purpose and function in the same manner when Verifying as they do when Key Punching.

The NON-MATCH and ERROR Indicators have already been mentioned when the CLEAR key was described.

NON-MATCH - The yellow indicator to the left of Row 2 of the keybank.

This indicator turns on when a Non-Match is created on a card column during Verifying or when a Non-Match Mark is found. The Keyboard will be interlocked at this time. It will turn off and the interlock released when the CLEAR key is pressed.

When only the Non-Match Indicator is lit, the EJECT key can perform its function and also turn off this indicator.

ERROR - The red indicator to the left of Row 2 of the keybank.

This indicator turns on with the Non-Match Indicator during Verifying when the second try at creating a Match on a card column results in a Non-Match. It turns off automatically when the storage entry (Correction) is made.

Pressing the CORR key turns on the Error Indicator. As long as the Error Indicator is lit, storage entry from a Character key or the Space bar can be made.

The advance is obtained at this time only by pressing a Character key or the Space bar.

When both the Non-Match and Error Indicators are lit or only the Error Indicator:

- The EJECT key can perform its function and also turn off the indicators.

- The Backspace key can perform its function and also turn off the indicators.

- The HOME key can perform its function but the indicators will <u>not</u> turn off.

PROGRAM CODES

Your study of the Key Punching use of a VP or VIP has given you an understanding of the Program Codes and their purpose in that function. We will now apply that basic understanding to the use of the Program Codes when Verifying.

When Verifying, the same Program Codes are used to serve either the same purpose or a purpose very much like that for Key Punching. In addition, both the VP and VIP use Program Codes to control Right Justify and the VIP has an additional code for print editing.

NOTE: The Program 2 Code is in parentheses.

VP PROGRAM CODES

The VP Program Codes for Verifying are shown in the unshaded part of the VP Program Code Chart.

CODES		WHERE PUNCHED in a PROGRAM CARD FIELD	FUNCTION	
PROG. 1	PROG. 2		KEY PUNCHING	VERIFYING
12	4	Each column except first	Field Definition	Field Definition
11	5	First column only	Start Skip	Start Bypass
0	6	First column only	Start Duplicate	Start Duplicate
1	7	Each column required	ALPHA Shift	ALPHA Shift
2	8	Each column required	Not significant	11/12 Verify Elimination
11-1	5-7	First column only	Not significant	Start Right Justify
12-11-1	4-5-7	Last column only	Stop Right Justify	Stop Right Justify

Code 12 (4) - Field Definition

This code serves the same purpose during Verifying as it does when Key Punching to continue an operation once it has been started either by a Program Code or by an Operating Control key.

Code 11 (5) - Start Bypass

Bypassing is used for those columns or fields not to be verified.

In the Automatic Mode, a Bypassing operation starts automatically when the Column Indicator and storage are advanced into a column containing Code 11 (5) in the Program.

In the Manual Mode, the presence of this code in the Program has no effect.

Bypassing can only be started automatically by this Program Code; it cannot be started by an Operating Control key.

Once started, Field Definition continues the operation. In the columns Bypassed, no comparisons are made and any Non-Match Marks are disregarded.

Code O (6) - Start Duplicate

Duplicate Verifying is used for those columns or fields that should contain the same information as the preceding card.

In the Automatic Mode, a Duplicate Verifying operation starts automatically when the Column Indicator and storage are advanced into a column containing Code O (6) in the Program. It may also be started by pressing the DUP key.

In the Manual Mode, the presence of this code in the Program has no effect. The DUP key is used to start Duplicate Verifying.

Once started, Field Definition continues the operation. In the columns Duplicate Verified, there is no comparing, however, a search is made for any Non-Match Marks for that field.

When the same information is to be common (Duplicated) in a column or field for more than one card in a series, Duplicate Verifying is used for all cards following the first.

Code 1 (7) - ALPHA Shift

This code functions only in the Automatic Mode to serve the same purpose during Verifying as it does when Key Punching. For those columns containing Code 1 (7) in the Program, the Character Keybank will be in the ALPHA (Upper Case) Shift. It will be in the NUMERIC (Lower Case) Shift for all other columns.

Code 2 (8) - 11/12 Verify Elimination

This code functions in both the Automatic and Manual Modes.

When a column contains Code 2 (8) in its Program, any punching in Positions 11 or 12 or in both of these positions does not have to be verified. It is only necessary for you to verify the punching in Positions 0 - 9 of the column. This would usually be a number.

Each column that may contain a Position 11 or 12 punch that is not to be verified must contain Code 2 (8) in the same column of the Program.

If you verify Position 11 or 12 in a column programmed with this code, a Non-Match will result if you try a different position (11 or 12) from that punched. If the attempt was an accident, all you have to do is press CLEAR and verify the code in Positions 0 - 9 only.

Code 11-1 (5-7) - Start Right Justify
Code 12-11-1 (4-5-7) - Stop Right Justify

These codes perform their purpose only in the Automatic Mode.

For the verifying of a Right Justified field, the columns of the Program for that field contain the following:

⊠ Code 11-1 (5-7), Start Right Justify, in the first column to start the automatic zero or blank comparison.

⊠ Code 12 (4), Field Definition, in all columns except the first to continue the zero or blank comparison once it has been started.

⊠ Code 12-11-1 (4-5-7), Stop Right Justify, in the last column to stop the advance for the verification of Position 11 with the +RJ or -RJ key. This code is not used if this verification is not required.

In the Manual Mode, the 12 in the Stop Right Justify code acts as the Field Definition code.

The Stop Right Justify will <u>not</u> stop the advance at the units column of a field if the advance is obtained by the use of either the SKIP, DUP, or COL DUP key.

VIP PROGRAM CODES

The Program Codes for Verifying are shown in the unshaded part of the VIP Program Code Chart.

CODES		WHERE PUNCHED in a PROGRAM CARD FIELD	FUNCTION		
PROG. 1	PROG. 2		KEY PUNCHING	VERIFYING	INTERPRETING
12	4	Each column except first	Field Definition	Field Definition	Field Definition
11	5	First column only	Start Skip and Non-Print	Start Bypass and Non-Print	Start Non-Print
0	6	First column only	Start Duplicate	Start Duplicate	Start Duplicate
1	7	Each column required	ALPHA Shift	ALPHA Shift	Not significant
2	8	First column only	Start Suppress Left Zero Print	Start Suppress Left Zero Print	Start Suppress Left Zero Print
2	8	Each column required except first	11/12 Print Elimination	11/12 Print Elimination	11/12 Print Elimination
3	9	First column following last column to be used	Start Early Feed Non-Print balance of card	Start Bypass and Non-Print balance of card	Start Early Feed Non-Print balance of card
11-2	5-8	First column only	Start Skip and Print	Start Bypass and Print	Start Print
11-1	5-7	First column only	Not significant	Start Right Justify	Not significant
12-11-1	4-5-7	Last column only	Stop Right Justify	Stop Right Justify	Field Definition

The ability of a VIP to print the OK and Corrected cards during the Verifying use of the machine adds codes for print editing to the basic codes of a VP.

These basic codes; Field Definition, Start Bypass, Start Duplicate, ALPHA Shift, Start Right Justify, and Stop Right Justify do the same thing in a VIP Program as they do with a VP Program. The ability to print or non-print is added to the Bypass operation.

NOTE: Code 2 (8) for the VIP serves a different purpose than for a VP.

Code 11 (5) - Start Bypass and Non-Print
Code 11-2 (5-8) - Start Bypass and Print

All columns not verified may be printed or not depending on the choice of code used to start the Bypass.

Code 2 (8) - Start Suppress Left Zero Print or
11/12 Print Elimination

This code is effective only in the Automatic Mode to serve either one of its two purposes during Verifying as it does when Key Punching. You were told the purposes of this code when the VIP Program Codes for Key Punching were explained.

Code 3 (9) - Start Bypass and Non-Print Balance of Card.

In the Automatic Mode. Code 3 (9) causes these operations during the entry and output for a card:

▪ If effective during entry:

- An automatic Bypass occurs from the column programmed for Start Bypass through Column 80. No Field Definition is required. These columns are not verified.

- A Card Feeding Cycle is started.

▪ If effective during output:

Any printing stops on the column programmed for Start Bypass. Eject rolls grab the card immediately and send it to the Output Stacker.

These two phases of the Code 3 (9), Start Bypass operation should be kept in mind when planning a two Program (Basic and Alternate) application where the PROG ALT key is to be used to switch Programs and this Start Bypass and Non-Print is to be used.

As you know, Code 3 (9) is the Early Feed when Key Punching.

This code has no effect in the Manual Mode.
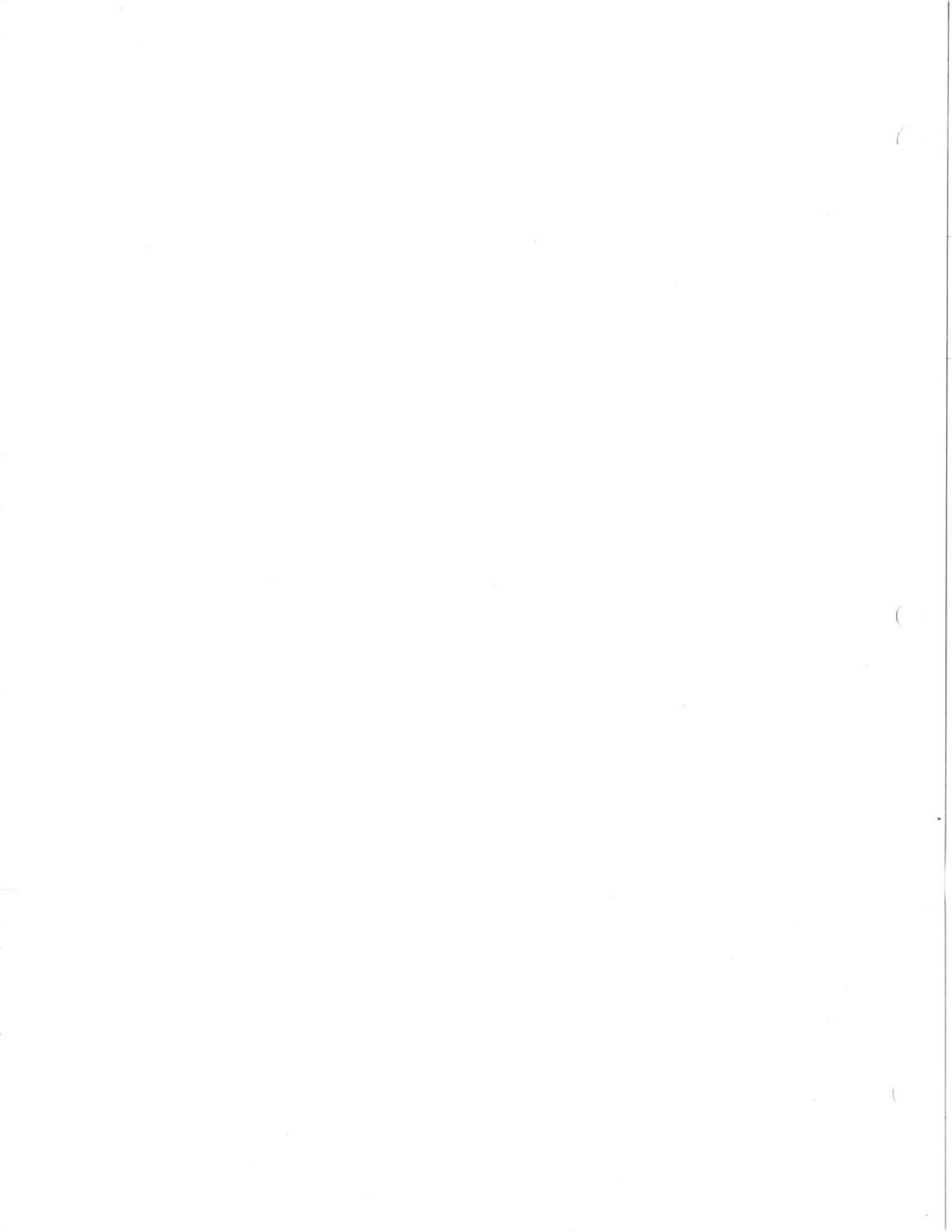
PROGRAMMED OPERATIONS

The various Verifying operations controlled by programming are explained in this section with examples of the uses of each operation.

The Automatic Mode plays a more important role when Verifying than when Key Punching. Bypassing, Right Justifying, the Automatic Feed, and any Print Editing are obtained only in the Automatic Mode.

As with Key Punching, the incidental advantage of the Automatic Mode to help maintain the accuracy of your work also applies to Verifying.

The majority of your Verifying Programs will be designed for Automatic Mode operation.

If the application includes special or different verifying for some of the cards, either a second Program can be used or a switch to the Manual Mode can be made for them.

NOTE: In the examples of the individual operations, Program 1 Codes are used. Program 2 Codes will produce the same results.

BYPASSING

In many applications, only those fields containing "vital" information are verified. These would usually be codes, quantities, and amounts. The accuracy of the rest of the information in the cards depends on the usual high degree of reliable performance of the key punch operator or on other means of verification. These fields would be Bypassed.

The fields that are Skipped during Key Punching would usually be Bypassed when Verifying.

Data automatically Duplicated into batches of cards can be Bypassed or it can be Duplicate Verified (see below).

In the Automatic Mode, the operation is controlled by Program Code:

⊠ For the VP, Code 11 (5) starts Bypassing, Field Definition Code 12 (4), continues the operation for a field.

⊠ For a VIP, three codes may be used:

- Code 11 (5) starts Bypassing and Non-Printing. Field Definition continues the operation for a field.

- Code 11-2 (5-8) starts Bypassing with Printing. Field Definition continues the operation for a field.

- Code 3 (9) starts Bypassing and Non-Printing. The operation continues automatically to the right margin.

The DATE (Columns 1 - 5) is not to be verified but is to be printed, the
DESCRIPTION (Columns 30 - 49) is not to be verified or printed, the "C"
is not to be verified or printed, Columns 63 - 80 are blank and need no
verification. In the Program Card:

- ☒ Code 11-2 in Column 1 starts the Bypass and Print operation for the
      Date.
- ☒ Code 12 in Columns 2 - 5 continues the operation through the field.
- ☒ Code 11 in Column 30 starts the Bypass and Non-Print operation for
      the Description field.
- ☒ Code 12 in Columns 31 - 49 continues the operation through the field.
- ☒ Code 11 in Column 55 causes the single-column Bypass and Non-Print.
- ☒ Code 3 in Column 63 causes the Bypass and Non-Print operation to the
      right margin.

NOTE: With a Verifying Punch (VP), Code 11 (5) would be used to start
   all of the Bypass operations shown above. Of course, Code 12 (4)
   would be used to continue the operation to the right margin.

DUPLICATE VERIFYING

The columns and fields Duplicated during Key Punching would usually be
Duplicate Verified if their verification is desired.

Duplicate Verifying can be started automatically by Code 0 (6) in the
Automatic Mode. Pressing the DUP key will start the operation in both
the Automatic and Manual Modes. The number of columns Duplicate Veri-
fied is determined by the Field Definition in both modes.

1. The same DATE (Columns 1 - 5) and C (Column 55) are in all cards of
   a batch and are to be verified. In the Program Card:

⊠ Code 0 in Column 1 starts the Duplicate Verifying operation.
⊠ Code 12 in Columns 2 - 5 continues the operation.
⊠ Code 0 in Column 55 causes a single-column Duplicate Verification.

Before starting to verify the cards for each batch, set the VP or VIP at PUNCH in the Manual Mode. Enter the Date and C for that batch. Set to VERIFY in the Automatic Mode.

2. For the documents within a batch, certain like information is in all of the cards for each document but this information changes from one document to the next.

The same INVOICE, SALESMAN, and CUSTOMER Numbers are punched in all of the cards for one document and are to be verified. In the Program Card:

⊠ Column 6 is blank so that you can Manually Verify these fields for the first card of each document and then use the DUP key to Duplicate Verify these fields in the following cards.
⊠ Code 12 in Columns 7 - 19 continues the Duplicate Verifying once it has been started.

This programming applies to both the Automatic and Manual Modes.

3. For the individual documents within a batch; some information is Duplicated in all of the cards for a document, other information is Duplicated in the first cards of a document but is not punched in the last cards, all information can change from one document to the next.

The same INVOICE and SALESMAN Numbers are punched in all of the cards for an invoice. The CUSTOMER Number is punched in all cards except one or two at the end of most of the invoices. This information is to be verified. In the Program Card:

⊠ Column 6 is blank so that the Invoice and Salesman Numbers can be
Manually Verified for the first card and the DUP key used to
Duplicate Verify these fields in the following cards.

⊠ Code 12 in Columns 7 - 13 continues the Duplicate Verifying once
it has been started.

⊠ Column 14 is blank so that the Customer Number can be Manually
Verified for the first card and:

- The DUP key can be pressed for the following cards to Dupli-
cate Verify the Customer Number, or

- The SKIP key can be pressed to verify this field when it is
to be blank (see Skipping below).

⊠ Code 12 in Columns 15 - 19 continues the Duplicate Verifying or
Skipping.

This programming applies to both the Automatic and Manual Modes.

SKIPPING

Skipping is used when Verifying to be sure that whole fields or portions
of fields that should be blank contain no punching. This is true mostly
of those fields which are filled or partially filled with punching in
preceding cards.

Skipping is started in the Automatic or Manual Mode only by pressing the
SKIP key:

⊠ In the Automatic Mode, a Skip is under the control of the Field Defi-
nition in the Program.

⊠ In the Manual Mode, a Skip is not controlled and will carry the blank
column verifying through to the right margin.

In this example performed in the Automatic Mode, the CUSTOMER NO, CATA-
LOGUE NO, DESCRIPTION, and QUAN fields may be blank, either individually
or in combination, on some cards but punched on others. For those cards
containing a Description, the length of the Description will vary from
card to card when it is punched. Columns 63 - 80 must be blank. In the
Program Card:

⊠ The first column in each of the fields is blank as is Column 63.
⊠ The balance of the columns in these fields contain Code 12.

When any one of the fields is to be blank, the field is verified by pressing the SKIP key when the Column Indicator is indexed to the first column of that field. At Column 63, the SKIP key is pressed to verify that Columns 63 - 80 are blank.

When the number of characters in the Description is less than 20 (full field), the SKIP key is pressed following the verifying of the last character to be sure that the remaining columns in the field are blank.

ALPHA SHIFT

The ALPHA Shift serves the same purpose and is programmed in the same way when Verifying as when Key Punching.

11/12 VERIFY ELIMINATION

In a card column, Position 11 or 12 or both of these positions are often used to identify different types of cards or are used for control or other special purposes. The use of these positions for these purposes is often not related to the data, usually a number, punched in Positions 0 - 9 of that column.

In many cases, it is not necessary to verify the Position 11 and 12 punching in one or more columns of a card but it is necessary to verify the 0 - 9 punching in those columns. To do this, those columns contain Code 2 (8) in the Program.

Position 12 in Columns 8, 9, and 10 are to be used for a card code and Position 11 of Column 14 is to be used for a special control. These positions do not require verifying. The numerical punching in the Invoice and Customer Number fields must be verified.

Code 2 in Columns 8, 9, 10, and 14 eliminate the necessity of verifying Positions 11 and 12 in these columns.

RIGHT JUSTIFY

A field Right Justified during Key Punching is usually Right Justified when Verifying.

Right Justify Verifying operates only under Program control and only in the Automatic Mode. The Right Justify programming for a field includes:

⊠ Code 11-1 (5-7) in the first column for the field.

⊠ Code 12 (4) in all other columns for the field.

⊠ Code 12-11-1 (4-5-7) instead of Code 12 (4) in the last column for
the field only if Position 11 is to be verified by using the RJ
keys.

When the Column Indicator is indexed into the first column of the
field:

⊠ Code 11-1 (5-7) starts an automatic zero or blank comparison, de-
pending on the setting of the Right Justify Fill Switch, which is
continued by Code 12 (4) until the first significant character in
storage is met. The automatic comparison and the indexing stop at
that column.

⊠ That column and the rest of the columns in the field are manually
verified. If Code 12-11-1 (4-5-7) is used, the indexing stops on
that column so that an RJ key can be used to verify Position 11.

The AMOUNT (Columns 56 - 62) field is to be Right Justify Verified. In
the Program Card:
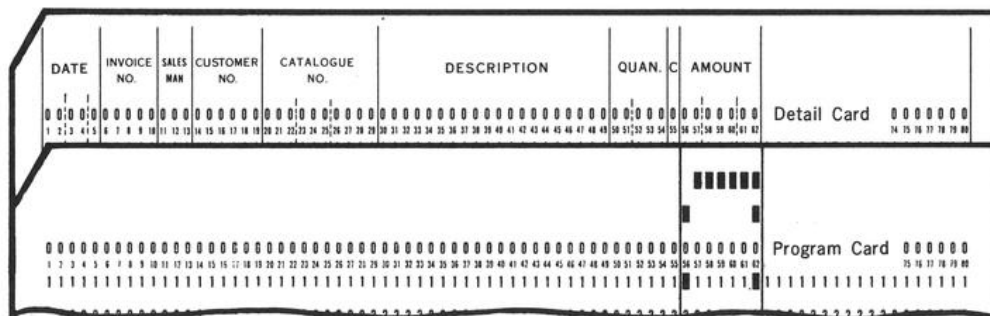
⊠ Code 11-1 in Column 56 starts the operation.

⊠ Code 12 in Columns 57 - 61 continues the operation.

⊠ Code 12-11-1 in Column 62 holds the operation until Position 11 is
verified by pressing an RJ key.

CORRECTION

The Correction operation allows errors in the setup to be corrected dur-
ing Verifying.

The Correction operation is used:

⊠ When you know a column or field is wrong before attempting to verify
it.

⊠ When your attempt at reaching a Match at the start of a field indi-
cates that the field is not punched right.

The Correction operation is obtained in either the Automatic or Manual
Mode by pressing the CORR key on the Keyboard; the red Error indicator
turns on. It is effective for that column.

☒ The ability to correct continues in effect and the Error indicator is lit for succeeding columns either to the right (advance) or to the left (backspace) if the Program has Field Definition in those columns. The correction ability stops and the Error indicator turns off at the end of the Field Definition.

☒ If there is no Field Definition in the following or preceding column, the correction ability is only effective for the column on which the key is pressed. It must be pressed again for each additional column to be corrected.

With the Correction feature in effect, the Character keys and the Space bar may be used to change the setup.

NOTE: If a correction is made to the digit in the units column of a field Right Justified, the entry (if any) in Position 11 of that column will be erased. At that time; the correct Character key is pressed followed by a depression of the proper RJ (+ or -) key to complete the entry in the units column and to advance to the next column.

When the CORR key is used and regardless of whether the setup is actually changed or not:

☒ The card being verified at the time is an "Error" card.

☒ The stored image of that card is considered "Corrected."

☒ A new card punched from the "Corrected" setup is CORRECTED Punched in its left margin.

PRINT EDITING
            (Applies only to the UNIVAC 1710 VIP)

Print editing during Verifying includes the use of the following Program Codes in the Automatic Mode:

☒ Code 11 (5) and 3 (9) - Non-Print when Bypassing.
☒ Code 11-2 (5-8) - Print when Bypassing.
☒ Code 2 (8) - Left Zero Print Suppression or 11/12 Print Elimination.

PROGRAM EXAMPLE

The Verifying of cards produced by the Program Example 1 for Key Punch-
ing is used as the basis for this example. The same conditions govern
the preparation of the Program for Verifying as given for Key Punching.

In the Program Card:

Date (Columns 1 - 5) - The Date is entered before starting the Verify-
ing of the cards for each batch.

- ⊠ Column 1, Code 0 starts the Duplicate Verifying of the Date.
- ⊠ Code 2 - 5, Code 12 continues the operation.

Invoice, Salesman, and Customer Numbers (Columns 6 - 19)

- ⊠ Column 6 is blank to allow:
  - Manual Verifying of these numbers for the first card of each
    invoice.
  - Columns 7 - 19, Code 12 continues the Duplicate Verifying
    started by pressing the DUP key.

Catalogue Number (Columns 20 - 29)

- ⊠ Columns 23, 24, and 25, Code 1 puts the Character Keybank in the
  ALPHA Shift while this number is being Manually Verified.

Description (Columns 30 - 49)

- ⊠ Column 30, Code 11 starts Bypassing this blank field.
- ⊠ Columns 31 - 49, Code 12 continues the operation.

Quantity (Columns 50 - 54)

- ⊠ Column 50; Code 11-1 starts Right Justify, Code 2 starts Left
  Zero Print Suppression.
- ⊠ Columns 51 - 53, Code 12 continues these operations.
- ⊠ Column 54; Code 12-11-1 stops Right Justify, Code 2 does 11/12
  Print Elimination to let a number print in this column.

<u>Amount</u> (Columns 56 - 62)

    ☒ Column 56; Code 11-1 starts Right Justify, Code 2 starts Left
       Zero Print Suppression.

    ☒ Columns 57 - 61, Code 12 continues these operations.

    ☒ Column 62; Code 12-11-1 stops Right Justify, Code 2 does 11/12
       Print Elimination to let a number print in this column.

Column 63, Code 3 (Early Feed) starts a Bypass and Non-Print which continues automatically to the right margin.

You will notice that the Program Card used for this Verifying example is the same as the Program Card used for Example 1 in Key Punching with the exception of the Start Right Justify. This Program Card could be used for the Key Punching example.
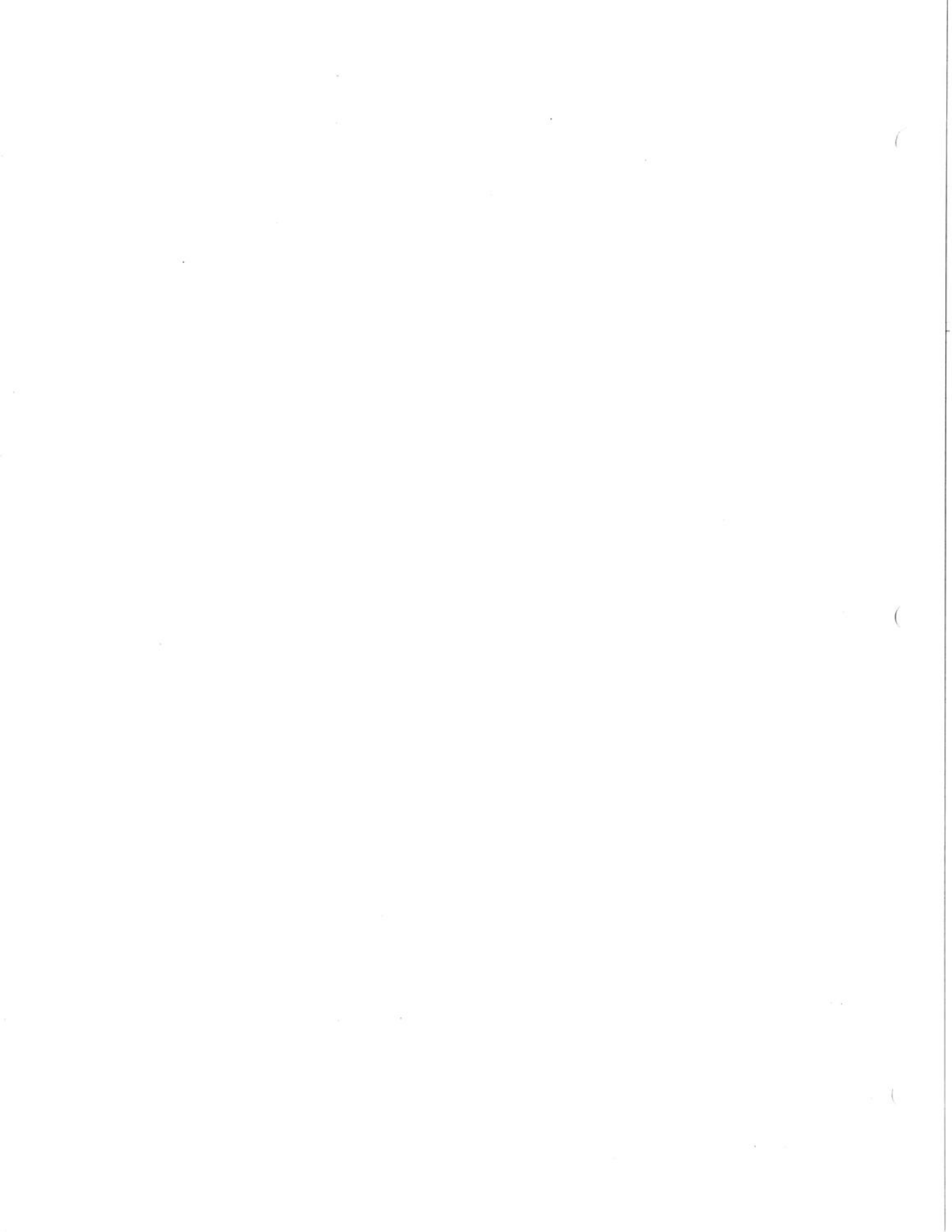
OPERATION

Some of the operations required of you as a VP or VIP Verifying opera-
tor are outlined in this section. The procedures given here are, not
necessarily, exactly suited to any specific job that you might do.
Your own knowledge of the machine and the nature of the job to be done
may lead you to a different or better method.

For the details about any of the controls mentioned here, you are given
the source of that information in the preceding sections.

PREPARING FOR OPERATION

1. Load the Magazine with the supply of the cards to be verified. (See
   Verifying, Features, Input Magazine)

2. Turn on the power by pressing in on the upper half of the Power
   Switch. (See Key Punching, External Features, Power Switch)

3. Set the Punch-Verify switch at VERIFY.
   Set the Print switch of a VIP at PRINT if the cards are to be printed.
   (See Verifying, Keyboard, Function Control Switches)

4. Set the Program Selection Switch at PROG 1 or PROG 2. (See Key Punch-
   ing, Keyboard, Program Selection Switch)

5. If the Right Justify is to be used, set the Right Justify Fill Switch
   at ZERO FILL or BLANK FILL. (See Key Punching, Keyboard, Right Jus-
   tify Fill Switch)

6. Enter the Program. Do this:

   ⊠ Set in the Program Mode. (See Key Punching, Keyboard, Mode Con-
     trol Switches)

   ⊠ Insert the Program Card in the Auxiliary Input. (See Key Punch-
     ing, External Features, Auxiliary Input.

   ⊠ Press the FEED key.

   ⊠ Remove the Program Card from the Select Stacker. (See Key Punch-
     ing, External Features, Stackers)

7. Enter any Constant Data to be Duplicate Verified.

   By "Constant Data," we mean those columns or fields where the punch-
   ing is exactly the same in all cards for a batch. These are the
   columns or fields programmed to be Duplicate Verified automatically
   with Program Code 0 (6).

   The procedure depends on the method to be used for entering the data,
   automatically from a Master Card or manually from the Keyboard.

a. Master Card Entry — If you are provided with the prepunched cards (Master Cards) used to enter this data during Key Punching, do this:

  ◙ Set in the Load Data Mode. (See Key Punching, Keyboard, Mode Control Switches)

  ◙ Insert the Master Card in the Auxiliary Input.

  ◙ Press the FEED key.

  ◙ Remove the Master Card from the Select Stacker.

b. Keyboard (Manual) Entry

  ◙ Set the Punch-Verify switch to PUNCH.

  ◙ Set in the Manual Mode.

  ◙ Press the SKIP key twice to clear the Data Input Storage.

  ◙ Enter the data in the proper columns by means of the Character keys.

  ◙ Reset the Punch-Verify switch to VERIFY.

8. Set the Mode of Operation (Automatic or Manual) to be used for the Verifying.

Press the FEED key to feed the first card to be verified from the Magazine. Press the CLEAR key to release any Keyboard Interlock.

ERROR CORRECTION

As you know, the reason for verifying punched cards is to discover any errors made in those cards when they were Key Punched and to make all corrections necessary so that you end your work with a batch of cards ready for processing.

The VP and VIP offer two means of making corrections during the one-pass UNIVAC Card Verifying Method, these can be called Automatic and Manual.

Automatic Correction - This is a correction made as the result of a Non-Match with the use of the CLEAR key. (See Verifying, Keyboard, CLEAR)

During the Verifying of a card, you are checking the information as you read it from the original document against the way it was read by the operator who punched that card:

☒ As long as you are in agreement, you will advance through the card image without interruption.

☒ When you do not agree at a column, the advance will stop with the yellow Non-Match indicator lit.

When you get a Non-Match indication, you must assume your full responsibility for the accuracy of the cards. Much can depend upon the legibility of the source document at this time:

- If you know what the proper entry should be, follow the procedure for attempting to reach a Match or to correct the storage.

- If you are not certain of what the proper entry should be, you can press the EJECT key to segregate the card so that the correct entry can be determined later. Press the FEED key so that the Verifying can continue with the next card.

Manual Correction - This is a correction made by using the CORR (Correction) key. (See Verifying, Keyboard, CORR)

When you are certain that the information punched in a field is not correct, the CORR key can be used to make the correct entry.

☒ This can be when, after you have attempted Automatic Correction in one or more columns of the field, it becomes clear to you that the balance of the field requires correction.

☒ When a field Duplicated in following cards is proven incorrect on the first card of the group and was corrected, that field would then be Manually Corrected on the following cards without attempting Automatic Correction.

Correction Card - During the Verifying of a card when the red ERROR indicator lights as the result of either the Automatic or Manual Correction operations, it is a signal to you that a card must be fed through the Auxiliary Input to be punched from the corrected image. The indicator will usually be turned off before that time.

At this time, there can be no card feeding unless a card is inserted in the Auxiliary Input.

In the Automatic Mode, there are two ways of obtaining this card feeding depending on when you insert the card in the Auxiliary Input:

- If the card is inserted after the card is completely verified, the FEED key is used.

- If the card is inserted when the red ERROR indicator lights or at any time before the card is completely verified, the card will feed automatically (Automatic Feed) from the Auxiliary Input when the verifying is completed.

In the Manual Mode, the FEED key is used regardless of when you insert the card in the Auxiliary Input.

INTRODUCTION

As we said in the beginning of this manual, one of the uses of a UNIVAC Verifying Interpreting Punch (VIP) is the Interpreting of punched cards.

What we mean by Interpreting is the continuous automatic feeding of punched cards so that the characters related to the codes punched in those cards will be printed along the top of the cards just above the 12 positions. The character printed above a card column is for the code entered into storage for that column.

Interpreting is a very simple operation:

▧ After placing the punched cards to be Interpreted in the Input Magazine, you press the INTERPRET-START switch on the Keyboard to start the automatic card feeding.

▧ As each card is fed, all of the punching in that card is read for entry into Data Output Storage as the card feeds through the Read Station to the Visible Station.

▧ The card is printed with the information in Data Output Storage as it passes through the Print Station on its way from the Visible Station to the Output Stacker.

Interpreting may be performed in either the Automatic or Manual Mode:

▧ In the Automatic Mode, the printing can be edited with such programmed operations as Non-Print, Duplicate Interpreting, Left Zero Print Suppression, and 11/12 Print Elimination. The Early Feed can also be obtained.

▧ In the Manual Mode, the operation is not under Program control. All information punched in a card will be printed without any editing.

"Duplicate Interpreting" is a new term to you. With this operation, constant data can be entered into one or more fields of storage before starting an Interpreting run. This data will then be printed on all of the cards instead of the data that may be punched in these fields of the individual cards.

FEATURES

All of the features of the UNIVAC Verifying Interpreting Punch have been described for you in the preceding sections of this manual. It is only necessary at this time to mention these features as they apply to the Interpreting operation.

CARD FEEDING CYCLE

When Interpreting, the card feeding is continuous and automatic. During one cycle, a card is fed, read, printed, and ejected to the Output Stacker as the next card feeds in.

⊠ In the Automatic Mode:

- The cycle may be obtained automatically after all 80 columns of each card are fed through the Print Station, _or_

- The Early Feed may be programmed to end the printing before Column 80 is reached and thus let the next cycle take place at once.

⊠ In the Manual Mode, the cycle occurs automatically after all 80 columns of each card are fed through the Print Station.

INPUT MAGAZINE

The punched cards to be Interpreted are placed face forward with the bottom (9) edge down in the Input Magazine just as you would do when Key Punching or Verifying.

AUXILIARY INPUT

The Auxiliary Input is used to enter a Program or to enter constant data for Duplicate Interpreting before starting an Interpreting operation. It has no use while the operation is in progress.

READ STATION

The Read Station is active automatically when Interpreting. As a card is fed through the Read Station on its way from the Magazine, all 80 columns of the card are read and the data from those columns entered directly into Data Output Storage.

Incidentally, the Duplicate Interpreting operation prevents the data from the fields programmed for this operation from entering the Data Output Storage.

VISIBLE STATION

At the start of an Interpreting operation if there is no card in the
Visible Station, the operation stops after the first card is fed from
the Magazine with the red Keyboard Interlock indicator lit.

After pressing the CLEAR key, the operation is resumed by again press-
ing the INTERPRET-START switch.

PRINT STATION

The Print switch on the Keyboard must be set at PRINT for the Print Sta-
tion to function during Interpreting. The characters printed are from
the codes in Data Input Storage.

PUNCH STATION

The Punch Station does not function during Interpreting.

STACKERS

All cards fed when Interpreting are delivered to the Output Stacker.

When there is a Full Stacker, the Interpreting stops. Here is what you
do to resume operation:

⊠ Take the cards from the Output Stacker.

⊠ Push the Follower Block to the Stacking Device.

⊠ Press the CLEAR key on the Keyboard to remove the Keyboard Interlock.

⊠ Press the INTERPRET-START switch to resume the Interpreting operation.

At the end of a run, the last card from the Input Magazine is Interpret-
ed and delivered to the Output Stacker. The operation will come to a
stop at that time.

KEYBOARD

For the Interpreting operation, the switches in the upper portion of the Keyboard and the red Interlock indicator are of primary interest to you.

The Character keys and Space bar as well as the Operating Control keys would be used before starting Interpreting to prepare the machine for operation.

FUNCTION CONTROL SWITCHES
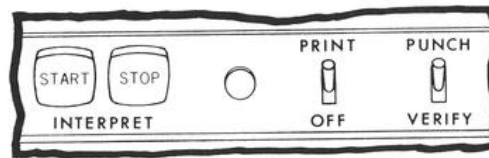
PUNCH-VERIFY - This switch is set at PUNCH.

PRINT - This switch is set at PRINT.

INTERPRET-START - This switch is pressed to start Interpreting. If the operation is stopped for any reason during a run, the Interpreting can only be resumed by pressing this START switch.

INTERPRET-STOP - While Interpreting is going on, you can stop the operation at any time by pressing this STOP switch. the operation is resumed by pressing the INTERPRET-START switch.

MODE CONTROL SWITCHES

These two switches function in the same manner as they do when Key Punching to determine the Mode of Operation.

PROGRAM SELECTION SWITCH
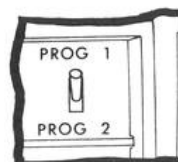
When Interpreting in the Automatic Mode, this switch serves the same purpose as it does when Key Punching and Verifying to determine whether Program 1 or Program 2 will be in effect.

When Interpreting in the Manual Mode, the Program has no effect; the setting of this switch is not important.

CHARACTER KEYS and SPACE BAR

Except for the manual entry of data to be Duplicate Interpreted before starting Interpreting, the Character keys and Space bar serve no purpose when Interpreting.

OPERATING CONTROL KEYS

Except for the entry of a Program, the entry of constant data to be Duplicate Interpreted, and the use of the CLEAR key to remove a Keyboard Interlock, these keys serve no function when Interpreting.

It is to be noted that the FEED key becomes inoperative when the INTER-PRET-START is pressed. The FEED key becomes active again when the last card feeds from the Input Magazine or when the card feeding is stopped with the INTERPRET-STOP.

INDICATORS

Only the red Interlock indicator functions when Interpreting to indicate a Keyboard Interlock because of card feeding. The reasons for a Keyboard Interlock are given in the Key Punching portion of this manual (see Keyboard, CLEAR).

After correcting the reason for the Keyboard Interlock, the Interpreting is resumed by:

▪ Pressing the CLEAR to release the Keyboard Interlock and to turn off the indicator.

▪ Pressing the INTERPRET-START to resume the operation.

PROGRAM CODES

The same Program Codes concerned with printing that are used when Key Punching and Verifying serve the same or a related purpose when used to control Interpreting.

The printing of the characters related to the codes in storage occurs automatically. Program control is required only for print editing and is obtained only in the Automatic Mode.

NOTE: The Program 2 Code is in parentheses in the explanations of the codes.

The VIP Program Codes for Interpreting are shown in the unshaded part of the VIP Program Code Chart.

CODES		WHERE PUNCHED in a PROGRAM CARD FIELD	FUNCTION		
PROG. 1	PROG. 2		KEY PUNCHING	VERIFYING	INTERPRETING
12	4	Each column except first	Field Definition	Field Definition	Field Definition
11	5	First column only	Start Skip and Non-Print	Start Bypass and Non-Print	Start Non-Print
0	6	First column only	Start Duplicate	Start Duplicate	Start Duplicate
1	7	Each column required	ALPHA Shift	ALPHA Shift	Not significant
2	8	First column only	Start Suppress Left Zero Print	Start Suppress Left Zero Print	Start Suppress Left Zero Print
2	8	Each column required except first	11/12 Print Elimination	11/12 Print Elimination	11/12 Print Elimination
3	9	First column following last column to be used	Start Early Feed Non-Print balance of card	Start Bypass and Non-Print balance of card	Start Early Feed Non-Print balance of card
11-2	5-8	First column only	Start Skip and Print	Start Bypass and Print	Start Print
11-1	5-7	First column only	Not significant	Start Right Justify	Not significant
12-11-1	4-5-7	Last column only	Stop Right Justify	Stop Right Justify	Field Definition

Code 12 (4) - Field Definition

This code serves the same purpose during Interpreting as it does when Key Punching and Verifying to continue an operation once it has been started by a Program Code.

NOTE: Code 12-11-1 (4-5-7) also serves for Field Definition.

INT-4	SECTION
2	PAGE

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Interpreting
Program Codes

OPERATING
INSTRUCTIONS

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Code 11 (5) - Start Non-Print

No printing will occur when the storage is advanced into a column
containing this code in the Program. This Non-Printing is continued
automatically for following columns by using Field Definition.

Code 11-2 (5-8) - Start Print

The printing of the characters related to the codes in storage hap-
pens automatically. This code serves no purpose when Interpreting.

Code 0 (6) - Start Duplicate

Duplicate Interpreting is used for those columns or fields where the
punching in the cards is to be disregarded and, in its stead, infor-
mation entered prior to the start of the run is to be printed.

A Duplicate Interpreting operation starts automatically when the stor-
age is advanced into a column containing Code 0 (6) in the Program.
Once started, Field Definition continues the operation.

For those columns or fields of Duplicate Interpreting, the constant
information is entered before starting Interpreting. This can be
done manually in the Manual Mode from the Keyboard or automatically
in the Load Data Mode from a Master Card.

Once the constant data has been entered, the function of the Dupli-
cate Interpreting is to prevent any data punched in those columns or
fields from entering the Data Output Storage.

Code 2 (8) - Start Suppress Left Zero Print or
            11/12 Print Elimination

This code serves either one of its two purposes during Interpreting
as it does when Key Punching and Verifying. You were told the pur-
poses of this code when the VIP Program Codes for Key Punching were
explained.

Code 3 (9) - Start Early Feed

When the last character to be printed for an Interpreting applica-
tion is in a column to the left of Column 80, the Early Feed should
be programmed for the column immediately after the column where the
printing is to end.

Use of the Early Feed speeds the Interpreting operation by ending
reading and printing and starting feeding and ejecting at that
point.

PROGRAMMED OPERATIONS

The Interpreting operations controlled by programming are explained in this section with examples of the use of each operation.

As we said before, these operations apply only in the Automatic Mode of operation. When Interpreting in the Manual Mode, the presence of a Program in the machine has no effect.

NON-PRINT

The Non-Print operation prevents storage readout. Thus, no printing will occur in the related columns.

Program Code 11 (5) serves to start Non-Printing. Once the operation is started, it is continued for a field by Field Definition, Code 12 (4).

A single-column Non-Print operation is obtained by Code 11 (5) in that column of the Program.

In the example, any punching in the DESCRIPTION (Columns 30 - 49) and the "C" (Column 55) is not to be printed. In the Program Card:

- ☒ Code 11 in Column 30 starts the Non-Print for the Description field.
- ☒ Code 12 in Columns 31 - 49 continues the operation through the field.
- ☒ Code 11 in Column 55 causes the single-column Non-Print.

DUPLICATE INTERPRETING

Duplicate Interpreting prevents storage entry from the individual cards as they are read during Interpreting. Any entry made into storage before starting Interpreting in the columns programmed for Duplicate Interpreting will be printed on all of the cards fed. The punching in the individual cards in those columns is disregarded.

NOTE: The columns or fields not programmed for Duplicate Interpreting are Interpreted in their own right and subject to other means of programming.

As stated in the previous section, the data to be Duplicate Interpreted may be entered manually from the Keyboard or automatically from a Master Card.

IMPORTANT: If the entry is made manually from the Keyboard, either the FEED or EJECT key must be pressed after making the entry to transfer the data to Data Output Storage.

Program Code 0 (6) starts Duplicate Interpreting. It is continued for a field by Field Definition.

Single-column Duplicate Interpreting is obtained by Code 0 (6) in that column of the Program.

NOTE: If the constant data is to be printed in columns that are blank (unpunched) in the cards, it is still necessary to use Duplicate Interpreting. If it is not, the constant data entered before starting Interpreting will be erased by the Space codes in those columns of the first card fed.

1. A Date other than that punched in Columns 1 - 5 of the individual cards is to be printed in these columns for all of the cards of a batch. In the Program Card:

- ☒ Code 0 in Column 1 starts the Duplicate Interpreting for the Date field.
- ☒ Code 12 in Columns 2 - 5 continues the operation through the field.

After entering the Program for the application, the Date to be Duplicate Interpreted is entered.

The VIP is then set for Interpreting in the Automatic Mode and the operation started. The date entered will be printed in Columns 1 - 5 of all cards for the run rather than the date punched in the individual cards.

Any data punched in the Detail Cards in the columns to the right of the Date will be Interpreted in their own right.

2. The same identification is to be printed on all of the cards of a batch. This might be done for the program cards for a computer run. The columns in which this identification is to print are blank in the example. These are Columns 66 - 80.

- ☒ Code 0 in Column 66 starts the Duplicate Interpreting.
- ☒ Code 12 in Columns 67 - 80 continues the operation.

After entering the Program, the identification (PAYROLL - RUN 1) to be Duplicate Interpreted is entered. The VIP is set for Interpreting in the Automatic Mode and the operation started to print the identification on all cards.

Although Columns 66 - 80 are blank in the Detail Cards, the programming for Duplicate Interpreting is necessary to prevent these columns of storage from being cleared to Space codes when the first Detail Card is read.

Any punching in the Detail Card columns to the left of Column 66 will be Interpreted in its own right.

PRINT EDITING

Print editing during Interpreting can also include Left Zero Print Suppression and 11/12 Print Elimination.

Program Code 2 (8) is used to start Left Zero Print Suppression and to perform 11/12 Print Elimination during Interpreting as it does during Key Punching and Verifying.

PROGRAM EXAMPLE

This is an example of the Interpreting of cards produced by a machine other than a VIP where the cards were not printed as they were punched. Here is what you should know to make a Program Card for this case:

- All of the cards for a batch are to be printed with the same Date rather than the various dates punched in the individual cards.

- The punching in the Description field is not to be printed.

- The printing for the preceding left zeros in the Quantity and Amount fields is to be suppressed.

- Some cards will be punched with Position 11 in the last column of the Quantity and Amount fields to identify those values as negative.

- The printing ends with Column 62.

In the Program Card:

<u>Date</u> (Columns 1 - 5) - The common Date to be printed on all cards would be entered before starting Interpreting.

- ⊠ Column 1, Code 0 starts the Duplicate Interpreting of the Date.
- ⊠ Columns 2 - 5, Code 12 continues the operation.

<u>Description</u> (Columns 30 - 49)

- ⊠ Column 30, Code 11 starts the Non-Printing of this field.
- ⊠ Columns 31 - 49, Code 12 continues the operation.

<u>Quantity</u> (Columns 50 - 54)

- ⊠ Column 50, Code 2 starts Left Zero Print Suppression.
- ⊠ Columns 51 - 54, Code 12 continues the operation.
- ⊠ Column 54, Code 2 does 11/12 Print Elimination to let a number print in this column.

<u>Amount</u> (Columns 56 - 62)

- ⊠ Column 56, Code 2 starts Left Zero Print Suppression.
- ⊠ Columns 57 - 62, Code 12 continues the operation.
- ⊠ Column 62, Code 2 does 11/12 Print Elimination to let a number print in this column.

<u>Early Feed</u> - Column 63, Code 3 starts card feeding immediately.

The columns not included in the above programming will be printed with the characters related to the punching in those columns.

OPERATION

The Interpreting operation is the simple procedure of continuous feeding and printing of punched cards. The suggested procedure for performing this operation is as follows.

For the details about any of the controls mentioned here, you are given the source (in parentheses) of that information in the preceding sections.

1. Turn on the power by pressing in on the upper half of the Power Switch. (See Key Punching, External Features, Power Switch)

2. Enter the Program if the Interpreting is to be done in the Automatic Mode. Do this:

   ▣ Set in the Program Mode. (See Key Punching, Keyboard, Mode Control Switches)

   ▣ Insert the Program Card in the Auxiliary Input. (See Key Punching, External Features, Auxiliary Input)

   ▣ Press the FEED key.

   ▣ Remove the Program Card from the Select Stacker. (See Key Punching, External Features, Stackers)

   ▣ Set the Program Selection Switch at PROG 1 or PROG 2. (See Key Punching, Keyboard, Program Selection Switch)

3. Enter all Constant Data to be Duplicate Interpreted.

   By "Constant Data," we mean those columns or fields where the printing is to be the same for all cards and the punching in those columns or fields is disregarded. These are the columns or fields programmed to be Duplicate Interpreted with Program Code 0 (6).

   The procedure depends on the method to be used for entering this data. This can be done automatically from a Master Card or manually from the Keyboard.

   a. Master Card Entry - If you are provided with a prepunched card (Master Card) for this entry, do this:

      ▣ Set in the Load Data Mode. (See Key Punching, Keyboard, Mode Control Switches)

      ▣ Insert the Master Card in the Auxiliary Input.

      ▣ Press the FEED key.

      ▣ Remove the Master Card from the Select Stacker.

b. Keyboard (Manual) Entry

▧ Set the Punch-Verify switch at PUNCH.
Set the Print switch at PRINT.
(See Key Punching, Keyboard, Function Control Switches)

▧ Set in the Manual Mode.

▧ Press the SKIP key twice to clear the Data Storage.

▧ Enter the data in the proper columns by means of the Character keys.

▧ To check the entry and to transfer the data to Data Output Storage:

  - Insert a blank card in the Auxiliary Input.

  - Press the FEED key to print and punch the card with the constant data entry.

  - Remove the card from the Select Stacker and be certain the entry is correct.

4. Load the Magazine with the supply of the cards to be Interpreted. (See Interpreting, Features, Input Magazine)

5. Set the Function Control Switches for the Interpreting operation. (See Interpreting, Keyboard, Function Control Switches)

▧ The Print switch is set at PRINT.

▧ The Punch-Verify switch is set at PUNCH.

▧ The Load Mode switch is set OFF.

▧ The Operating Mode switch is set at either AUTO or MANUAL. If a Program has been entered, the AUTO setting would be made.

▧ The Program Selection Switch is set at either PROG 1 or PROG 2 if the Automatic Mode is to be used. If the Manual Mode is being used, this switch setting is not important.

6. To start the operation, press the INTERPRET-START switch. If the Visible Station is empty at the start of operation:

▧ Press the CLEAR key to remove the Keyboard Interlock which occurs when the first card is fed.

▧ Press the INTERPRET-START switch again to resume the operation.

7. If you wish to stop the operation at any time during the run, press the INTERPRET-STOP switch.

8. If the operation stops automatically during the run:

▧ Determine and correct the reason for the stoppage.

ⓧ Press the CLEAR key if a Keyboard Interlock is in effect.

ⓧ Press the INTERPRET-START switch to resume the operation.

9. At the end of the run, the last card from the Magazine will have been printed and delivered to the Output Stacker.

MACHINE CARE

The things for you to do to properly care for the VP or VIP are few and easily done. They are, however, most important. As with any piece of equipment, excess dust and dirt seriously affect its operating efficiency. If you take proper care of the machine, it will be able to perform at its best for you.

When you are first assigned a VP or VIP, your Supervisor, Instructor, or the UNIVAC Field Engineer can review these procedures with you.

The items of machine care include:

1. The top covers of the machine should be kept free of all objects both large and small:

   ⊠ Small objects (pencils, paper clips, rubber bands, etc.) lying loose on the covers or Reading Board can get into the Input Magazine or inside the machine to cause card jams or damage to the machine.

   ⊠ Large objects on the covers will delay your getting the Access Cover open in case of a card jam or the like.

   ⊠ Papers and other objects on the grille of the Access Cover block the air circulation inside the machine to cause overheating.

2. The outside covers and the Reading Board should be kept clean.

3. The inside of the machine and the operating elements should be inspected and cleaned on a scheduled basis. The primary areas requiring attention are:

   ⊠ The Chip Receiver so that chips do not overflow.

   ⊠ The Read Station so that proper reading is done.

   ⊠ The entire Card Path including the Input Magazine and Stackers so that excess dust and lint do not cause card jams.

For this machine care, you should have the following available to you:

1. A soft-bristle brush for general dusting purposes. A brush of this kind is furnished with the machine at the time it is delivered.

2. For a VIP, a brush with short, stiff bristles for cleaning the Type Wheel. This is a brush similar to that used for cleaning the type of a typewriter.

3. Cleansing tissue for the cleaning of internal surfaces. Soft cloth or industrial type tissue for the cleaning of exterior surfaces.

4. A mild soap or detergent for the cleaning of exterior surfaces.

5. A small, portable vacuum cleaner with a flexible hose should be available in the department. Vacuum cleaning is strongly recommended as the quick, efficient method of removing lint, dust, and other particles from the Magazine and Stackers as well as the Card Path and other inside areas. By this means, the particles are removed and not allowed to remain to be recirculated.

> IMPORTANT: The hose and nozzle of this vacuum cleaner must not be metal.

Schedules

Just when and how often you should attend to the various items of machine care should be determined by your Supervisor. This scheduling can be based on the amount and nature of the use.

The various items of machine care must be performed frequently enough to be thoroughly effective to prevent misoperation due to dirt, dust, and lint accumulations.

The following machine care frequencies are suggested:

DAILY -- Empty the Chip Receiver.

BIWEEKLY

- Clean the dust and lint from the Card Path including the Read Station, Magazine, and Stackers.
- Clean the Type Wheel of a VIP.
- Clean the outside covers and Reading Board.

Procedures

The following procedures are suggested for performing each of the machine care items:

> IMPORTANT: Except when emptying the Chip Receiver, the power to the machine must be turned OFF when performing any of these operations.

DAILY

- Empty the Chip Receiver.
       (See Key Punching, External Features, Chip Receiver)

You should do this as a matter of habit. We suggest; either at the end of the day or at the start of work in the morning, then, if necessary, the first thing after lunch.

BIWEEKLY

1. (VP and VIP) - Clean the dust and lint from the Card Path including the Magazine and Stackers.

   ⊠ Remove all cards from the machine.

   ⊠ Open the Access Cover.

   - Remove the front part of the Read Station.
     (See Key Punching, Internal Features, Read Station)

   - Lower the glass plate of the Visible Station.
     (See Key Punching, Internal Features, Visible Station)

   - Remove the metal plate at the left of the Punch Station.
     (See Key Punching, Internal Features, Punch Station)

   ⊠ With the soft-bristle brush (and vacuum cleaner), clean all areas of the Magazine, Stackers, and the Card Path from the Magazine to the Stackers.

      NOTE: If a vacuum cleaner is not used, hold a piece of paper or an envelope beneath the interior areas as you dust to prevent the dust and lint from falling into the lower areas.

   The area in and around the oscillating blades in the Visible Station should be dusted thoroughly to remove any possible dust and lint. CAUTION: Be very careful not to bend or damage these blades when dusting in this area.

   ⊠ Clean the Read Station thoroughly with a soft cleansing tissue:

   - Wipe the lamp and the inner surface of this station.

   - Wipe the top and the flat surface of the front part of this station.

   - Return the front part of the Read Station to its position in the machine.

   ⊠ As you return the metal plate to the left of the Punch Station, wipe it with the cleansing tissue.

   ⊠ With the dry cleansing tissue, wipe the inside and outside of the glass plate as you close it.

      NOTE: If the glass is very dirty, use a moist (not wet) tissue containing a mild soap or detergent to clean the glass; then dry thoroughly before closing. Do not use any moisture when cleaning the inside of this station.

2. (VIP) – Clean the Type Wheel.

   ☒ Remove the Inking Roll.
        (See Key Punching, Internal Features, Print Station)

   ☒ With the stiff-bristle brush (dry), clean the Type Wheel while
        you rotate it by turning the drive belt or pulley on the left
        side of the Print Station.

        IMPORTANT: Never use any moisture when cleaning the Type Wheel.
           This dissolves the ink and makes a mess.

   ☒ Return the Inking Roll.

   ☒ Close the Access Cover.

3. (VP or VIP) – Clean the outside covers and the Reading Board.

   ☒ The Access Cover should be closed.

   ☒ Turn the Power Switch OFF.

   ☒ With a _moist_ (not wet) cloth or industrial tissue containing the
        mild soap or detergent, clean the outside covers and the Reading
        Board; dry thoroughly.

        CAUTION: If you clean the Keyboard unit, do not use any moisture
           around the key tops. This can affect the electrical contacts
   and wiring inside the unit.

OPTIONAL FEATURES

To add to the many abilities of the UNIVAC 1701 Verifying Punch and the UNIVAC 1710 Verifying Interpreting Punch already described to you, various additional abilities (Optional Features) are available. Your machine may have none or one or more of these features.

The Function Control Switches for two of the Optional Features are shown in the upper left of the Keyboard. These are the Self-Check and the Interspersed Master Card.

These Optional Features include:

- ⊠ Self-Check, Modulus 10 or Modulus 11 - Numerical fields are verified automatically while Key Punching. This feature may be used to expand code numbers by automatically generating and punching the related Check Digits.

- ⊠ Interspersed Master Card - With Master Cards interfiled with Detail Cards, information is read automatically from the Master Cards for Duplicating in the following Detail Cards during Key Punching, Verifying, or Interpreting until changed automatically by the reading of the next Master Card.

- ⊠ Short Card Feed - The Input Magazine and Output Stacker can be adjusted by you for the feeding of 51-Column Short Cards, 66-Column Short Cards, or the standard size 80-Column Cards.
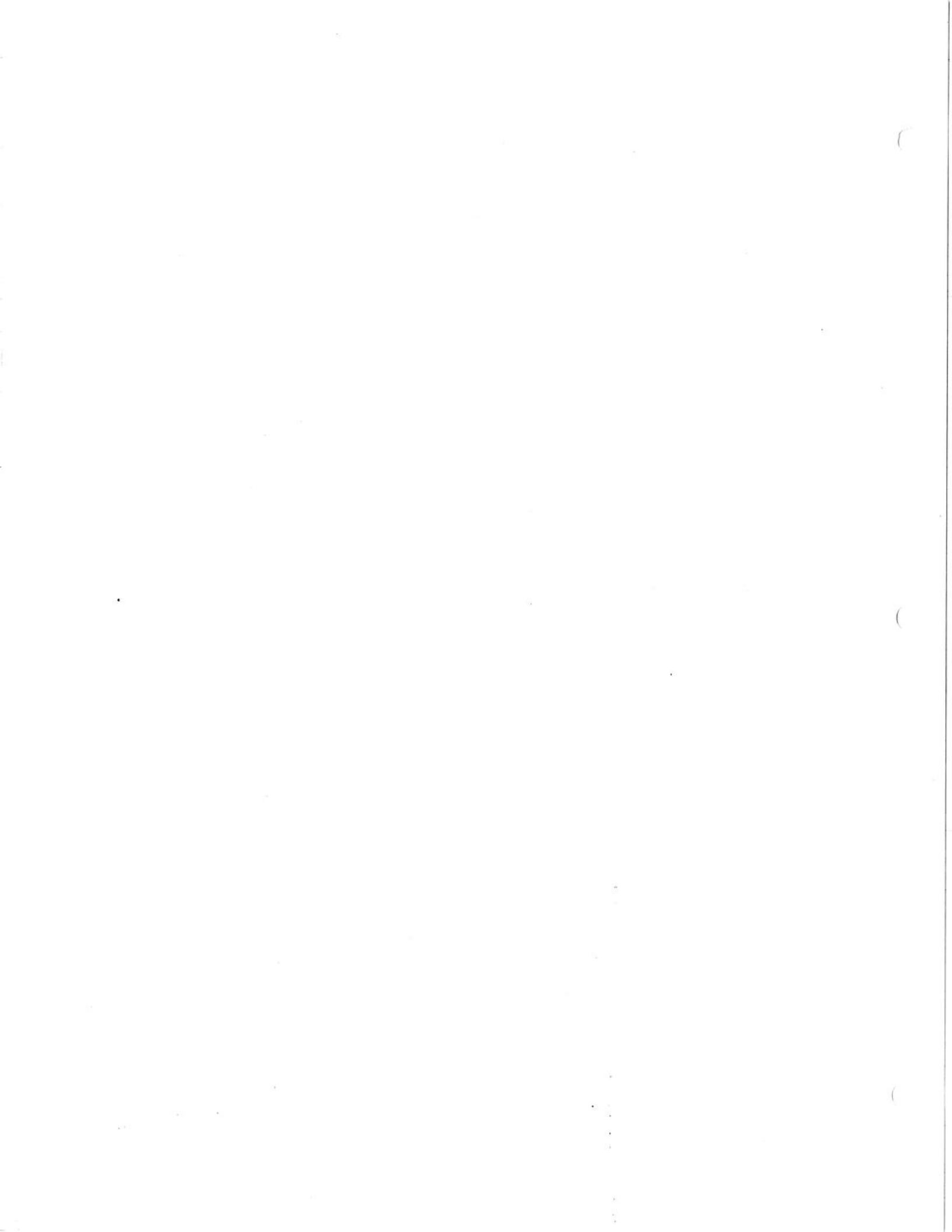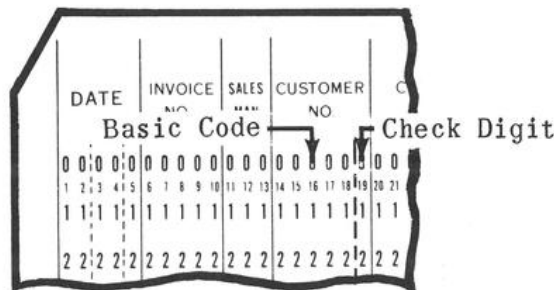
SELF-CHECK

MODULUS 10 or MODULUS 11

The principal purpose of the Self-Check feature for a UNIVAC VP or VIP is to verify a numerical field by the use of a "Check Digit" while you are originating the cards during Key Punching. We call this, "Check Digit Verifying."

You can also use this feature to generate and punch the Check Digit for a numerical code, "Check Digit Punching."

The Self-Check feature performs its function automatically under control of the Program by means of a calculator included in the feature. Your machine may be equipped for either the Modulus 10 (MOD 10) or the Modulus 11 (MOD 11) calculation but not both. Your Supervisor will know.

> NOTE: The two methods of computing Check Digits (Modulus 10 and Modulus 11) together with the programming for Check Digit Punching and Check Digit Verifying are described in detail in the Reference Manual for the UNIVAC 1701 Verifying Punch and 1710 Verifying Interpreting Punch (UP-7642). Refer to the subject of Self-Check in the Optional Features section of that manual.

A Check Digit is a numeral (0, 1 - 9) added to the right of a basic numerical code. Thus, if a Customer Number code was 5 digits, the addition of a Check Digit makes it a 6-digit code.

The Check Digit of a number is obtained by a calculation using the digits of that number. The Modulus 10 Check Digit of 84526, for example, is 3. If this was a numerical code, the expanded code for Self-Checking purposes is 845263.

This expansion of basic code numbers can be done automatically by the Check Digit Punching operation.

When a code that has been expanded to include a Check Digit and the expanded code is included in the source documents, the field in which that code is punched can be Check Digit Verified by repeating the calculation and checking to see that the same Check Digit is obtained.

The Self-Check feature performs its calculations automatically in a field to arrive at the Check Digit as you enter each digit of the basic code. Then, when you have indexed to the Check Digit column:

⊠ If you are Check Digit Punching, the Check Digit calculated enters
the Check Digit column automatically and the storage indexing advances.

⊠ If you are Check Digit Verifying, the Check Digit you key in from the
document is compared with the calculated Check Digit.

- If the two digits agree (Match), the Check Digit enters the Check
Digit column and the storage indexing advances.

- If the two digits do not agree, the indexing stops on the Check
Digit column with the yellow Non-Match indicator lit. You can
reenter the field as many times as you wish to try to reach a
Match.

If a Non-Match remains, you can advance out of the field. When
you do, the Check Digit calculated enters the Check Digit column
together with Position 12 in that same column to indicate that
a Non-Match occurred.

We will tell you more about this Non-Match procedure later on.

In one run, the Self-Check feature may be used:

⊠ For Check Digit Punching only in one or more fields.
⊠ For Check Digit Verifying only in one or more fields.
⊠ For Check Digit Punching in one or more fields while Check Digit
Verifying in other fields.

Whether Check Digit Punching or Check Digit Verifying will be performed
in a field depends entirely upon the programming of that field.

Control

When the Self-Check feature is included in a VP or VIP, the following
function controls apply:

SELF-CHECK SWITCH

With the Self-Check feature, a Function Control Switch is provided in
the upper left corner of the Keyboard to make the feature operative or
inoperative. This toggle switch has two settings:
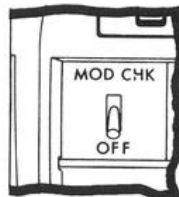
⊠ MOD CHK (Up) - The Self-Check feature is operative.

⊠ OFF (Down) - The Self-Check feature is inoperative.

PUNCH-VERIFY SWITCH

The Self-Check feature functions only when Key Punching (PUNCH).

OPERATING MODE SWITCH

◼ Check Digit Punching functions only in the Automatic (AUTO) Mode.

◼ Check Digit Verifying can be done in either the Manual or Automatic Mode.

◼ When Check Digit Punching and Verifying in the same card, the operation must be done in the Automatic Mode.

PROGRAM SELECTION SWITCH

The PROG 1 (Program 1) setting is used when Check Digit Punching or Check Digit Verifying.

Although some of the programming for Self-Checking extends into the Program 2 area (see Program below), this coding serves its proper purpose only when the Program Selection Switch is set at PROG 1 and the Self-Check Switch is set at MOD CHK.

If the Program Selection Switch is set at PROG 2, regardless of the setting of the Self-Check Switch, all coding in the Program 2 area will function as Program 2 Codes.

CHECK PUNCH

The Punching Station functions automatically during card feeding when the Self-Check feature is operative to cause a CHECK Punch in Position 7 in the leading end of a card in the left margin to indicate:
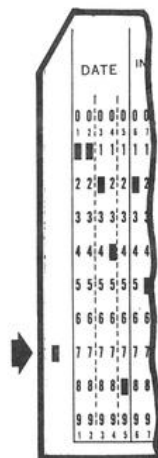

◼ When Check Digit Punching, that the card has been Key Punched with the Self-Check feature operative.

▉ When <u>Check Digit Verifying</u>, that the card has been successfully Self-Checked. You will get this identifying punching in a card only when you have obtained a Match of the Check Digit for all fields of that card Check Digit Verified.

Operation

An application that includes the use of the Self-Check feature differs little from any other Key Punching operation except for a Non-Match during Check Digit Verifying (see below)

After entering the Program and any Constant Data, the cards to be punched are loaded into the Input Magazine. Either before or after feeding the first card to the Visible Station, the following Function Control Switch settings are made:
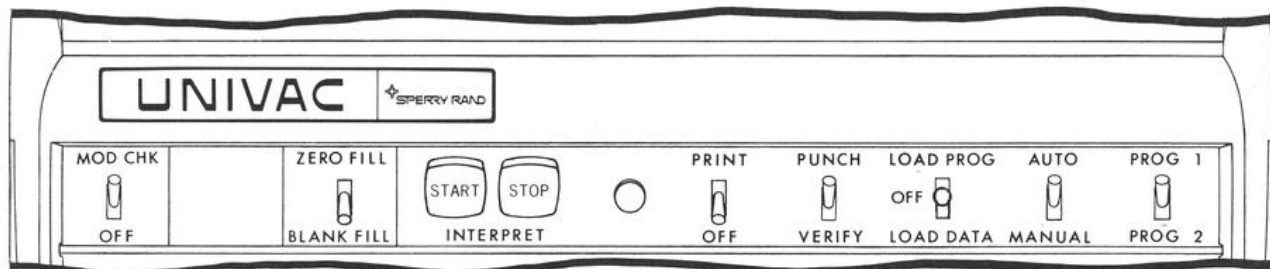
▉ Self-Check Switch at MOD CHK.

▉ Print Switch (VIP) at PRINT or OFF depending on whether printing is desired or not.

▉ Punch-Verify Switch at PUNCH.

▉ Load Mode Switch at OFF.

▉ Operating Mode Switch:
    At AUTO for Check Digit Punching only or combined Check Digit
        Punching and Verifying.
    At AUTO or MANUAL for Check Digit Verifying only.

▉ Program Selection Switch at PROG 1.

CHECK DIGIT PUNCHING

For a field of Check Digit Punching, you enter the basic code digits in the same manner as for any other field. As the storage indexes through the Check Digit column, the Check Digit enters. This storage indexing and Check Digit entry are automatic with no interruption to your operating rhythm.

<u>Corrections</u>: To make a correction while entering the digits of the basic code or after the check digit has entered, an entire new entry must be made in the field. You can use either of these procedures:

▉ Backspace to the first column of the field or to a column to the left outside the field. Then make the new entry, <u>or</u>

☒ Press the HOME key to return to Column 1. Use the DUP or COL DUP key to advance to the first column of the field to make the new entry.

Never use the Backspace key to correct individual columns within a field. Except for the first column of a field, the entry of one digit, a backspace, and then the entry of a second digit will generate the wrong Check Digit.

CHECK DIGIT VERIFYING

For a field of Check Digit Verifying, you enter all of the code digits for that field given on the source document in the same manner as for any other field. The last digit you enter should be the Check Digit. At this time, the Check Digit you enter is compared automatically with the Check Digit calculated.

☒ If the two Check Digits agree (Match), the Check Digit enters the column and the storage indexing advances without interruption to your operating rhythm.

☒ If the two Check Digits do not agree, the yellow Non-Match indicator lights and the Keyboard interlocks. Do this:

- Press the CLEAR key to turn off the Non-Match indicator and release the Keyboard Interlock.

- To be sure you made the proper entries in the field, press the HOME key to return to Column 1. Then use the DUP or COL DUP key to advance to the first column of the field being Check Digit Verified. If a Non-Match again results ---

- Press the DUP or COL DUP key to advance from the Check Digit column to continue with the Key Punching of the balance of the card. In that Check Digit column:
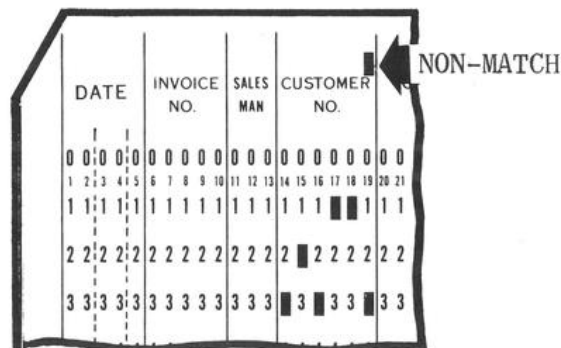
The Check Digit calculated by the Self-Check feature is entered automatically and will be punched in the card.

Position 12 is entered automatically and will be punched in this column to indicate that the Check Digit on the document did not agree with the Check Digit calculated.

- When a card in which there is a Non-Match Check Digit is fed, that card will not be CHECK Punched with Position 7 in its left margin.

<u>Corrections</u>: To make a correction while entering the basic code digits, an entire new entry must be made in the field. You can use either one of these procedures:

- Backspace to the first column of the field or to a column to the left outside the field. Then make the new entry, <u>or</u>

- Press the HOME key to return to Column 1. Use the DUP or COL DUP key to advance to the first column of the field to make the new entry.

Never use the Backspace key to correct individual columns within a field. Except for the first column of a field, the entry of one digit, a backspace, and then the entry of a second digit will generate the wrong Check Digit.

When a Non-Match is created, the procedure using the HOME key given above must be used to try to reach a Match. If it is not, the "7" will not be punched in the left margin if the attempt is successful.

When a batch of cards is completed, the source documents for any cards not CHECK Punched are reviewed by some one assigned by your Supervisor. This person must determine the reason for the difference in Check Digits and reconcile that difference so that agreement is reached. The wrong code may have been applied to the document.

Regardless of the reason for the Non-Match, when the proper entry is determined, the Non-Match cards must be remade if only to eliminate the Position 12 punch in the Check Digit column. If this is not done, that column will be invalid and will cause the wrong character to be read during further processing.

OPERATING CONTROL KEYS

If you attempt to advance completely through a Self-Checking field with these Operating Control keys, this will happen because of the multiplication that takes place within that field:

COL DUP Key - Pressing this key in a basic code column causes the digit stored in that column to enter into the calculation.

- When <u>Check Digit Punching</u>, the COL DUP key may be used in all columns of the basic code <u>except</u> the units column (the column before the Check Digit column). The digit for this column must be entered from the Character Keybank.

  If the COL DUP key is used in the units column, the advance to the Check Digit column will take place but the Check Digit is not stored and will not be punched.

- When <u>Check Digit Verifying</u>, the COL DUP key will function in any or all of the basic code columns.

<u>DUP Key</u> - Use of the DUP key is not advocated. The speed of the advance is such that, usually, no erasing or calculating takes place.

SKIP Key - Using the SKIP key of Space bar causes a zero Check Digit to be generated and the basic code columns to be blank.

- When Check Digit Punching, the zero is punched in the Check Digit column.

- When Check Digit Verifying, the blank obtained from the Skip or the Space is compared with the zero generated in the Check Digit column; the result is a Non-Match.

   NOTE: If you attempt to clear storage by using the SKIP key in the Manual Mode, be sure the MOD CHK switch is OFF. This prevents the Non-Match in the fields programmed for Self-Checking.

Program

The Program for the Self-Check feature uses both the Program 1 and Program 2 areas of the Program Card and Program Storage although the operation is under Program 1 control (PROG 1).

The following is a brief description of the programming for a Self-Checking field. The basic Program 1 Codes are used for the balance of the card.

>   NOTE: As mentioned in the first page of this section, the two ways of computing Check Digits (Modulus 10 and Modulus 11) together with the details of programming for this feature are given in the Reference Manual (UP-7642).

1. Field Definition – Code 12 – This code is in all columns of the Program Card field except the first. This includes the basic code and the Check Digit columns.

2. Check Digit – Code 8 – The location of this code depends upon the type of operation to be performed:

    ☒ Check Digit Punching – Code 8 is in the units column for the basic code of the Program Card field. This is the first column to the left of the Check Digit column.

    ☒ Check Digit Verifying – Code 8 is in the Check Digit column of the Program Card field.

3. Multiplier Codes – These are positions punched in the basic code columns of the Program Card field to represent the multiplier digits used in calculating the Check Digit. These codes are given in the Reference Manual and depend on whether Modulus 10 or Modulus 11 is to be used.

INTERSPERSED MASTER CARD

With Master and Detail Cards interfiled, the Interspersed Master Card feature for the UNIVAC VP or VIP allows information punched in one or more fields of Master Cards to be read as they feed in two automatic cycles from the Input Magazine to the Output Stacker.

> NOTE: The Master Cards are not printed or punched as they pass through the machine.

The information read from one Master Card is entered into Data Storage to be Duplicated into the following group of Detail Cards until changed by the automatic reading and feeding of the next Master Card.

This same type of operation, performed manually, was described for you in the Key Punching portion of this manual under Operation. (See Key Punching, Operation, Interspersed Master Card Entry)

With this feature, all you do is pause a moment in your Key Punching or Verifying while a Master Card feeds through automatically.

This method of entering Duplicate information applies to all uses of a VP or VIP:

- When Key Punching, you would enter the information for other fields from the Keyboard. Then, when your entry is completed, all information forming the image for the Detail Card (that Duplicated from the Master Card and that keyed in by you) is printed and punched in that Detail Card.

- When Gangpunching, the entire operation is automatic with the data to be printed and punched into each group of Detail Cards being read automatically from the related Master Card.

- When Verifying, the information read from fields of a Master Card is used as the basis for the automatic Duplicate Verifying of the punching in those fields of the related Detail Cards.

- When Interpreting, the information read from fields of a Master Card is Duplicate Interpreted on the following Detail Cards.

The manual setting of a Function Control Switch (see Control below) determines whether the feature is operative or inoperative.

When the Interspersed Master Card feature is operative:

- The Master Cards are distinguished automatically from the Detail Cards by the presence or absence of a 60 degree corner cut in the upper left corner (see Control below).

- The Master Cards and the Detail Cards are subject to independent Program control; Program 1 for the Detail Cards, Program 2 for the Master Cards (see Program below). The Program Selection Switch is set at Program 1 (PROG 1). The switching from one Program to the other is entirely automatic during the run.

⊠ The Read Station becomes active automatically when a Master Card is
  sensed.

Control

When the Interspersed Master Card feature is included in a VP or VIP,
the following function controls apply regardless of whether the machine
is being used for Key Punching, Verifying, or Interpreting.

CORNER CUT

The primary control over the operation of this feature is the sensing
of the UPPER LEFT CORNER of a card as it is fed to the Read Station
from the Input Magazine. This sensing determines whether this corner
has the 60 degree corner cut or is square (or round).
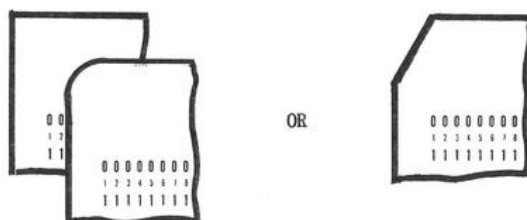
INTERSPERSED MASTER CARD SWITCH

With this feature, a Function Control Switch is provided in the upper
left corner of the Keyboard. This three-position toggle switch has
three settings; two operative, one inoperative.
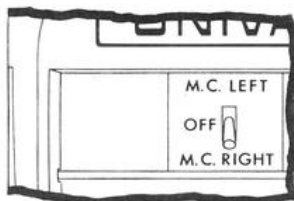
The two operative settings of this switch determine whether the Master
Card will be one with the corner cut or one with the square (or round)
corner. In either case, the other type of card will be the Detail Card.

The switch settings are:

⊠ M.C.LEFT (Up - Operative) - Make this setting when the Master Cards
     are those with the upper left corner cut. The Detail Cards have
     the square (or round) upper left corner.
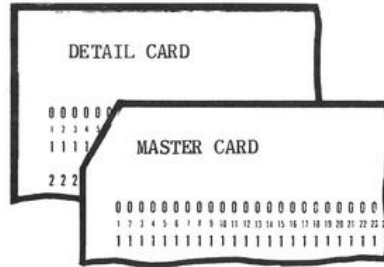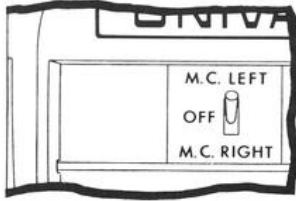
⊠ M.C.RIGHT (Down - Operative) - Make this setting when the Master Cards are those with the <u>square (or round)</u> upper left corner. The Detail Cards have the upper left corner cut.
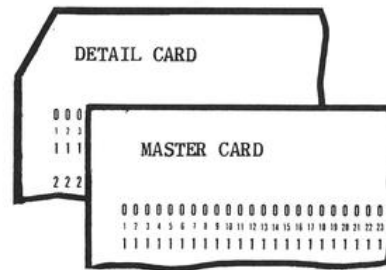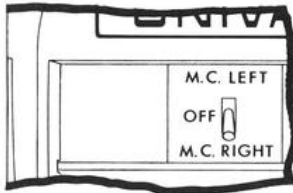
⊠ OFF (Center) - The feature is inoperative. The cut, if any, in the upper left corner has no influence on the machine operation.

OPERATING MODE SWITCH

The Interspersed Master Card feature functions only in the Automatic Mode (AUTO).

PROGRAM SELECTION SWITCH

This switch is set at Program 1 (PROG 1) when the Interspersed Master Card feature is operative. The Program switches automatically to Program 2 control when a Master Card is sensed and back to Program 1 control when a Detail Card is fed.

Operation

An application that includes the use of the Interspersed Master Card feature differs little from similar Key Punching, Gangpunching, Verifying, or Interpreting operations except information to be Duplicated is entered from the Master Cards as the operation is in progress.

Some Key Punching, Verifying, and Interpreting applications may also require that other Duplicate information be entered manually from a Master Card or from the Keyboard.

After entering the Program, any Constant Data, such as a Date, which is common for all of the Detail Cards is entered. A supply of the inter-filed Master and Detail Cards is loaded into the Input Magazine.

Before feeding the first card from the Input Magazine, the following Function Control Switch settings are made:

- Interspersed Master Card Switch - This setting depends on whether the Master Cards or the Detail Cards have the upper left corner cut:

        At M.C.LEFT - Master Cards have corner cut.
        At M.C.RIGHT - Detail Cards have corner cut.

- Print Switch (VIP) at PRINT or OFF depending on whether printing is desired or not.

- Punch-Verify Switch at PUNCH or VERIFY according to the use being made of the machine.

- Load Mode Switch at OFF.

- Operating Mode Switch at AUTO.

- Program Selection Switch at PROG 1.

Program

The programming for the Interspersed Master Card feature uses both the Program 1 and Program 2 areas of the Program Card and Program Storage.

The following is a brief description of this programming. For more information on the subject, refer to Interspersed Master Card in the Optional Features section of the Reference Manual (UP-7642) for the UNIVAC 1701 Verifying Punch and 1710 Verifying Interpreting Punch.

PROGRAM 1 - Detail Card

The basic Program 1 Codes are used for the programming of the Detail Cards. The fields read from the Master Cards are usually programmed for Duplicating in the Detail Card Program.

PROGRAM 2 - Master Card

Storage entry from a Master Card requires no Program control. The punched and blank columns of a Master Card erase the existing contents of Data Storage and create a new setup.

Code 5 - Start Skip - Erase Storage. Any data in storage is erased and no data from the Master Card is allowed to enter.

Code 6 - Start Duplicate - Retain Storage. Any data in storage when a Master Card is read is allowed to remain and no data from the Master Card is allowed to enter.

Code 4 - Field Definition. During the reading of a Master Card, the operation started by either Code 5 or Code 6 will continue for each column programmed with this Field Definition.

Short Card Feed

The Short Card Feed allows either 51-Column or 66-Column Short Cards to be fed through a UNIVAC VP or VIP for Key Punching, Verifying, or Interpreting. Removable card guides are used for this feeding.

When Short Cards are to be fed, you install one card guide in the Input Magazine and another in the Output Stacker. Removing these guides returns the machine to full 80-Column card operation.

For programming and for Data Storage entry and readout; the 51-Column card is related to Columns 1 - 51 of an 80-Column card, the 66-Column card is related to Columns 1 - 66.

Control

The only basic difference in control between an application using Short Cards and one using the Standard 80-Column Cards is obtained automatically over the feeding and receiving by the use of the card guides. The card size does not affect the use of any of the function or operating controls.

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51-Column, Magazine ▶

66-Column, Magazine
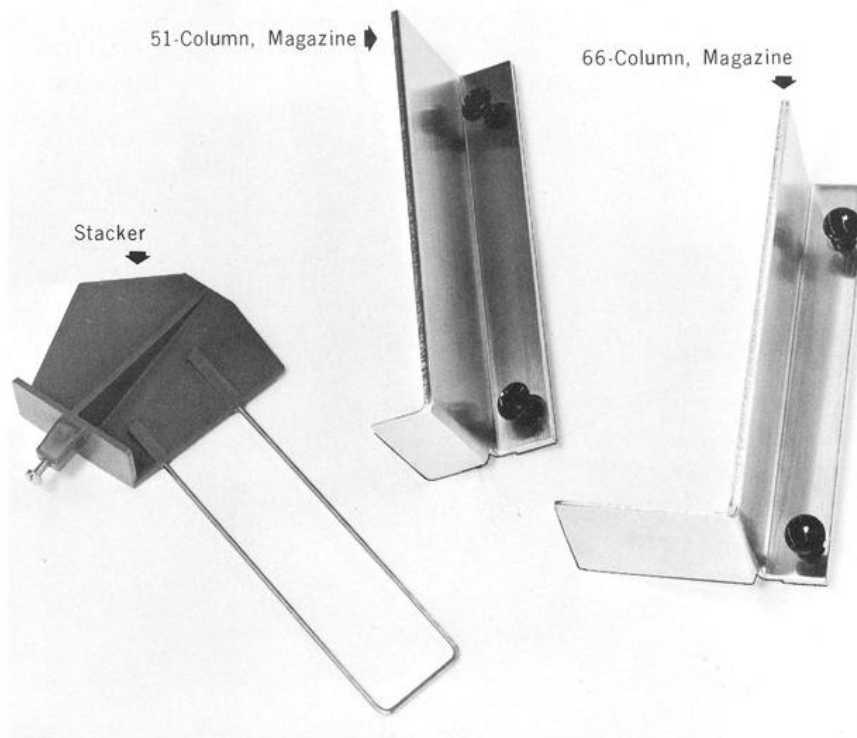
Stacker

The three Card Guides pictured here are furnished with the Short Card Feature to control card alignment. Two guides are for the Input Magazine; one for 51-Column cards, the other for 66-Column cards. The third is for the Output Stacker.

INPUT MAGAZINE CARD GUIDES

These guides are metal pieces with a right angle at the front and two plastic snap fasteners in the base. The guide with the shorter front portion is for the 51-Column cards.

There are two sets of two holes each in the bottom of the Magazine. Each set consists of a hole near the front and another near the rear. The set to the left, nearest the center, is for the 51-Column cards; the set to the right is for the 66-Column cards.

The upper part of a snap fastener is a plunger. When this is pressed down, the bottom part of the fastener will expand. When a guide is set with its fasteners in the proper holes in the base of the Magazine, the upper part of the fasteners is pressed down to lock the guide in place. The guide is released for removal by pulling up on the fasteners.

OUTPUT STACKER CARD GUIDE

There are two square holes in the base of the Stacker just to the left of the Stacking Device. The hole to the left is for the 66-Column cards, the hole to the right for the 51-Column cards.

The stud containing the screw in the bottom of the guide is inserted in the proper hole according to the size of the cards to be fed.

The screw in the guide is most important when using 51-Column cards because these cards have an odd number of columns. When the guide is installed in the hole to the right, the screw causes a switch at the bottom of the hole to close; this causes:

▧ The contents of Data Storage, starting with Storage Column 1, to read out for punching (and printing) starting with Card Column 1.

▧ During Verifying, the OK and Corrected identifications to punch in their proper locations in the left margin of the card.

If this switch in the hole to the right is not closed during 51-Column card operation, punching (and printing) will occur one column to the left of where it should. If this happens when using 51-Column cards, be sure that:

▧ The guide is installed in the hole to the right, <u>or</u>
▧ The screw is not missing, <u>or</u>
▧ The screw is properly adjusted so it will close the switch.
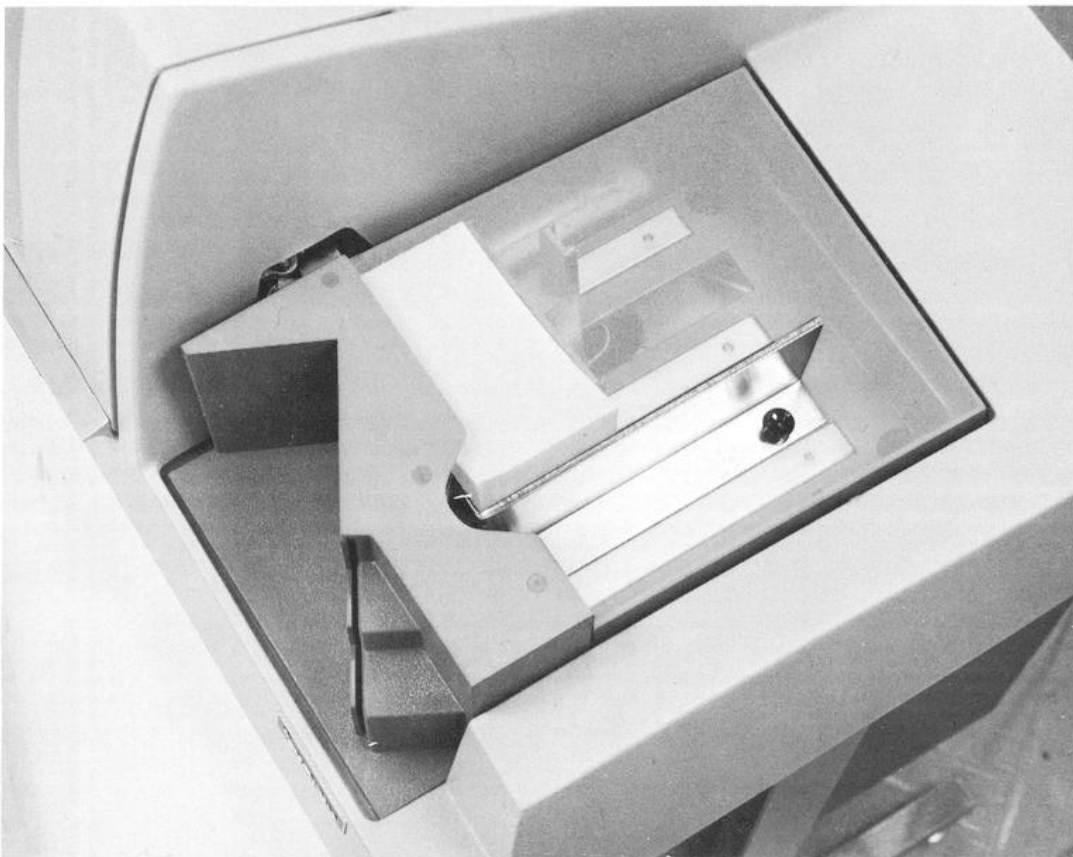
The Magazine ready for the feeding of Short Cards.

Operation

An application that uses Short Cards differs little from a similar Standard 80-Column Card application of Key Punching, Verifying or Interpreting except for the installation of the Card Guides.

To install an Input Magazine Card Guide:

▉ Empty the Magazine and push the Follower Arm to its latched position at the rear.

▉ Be sure the upper part of each snap fastener on the Card Guide is in its up position.

▉ Seat the Card Guide with its fasteners inserted in the proper holes in the base of the Magazine; press down on both fasteners to lock the guide in place.

After the guide is installed, the Magazine is loaded with cards and the Follower Arm is released.

Because the full 80-Column (Standard Size) card must be used to load the Program and also to load data, these loading procedures are performed before the Output Stacker Card Guide is installed.

Short Cards in the Output Stacker

Program

The programming for a Short Card application is the same as that for a full 80-Column card with blank columns at the right. For a 51-Column card, these "blank" columns are 52 - 80; for a 66-Column card, they are 67 - 80.

The programming for the right-hand columns would be:

<u>51-Column Card</u> -- At Column 52 <u>or</u> before:

        Key Punching --- Start Skip or Early Feed.
        Verifying ------ Start Bypass.
        Interpreting --- Start Early Feed.

<u>66-Column Card</u> -- At Column 67 <u>or</u> before

        Key Punching --- Start Skip or Early Feed.
        Verifying ------ Start Bypass.
        Interpreting --- Start Early Feed.

RELEASE/EJECT KEY

The Release/Eject feature for a UNIVAC VP or VIP adds another means of obtaining a Card Feeding Cycle, called Card Release. The basic Card Eject operation is also included in this feature. Both of these operations are obtained from one operating control key.

The Card Release operation is most useful for those applications where the last column of manual entry or manual verifying varies from card to card.

During Key Punching, the Card Release operation allows you to start a Card Feeding Cycle after making the last column of manual entry while the following happens automatically in the column and the columns to the right of where the operation was started:

⊠ The clearing of variable information. This is information you had entered for the previous card but is not wanted in the current card.

⊠ The retaining of duplicate information in selected columns. This is information programmed for Duplication in all cards of a batch.

As you know when the FEED key is used during Key Punching, all of the data in storage remains unchanged and is punched in the card.

During Verifying with the Card Release operation, you can start a Card Feeding Cycle after the last column of manual verifying while the following is done automatically in the column and the columns to the right of where the operation was started:

⊠ All columns programmed for Duplicate Verifying are checked.
⊠ All columns programmed for Bypassing are not verified.
⊠ All other columns are checked to be sure they are blank.

Control

The operating control key for the Release/Eject function replaces the EJECT key in the top row of the keybank (Row 1, Key 11). This key is labeled REL at the top and EJT at the bottom. One of the two operations will be performed depending on the Mode of Operation in effect at the time the key is pressed.

REL ⟵ Card Release in the Automatic Mode
EJT ⟵ Card Eject in the Manual Mode

CARD RELEASE -- REL (Automatic Mode)

Key Punching

In the Automatic Mode when the REL/EJT key is pressed before the right margin is reached, an advance to the right margin is started. Here is what happens:

▨ During the advance to the right margin:

- Any columns programmed for Duplicating, Code 0 (6), will be duplicated.

- All other columns will be Skipped automatically whether programmed for Skipping or not, i.e., they are cleared to blanks (Space codes).

▨ When the right margin is reached, the Automatic Feed starts a Card Feeding Cycle. The usual events occur:

- A card in the Visible Station is punched (and printed) and fed to the Output Stacker.

- A card from the Input Magazine is fed to the Visible Station.

Verifying

In the Automatic Mode when the REL/EJT key is pressed before the right margin is reached, an advance to the right margin is started. This happens:

▨ During the advance to the right margin:

- Any columns programmed for Duplicate Verifying, Code 0 (6), will be checked for Non-Match Marks.

  If a Non-Match Mark is detected, the operation stops at that column. If a Correction is made, the advance may be restarted by again pressing the REL/EJT key.

- Any columns or fields programmed for Bypassing, Code 11 (5) or 11-2 (5-8), will be verified.

- All other columns will be Skipped automatically, i.e., checked for blanks (Space codes).

  If a Non-Match is detected (a column that is not blank), the operation stops at that column. If a Correction is made, the advance may be resumed by again pressing the REL/EJT key.

▨ When the right margin is reached:

- If no Error is detected for the card, i.e., no Correction made in the setup, the Automatic Feed starts a Card Feeding Cycle. The usual events occur:

  .. The card in the Visible Station is identified as OK and fed to the Output Stacker.

  .. The next card in the Magazine is read as it feeds to the Visible Station.

- If an Error was detected and a Correction made to the setup, the usual procedure of inserting a blank card in the Auxiliary Input and pressing the FEED key is used.

CARD EJECT --- EJT (Manual Mode)

In the Manual Mode when the REL/EJT key is pressed regardless of the reading of the Column Indicator, a Card Eject Cycle is initiated. The operations performed at this time are identical to those described for the EJECT key under Keyboard in the Key Punching and Verifying sections of this manual:

⊠ A card in the Visible Station is delivered to the Select Stacker without being printed or punched. During Verifying, this card is considered to be an Error card.

⊠ There will be no card feeding from either the Input Magazine or the Auxiliary Input.

Operation

The Card Release operation, as we have said, is used mostly for those applications where the last column of manual entry or manual verifying varies from card to card. Here is an example:

In the Detail Card:

⊠ Columns 1 - 50 -- Data will be entered into these columns for every card.

⊠ Columns 51 - 72 (Comments) -- Information is to be entered in this field for some of the cards; for other cards, the field is to be blank. The number of characters entered into this field can vary from card to card.

⊠ Columns 73 - 80 (Program Identification) -- The same identification is entered into all of the cards for a group or batch.

In the Program Card:

⊠ Columns 1 - 50 -- Any programming for these columns is not important at this time.

⊠ Columns 51 - 72 -- No programming is required in the Comments field for the Card Release operation.

⊠ Columns 73 - 80 -- Code 0 in Column 73 starts the Duplicating of the Identification for each card. Code 12 in Columns 74 - 80 continues the operation to the right margin.

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The following operations will occur depending on the last column of manual entry:

◼ If the last entry is made in Column 72 (the Comments field would be filled), the REL/EJT key is not used; these operations will happen automatically:

- The Program Identification is Duplicated.
- The Card Feeding Cycle is started.

◼ When the last entry in the Comments field is made before Column 72 is reached, the REL/EJT key is pressed:

- The balance of the Comments field is cleared.
- The Program Identification is Duplicated.
- The Card Feeding Cycle is started.

◼ When no entry is to be made in the Comments field, the REL/EJT key is pressed at Column 51:

- All of the Comments field is cleared.
- The Program Identification is Duplicated.
- The Card Feeding Cycle is started.