

Reference Manual

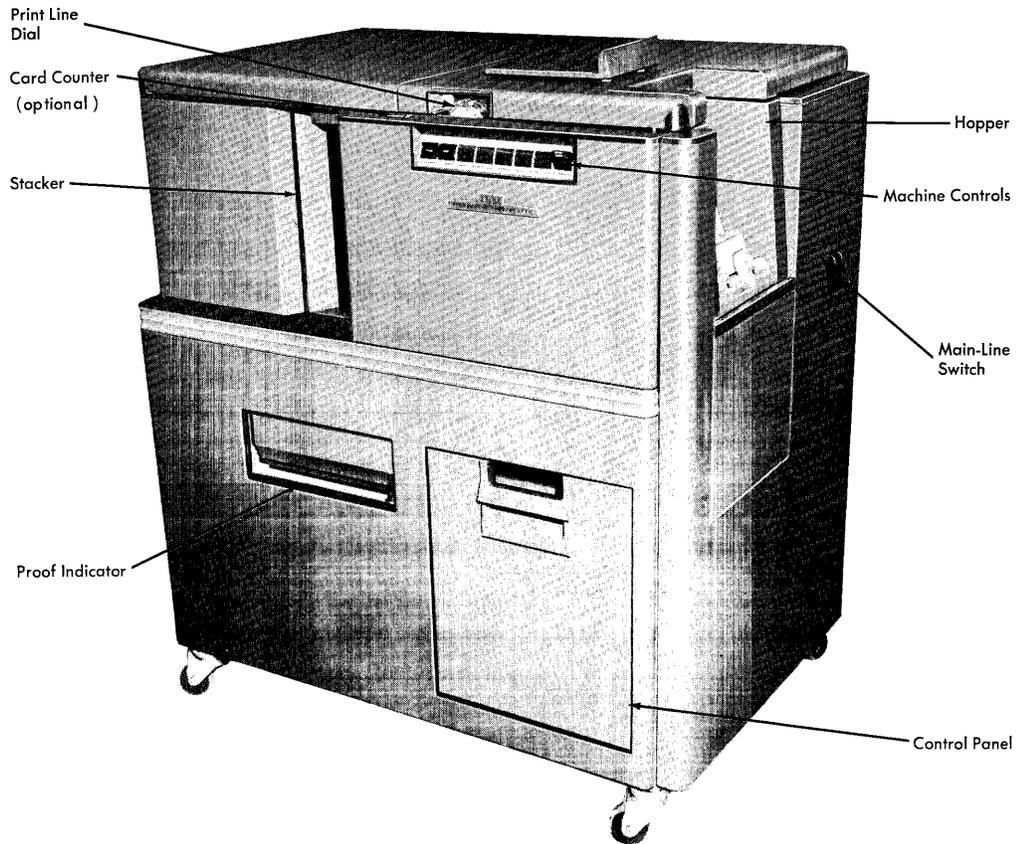
557 Alphabetic Interpreter

IBM Reference Manual

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One of the first concepts taught in introductory courses in punched card accounting is that of the method used to sense and translate holes in a card. In the demonstration of this concept, an interpreter is often shown. It represents the most graphic example of an effect (printing) and a cause (the punched hole). The singleness of purpose of an interpreter is thus established concurrently with the first demonstration of a basic use of the hole in the card.

From this introductory point on, an interpreter is often considered to be the machine used only to eliminate the necessity for visual decoding. The IBM 557 Alphabetic Interpreter, however, has features which significantly increase application potential. A variety of special features is available to tailor the machine to meet the demands of modern data processing techniques. When equipped with several of the special features discussed in detail later in the manual, the 557 becomes an automatic line finding, high-speed ledger posting machine while retaining all of the

usual interpreter capabilities. The importance of this ability is recognized when even a few ledger posting ideas are listed, as follows:

- | | |
|--------------------------|----------------------------|
| inventory ledgers | premium history cards |
| installment loans | mortgage loans |
| payroll earnings records | appropriations and budgets |
| savings deposits | stockholder records |
| claims histories | personnel history records |

Information on the card-to-card comparing, selective line printing, and selective stacking features is included in this manual. It replaces the *IBM 557 Alphabetic Interpreter General Information Manual*, the *557 Bulletin on Card-to-Card Comparing and Selective Stacking*, and the *557 Bulletin on Selective Line Printing*.

Figure 1 shows an installment loan history ledger prepared on a 557 equipped with selective line printing.

DAVIDSON H			2 769059		6	5 718		116676		6676	110000		6482		
NAME			DAY	TYPE	NUMBER	OFFICE	DEALER	SEC	TERM	MO.	YE.	AMOUNT OF LOAN	DISCOUNT	PROCEEDS	REGULAR PAYMENT
			LOAN		NUMBER										
3	4	116676	6482						110194						
4	1	110194	6482						103712						
5	3	103712	6482						97230						
6	4	97230	6482						90748						
7	2	90748	6482						84266						
(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)															
INSTALLMENT LOAN HISTORY LEDGER CARD															
MO.	DAY	YR.	PRESENT BALANCE	AMOUNT OF REGULAR PAYMENT	AMOUNT OF IRREGULAR PAY.	LATE CHARGE	NEW BALANCE	1st 2nd 3rd			NOTICES				
DATE PAID															

Figure 1. Installment Loan History Ledger Card

Machine Features

The IBM 557 Alphabetic Interpreter reads information punched in a card and prints that information at the rate of 100 cards per minute. As many as 60 characters may be printed on one of 25 lines of each card with a single pass through the machine. These lines are located from the 12 to the 9 edge of the card and are selected by a manually operated printing position dial. Flexibility of printing and control is provided through a control panel.

Basic Features

The basic model of this interpreter is equipped with the following features:

Print Unit. Sixty typewheels, each capable of printing numerical, alphabetic, and the three special characters coded by 12, 11, and 0-1.

Zero Print-Control. Electrical control of the printing of zeros is provided on the control panel.

Selectors. Four selectors, each having five positions, can be used for numerical selection or as column splits.

Column Splits. Two.

Print Suppression. Ability to suppress printing under the control of an X or NX condition.

Printing Lines. Twenty-five printing lines on the card selected by a manually operated printing position dial.

Special Features

In addition, the following special devices are available to increase the scope of applications of this interpreter:

1. *Card-to-Card Comparing.* When printing from a master card to detail cards, comparison may be made

of the control information in each to insure that printing occurs only on matching cards. Comparing positions are furnished in groups of five, up to a total of four groups (20 positions). Three types of comparing can be supplied: numerical, alphabetic, or special character.

2. *Selective Stackers.* A maximum of four stackers can be provided. Control panel wiring allows separation of the cards into four groups.

3. *Selective Line Printing.* The 557, when equipped with the selective line printing device, will "find" and post the next available ledger card posting line.

4. *Interpret Emitter.* A hub for each character emits the impulses necessary to cause the printing of that character.

5. *Special Characters.* Printing of eight additional special characters may be provided in each typewheel.

6. *Printing of as many as six adjacent asterisks (*)* to the left of the highest significant digit of a field in specified pre-set positions only.

7. *Repeat Print.* Printing information read from X or NX master cards on following detail cards.

8. *Proof.* Ability to check the printing of numbers, letters, and special characters punched in the card or set up by the interpret emitter. Also, ability to check print suppression, repeat print operations, and typewheel alignments.

9. *Card Counter.* Counts all cards except those for which the proof device has indicated an error.

10. *Print Entry.* Two control panel entries to each typewheel. Either entry may be selected by a manually-operated switch. A 12-position selector for selection of zero print control wiring is included with this feature.

11. *Selectors.* Four additional selectors are available.

12. *Pre-sensing.* This pre-sensing station is required to permit the selectors to be used for alphabetic selection and to control the repeat print device.

13. *51-Column Feed.* Provision to handle 51-column cards is available on a fixed basis, installed only at the factory.

ing. When set on position 1, printing occurs above the 12 position of the card; when set on position 2, printing occurs at the 12 position; when set on position 3, printing occurs between the 12 and 11 positions, etc.

Machine Stop Light (Figure 2)

A stop light is located on the front of the machine. It comes on when the proof device detects an error. The light is turned off by resetting the proof indicator unit.

Proof Indicator Unit

The proof indicator unit is located to the left of the control panel. When an error is detected by the proof device, an indicator is extended to show the error. The unit is reset by depressing the proof indicator unit reset cover on the front (Figure 18).

Print-Entry Switch (Figure 2)

A switch, controlling the selection of the print entry, is located at the extreme right of the key unit. The operation of this switch is explained under "Print Entries 1 and 2."

Print-Entry Lights (Figure 2)

Operating in conjunction with the print-entry switch are two lights located on the front of the machine. These lights indicate which print entry is operating.

Control Panel (Figure 4)

The operations of this machine are directed by wiring the control panel (Figure 4) located on the front of the machine. Electrical impulses which result from sensing holes in the card travel by internal connections to the control panel where the operations of the machine are controlled by means of external wiring.

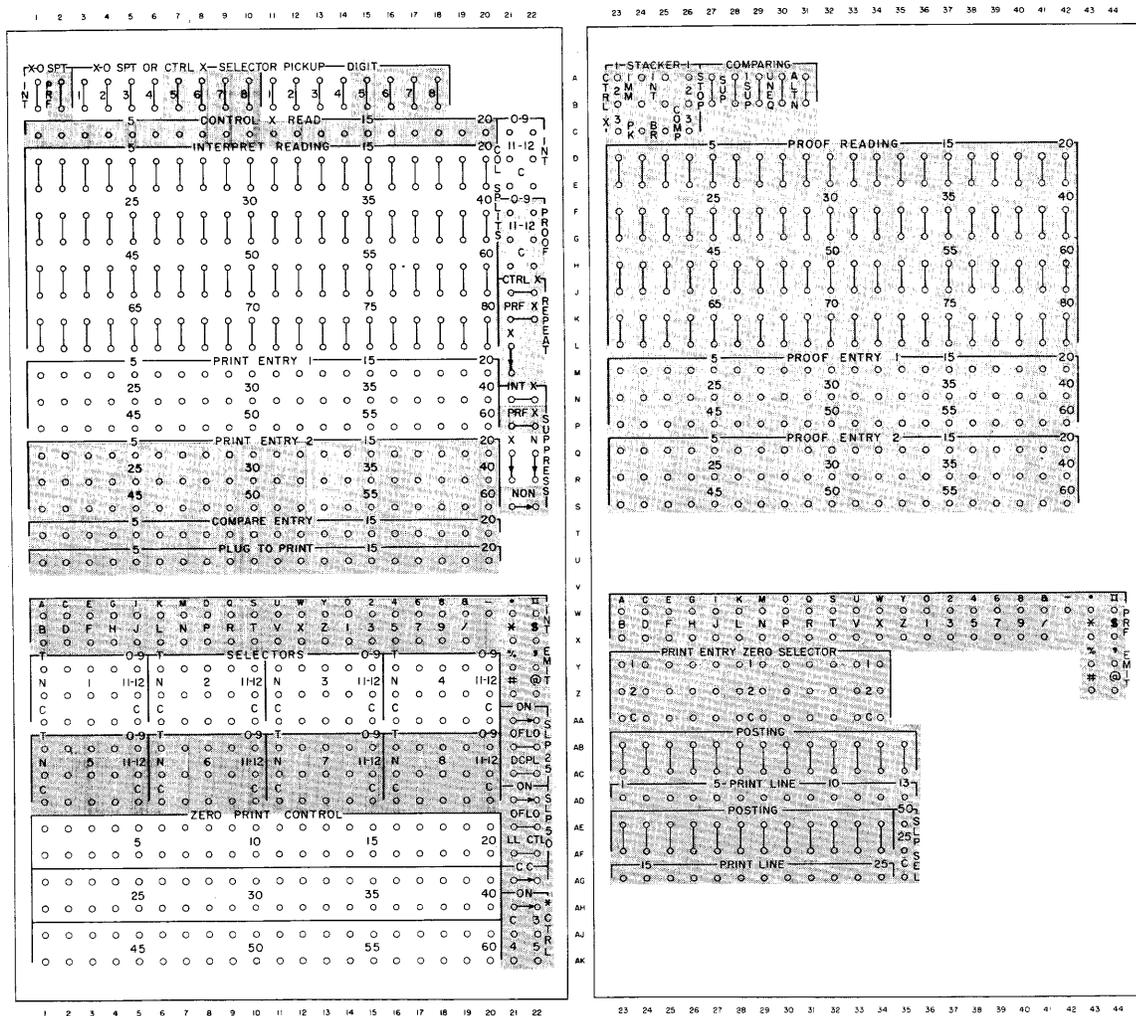


Figure 4. Control Panel

There are two kinds of hubs on the control panel, exits and entries. An exit emits an impulse, and an entry accepts an impulse wired into it. Some exits are controlled by a hole in the card, while others emit for every card or as a result of some other function performed. A connection must be made from an exit to an entry by means of a control-panel wire. The entries and exits used vary with each application that the machine is required to perform.

When two hubs on the control panel are connected by a line, both hubs are common.

When two hubs on the control panel are connected by an arrow, the hubs are the two sides of a switch and are connected by control-panel wiring to turn the switch on.

To facilitate the location of hubs on the control panel, the columns are numbered from 1 to 44, and the rows are lettered from A to AK. Groups of hubs performing similar functions are sectioned off with heavy lines. Shaded areas on the control panel indicate special features.

A detailed description of all hubs will be found in this manual in the section titled "Control Panel Summary."

Normal Printing

The basic operation of the IBM 557 is to read information from a card and print that information on

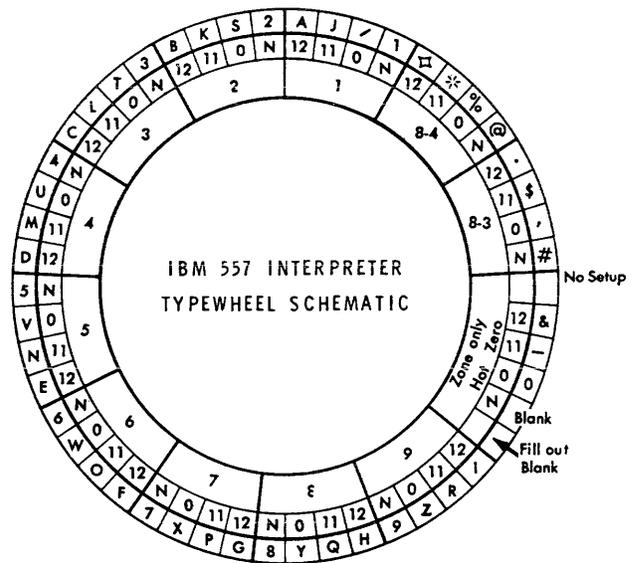


Figure 5. Typewheel

the same card. Printing is done by means of a typewheel (Figure 5). The information punched in the card is coded in the standard manner (Figure 6). Numbers are represented by a single punch in a column; letters, by two punches; special characters, by various combinations. Special-character coding arrangements, other than the standard one shown, are available. Printing of special characters having more than one numerical punch, such as the dollar symbol (\$), requires a special character printing device.

Figure 7 shows a schematic of the card feed with the maximum of four stackers.

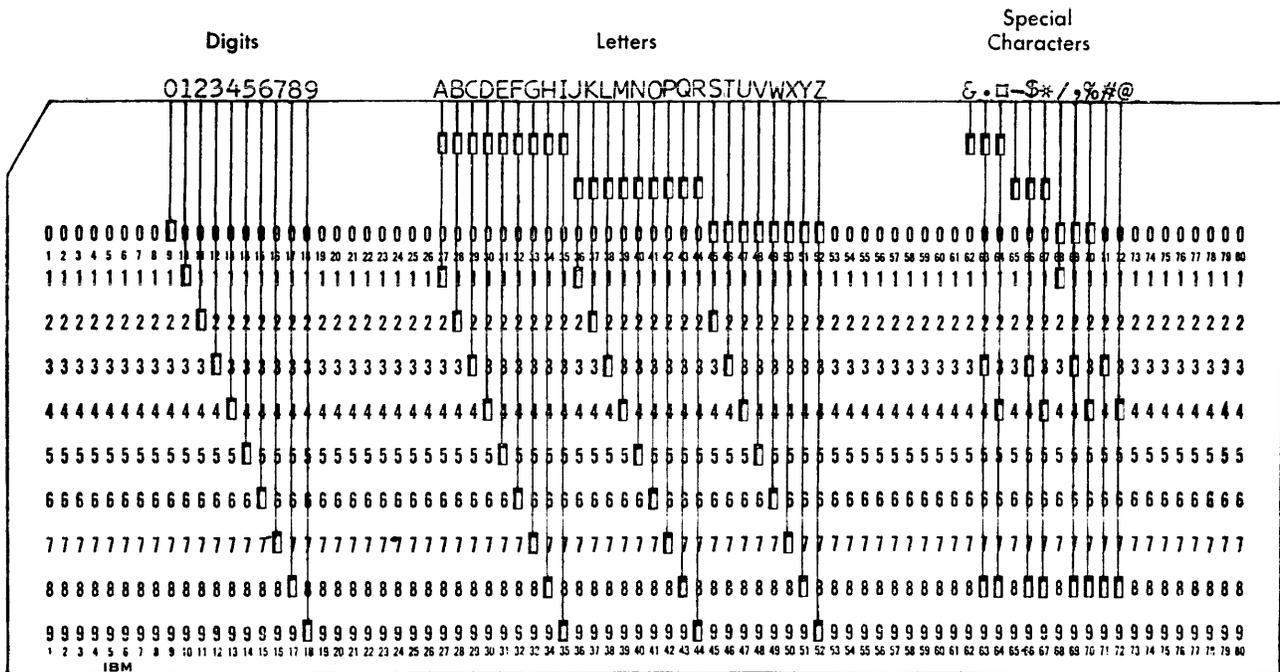


Figure 6. Character Punching

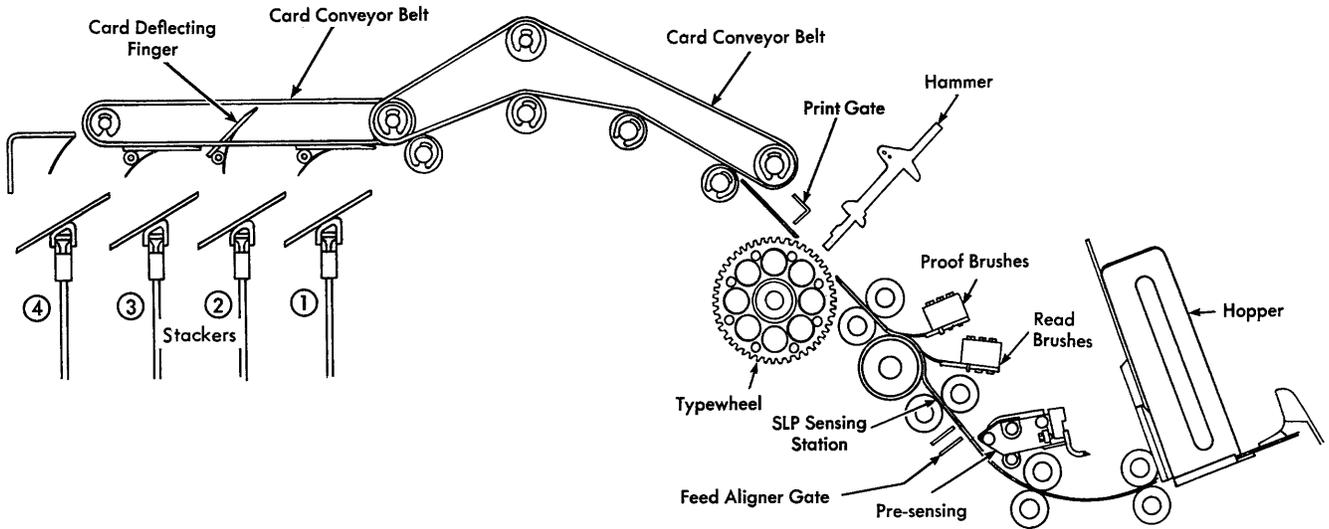


Figure 7. Card Feed Schematic

Interpret Reading

The 80 pairs of interpret reading hubs represent the 80 columns of the card. To print the information in the cards, these hubs are wired to the print entry hubs.

Print Entry 1

The 60 hubs in this section of the control panel represent the 60 typewheels. They are normally wired from interpret reading.

Zero Print-Control

The zero print-control feature of the 557 provides electrical control of the printing of zeros and characters represented by only an 11 or 12 punch. To print zeros and characters coded by just an 11 or 12 punch, e.g., a dash (—) for an 11 or an ampersand (&) for a 12, control panel wiring in addition to the normal wiring from the interpret reading station is needed.

An impulse or impulses wired to print entry must be able to reach the “fuse” to complete a circuit and energize the print magnet to cause printing. Significant digits (1 through 9) have a path to the fuse and can print with no zero print-control wiring required. Zeros and characters coded by only an 11 or 12 punch do not, however, have a path to the fuse and must use an internal impulse supplied by the machine. This impulse, called a “zero print impulse” is controlled by wiring zero print control.

In addition to the print entry hub for each type wheel, there is a pair of zero print-control hubs. The hubs in the lower row are numbered from 1 to 60 (Figure 8). Wiring to these hubs controls the printing of zero, 11, and 12 punches in the corresponding type-

wheel. Typewheel arrangements other than a dash for an 11 punch and an ampersand for a 12 punch may be specified.

The zero print impulse is made available to the print entry from the brush after the 9 position of the card has been read. Since cards feed face down, 12 edge first, the entire card will, therefore, have been read before the zero print impulse is made available. This impulse must reach the fuse to permit the character at its corresponding print entry to print.

A zero print contact, one for each printing position, is transferred if the position being read at the print entry has only a 0, or 11, or 12 punch. A significant digit (1 through 9) does not transfer the zero print contact; it is connected through the print magnet to the fuse, and it prints. The transfer of the zero print contact for 0, 11, or 12 coded characters occurs after the 9 position of the card has passed the brushes but before the zero print impulse can reach the print magnet and fuse. As a result, a field punched 007109 is printed as shown in Figure 9. The arrows show the circuit to the fuse.

Figure 10 shows the addition of wires to make available a path to the fuse for zeros. Zero print impulses are available from the positions in which significant digits are wired. The short wires “jacked” between vertical zero print control hubs carry the zero print impulse between positions. When the zero print im-

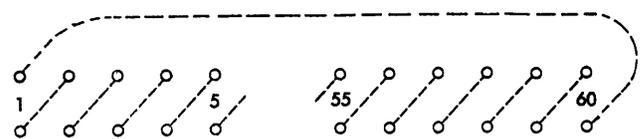


Figure 8. Zero Print-Control Hubs

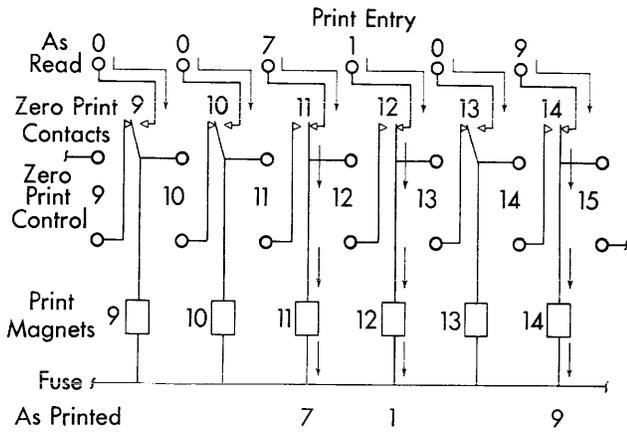


Figure 9. Zero Print-Control

pulse reaches a position in which the zero print contact is transferred (i.e., only a 0, or 11, or 12 impulse at the print entry), printing takes place.

The dotted line shows the path of the zero print impulse from the significant digit at position 14 around to position 9. At print entry position 9, a 0 (not to be confused with the zero print impulse) has transferred the zero print contact. The zero print impulse from position 14 travels through the transferred zero print contacts to the fuse and causes printing of the zero at the print entry. It also travels through the wire or jack plug between upper zero print-control hub 9 and lower zero print-control hub 10, through the transferred zero print contact of position 10 and to the fuse to cause the zero at print entry 10 to print. The same zero print impulse travels from upper zero print-control hub 10 through the control panel wire connecting upper 10 to lower zero print-control hub 11 and ends at zero print contact 11. Zero print contact 11 is not transferred because the digit

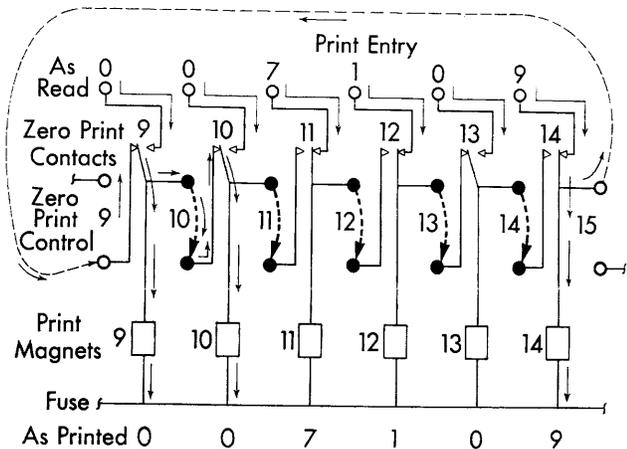


Figure 10. Zero Print-Control

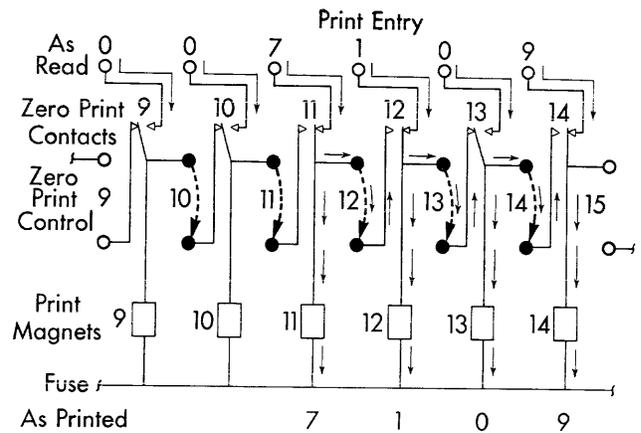


Figure 11. Zero Print-Control

at print entry 11 is a 7, is therefore significant, and has a normal path to the fuse.

To eliminate zeros to the left of the highest significant digit, the zero print-control wire from the low-order position to the high-order position must be removed (Figure 11). This breaks the zero print impulse circuit.

When a control panel is wired to print zeros to the left of print position 60, the control-panel wire to the high-order position of the field is wired from the upper hub of zero print-control 1 as illustrated in Figure 12. This hub is internally connected to print position 60.

When zeros are controlled to print to the right or left of a significant digit, ten consecutive zeros can be carried or controlled to print.

To print a field containing all zeros, such as a zero balance amount, the high-order position of the field must have an additional wire from interpret reading direct to the lower hub of the corresponding zero print-control position. This, in effect, by-passes the control of the zero print-contacts and allows the zero print impulse to reach the print magnet, thus enabling the zeros to print. When a total of more than ten positions are to be controlled for zero printing, at least every tenth zero print-control position must be wired from interpret reading. When two or more fields of ten or more positions are being controlled for zero printing, the high-order position of each field should be wired from interpret reading to zero print-control as explained above.

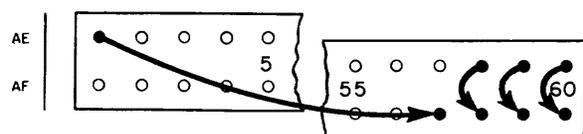


Figure 12. Zero Print-Control

Column Split

When a control punch (11 or 12) appears above a numerical field, it combines with the numerical punch in the same column and results in the printing of an alphabetic character. This can be prevented by the use of a column split.

The column containing the control punch is wired to the common (c) of a column split. Any impulse 9 through 0 in that column is available at the hub marked 0-9, while the 11 or 12 impulse is available at the hub 11-12. By wiring from the 0-9 hub to the typewheel in which printing is desired, the numerical punch in that column is printed without the interference of the control punch.

Two column-split positions are available on the standard machine for use with interpret reading only. On machines equipped with the proof device, two additional positions are provided for use with proof reading only.

Wiring (Figure 13)

This example shows normal alphabetic printing, column splits, and control of zero printing.

1. Employee number is read from columns 1-5 and printed in typewheels 1-5.
2. Employee name is read from columns 16-40 and printed in typewheels 9-33.
3. Hours are read from columns 45-47 and printed in typewheels 45-47.
4. Amount is read from columns 75-80 and printed in typewheels 55-60.
5. The units position of the amount is wired through a column split to eliminate a control-x-punch in that column.

6. All zeros are controlled to print.

7. Zero print-control is wired for the hours field to print all zeros except those to the left of the high-order significant digit.

8. Zero print-control is wired for the amount field to print all zeros, including zero-balance amounts. NOTE: If zero balances are to be identified, but zeros to the left of significant amounts are to be eliminated, interpret reading 79 can be wired to the lower hub of zero print-control position 59. With this wiring, 00 identifies zero balances.

9. The x-switch must be wired at all times, except when suppressing printing on NX-cards.

Control Impulses—X and 12 Punches

Although a 12 punch can be used as a control impulse in some circumstances, the basic control func-

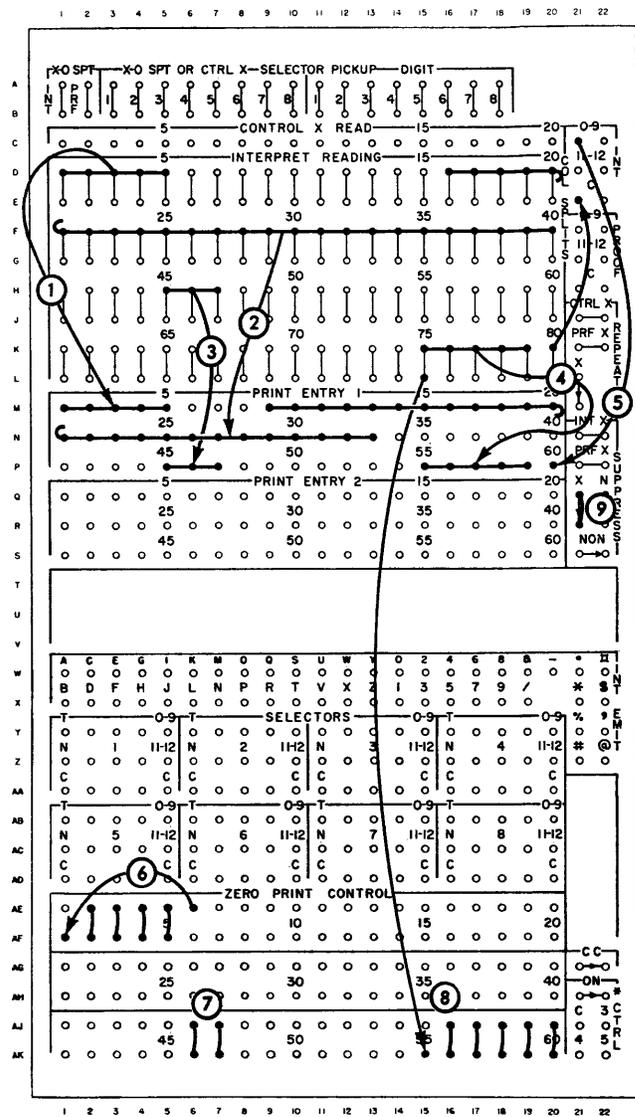


Figure 13. Printing

tion is performed by an x punch. This is especially so when the proof device is added to the 557; the proof device treats all 12 punches in repeat and suppress print-control columns as errors.

Control x read, or the pre-sensing station, reads only x punches. Digits or 12 punches in the control columns of master or detail cards do not affect the function of the unit. CTRL X station in repeat print accepts only x punches read at control x read station. However, when repeat print is wired for proof (from proof reading to PRF X) all 12 punches in master and/or detail cards are treated as an RPX error.

The suppress print mechanism accepts both x and 12 punches as control impulses. If proof x (PRF X) is wired, the proof device treats all 12 punches in control columns of master and/or detail cards as SPX errors.

Suppress Print

Selective printing of an entire card may be performed under the control of an x or nx condition. In this manner, all of one type of card may be interpreted without separating the file or printing on the other cards in the file.

The column containing the control punch (11 or 12) is wired from interpret reading directly to the interpret x hub. The device will not accept 9 through 0 impulses; therefore, no column split is required. If it is desired to suppress the printing of x cards, the x switch must be wired on. If, however, it is desired to suppress printing of the nx cards, the nx switch must be wired instead.

On machines equipped with proof, a proof x hub is provided to check the suppress operation. The column containing the x is wired from proof reading to the proof x hub. If the machine does not suppress print, an error results, and the machine stops.

Suppress print accepts both x and 12 impulses as control impulses. A 12 cannot be used to control the device when proof is used. A 12 cannot appear in the control column in detail cards when proof is used. Both of these conditions are treated by the proof mechanism as an error. (See the section titled "Proof"—SPX).

Non-suppress is only effective when the proof feature is on the machine. The wiring of this switch permits the printing of all cards even though an error is detected. However, the machine stops and the column in error is indicated.

Wiring (Figure 14)

This example demonstrates the suppress printing feature by printing only the nx80 cards.

1. A field of the card is wired to print zeros to the left and right.

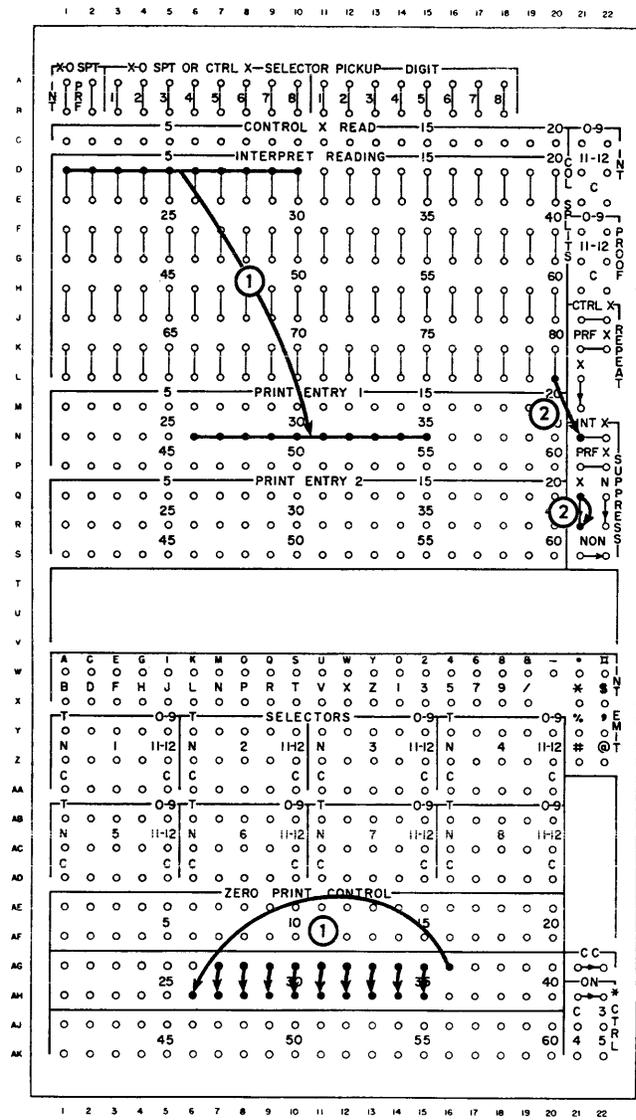


Figure 14. Suppress Print

2. An x from column 80 is wired to the interpret x hub of the suppress print device. The x switch is wired to prevent the printing of all cards containing the x punch in column 80.

Additional Features

Pre-sensing (Control X Read)

Control x read (Figure 15) controls selectors for alphabetic selection and is necessary to control the repeat print feature. An x punch in the card is the control symbol for both of these functions. The unit will not read digits or 12 punches.

The pre-sensing station is just above the 557 hopper. To gain access to it, two knurled head bolts at either side of the hopper side plates, and above the plates, must be removed. They are immediately recognizable when the top cover is raised.

The pre-sensing station is composed of 80 contact pins. The terminals of these pins are arranged in two banks; odd numbers on the lower, even numbers on the upper. The lower bank is numbered 1, 3, 5, 7, etc., from right to left. These terminals correspond to the eighty card columns.

The twenty control x read hubs are connected to the 20 pre-sensing wires. The wires run consecutively, one to twenty, right to left, and correspond to the 20 control x hubs on the control panel. They may be clipped to any of the 80 terminals by the machine operator.

NOTE: The two white wires on the extreme left and right of the unit are the common wires, and should be set only by a customer engineer.

Repeat Print

Information punched in a master card may be read and printed on the master card and succeeding details under the control of an x or NX condition recognized at the pre-sensing station. However, it is not possible to read information from the detail cards and print it in addition to the information printing from the master cards during the same run.

The impulse from control x read is wired to the control x hub of the repeat print device. If the master card contains the x punch, the x switch must be wired on. If the master card is the NX card, no additional wiring is needed. When cards run out, the typewheel setup is retained until a new master is sensed or the x switch is disconnected.

On machines equipped with the proof device, the proof x hub is added to the device. The column containing the control x must be wired from proof reading to the proof x hub.

The master card and/or selected detail cards may be print suppressed during repeat printing. The control x station in repeat print accepts x type impulses read at the control x read station. If proof is not provided, a 12-punch can appear in the control column in detail cards. If proof is provided, a 12 punch in the control column of either master or detail

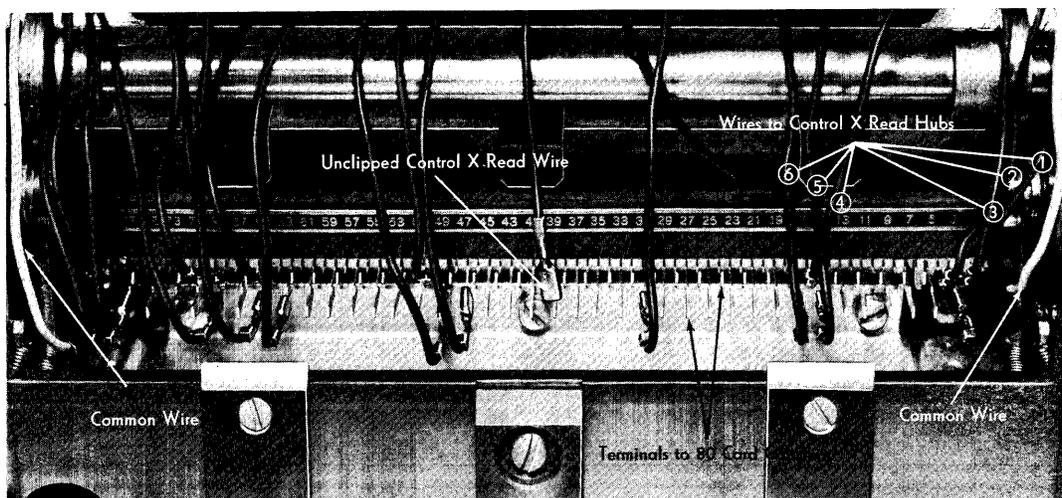


Figure 15. Pre-sensing (Control x Read)

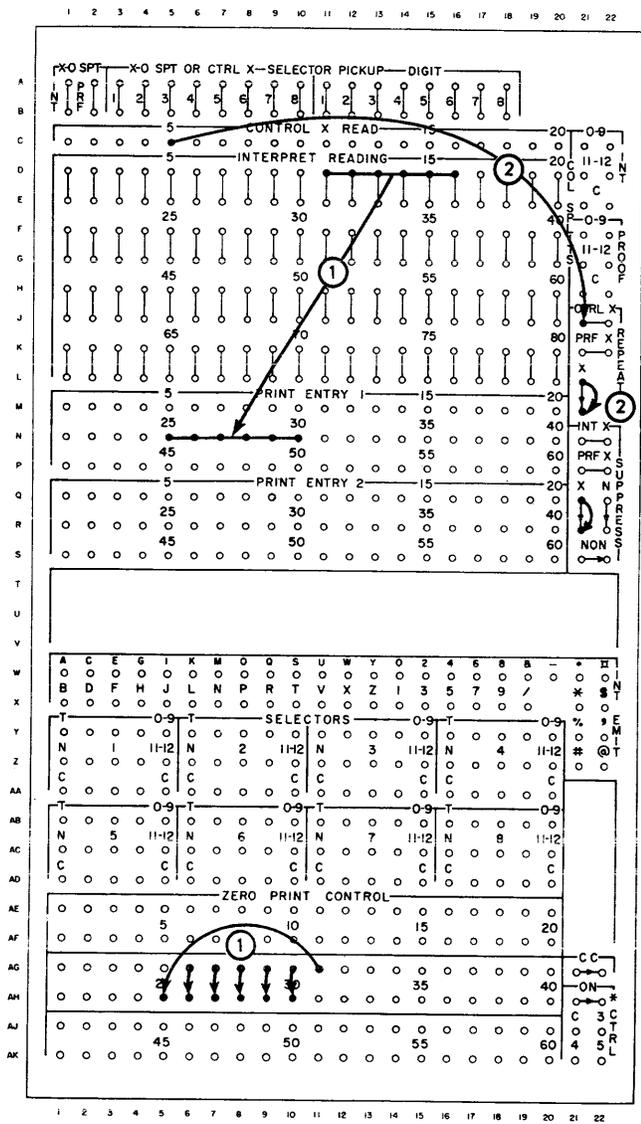


Figure 16. Repeat Print x Master Cards

cards will be treated as an error. See the section titled "Proof"—RPX.

Wiring (Figure 16)

This example demonstrates the repeat print feature by reading the information from an x master card and printing it on the master card as well as the following nx detail cards.

1. Normal wiring to print zeros to the left.
2. A control x is wired to the control x hub of the repeat print device. The x switch is wired to

permit reading from the x cards and printing of that information on the x cards and the following nx cards.

Print Entries 1 and 2

Print entries 1 and 2 provide for two different card forms and/or two printing setups on one control panel. Selection of either one of the two setups is controlled by a manually-operated switch (called the print entry switch) on the front of the machine.

Both sets of print entry hubs cannot be made active at the same time. When print entry 1 is active, the print entry 1 light on the front of the machine is on. When print entry 2 is active, the print entry 2 light is on.

In operations where it becomes necessary to alter the zero print-control wiring from the print entry 1 setup to the print entry 2 setup, a 12-position print entry zero selector supplied with the print entry device can be used.

When print entry 1 is active, a connection exists between the C (common) row of hubs and the 1 (print entry 1) row of hubs. When print entry 2 is active, the connection between the C and 1 rows is broken and a connection between the C and 2 (print entry 2) rows of hubs is established. With this selector, the zero print-control wiring can be changed for the two setups. These hubs may also be used to change the setup of control wiring, such as print suppression, etc.

Wiring (Figure 17)

Two setups are wired on the same control panel through the use of the print entry switch and the print entry zero-selector.

1. Field A is printed in typewheels 2-6 in both print entries. Zero print-control is wired to eliminate zeros to the left of the highest significant digit in the field.
2. Fields B and C are wired to print in typewheels 24-28 and 30-34, respectively, through print entry 1.
3. Zero print-control is wired through the C and 1 side of the print entry zero-selector to print all the zeros in field B.
4. Similarly, field C is wired to print all the zeros through the C and 1 sides of the selector.
5. Field D is wired to print in typewheels 27-31 through print entry 2.

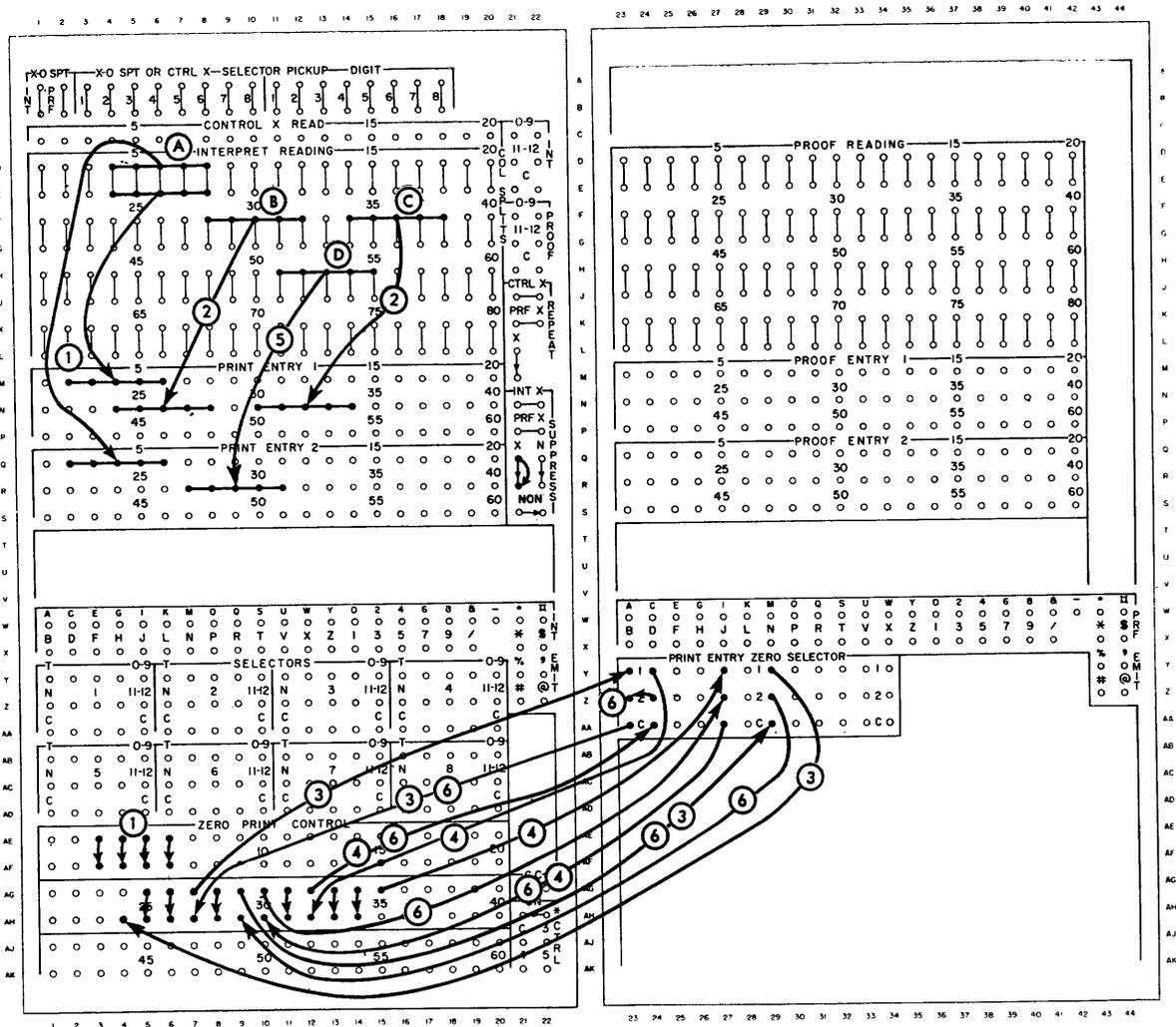


Figure 17. Print Entry

6. Zero print-control wiring used to control fields B and C on the print entry 1 setup is broken by the print entry zero-selector when print entry 2 is made active by the print-entry switch. New zero print-control wiring is established through the C and 2 sides of the selector to control the printing of zeros in field D.

Proof

Incorrect printing of valid 557 characters, failure to print for all characters (except 12, 11, and 0 punches), and the operations of repeat and suppress print may be checked with the proof device. In addition, the alignment of the typewheels for printing is checked. If any of these operations fail, an error is indicated; the cards stop feeding from the hopper, and the cards in

the machine run into the stacker. The error card will be the second card in the stacker, no cards will remain in the feed, and printing is suppressed for the error card and the card following. When proof is installed on the machine, all interpret and control wiring *must be duplicated*, or an error indication will result for every card, even though no errors are made.

Proof Reading

These hubs are the exits for a second reading of the card when proof is installed. Impulses from these hubs are used to check printing and other operations controlled by the interpret reading impulses. This check is made by a comparison of the impulse from proof reading with an impulse resulting from the operation instituted by interpret reading. Impulses from proof reading hubs are two cycle points later than those from the interpret read hubs.

Proof Entry 1 and 2

The impulses from the proof reading station are wired to these hubs to check that the original impulse from interpret reading has resulted in the proper action. These two sets of hubs correspond to the two sets for print entry. Any position wired to cause printing *must* be duplicated to cause proof of the printing.

Any error indicated by the proof device stops the machine, suppresses printing on the error card, and lights the stop light on the front of the machine. When the error is sensed, no additional cards are fed from the hopper, and all cards already in the feed are advanced into the stacker before the machine is stopped. In addition, an indicator on the proof indicator unit is extended to indicate the type of error that has occurred. Figure 18 shows indicator 35 extended. An error reset cover is provided on the proof indicator unit which, when depressed, resets the indicator and turns off the stop light. The various numbers and letters on the proof indicator unit represent the following:

I-60. These numbers indicate the typewheel in which a printing error has occurred.

SP. This indicator is extended if the suppress print has been controlled correctly, but the machine has failed to perform the operation. The machine stops on the cycle following the indication.

SPX. This indicator is extended for an error in the control to cause the suppress print-operation. It may mean that the control panel is incorrect, or that the machine is in error. If a 12 punch appears in the suppress print-control column on a master or detail card, the proof device will treat such a punch as an SPX error.

TA. This indicator will be extended if the typewheels are not in proper alignment for printing. The machine stops on the cycle following the indication. Printing is not suppressed on this type of an error card but is suppressed on the following cards.

RP. The indicator will be extended if the repeat print operation has failed, that is, the control is cor-

rect, but the machine has failed to perform the operation.

RPX. This indicator will be extended if there is an error in the control to cause repeat print or to check repeat print. It may mean that control-panel wiring is incorrect, or that the machine is in error. If a 12 punch is in the repeat print-control column of a master or detail card, the proof device switch reads such a punch as an RPX error.

Selectors

Four, 5-position selectors are standard on the basic machine. Four additional selectors can be supplied as a special feature. These selectors may be used:

1. For numerical selection.
2. For alphabetic selection if pre-sensing (control x) is installed.
3. As column splits.

Selector Pickup

Each selector has two separate pickups, which should *never* be connected together. Each pickup should be activated by a specific impulse for a specific function. Both pickups will transfer the selector immediately and hold it until the completion of that cycle.

X-0 Split or Control X

This pickup can be wired from x-0 split hubs to use the selector as a column split, or from control x read for numerical and alphabetical selection. The interpret x-0 split hub times the selector for use with the interpret reading brushes; the normal side of the selector becomes the exit for any 11 or 12 impulses that enter the common hub, and the transferred side becomes the exit for 0-9 impulses. The proof x-0 split hub controls the selector in the same manner in time with the proof reading brushes.

Wiring from control x read to this pickup transfers the selector for the entire cycle. Control x impulse emits before 12, x, or digit impulses are read by the interpret read brushes. The selector can thus be used for both alphabetic and numerical selection.

Digit Pickup

These hubs are normally impulsed by an x impulse from the interpret or proof reading stations. Since the hubs accept any impulse 12-9, a column split

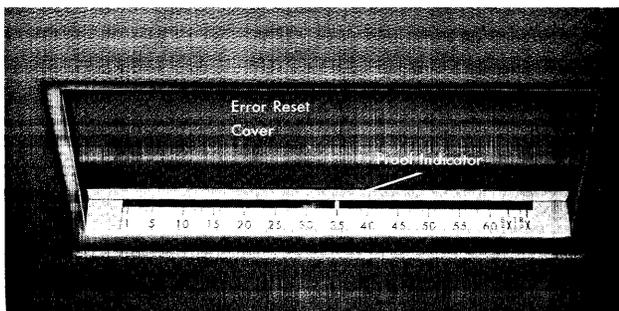


Figure 18. Proof Indicator Unit

is normally required. However, when this hub is impulsed from proof reading, the pickup impulse *must always be filtered through a column split*. If the selector is being used to select zero print-control wiring, the x impulse from the interpret reading station must be filtered through the 12 and 11 side of a column split to prevent the zero print impulse from transferring the selector.

C, N (11-12), T (0-9). The individual positions of each selector are represented here. When the selector is normal, a connection exists between the C or common hub and the N or normal hub. The N hub also represents the exit for the 11 and 12 impulses which enter the common hub when used as a column split. When the selector is transferred, a connection exists between the C or common hub and the T or transferred hub. The T hub also represents the exit for 0-9 impulses entering the C hub when used as a column split. The selector should not be used to select

an impulse of the same timing as the pickup impulse. The selector should not be used as a column split when taking an x impulse from proof reading to the digit pickup.

Wiring (Figure 19)

The wiring for the proof device is shown here with the use of selectors and column splits.

1. Wiring to read a five-column numerical field eliminating the x in the units position.
2. If the x is not present, the field prints in typewheels 29-33.
3. When the x is present, selector 1 is transferred and printing occurs in typewheels 21-25.
4. Zero print control is wired to print all zeros.
5. All control and position wiring is duplicated for proof. Selector 4 controls the selection of proof entry.

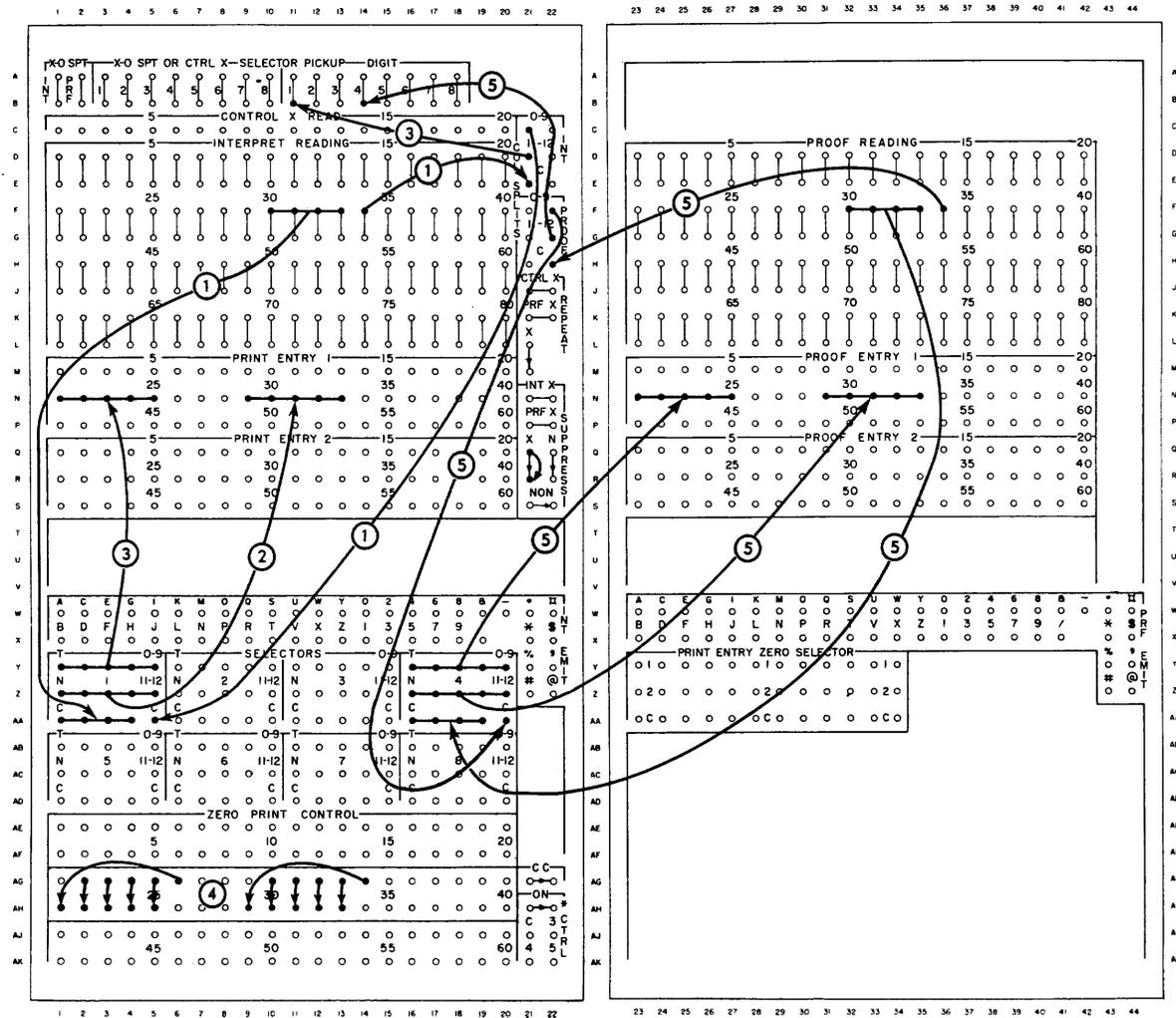


Figure 19. Proof

Alphabetic Selection

Selectors on the IBM 557 can be used for alphabetic selection only if pre-sensing (control x read) is installed. Master cards are identified at the pre-sense station for both printing and proof operations.

The selectors used for both operations must be picked up by control x read. In alphabetic selection, proof selectors must *not* be impulsed from the proof reading station.

As in numerical selection, all other interpret and control wiring must be duplicated for proof.

Wiring (Figure 20)

Wiring for alphabetic selection and proof with x master cards is shown here.

1. Control x read station 5, which reads x master cards, is wired to pick up selectors 1 and 2. These selectors are transferred for x master cards and normal for NX detail cards.

2. Alphabetic field 61-65 is wired to print entry 2 in positions 45-49 for x cards, and in positions 51-55 for NX cards.

3. Wiring of step 2 is duplicated from proof reading through a selector to proof entry 2.

Card-to-Card Comparing and Selective Stacking

Card-to-card comparing and selective stacking are additional features available on the 557 Interpreter. The comparing feature provides a means of verifying operations when information from a master card is transferred to detail cards. With selective stacking, cards can be separated or selected into a maximum of 4 stackers (Figure 21).

In a compare operation, data read from the master card is stored for comparison with successive detail

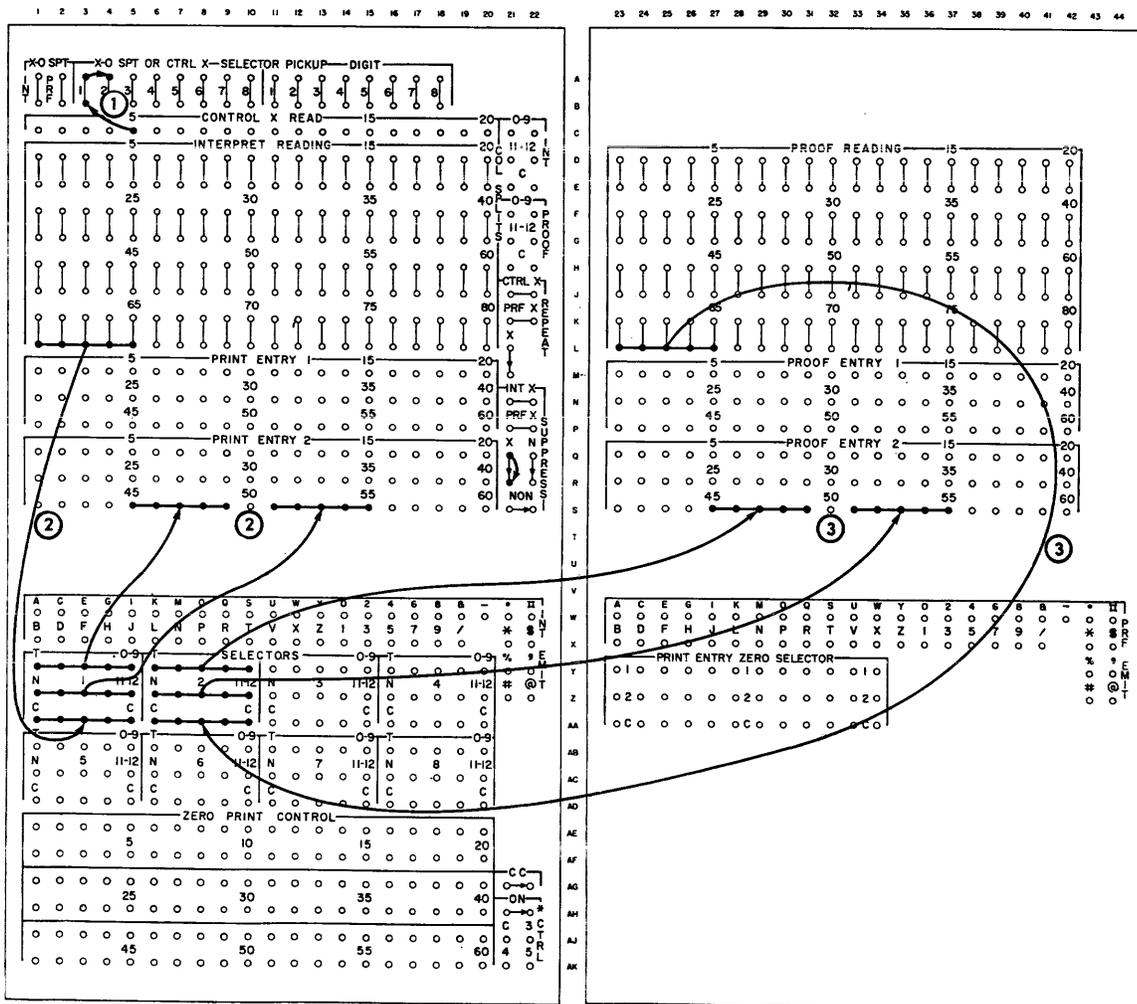


Figure 20. Alphabetic Selection with Proof

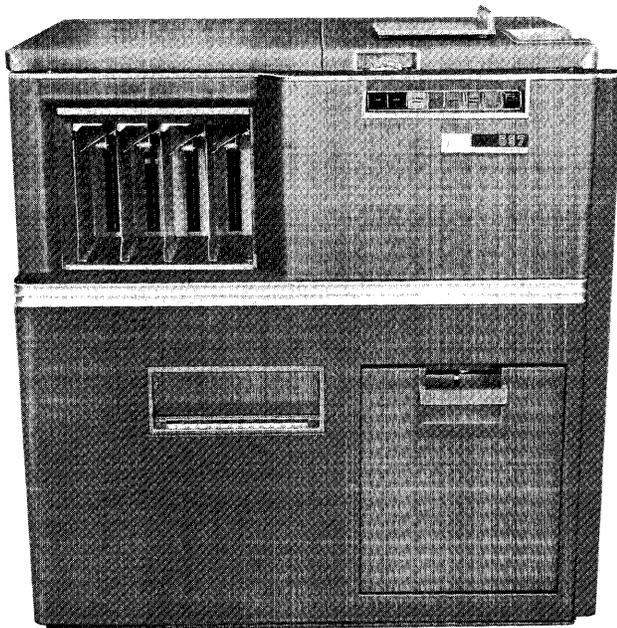


Figure 21. IBM 557 Interpreter with Four Stackers

cards. The compared master-card data can be held in the typewheels for repeat printing. Printing can be suppressed on unmatched detail cards and continued on the following matched detail cards. Machine operation can be stopped and printing can be suppressed whenever unmatched or duplicate cards are recognized.

Comparing positions are furnished in groups of 5, up to a total of four groups (20 positions). Three types of comparing can be supplied:

1. Numerical—in each position comparison takes place only on single numerical characters, 0 through 9. A zero compared with a blank is recognized as unequal.
2. Alphabetic—comparison can be made on single numerical punches, the 0-1 code, single zone punches, or any single alphabetic character A-Z.
3. Special Character—comparison can be made on all numerals, letters, codes, and special characters that can be printed on the 557 Interpreter. A maximum of 10 positions is available for special character comparing.

On machines with selective stackers, control-panel wiring determines which cards fall into the extra pockets. Unmatched cards, duplicate master or detail cards, cards preceding unmatched and duplicate cards, and cards with punching in a given column can be selected.

Stop Key (Figure 22)

In addition to its normal function of stopping machine operation, the *stop key* is used as a reset key

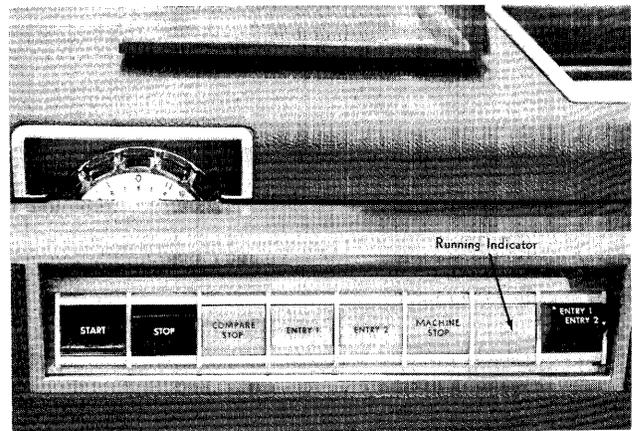


Figure 22. Signal Light Unit

when, by control-panel wiring, an impulse to the *compare stop* hub causes the machine to stop. At the time the stop occurs, all cards are either in the hopper or the stackers, and the *compare stop* light is on. To resume operation, depress the stop key to turn off the compare stop light; then depress the start key to feed the cards. The start key should be held down for three card-feed cycles. After the third cycle, feeding is automatic.

Compare Stop Light (Figure 22)

The compare stop light turns on and the machine stops when the compare stop hub on the control panel receives an impulse from the *unequal*, *alternate*, or *immediate suppress* hubs. Before operation of the interpreter can be resumed, the light must be turned out by depressing the stop key.

Stackers

The stackers are located at the left front of the machine, and each will hold approximately 800 cards. A *stacker stop* switch is provided to stop the machine when any stacker is filled to capacity. The stacker on the extreme left is the normal stacker and, if all four stackers are installed, is numbered 4. The selective stackers are numbered 1 to 3, right to left. The cards are stacked in their original sequence.

Compare Operation

The compare unit recognizes as a normal condition alternating master and detail cards with matching control fields. The compare operation, in the normal condition, alternates storing from the master card and comparing from the detail card. Under the normal condition, neither the unequal nor the alternate hub emits an impulse (Figure 23).

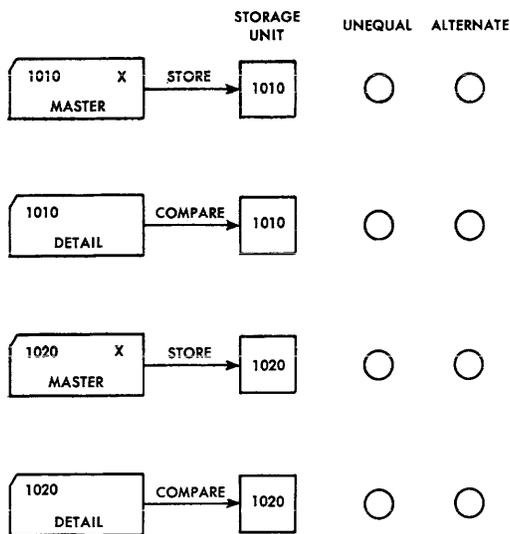


Figure 23. Normal Comparing

The alternate hub emits whenever storing and comparing do not occur on alternate cycles, that is, whenever a master card is followed by a master card, or a detail card is followed by a detail card (Figure 24).

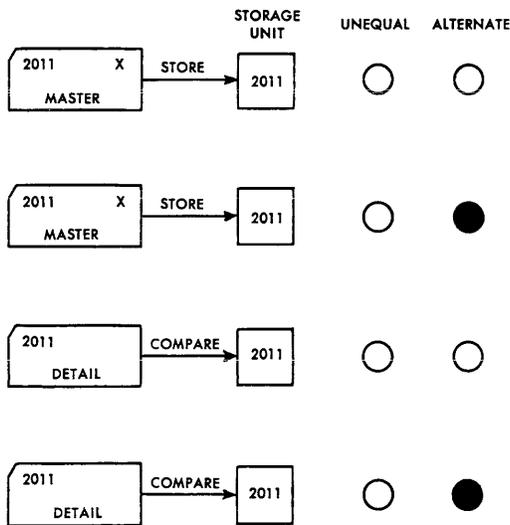


Figure 24. Comparing—Alternate Emitting

The unequal hub emits *only* on comparing cycles when the compared fields are unequal; that is, whenever a detail card does not match the preceding master card (Figure 25).

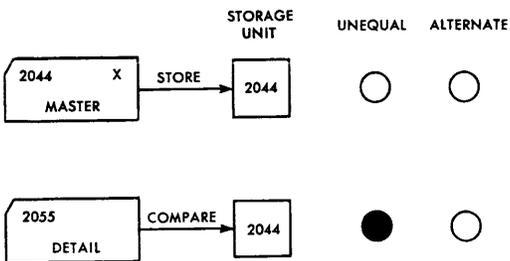


Figure 25. Comparing—Unequal Emitting

If, during a compare cycle, storing and comparing have not occurred alternately and the compared fields are unequal, both the alternate and unequal hubs emit an impulse, that is, whenever a second detail card follows a master card and does not match the master. The first detail card may or may not match the master (Figure 26).

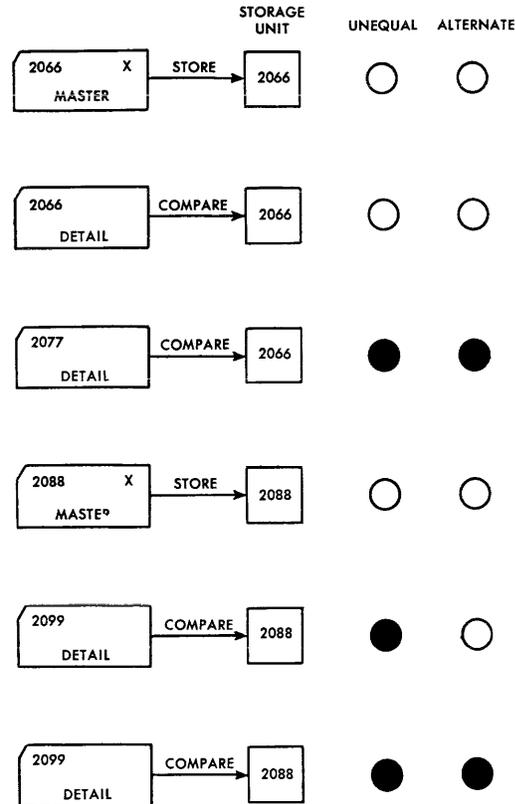


Figure 26. Comparing—Unequal and Alternate Emitting

Card-to-Card Comparing

Information from a detail card read by the *interpret* brushes is compared with information stored from the preceding master card. As the master card is read by the interpret brushes, the control field enters storage where it is held until the next master card is read. Information in each detail card is compared with the master information in storage.

During comparing, the arrangement of a file composed of single master and single detail cards can be checked. If the sequence is not alternately master and detail cards, the machine can be made to operate as follows:

1. The machine can be stopped.
2. Printing can be suppressed.
3. Duplicate cards can be selected.

The above operations can be performed separately or in combinations.

The compare unit enables the operator to check the *alternating* sequence of the file. It is not possible to check *numerical* sequence on the 557. The fields being compared, as well as other information in the master card, can be printed on the master and following detail cards under an X or NX control.

Machines having the card-to-card comparing feature must also have control X read (pre-sensing) and repeat print features. Comparing operates in conjunction with these features. Master cards are distinguished by the presence or absence of the X punch in a given column. A control X read contact is used to read the X punched column.

The following wiring must be done for the interpreter to recognize a master card for comparing:

1. A control X read contact is wired to control X repeat.
2. The X switch is wired if master cards are X punched; it is unwired if detail cards are X punched.

Compare Entry

The field to be compared is wired from interpret read to compare entry. Information read from master card to compare entry is placed in storage and held for comparison with succeeding detail cards. Information read from detail cards is compared with the stored data.

When a master card is recognized, the storage unit is cleared. Each time a new master card is read by interpret reading brushes, control information is placed in storage for comparison with successive detail cards. Comparing does not take place between two master cards or the last detail card in a group and the following master card. The fields being compared *must not* be wired to print entry directly from interpret read. Plug-to-print hubs must be used.

Plug-to-Print

The compare entry hubs are connected internally through filters to the plug-to-print exit hubs. Information received by compare entry hubs is available from the corresponding plug-to-print hubs. These hubs can be wired to print entry 1 or 2 to print the control information on the master and/or detail card.

Information to be printed can be selected only at the time a *master* card is being read. On machines with proof reading, the wiring for every field that is to be printed must be duplicate-wired from proof reading to proof entry 1 or 2. Proof is effective only at the time a master card is being read.

Comparing Unequal (UNEQ)

The unequal hub emits an impulse on the compare cycle when detail information compared to master information in storage is unequal. An unequal impulse can be:

1. Wired to compare stop to interrupt a machine operation.
2. Wired to compare suppress to prevent printing on the unequal detail card.
3. Wired to stacker compare to select the unequal detail card, or to immediate pick to select the card immediately preceding the unequal detail card.
4. Controlled by a selector.

Comparing Alternate (ALTN)

When the 557 is wired from control X read to repeat print and the repeat print X switch is wired ON, the comparing alternate hub emits if the card sequence is *not* alternately master and detail. An impulse is available from ALTN when a detail card immediately follows a master, or a master immediately follows a master. In the sequence M1-D1-D1-D2-M3-M3-M4-D4, ALTN emits for the cards underlined as they pass interpret reading.

ALTN can be wired to:

1. Compare stop hub to stop machine operation;
2. Compare suppress to prevent printing; or
3. Stacker compare to select all multiple detail or master cards except the first in a series; or to stacker immediate pick to select all multiple detail or master cards except the last in the series;
4. Digit pick-up of a selector to control the UNEQ impulse.

Comparing Stop (STOP)

Comparing stop is normally wired from the UNEQ or ALTN hubs to stop machine operation. When this hub receives an impulse, no more cards are fed from the hopper and the cards inside the machine automatically run out before the machine stops. The card for which the machine has stopped will be the next to the last card out. On the run-out, cards are read, compared, printed and selected according to control panel wiring. Master information from the last master card read remains in storage for comparing with detail cards when machine operation is resumed. Master information remains in storage until another master card is read or until the control panel is changed.

Information stored in the typewheels for repeat printing is held when the machine stops. This information is available to print on the next card read if it is a detail card.

The compare stop light turns on when the stop hub receives an impulse. To resume operation, the light must be turned off by depressing the stop key. Depressing the start key begins card feeding.

Compare Suppress (SUP)

Compare suppress accepts impulses from UNEQ, ALTN or I SUP hubs to suppress printing on cards for which ALTN, UNEQ, or I SUP emit. Wiring to the non-suppress switch has no effect when SUP is impulsed.

Compare Suppress Immediate (I SUP)

Compare suppress immediate emits impulses when two or more master cards immediately follow each other. I SUP wired to SUP suppresses printing on all master

cards except the last in the series. For instance, in the sequence M5-D6-M7-M8-M9, if I SUP were wired to SUP, printing would be suppressed on M7 and M8.

Wiring the non-suppress switch has no effect when I SUP is wired to compare suppress. The wiring in Figure 27 performs the following operations:

1. Multiple detail cards are compared with each master card.
2. Printing is suppressed and the machine stops for unmatched detail cards.

Wiring (Figure 27)

1. Control x contact 20 is used to read master cards that are x punched in column 80. Control x read 20 is wired to repeat control x, and the x switch is wired on. With this wiring, the master cards

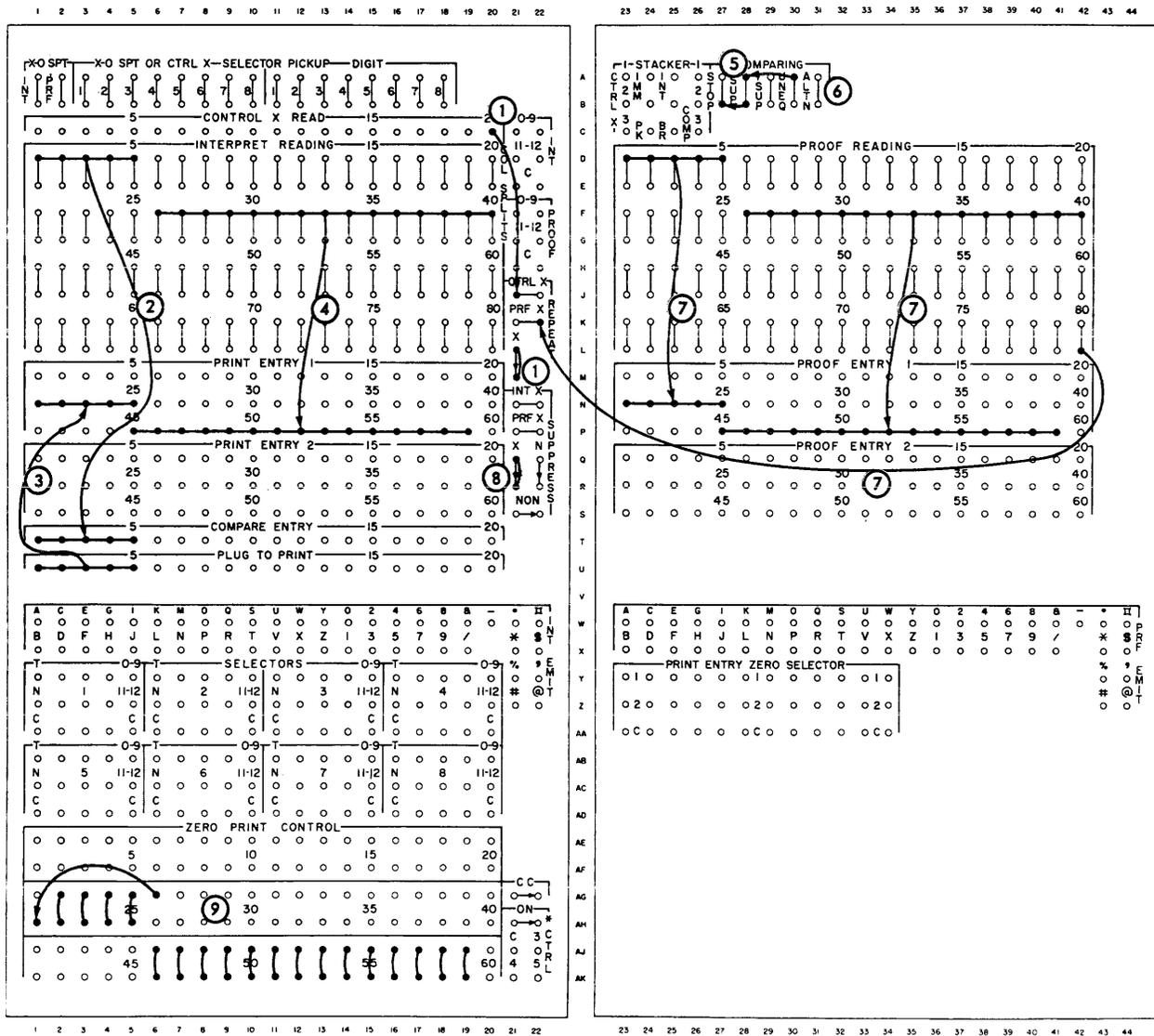


Figure 27. Suppressing Printing on Unmatched Detail Cards

are recognized. Also, control is set up for repeat print and comparing operations.

2. The control field to be compared is wired from interpret reading to compare entry.
3. Plug-to-print is wired to print entry 1 to repeat-print the control field on the master and following detail cards.
4. Wiring from interpret reading to print entry 1 sends master card information to the typewheels for the repeat-print operation. This field is not used in the compare operation so it is wired directly to print entry 1.
5. Wiring from UNEQ to SUP and STOP stops the machine operation and suppresses printing on unmatched detail cards.
6. The ALTN hub is not wired because in this problem multiple detail cards are the normal condition.

7. Normal proof wiring.

8. Suppress x switch must always be wired unless printing of NX cards is suppressed.
9. Zero print-control wiring. All zeros to the left of the significant digits in the control field print; zeros do *not* print to the left of significant digits in print entry positions 45-59.

In Figure 27, the 557 is controlled to compare detail cards with the preceding master card. If the result of comparing is unequal, printing is suppressed and the machine stops. By changing the comparing wiring, and adding wiring for the selector as shown in Figure 28, the following operation can be performed:

1. The normal sequence of the file should now be alternating master and detail cards with matching control fields.
2. The machine stops and suppresses printing on all multiple detail cards.

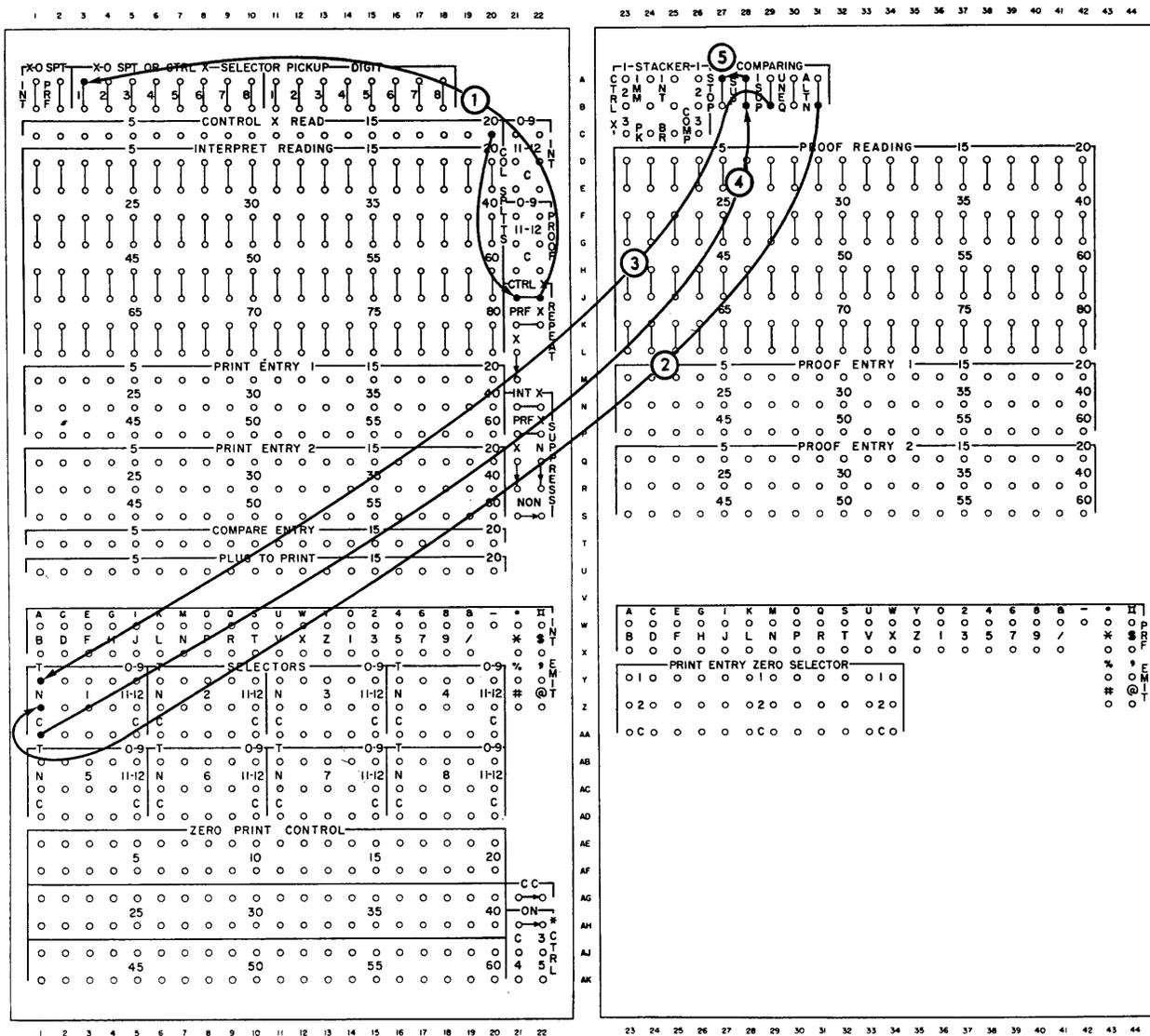


Figure 28. Suppressing Printing on Duplicate Cards

3. Printing is suppressed and the machine stops for master cards not immediately followed by a detail card.

Wiring (Figure 28)

1. Selector 1 will be transferred for all master cards that are sensed by control x read contact number 20.
2. The ALTN impulse is wired into normal side of the selector. The ALTN impulse comes out of the common of the selector only when multiple detail cards are sensed.
3. The I SUP impulse comes out of the common hub of the selector only when a master card is immediately followed by another master card.
4. Printing is suppressed on all multiple detail cards and on all multiple master cards not immediately followed by a detail card.
5. Whenever printing is suppressed, the machine also stops.

Selective Stacking

As many as four stackers can be installed on the 557 Interpreter. The stackers are located on the left front of the machine and are numbered right to left—1, 2, 3, 4. Without control panel wiring, cards stack normally in the stacker farthest to the left. Selected cards fall into stackers 3, 2 or 1 as directed by control panel wiring.

Each of the selective stackers (3, 2, and 1) has four control hubs used to determine which cards fall into each stacker. The control hubs are labeled CTRL X, IMM PK, INT BR and COMP. If a card is directed by control panel wiring to fall into two stackers at the same time, the card goes to the first one it reaches. Therefore, stacker 1 would have precedence over 2, stacker 2 over stacker 3, and so on.

Stacker Control X 1, 2, and 3 (CTRL X). These hubs accept impulses from control x read to select the cards that are x punched in a given column. A control x contact must be wired to read the column. Wiring to CTRL x 2 will send the x card to stacker 2, and so on.

Stacker Immediate 1, 2, 3 (IMM PK). Stacker immediate receives impulses wired from UNEQ to select the card *before* the unequal card, or from ALTN to select the card preceding the card for which ALTN is emitting.

Stacker Interpret 1, 2, and 3 (INT BR). These hubs receive any impulse from interpret reading to select the card being read.

Stacker Compare 1, 2, and 3 (COMP). Stacker compare receives impulses wired from UNEQ and ALTN hubs. If UNEQ is wired to COMP, the unequal detail card is selected. If ALTN is wired to COMP, each card for which ALTN emits is selected. The wiring in Figure 29 performs the following operations:

1. Information from master cards is printed on master and matching detail cards.
2. Printing is suppressed on unmatched detail cards; these cards are selected to stacker 2.
3. All master cards (x punched in column 80) are selected to stacker 3.
4. All other cards go to stacker 4 (normal stacker).

Wiring (Figure 29)

1. Control x contact 20 senses the x in column 80. Wiring control x read 20 to repeat control x and wiring the x switch indicates when a master card is being read.

2. The control field is wired from interpret reading to compare entry.

3. Wiring from plug-to-print to print entry 1 allows the control information to print on master card and repeat print on detail cards.

4. Wiring from interpret reading to print entry 1 enables master card information *not* being compared to repeat print in detail cards.

5. UNEQ wired to SUP prevents printing on unmatched detail cards. UNEQ wired to stacker 2 COMP directs unmatched detail cards to stacker 2.

6. Wiring from control x read contact 20 to stacker 3, CTRL X, causes the machine to stack all master cards in stacker 3. No column split is necessary with this wiring. The dotted line shows an alternate wiring to select x punched master cards by wiring from interpret read brush 80 through a column split to stacker 3 INT BR.

7. Suppress x switch must be wired unless we are suppress printing on NX cards.

8. Normal zero print-control wiring. NOTE: For a machine with a proof device, wiring should be added for proof reading each field being printed.

The wiring in Figure 30 performs the following operations:

1. Printing is suppressed on unmatched detail cards.
2. Unmatched and duplicate master cards are selected to stacker 1.
3. Unmatched detail cards are selected to stacker 2.
4. All other cards go to stacker 4 (the normal stacker).

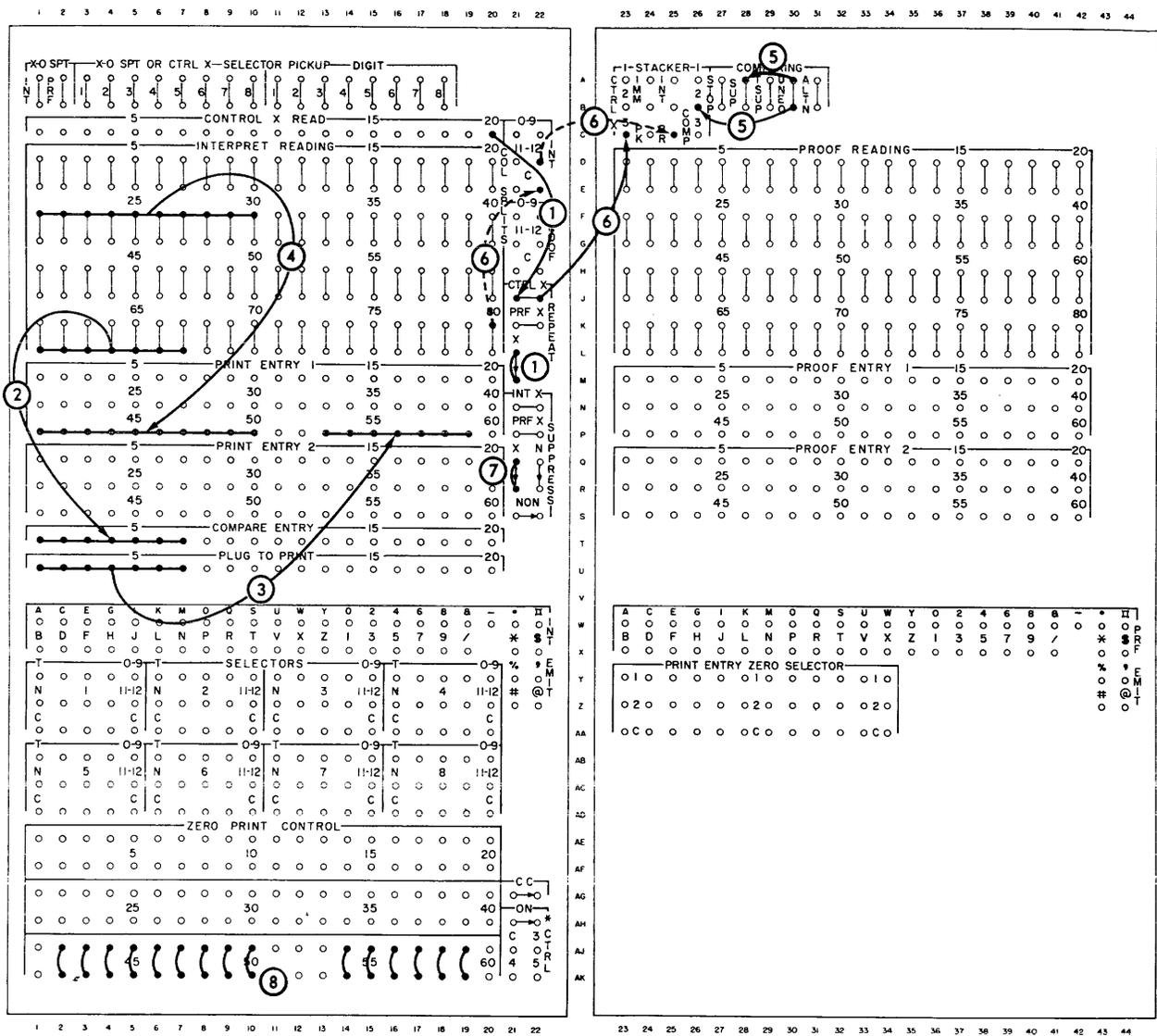


Figure 29. Print Suppression and Card Selection

Only the wiring necessary for selection and stacking cards is shown. Wiring and proof for the printed and compared fields is not included.

Wiring (Figure 30)

1. The UNEQ impulse wired to SUP prevents printing on all unmatched detail cards. By wiring UNEQ to stacker 2 COMP, all unmatched detail cards are controlled to go to stacker 2.
2. The x in the master card is sensed by pre-sense contact 1. Wiring from control x read 1 to CTRL X pickup for selector 1 causes the selector to be transferred only when x master cards are being read.
3. The ALTN impulse wired to the digit pickup of selector 2 transfers selector 2 for every master card immediately following a master, and for every detail card immediately following a detail card.

4. The ALTN impulse is wired to the common of selector 1 and from transfer to stacker 1 IMM PK. When several master cards appear together in a file, all multiple master cards except the last in each sequence are sent to stacker 1 with this wiring. Thus, in the sequence M1 D1 M2 M3 M4 D4 M5 M5 D6 M7 M7 D7 D7, the underlined master cards are selected by this wiring. Stacker 1 should contain multiple master cards. Duplicate detail cards are not to be selected. Therefore, the ALTN impulse is directed to stacker 1 IMM PK for master cards only.

5. UNEQ is wired to the common of selector 2 and from normal to stacker 1 IMM PK to select unmatched master cards. It is necessary to select the UNEQ impulse because several detail cards may follow an unmatched master. As wired here, the UNEQ impulse reaches stacker 1 IMM PK only when the ALTN does *not* emit; that is, only when the *first* detail card follows an un-

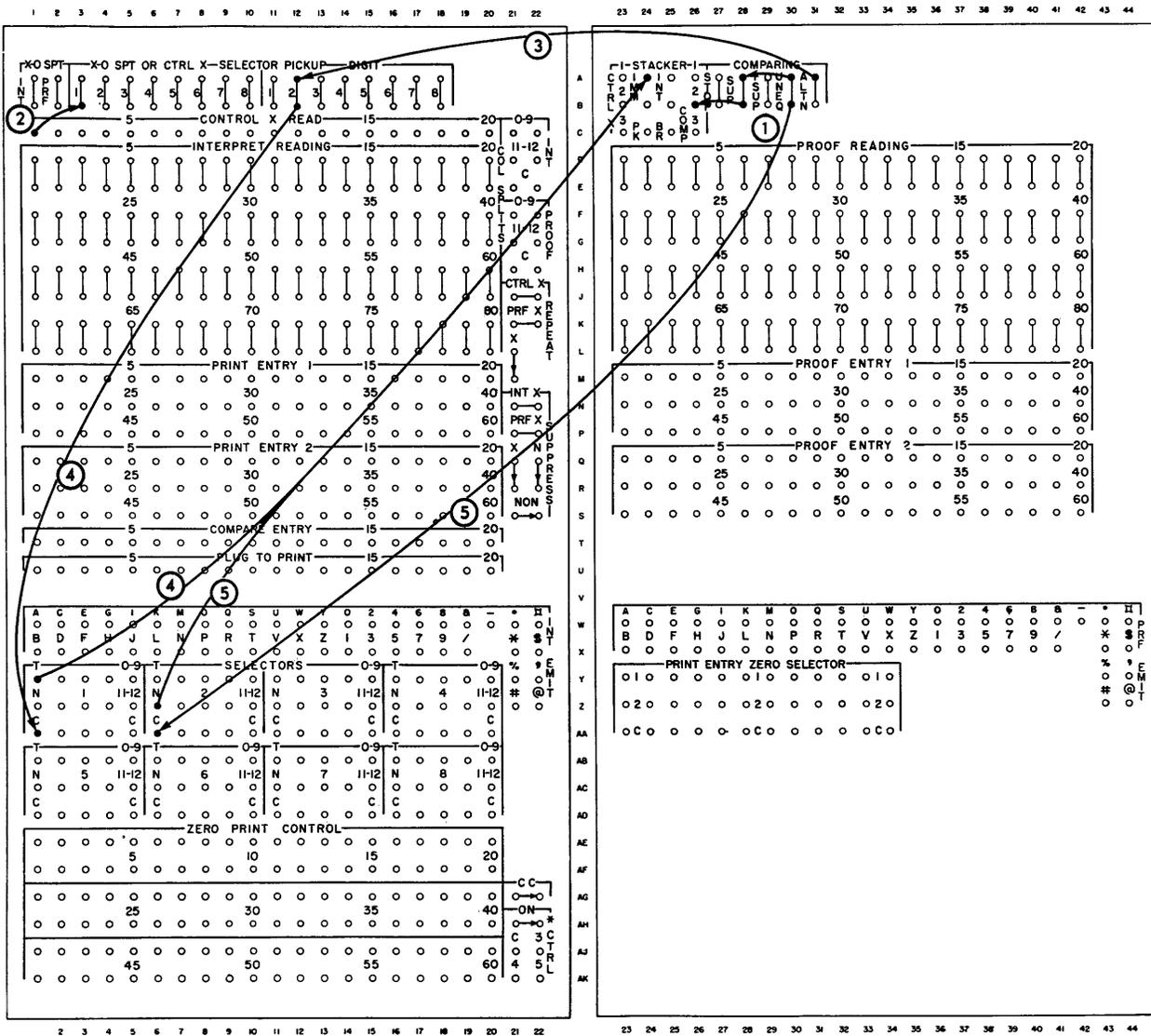


Figure 30. Suppression of Unmatched and Duplicate Cards
 matched master. In the sequence M1 D1 M2 D3 D3, the UNEQ impulse, as selected here, will reach stacker 1 IMM PK for the first D3 card only. Because the IMM PK hub causes selection of the card previous to the card that impulsed it, M2 would be selected to stacker 1.

Selective Line Printing

A selective line printing device can be plant installed on the 557 Interpreter. The following devices must also be installed:

1. Control x read (pre-sense).
2. Repeat print.
3. A minimum of five positions of comparing.
4. A minimum of one selective stacker.

Selective line printing is available in two models to post a maximum of either 25 lines (SLP-25) or 50 lines (SLP-50) from a data card to each face of a ledger card. By reversing the card, a maximum of either 50 or 100 lines can be posted from a data to a ledger card. Print control is maintained by control panel wiring.

Operation

The 557 can print information from a master card on the same master card and/or subsequent detail card(s). Therefore, in a posting operation, the data cards would be identified as master cards and the ledger cards as detail cards. This terminology, "master-data cards" and "detail-ledger cards" will be used throughout this section.

The repeat print and pre-sensing (control x read) devices must be installed and wired to recognize either

x or NX master cards. Information can be posted from a master-data card to an immediately following detail-ledger card. Card-to-card comparing should be performed at the same time. The multiple stackers can be impulsed to select out cards from both the card-to-card comparing and posting operations.

If suppress print is being used in the card-to-card comparing process, this device operates the same for *all* repeat print processes. For example: If we are repeat printing the control-compare field on NX cards only, we can post by selective line printing on NX ledger cards only. Each printed line requires a separate pass of the data and ledger cards.

Ledger cards can be posted in any sequence on the 25 or 50 printing lines through control panel wiring. The posting sequence must be the same during any specific run of the cards. For instance: If we wire the 557 to post ledger cards three times, on lines 5, 10, and 25, all ledger cards in the file must be posted on those lines and in that order. SLP-50 cards post on lines 30, 35, and 50. The print-position dial is inoperative during selective line printing. The data card is positioned for printing by means of separate control-panel wiring.

Sensing Unit

Certain print positions on ledger cards are reserved for the posting indicator mark. This (diagonal) mark is printed from the 0-1 section of the typewheel. The posting indicator marks are sensed by a photosensitive unit. This unit recognizes the posting indicator mark printed on the ledger card during the previous posting run. The mark is in line with, and printed at the same time as, the posted information (Figure 31).

After the mark(s) made during the previous posting(s) has been read at the sensing station, the card is automatically positioned to be printed on the next posting line. This line has been determined by control panel wiring. The card then moves to the printing station where the next line is posted and a new indicator mark is printed.

A special ribbon, IBM part number 472789 or its equivalent, must be used. This ribbon normally provides approximately 50,000 lines of printing before replacement is required.

SLP-25 Components

The SLP-25 switch must be wired for selective line printing-25 operations.

Fifty posting hubs are provided, two common exit hubs for each of the 25 posting passes. They are usually wired to print-line entry hubs or the comparing (COMP) hub of a selective stacker. After all indicator marks on the ledger card have been scanned, one set

of posting hubs emits. These hubs emit consecutively and in sequence, one set at a time. For instance: if a ledger card has been previously posted three times, the fourth set of posting hubs emits regardless of where the previous three lines have been printed on the card.

Ledger cards may be selected to stackers 1, 2, or 3 after the desired number of posting entries has been made. An impulse from the posting hub designating the last printed posting of the overflow-25 hub must be wired to the COMP hub of a selective stacker.

The fully posted card can be selected to one of the multiple stackers on either the 25th or 26th pass of the file. If ledger cards which have been posted 25 times are to be selected out directly after the 25th posting, posting hub 25 must be wired to the COMP hub of one of the selective stackers. If the ledger cards are to be selected on the 26th pass of the file, OFLO-25 must be wired to the COMP hub of one selective stacker.

If less than 25 lines are being printed, the ledger card can be selected directly after the last posting, or on the pass of the file following the last posting. For instance: If we are posting 10 times and wish to select the ledger card on the 10th pass of the file, posting hub 10 would be wired to the COMP hub of a selective stacker. If the ledger card is to be selected on the 11th pass of the file, the following wiring would be necessary:

1. Posting hub 11 to the COMP hub of a selective stacker.
2. Posting hub 11 to COMPARING SUP hub to suppress printing on the ledger card during the 11th pass of the file.

Twenty-five print-line entry hubs are provided, one for each print line on the card. These hubs accept impulses to cause printing on a specific line of the card. They are usually wired from the posting exit hubs. Any single posting impulse can be wired to any single print-line hub.

The overflow-25 hub (OFLO-25) is an exit hub that emits only after all 25 lines of the card have been posted, i.e., on the 26th pass of the card. This impulse can be used to select the filled card to one of the selective stackers or to stop the machine. Print suppression is automatic when OFLO-25 emits.

The data card print-line hubs (DCPL) are exit hubs that control printing on the master card. They must be wired to a specific print-line hub to print all data cards during a specific pass of the file.

If a posting hub has already been wired to the desired print-line hub, the DCPL impulse can be wired to one of the two common posting hubs. For instance: If we wire posting hub 3 to print-line hub 5, we print information on the fifth line of the ledger card during

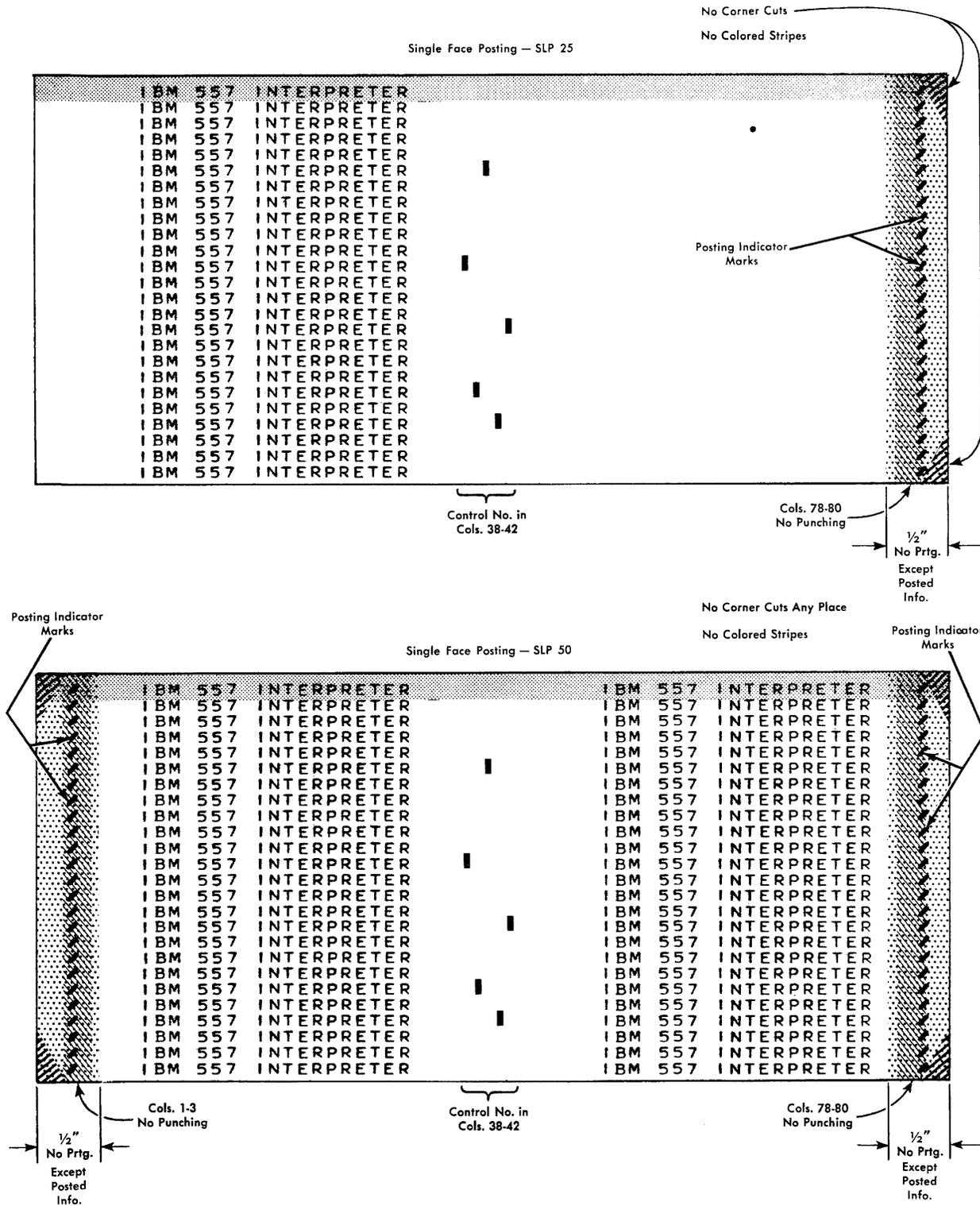


Figure 31. SLP-25 and SLP-50 Posted Cards

the third pass of the file. If we wish to print on line 5 of the data card also, we wire from DCPL to print-line hub 5 to one of the common hubs of posting hub 3.

Print suppression on the data card is accomplished in the normal manner under an X or NX control in

the print suppression unit. If the proof device is installed, the DCPL hub must always be wired to a print-line hub. If printing is being suppressed on the data card, the DCPL hub must still be wired to a print-line hub or a proof error will occur.

Card and Print Adjustment

Because the photosensing unit is sensitive to punching, printing, and coloring, certain adjustments in these areas must be made for the *ledger card only*. Because the data card prints under a separate control, it can be punched and printed in the normal manner. In SLP-25 with single face posting, the following restrictions must be observed for all *ledger cards*:

1. No printing or marking of any kind other than the posted information can occur within one half inch of the right edge of the card. A maximum of 59 characters can be printed on any single pass of the card.
2. Columns 78, 79, and 80 must not be punched.
3. The card must be free of colored stripes; white or J-natural stock is recommended for maximum legibility.
4. Corner cuts cannot be made in the upper or lower right-hand corners of the card.
5. The 51-column feed cannot be installed with SLP-25 (Figure 31).

If both faces of the card are being posted in SLP-25, the following restrictions must be observed for the *ledger card*:

1. No printing or marking of any kind other than the posted information can occur within one-half inch of the right edge of both faces of the card.
2. Columns 1, 2, and 3 and 78, 79, and 80 must not be punched.
3. The card must be free of colored stripes; white or J-natural stock is recommended for maximum legibility.
4. The card cannot have *any* corner cuts.
5. The 51-column feed cannot be installed.

Wiring (Figure 32)

This is a combined SLP-25 and card-to-card comparing operation. The ledger card is posted on all 25 lines. Matching control fields for master and detail cards are punched in columns 21-25. The sequence of the file is alternating data and ledger cards. Information

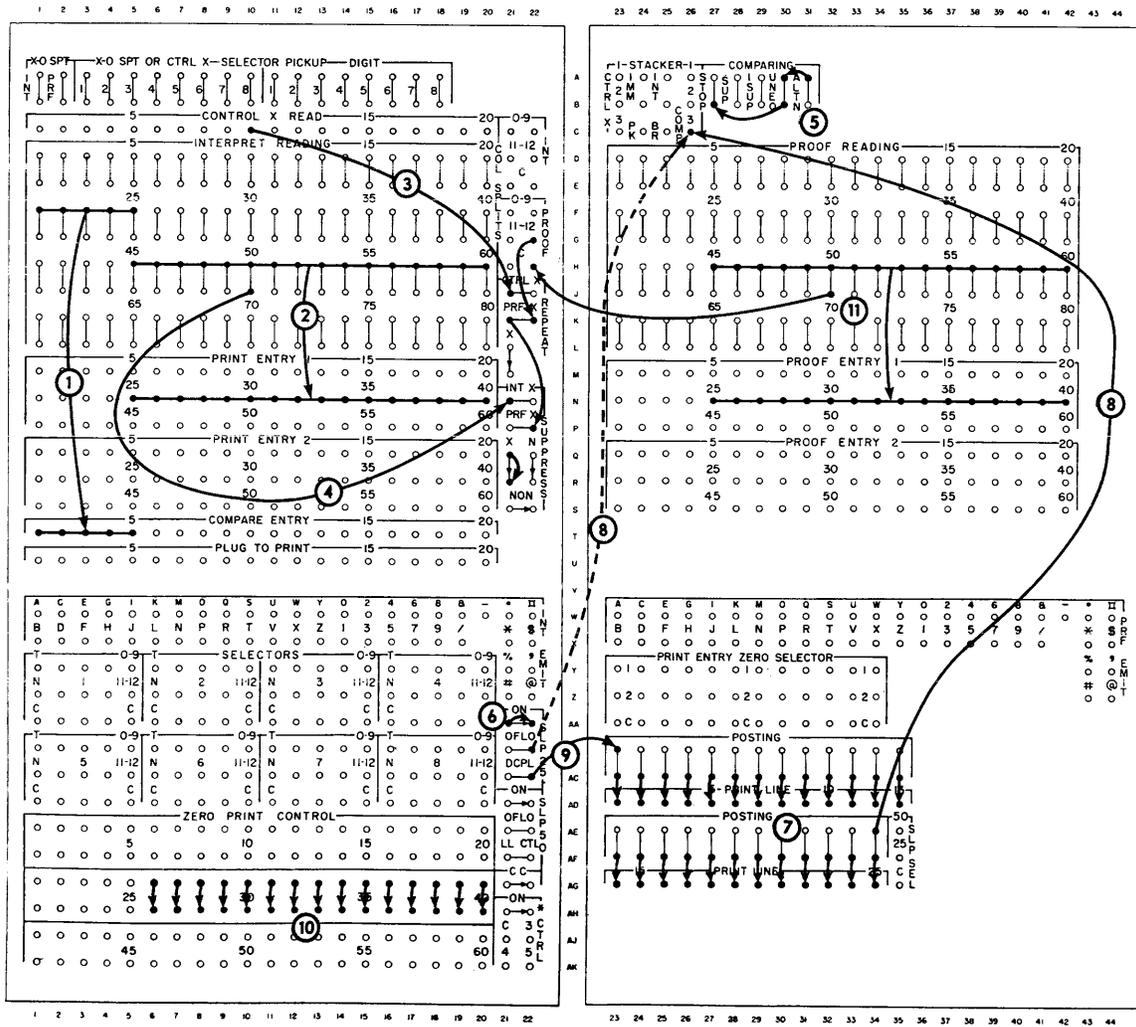


Figure 32. SLP-25; 25-Line Posting

to be posted is punched in columns 45-60 of the master card; it is x punched in column 50.

1. The control field is used in the compare operation only; it is not printed on either data or ledger cards. Wiring from columns 21-25 to compare entry checks the related fields in master and detail cards.

2. Posted information is read from columns 45-60 in master cards and printed in positions 25-40 on detail cards.

3. The control x read station 10 is set to read column 50 of master cards and impulses the repeat print unit. Master cards are x punched, so the x switch is wired.

4. Wiring interpret read brush 50 to suppress print, with x switch wired, suppresses printing on master data cards.

5. Unequal and alternate hubs are jack-plugged and wired to the STOP hub. If control fields do not match or the sequence of the file is not alternately master and detail, the machine stops. The error card is the next to the last card in the stacker.

6. SLP-25 switch must be wired.

7. Posting hubs 1-25 are wired to print lines 1-25. The first pass of the card is printed on line 1, the second on line 2, and so on.

8. Posting hub 25 is wired to stacker 3 COMP. Completely posted cards are selected out on the 25th pass of the file. The dotted line from OFLO-25 to stacker 3 COMP shows the alternate method of selecting fully posted ledger cards on the 26th pass of the file. Cards with less than 25 posted lines stack normally in stacker 4.

NOTE: Selection on both the 25th and 26th passes of the ledger card can be combined at the same time by wiring OFLO-25 to the INT BR hub of stacker 3 and posting hub 25 to COMP hub of stacker 3.

9. Although printing is suppressed on the data card, DCPL *must* still be wired. DCPL is wired to print line 1.

10. Normal zero print-control wiring for the posted field.

11. Duplicate wiring from proof.

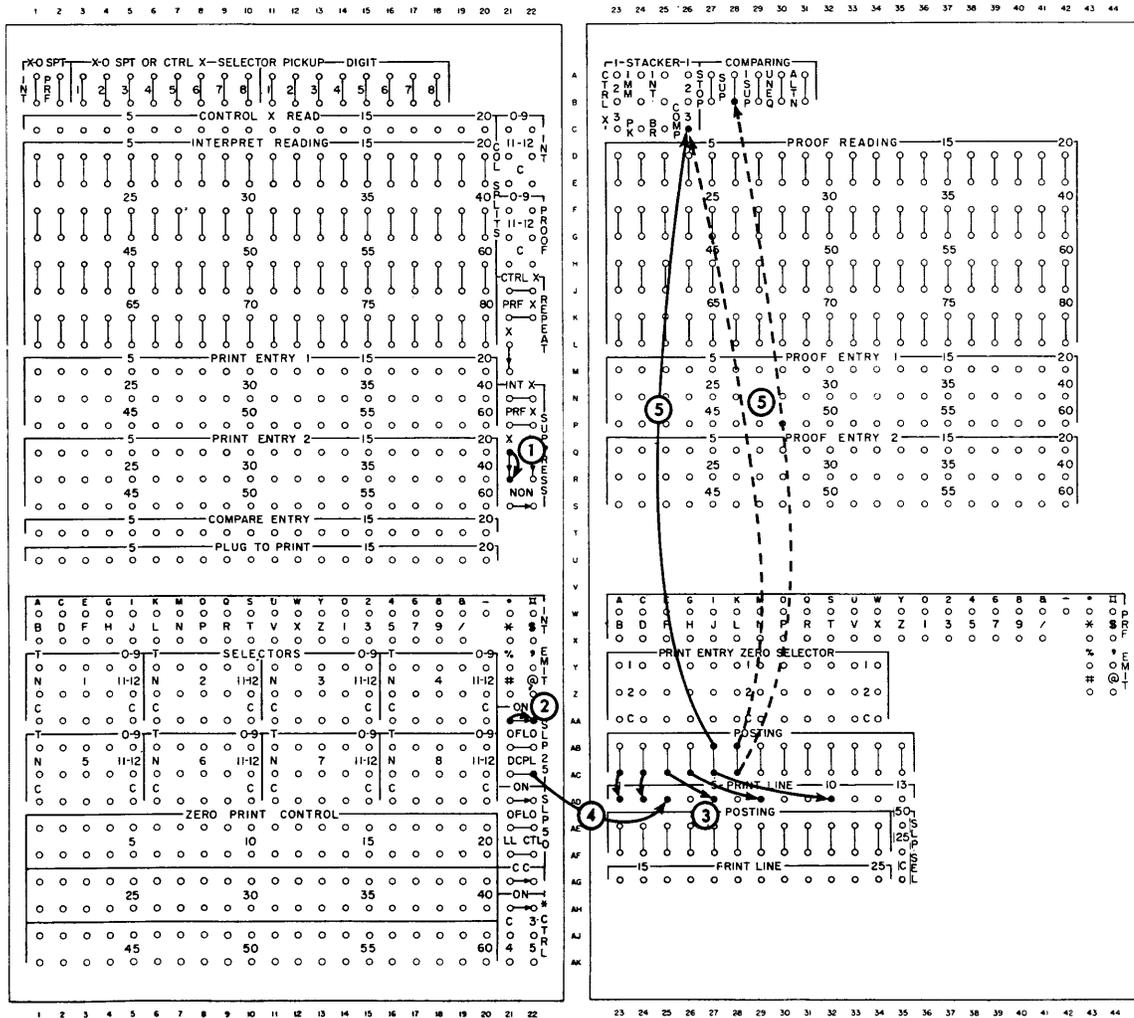


Figure 33. SLP-25; Five-Line Posting

In Figure 33, the operation is the same as the preceding problem with these two exceptions:

1. The ledger card is posted on lines 1, 2, 5, 7, and 10 only.
2. Data cards are printed on line 3 by control panel wiring.

Wiring changes occur only in selective line printing and print suppression as shown.

Wiring (Figure 33)

1. Print suppress unit is not wired from either interpret reading or proof; x switch is wired.
2. Because the card is posted only five times, OFLO-25 does not emit.
3. The ledger card is posted on print lines 1, 2, 5, 7, and 10 successively. Wiring from posting to the print-line hubs identifies each pass of the card with its respective print line.
4. DCPL is wired to print-line hub 3.
5. Wiring from posting hub 5 to the COMP hub of stacker 3 selects the card to stacker 3 on the fifth pass of the file. The dotted line from posting hub 6 to stacker 3, COMP, shows an alternate wiring to select the ledger card on the sixth pass of the file. Posting hub 6 is also wired to COMPARE SUP to suppress printing on the ledger card during the sixth pass of the file.

NOTE: Selection of ledger cards on the fifth and sixth passes of the file can be combined at the same time by wiring from posting hub 5 to the COMP hub of stacker 3, and from posting hub 6 to the INT BR hub of stacker 3 and to COMPARE SUP.

Posting on Both Faces of the Ledger Card

The ledger card can be posted on both faces for a maximum of 50 lines (50 passes of the card) in SLP-25 and a maximum of 100 lines (100 passes of the card) in SLP-50.

On both faces of the ledger card, the 12-edge must be the leading edge when the card is fed through the machine. Because the ledger card is reversed, each punch has a double significance. It appears in one column when the first face of the card is printed and in another column when the second face of the card is printed.

Figure 35 illustrates both faces of a ledger card before the first posting has occurred.

The control field—used for identification and in the card-to-card comparing process—is punched in columns 10-14 in the data-master card and in the *first face* of the ledger-detail card. When the *second face* of the ledger card is posted, the control field appears in columns 67-71 in reverse order; i.e., the high order digit is in column 71, the thousandths digit is in column 70, and so on.

The ledger card is x punched in column 21 on the first face and in column 60 on the second face.

Figure 34 illustrates the wiring for the control fields in an SLP-25 operation with double face (50 lines) posting. Only the control field wiring is shown. Wiring for the selective line printing process is the same as the wiring illustrated in Figures 32 and 33.

Wiring (Figure 34)

1. Control x read station 15 is wired to repeat print. It is set to identify master-data cards which are x punched in column 65. The detail-ledger card must not be x punched on columns 65 or 16 on either face of the card. This is necessary because column 65 becomes 16 when the card is reversed and vice versa.
2. Control x read station 5 is wired to CTRL X pickup of selector 1. Station 5 is set to read column 60.

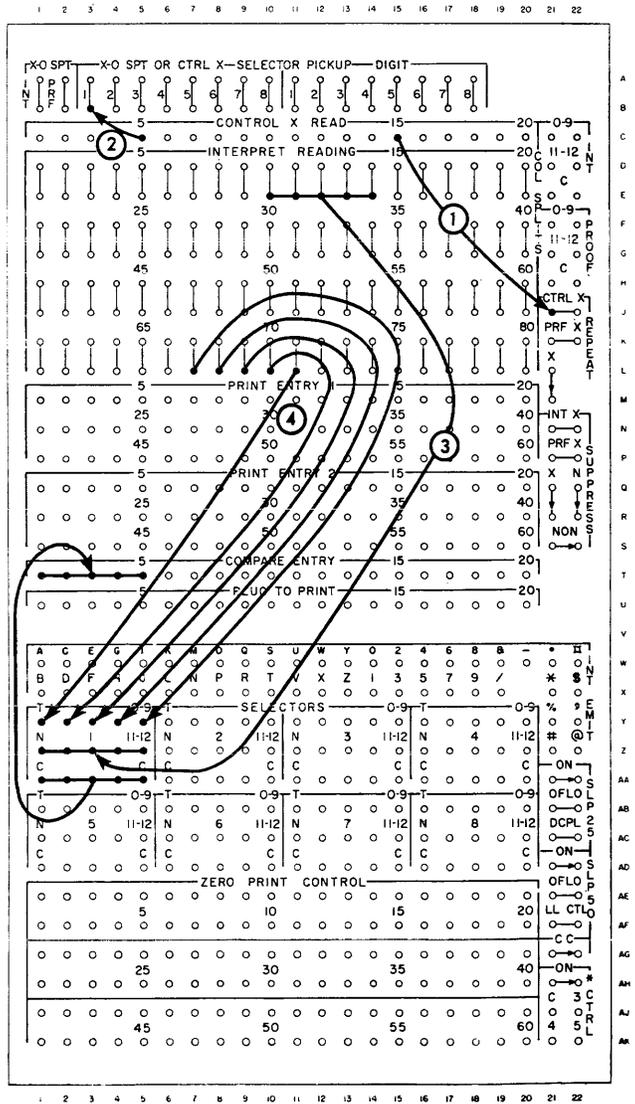


Figure 34. Selection of Control Field for Double Face Posting

The ledger card is x punched in column 60 on the *second* face of the card; consequently, it is x punched in column 21 on the *first* face of the card. Column 60 must not be x punched on the first face of the ledger card; column 21 must not be x punched on the second face of the ledger card. This is necessary because, when

the ledger card is reversed, column 60 becomes column 21 and vice versa. The master-data card must not be x punched in column 60.

3. Interpret read brushes 10-14 are wired to the normal side of selectors 1 and out of the common hubs to the compare entry. This wiring allows the control

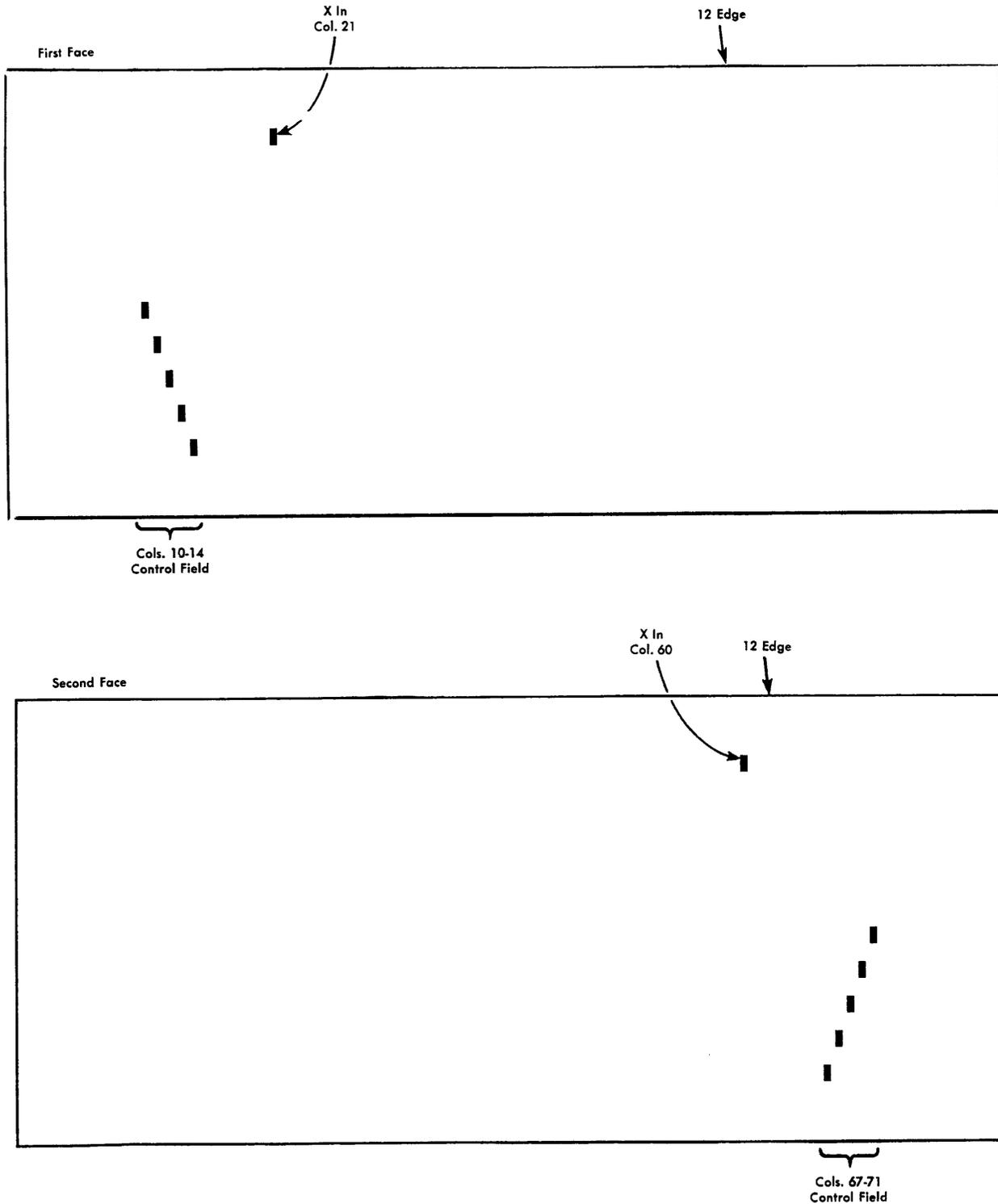


Figure 35. Ledger Cards for Double Face Posting

ANY NATIONAL BANK

ON THE REVERSE SIDE OF THIS CARD YOU WILL FIND YOUR STATEMENT OF ACCOUNT



T. A. SMITH
ANY STREET ADDRESS
ANY CITY, ANY STATE

THIS IS
YOUR ACCOUNT
NUMBER

1 3 4 5 5 1 0

OTHER SERVICES

PERSONAL LOANS

TRUST DEPARTMENT

MORTGAGE LOANS

RETAIL CHARGE ACCOUNT SERVICE

SCHOOL SAVINGS

CHRISTMAS CLUB

SAFETY DEPOSIT

SAVINGS ACCOUNTS

WE ARE A MEMBER OF THE FEDERAL DEPOSIT INSURANCE CORPORATION

Figure 36. Name and Address Side

field from the master-data card and from the *first* face of the detail ledger cards (nx in column 60) to reach the comparing unit.

4. Interpret read brushes 67-71 are wired to the transferred side of selector 1—in reversed order—and out of the common hubs to the compare entry. This wiring allows the control field from the *second* face of the detail-ledger cards (x in column 60) to reach the comparing unit.

The following example of a card posted on a 557 equipped with SLP represents a dynamic approach to a traditional posting problem.

Figures 36 and 37 show the name and address and ledger sides of a statement of account. In brief, a statement of the activity in the account is mailed each month to the individual or company holding the account. Each transaction for the previous month is detailed and dated. Four transactions are posted to each line, in this case, since the card from which the posting is made was punched on the IBM RAMAC® 305 when it detected four transactions in the history area of the account. The last line was posted from a summary card prepared by the RAMAC 305 at the end of the month.

STATEMENT OF ACCOUNT		YOUR ACCOUNT NUMBER - 1 3 4 5 5 1 0				YOUR ACCOUNT BALANCE - 1 4 3,5 0				ON-MAR 30	
LINE	DATE	TRANSACTION AMOUNT	LINE	DATE	TRANSACTION AMOUNT	LINE	DATE	TRANSACTION AMOUNT	LINE	DATE	TRANSACTION AMOUNT
	1 2	1 2 0 0	1 2		2 4 0 0	1 3		1 6 0 0	1 4		2 5 0 0
	2 6	1 4 0 2	0 1 6		1 0 0 0	1 8		1 4 0 0	1 8		1 8 0 0
	1 1 0	6 0 0 0	2 1 1		1 6 5 0	1 1 3		2 0 0 0	1 1 6		2 5 0 0
	1 1 8	4 0 0 0	1 1 9		8 5 0	1 2 1		1 8 0 0	1 2 1		9 7 5
1 CHECK	2 2 2	5 0 0 0	1 2 2		6 0 0	1 2 3		4 4 0 0	1 2 6		6 0 0
	1 2 7	5 0 0	1 2 7		8 0 0	1 2 9		1 0 0 0	1 3 0		4 5 0
2 DEPOSIT	1 3 0	2 0 0									
YOUR ACTIVITY THIS MONTH-		NUMBER OF CHECKS DRAWN 2 2	AMOUNT OF CHECKS DRAWN 4 7 5,7 5	NUMBER OF DEPOSITS MADE 3	AMOUNT OF DEPOSITS MADE 3 5 5,2 0	NUMBER OF CHECKS 2 1 0	CURRENT BALANCE 2 0,8 5	BALANCE DATE A P R 3 0			

PLEASE REPORT PROMPTLY ANY DISCREPANCY TO OUR AUDITING DEPARTMENT

Figure 37. Ledger Side

SLP-50 Components

Selective line printing-50 permits posting 50 lines on each face of a card for a total of 100 postings per card. Half-line posting is printed in two 25-line columns, left half of the ledger card first, for a total number of 50 passes of the card. Shifting from the left to the right half posting column is accomplished by control panel wiring.

The print location of all posted lines must be the same on both halves of the card. If we post card passes 1-20 to print on lines 1-20 of the left half, we must post card passes 21-40 to print on lines 1-20 of the right half of the card.

SLP-50 and SLP-25 functions and wiring are the same in the following respects:

1. Repeat print and control x read must be wired.
2. Card-to-card comparing should be performed at the same time.
3. Each printed line requires a separate pass of the card.
4. Suppress print operates in the same manner for all repeat-print operations.
5. Data card print-line hub (DCPL) must be wired.
6. A 51-column feed cannot be installed.
7. The data card is printed in the same manner.

The SLP-50 switch must be wired for selective line posting-50 operations. It is not necessary to wire the SLP-25 switch for SLP-50 operations.

In SLP-50, OFLO-25 emits automatically on the 26th pass of the card if all 25 lines on the left half of the card have been posted. It also emits when the last-line control hub (LLCTL) first receives an impulse from the posting hubs. In SLP-50, OFLO-25 is wired to the first printing line on the right half of the card. The first printing line, and all subsequent lines, must be the same for both halves of the card.

In SLP-50, each posting and print-line hub functions twice for each card—once for each half of the card. For example: Posting hub 2 emits for both the second and 27th passes of the card; print line 25 accepts posting impulses to print both the 25th and 50th lines on the card.

In SLP-50, as in SLP-25, it is possible to select the ledger card to one of the multiple stackers either directly after posting has been completed or on the pass following the last posting. In the latter operation, OFLO-25 is used in addition to two other hubs, the overflow-50 and last-line control hubs.

Overflow-50 (OFLO-50) emits an impulse on the pass after the 25 lines have been printed on the right half of the card, i.e., on the 51st pass of the card. It also emits the second time LLCTL receives an impulse from the posting hubs. OFLO-50 can be used to select ledger

cards to stackers or to stop the machine. Print suppression is automatic when OFLO-50 emits.

LLCTL is an entry hub that is usually wired from a posting hub; this identifies the last posting pass if less than 25 lines are being printed on each half of the card. LLCTL is wired from the posting hub *following* the last desired posting pass of the card. Because the posting hubs emit once for each half of the card, LLCTL receives two impulses if less than 25 lines are being printed on each half of the card. When LLCTL is impulsed from the left half of the card, OFLO-25 emits an impulse. When LLCTL is impulsed from the right half of the card, OFLO-50 emits an impulse.

Selection of the ledger card directly after posting has been completed is accomplished by the use of the selective line printing selector (SLP SEL). The selector consists of three positions—a common hub (C), an SLP-25 hub (25), and an SLP-50 hub (50). The common hub accepts impulses from the posting hubs. In SLP-50, the first time the posting hubs emit (for the left half of the card) the posting impulse is available out of the 25-hub of the selector. The second time the posting hubs emit the impulse is available out of the 50-hub of the selector.

To select the ledger card directly after posting, the last posting hub to be used should be wired into the C hub of the SLP selector and out of the 50-hub to the COMP hub of one of the selective stackers.

DCPL hubs operate exactly as they did for SLP-25. It is not possible to print on the right side of the data card in SLP-50; all posting occurs on the left side of the data card. Assume that DCPL is wired to print-line hub 10. The data card will be posted on the tenth line on the left half of the card.

Card and Print Adjustments

In SLP-50, these restrictions must be observed for the *ledger* card:

1. No printing or marks of any kind except the posted information can appear within a one-half-inch margin from the left and right edges of the card. A maximum of 58 characters can be printed on each line of the card. Because each pass prints on only half of the card, a maximum of 29 characters can be printed on any single posting.
2. Columns 1, 2, 3, and 78, 79, 80 must not be punched.
3. The card must be free of colored stripes.
4. The card cannot have corner cuts (Figure 31).

Figure 38 illustrates a 50-line posting operation. Only the wiring for the SLP operation is shown. Card-to-card comparing, control x read, and repeat-print wiring are the same as illustrated in Figure 32.

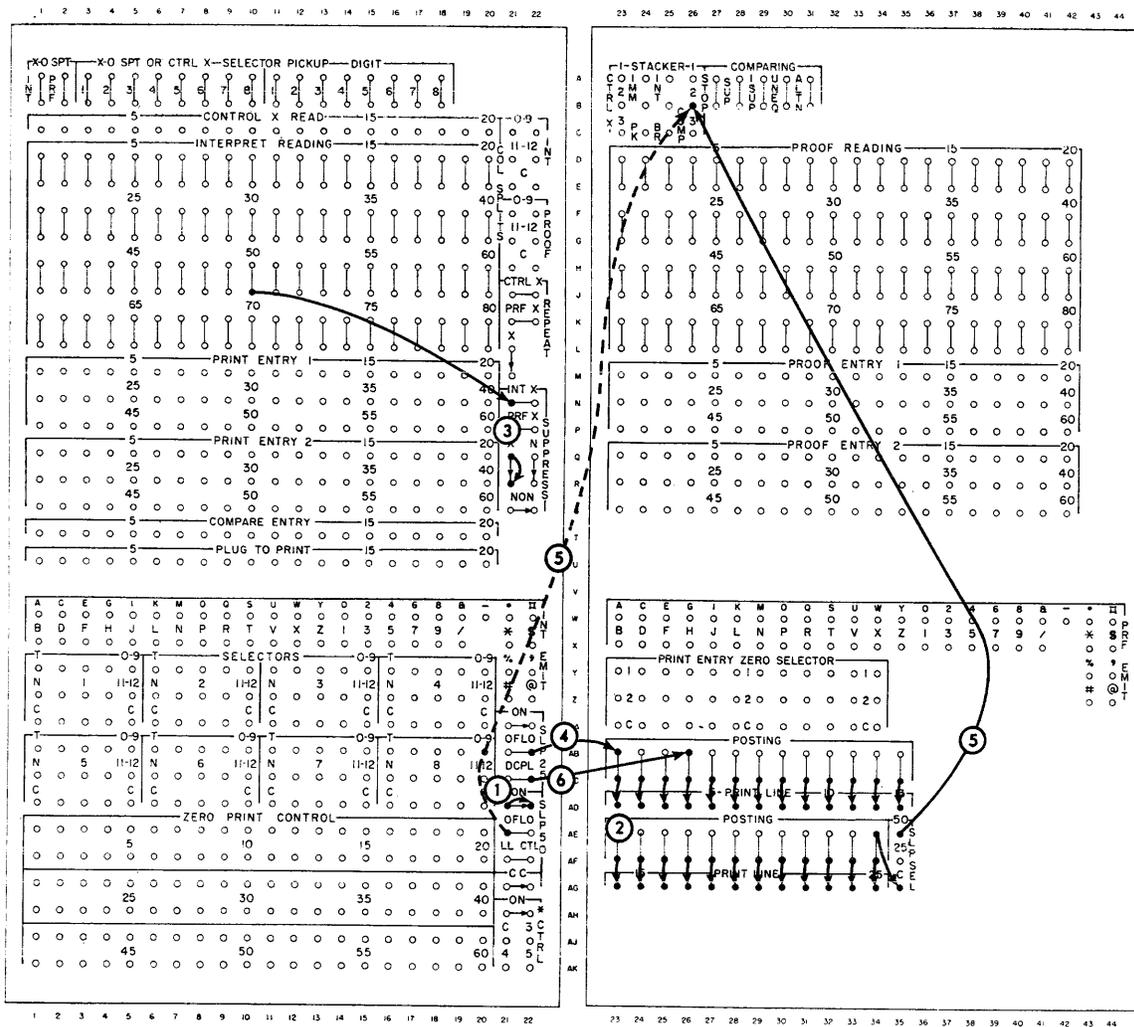


Figure 38. SLP-50; 50-Line Posting

Wiring (Figure 38)

1. SLP-50 must be wired.
2. Posting exits 1-25 are wired to print-line entries 1-25.
3. Interpret read brush 50 is wired to the suppress print unit and the x switch is wired. Printing is suppressed for all master cards.
4. OFLO-25 is wired to print line 1 through the common hub of posting hub 1. Because LLCTL is not wired, OFLO-25 emits only after the left half of the card has been completely posted, i.e., on the 26th pass of the card. The card then shifts and printing begins on line 1 on the right half of the card.
5. Posting hub 25 is wired into the C hub of the SLP selector and out of the 50-hub to stacker 2 COMP. This selects the fully posted card directly after the last posting—on the 50th pass of the file. The dotted line—from OFLO-50 to stacker 2 COMP—shows an alternate wiring to select ledger cards on the 51st pass of the

file. Cards that are not completely posted stack in the normal stacker, number 4.

NOTE: Selection of ledger cards on both the 50th and 51st passes of the file can be combined at the same time by wiring OFLO-50 to the INT BR hub of stacker 2 and posting hub 25 through the 50-hub of the SLP selector to the COMP SUP hub of stacker 2.

6. Although printing is suppressed on master-data cards, the DCPL hub must be wired. It is wired to print-line hub 4, through the common hubs of posting hub 4.

In Figure 39, the operation is the same as the preceding problem with these two exceptions:

1. The ledger card is posted ten times on lines 5, 10, 15, 20, and 25 of the right and left-hand sides of the cards.
2. Data cards are posted on line 1.

Wiring changes occur only in selective line printing and print-suppression. These changes are shown in Figure 39.

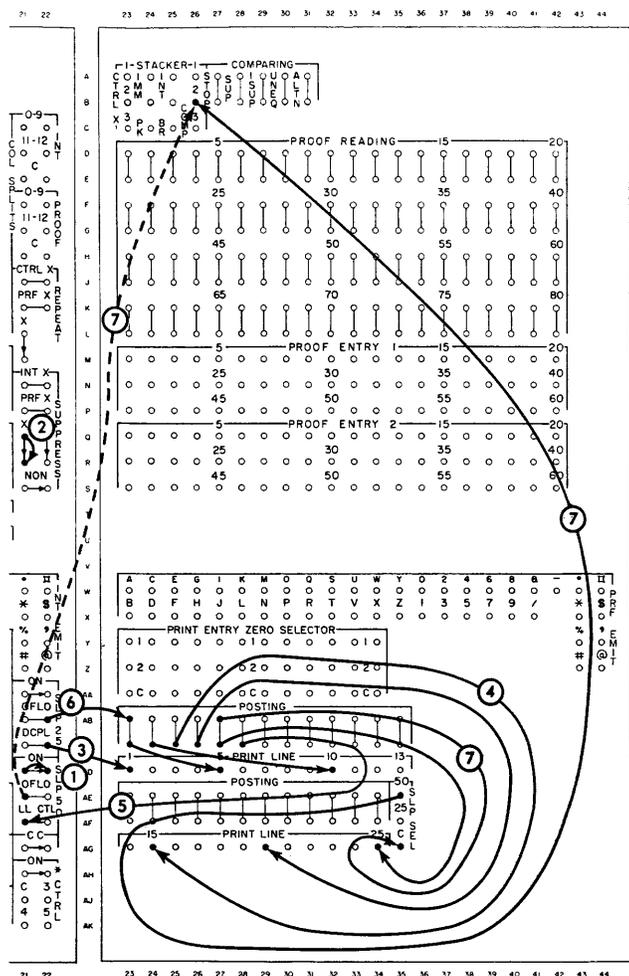


Figure 39. SLP-50; Ten-Line Posting

Wiring (Figure 39)

1. SLP-50 must be wired.
2. Print suppress unit is not wired from interpret or proof read. The x switch is wired.
3. DCPL is wired to print-line hub 1. Data cards are posted on the first line on the left half of the card.
4. Posting passes 1-5 are printed on the left half of the ledger card, print lines 5, 10, 15, 20, and 25. Posting passes 6-10 are printed on the right half of the ledger card, print lines 5, 10, 15, 20, and 25.
5. Posting hub 6 is wired to last line control (LLCTL). Hub 6 emits twice, once for each half of the card. On the sixth pass of the card (left half), LLCTL is impulsed and OFLO-25 emits. On the 11th pass of the card (right half), LLCTL is impulsed and OFLO-50 emits.
6. OFLO-25 is wired to print line 5 through common hub of posting hub 1. On the sixth pass of the card (left half), OFLO-25 emits, and the card is printed on the right half on print line 5.
7. Posting hub 5 is wired to the C hub of the SLP selector, and out of the 50-hub to stacker 2 COMP.

Ledger cards are selected out directly after the last posting—on the tenth pass of the file. The dotted line from OFLO-50 to stacker 2 COMP illustrates an alternate method of wiring to select out ledger cards on the eleventh pass of the file. If ledger cards have been posted less than ten times, they stack in the normal stacker, number 4.

NOTE: Selection of ledger cards on both the tenth and eleventh passes of the file can be combined at the same time by wiring from posting hub 5 to the COMP hub of stacker 2 and from posting hub 6 to the INT BR hub of stacker 2 and to COMPARE SUP.

Check Protection

Printing asterisks to the left of an amount is often desired for protection purposes. Because the number of positions in the amount varies, the number of asterisks to be printed also varies. Printing of as many as six asterisks to the left of the high-order significant digit in an eight-position field may be automatically controlled in a predetermined group of adjacent type-wheels by the check-protection device. When this device is installed, the normal 0-1 character (/) is replaced by an asterisk in the six typewheels designated. Therefore, a 0-1 code prints an asterisk in these positions.

When this device is to be used, the asterisk control switch must be wired ON. In addition, if all six positions of asterisk printing are not being used, the C hub must be wired to the hub indicating the number of positions to be used. It is not possible to use less than three positions of this device.

All positions of the device being used (as indicated by the ON switch and the C to 3, 4, or 5) must be wired from the card. In addition, all columns of the field must be punched (including zeros to the left). When the check-protection feature is installed, internal wiring recognizes all zeros punched to the left of the high-order significant digit in the amount field. These zeros are printed as asterisks. When fewer than the maximum of six positions are being used, the unused positions must not be wired to print.

When proof is used in conjunction with check protection printing, the wiring and limitations are the same as previously noted, except that the cents field must always be punched, wired, and printed in the amount field. The printing of asterisks and the amount is also the same; however, verification of printing goes beyond the normal scope of proof. In addition to proof as covered in that section of the manual, the printing of zeros and asterisks is completely checked, and an error indicated if they do not print correctly or if they fail to print. A blank

column in the amount field is detected as an error, as well as columns which are double-punched. The only exceptions to the latter are 12-1, 11-1, and 0-1 combinations and 8-3, 8-4 when special character printing is on the machine.

The check protection device can be used to protect the printing of the net amount on both the check and the check stub when check and stub are incorporated in the same card design and wired from the same punched field. Asterisks print on the check, and diagonals (or other 0-1 coded symbol) print on the stub unless special typewheels have been installed in the positions used for printing the amount on the stub.

Wiring (Figure 40)

The check protection device is used here to protect all positions to the left of the decimal place (all dollar positions). The blank typewheel is left for a pre-printed decimal place or if necessary, one wired from the interpret emitter.

1. Normal wiring to print the amount.
2. Normal zero print-control wiring.
3. The check-protection device is wired on (special wheels in positions 29-34).
4. Common to 4 must be wired as only the four right-hand positions of the device are being used.
5. The dotted wire results in the printing of a decimal point if the interpret emitter and special character printing are on the machine.

Emitters

In many cases it may be desired to print information not punched in the card. This information can be printed by the use of the emitter.

Interpret Emitter. Each of these hubs emits the impulses necessary to cause the printing of the character indicated. A single wire from that hub to print entry results in the printing of that character. Zero print-control must be wired in the normal manner.

Proof Emitter. If the machine is equipped with the interpret emitter and the proof device, these hubs are added to permit the checking of emitted printing. Any wiring from the interpret emitter to print entry must be duplicated by wiring from the proof emitter to proof entry.

Special Characters

Three special characters are standard. They can be provided in several arrangements, one of which is: 0-1, (/); 11, dash (-); 12, ampersand (&).

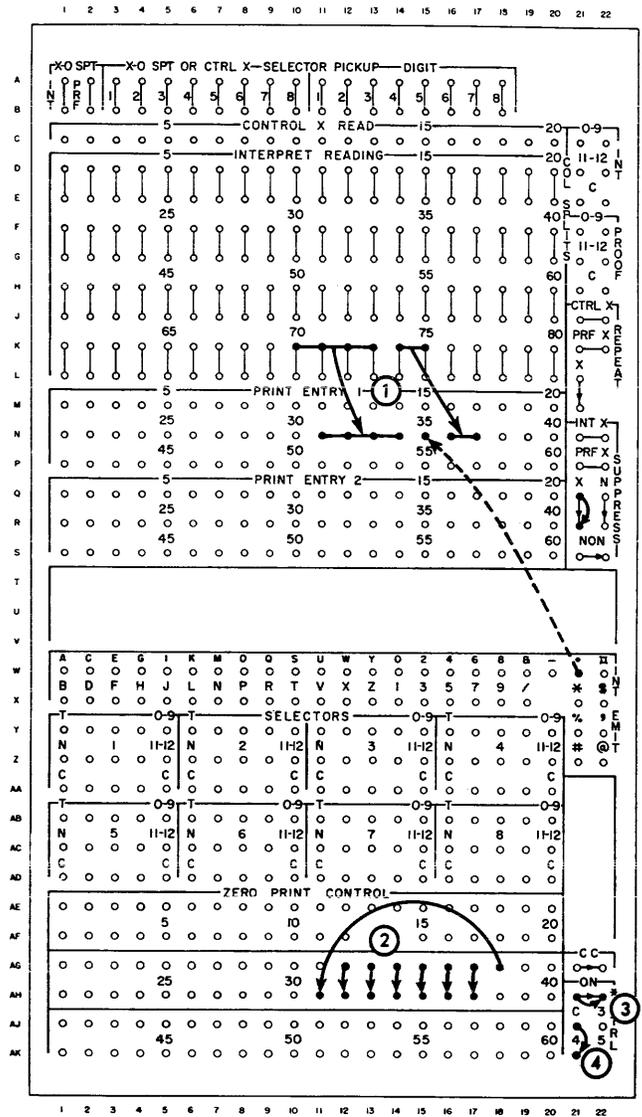


Figure 40. Check Protection

To interpret additional special characters (Figure 6), a device must be added to the machine. These special characters may be printed from the interpret emitter or from the card. A maximum of 30 special characters may be printed at one time.

Large Typewheels

Eight large typewheels may be ordered, for plant installation only, on the IBM 557 Alphabetic Interpreter. These typewheels are intended, primarily, for check-writing applications.

Each typewheel occupies two positions in print entries 1 and 2, and each typewheel prints a large-sized digit. Print entries 39 through 54 are reserved for the device.

The even numbered print entries must be used with this feature. For instance: a six-digit amount field

would use print entries 44, 46, 48, 50, 52, and 54. If check protection is installed, the amount field must be completely punched; in a six-digit field, 25 dollars and 50 cents must be punched 002550.

These are the limitations if the large typewheels are installed:

1. Print entries 39 through 54 can be used for numerical information only. Alphabetic and special characters must not be wired in this field. Numerical information must be wired to the even numbered entries.

2. Printing position one (line one) cannot be used for any application when large typewheels are installed.

3. Because each special typewheel occupies two positions of print entry, a maximum of 52 positions of print (8 large type and 44 regular) is available.

4. The odd numbered positions of zero print control in the field 39 through 54 are inoperative. To print zeros, the upper hub of each even numbered position must be wired to the lower hub of the following even numbered position. If check protection is installed, zeros must be wired to print to the left of significant digits.

Zero print-control positions are numbered vertically on the control panel, but the upper and lower hubs of each position are diagonally opposite. For instance, in position number 50 on the control panel there are two hubs, one above and one below the number. The hub above the number 50 is the upper hub of zero print-control position 49; the hub below the number 50 is the lower hub of zero print-control position 50. The upper hub of position 50 is the hub above the 51st position in zero print-control (Figure 41).

In Figure 41, five positions of the large typewheels are being used with check protection. The amount of the check being printed is 25 dollars and 50 cents.

Only 0 through 9 characters and the 0-1 code (asterisk) print. If the proof device is installed with check protection, blank columns and all double punches except the codes 12-1, 11-1, and 0-1 register as errors. If the proof device is installed without check protection, blank columns and double punches do not register as errors.

Figure 42 illustrates a check printed with large typewheels and proof. Figure 43 illustrates the control panel wiring required to print the check.

Wiring (Figure 43)

1. The second control x read contact is set to read column 5, which is x punched in a master card. This impulse activates repeat print at the control x station. Repeat x switch is wired ON because master cards are x punched. Proof is provided by wiring from proof reading brush 5 to proof x repeat.

2. nx detail cards are printed as checks. The suppress print interpret station is impulsed from interpret read brush 5, which reads x punched master cards. Suppress print proof x is impulsed from proof reading brush 5. Suppress x switch must be wired ON because printing is to be suppressed on all x cards.

3. Payee's name is punched in columns 55-70 of x cards, and printed on nx cards (the check) in positions 15-30. Duplicate wiring from proof.

4. Amount field is punched in columns 75-80 of x cards and printed on nx cards (the check) in large typewheels 44, 46, 48, 50, 52, and 54 of print entry 1. Duplicate wiring from proof. Only even numbered typewheels can be used.

5. Asterisk control is wired ON. The check protection asterisks have been installed in the 6 print positions of the dollar amount field (print entries 40, 42, 44, 46, 48, and 50). Because only four positions

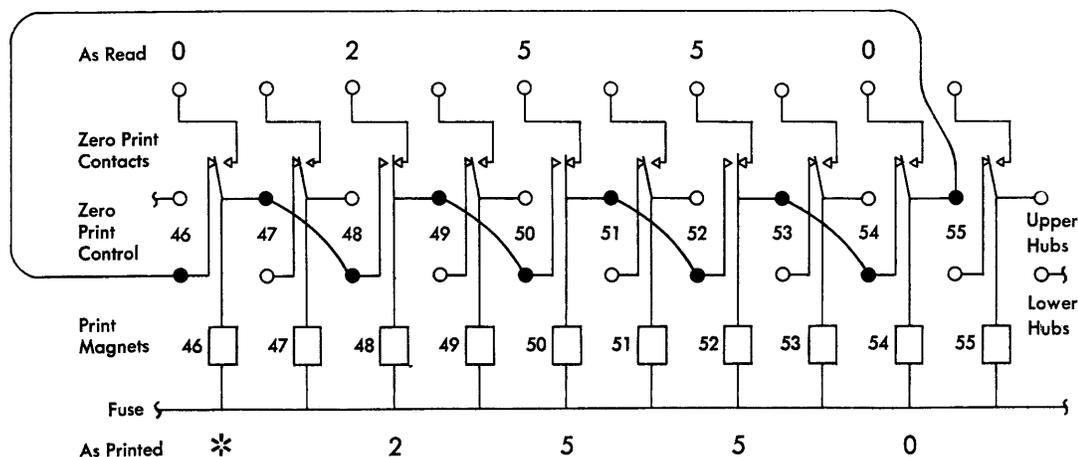


Figure 41. Large Typewheels with Check Protection

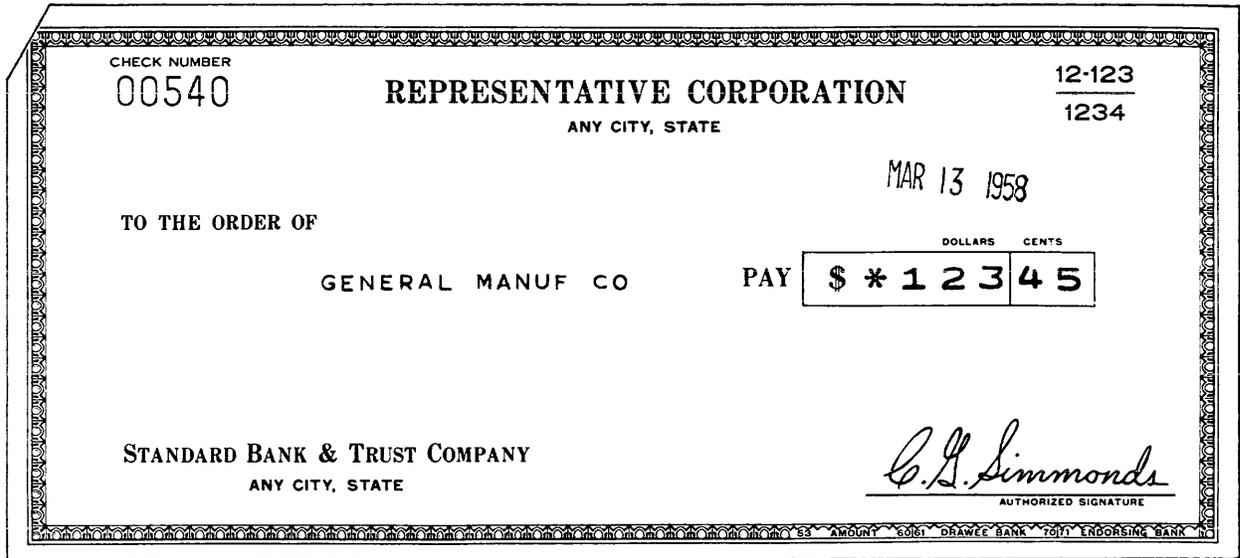


Figure 42. Check Printed with Large Typewheels

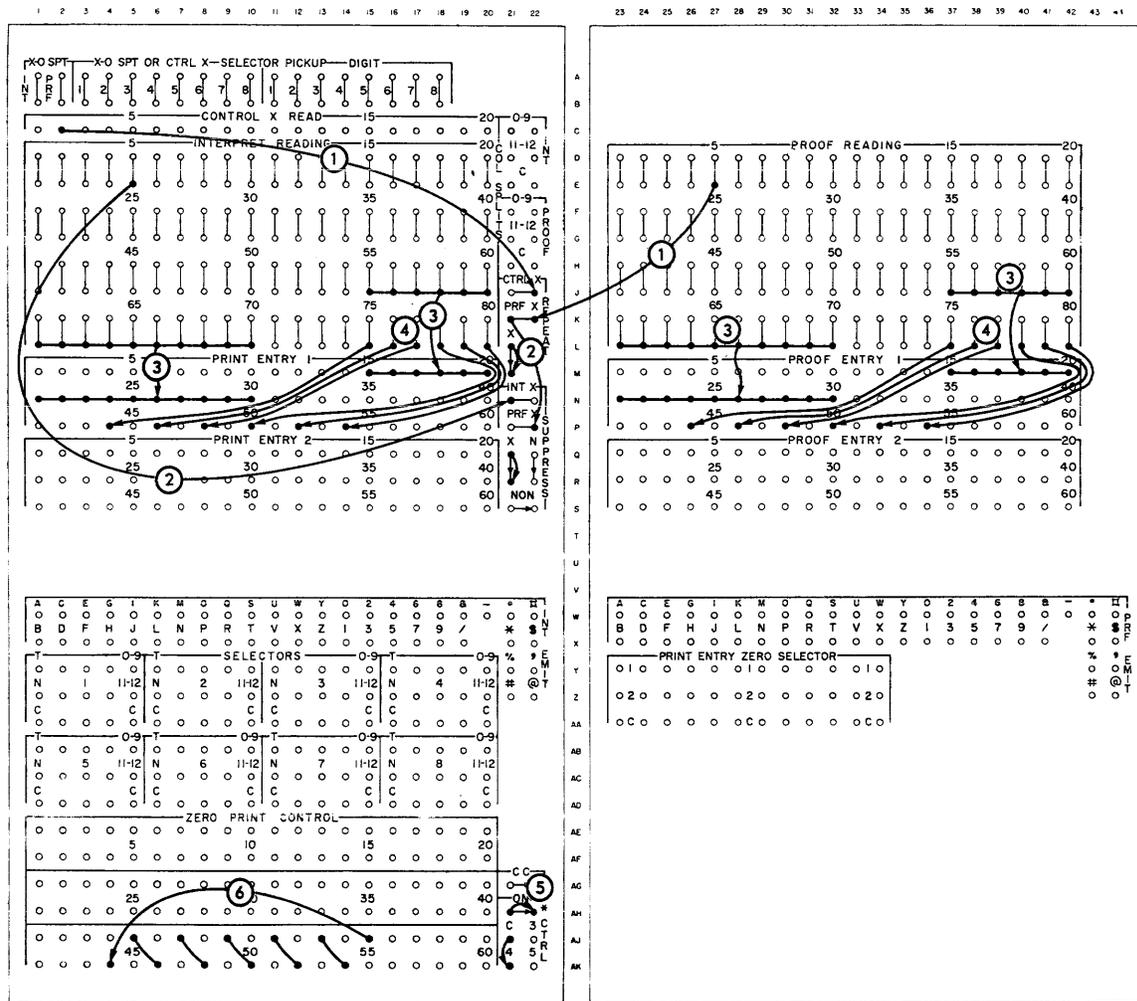


Figure 43. Wiring for Check

of asterisk control are being used, c must be wired to 4.

6. Zero print-control is wired in even numbered columns only.

Card Counter

Cards passing through the interpreter may be counted by the card counter. By wiring the switch ON, all cards are counted, except those on which printing is suppressed by the proof device.

51-Column Feed

When the 51-column feed is installed, the impulses from column 1 of the card are available at read hubs 15, column 2 at hubs 16, etc., and column 51 at

hubs 65. The first typewheel is position 12, the second is 13, and the last is 49. Typewheel 49 prints the same distance from the right edge of the 51-column card as typewheel 60 prints from the right edge of the 80-column card.

Ribbon Replacement

The ribbon feeds from one spool to the other approximately $\frac{1}{4}$ of an inch on each print cycle. It feeds in one direction until a metal eyelet about ten inches from the end of the ribbon on either spool strikes the ribbon reversing lever, thus reversing the feed.

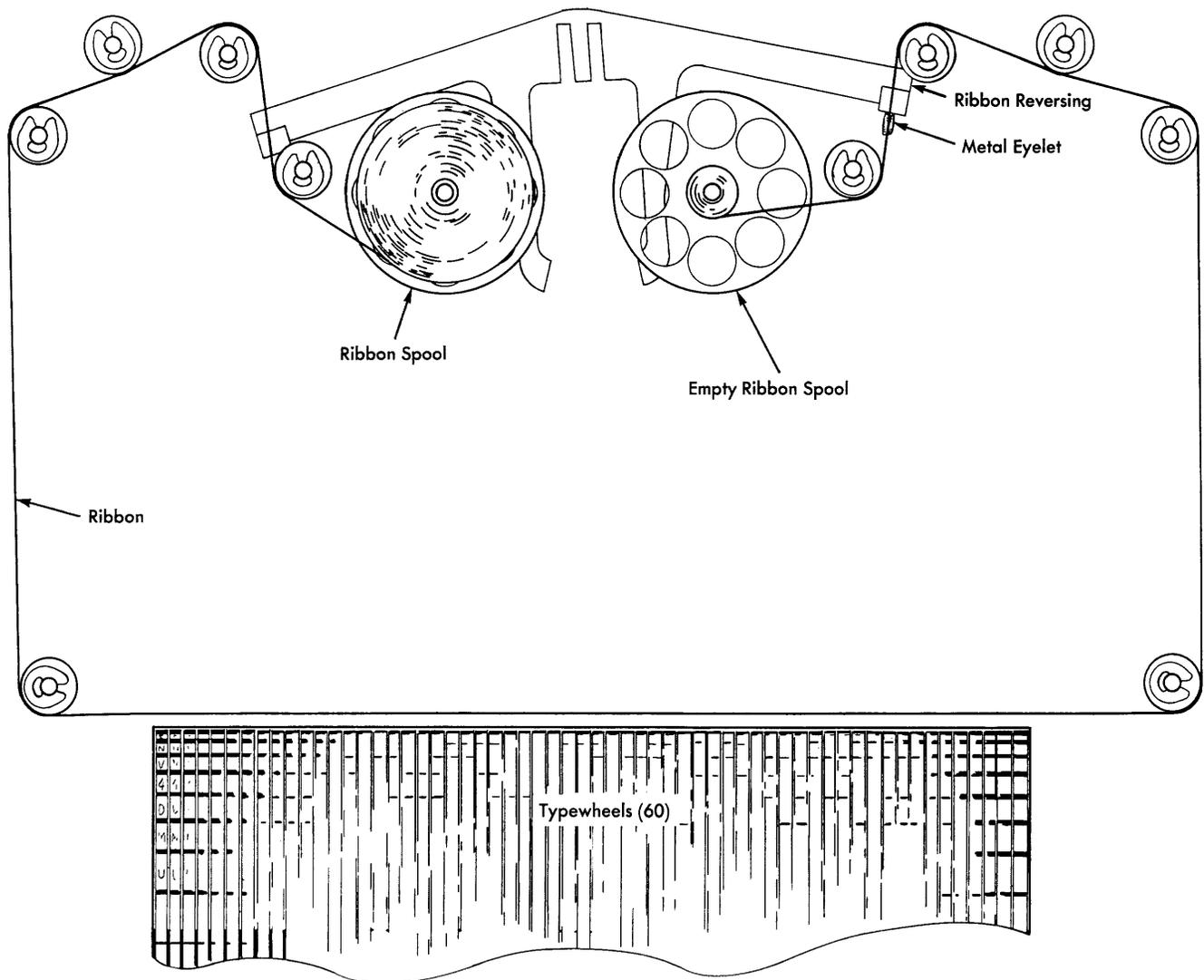


Figure 44. Ribbon Feed Schematic

When a new ribbon is installed, it is important that the leading end of the ribbon be firmly hooked on the empty spool. Enough ribbon should be wound around the empty spool so that the metal eyelet is somewhere between the spool and the ribbon revers-

ing lever. The threading of the ribbon around guide rollers is shown in Figure 44.

NOTE: A silk ribbon should be used in the 557. IBM part 154438, or its equivalent, is recommended for all normal card interpreting applications.

Control Panel Summary

The control panel, described in the following paragraphs, is illustrated in Figure 45.

1. *X-0 Split-Interpret.* This hub emits the impulse needed to control selectors to become column splits. This impulse times the selector for use as a column split with the interpret brushes.

2. *X-0 Split-Proof.* This hub emits the impulse to control selectors to be column splits. Selectors picked by this impulse are timed for use with the proof brushes.

3. *Selector Pickup X-0 Split or Control X.* This hub accepts impulses to cause the corresponding selector to transfer immediately. It is usually wired from the X-0 split hub to use the selector as a column split or from the control x hubs to allow selective control of x punched cards.

4. *Selector Pick-up-Digit.* This hub accepts impulses to cause the corresponding selectors to transfer immediately. Digit pickups are normally wired from interpret or proof reading through the 11-12 side of a column split. When wiring from proof reading, the pickup impulse *must* be filtered through a permanent column split.

5. *Control X Read.* This is a pre-sensing station to read an x punch in a card for control purposes. It is used to control repeat print and control selectors for alphabetic selection.

6. *Interpret Reading.* These are exits for reading 80 columns of the card. They are usually wired to print entry for printing.

7. *Column Splits-Interpret.* These are automatic column splits timed for use with interpret reading.

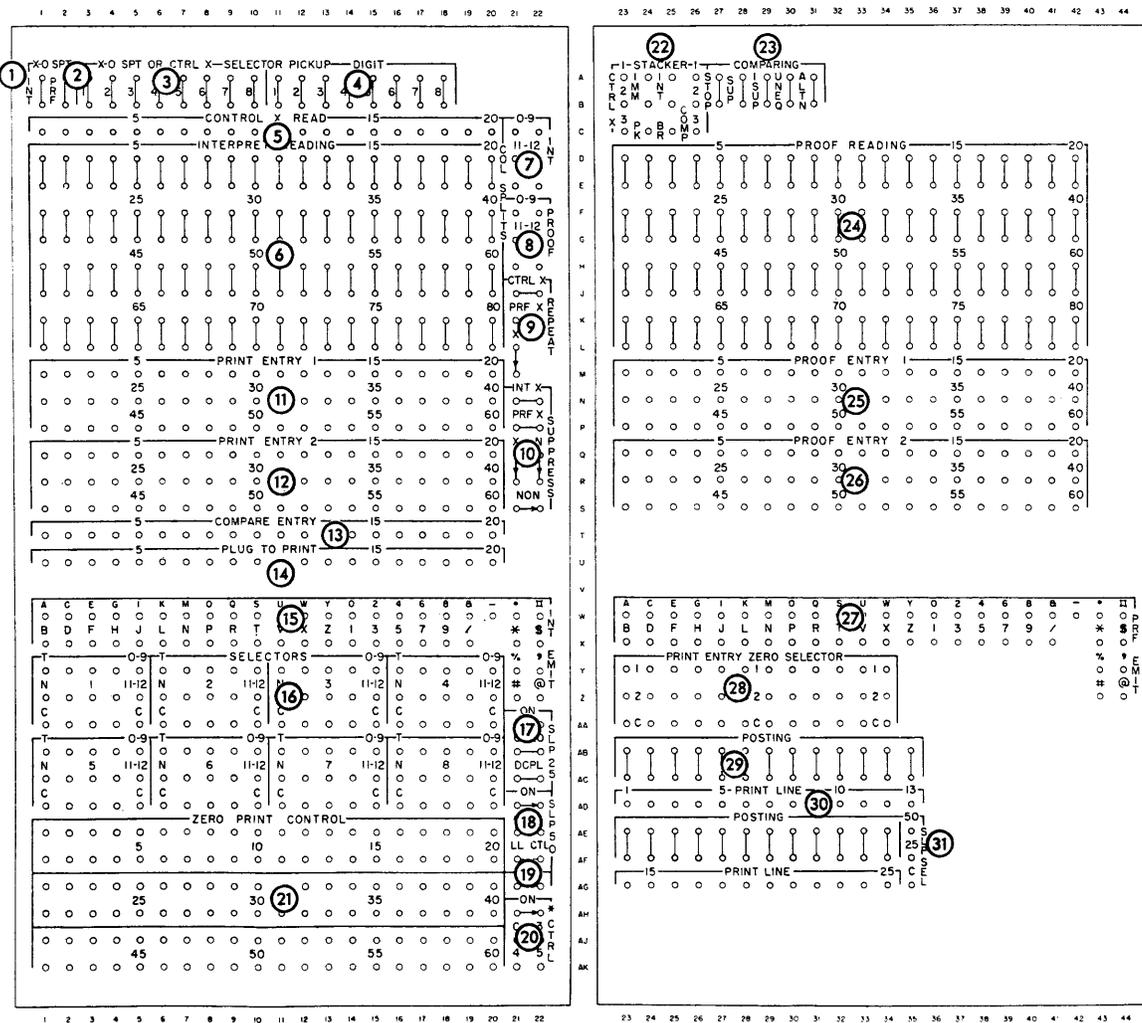


Figure 45. Control Panel Diagram

If more "points" are needed, X-0 split—interpret can be wired to the X-0 split pickup of a selector. The five points in the selector then assume the same function as the automatic column splits.

8. *Column Splits—Proof.* These are automatic column splits timed for use with proof reading.

9. *Repeat.*

CONTROL X. This hub accepts an impulse from control x read only to cause the information set up from that card to print again on the next and succeeding cards until the next control x read impulse.

PROOF X. This hub accepts an impulse from proof reading only to check that the machine has performed the repeat print operation as directed.

X SWITCH. This hub is wired when master cards are x punched.

10. *Suppress.*

INTERPRET X. This hub accepts x or 12 impulses to cause the suppression of printing for that card. When used with proof, x's must be used.

PROOF X. This hub accepts x impulses to check the suppression of printing as controlled above.

X SWITCH must be wired except when suppressing printing of NX cards.

N SWITCH suppresses printing of all NX cards.

NON-SUPPRESS forces the printing of error cards. It is operative only if a proof device is installed on the machine.

11. *Print Entry 1.* This is an entry to 60 typewheels to cause printing, usually wired from interpret reading or interpret emitter. These hubs accept information only if the print entry switch is set for entry 1 at the operator's station.

12. *Print Entry 2.* This is an alternate entry to the typewheels to cause printing, usually wired from interpret reading or the interpret emitter. These hubs accept information only if the print-entry switch is set for entry 2 at the operator's station (i. e., keys and lights).

13. *Compare Entry.* These are entries to storage from interpret read for control information read from a master card. The control field in the following detail cards is then compared with the control field stored from the master card to check proper grouping.

14. *Plug to Print.* The compare entry hubs are connected internally through filters to the plug-to-print exit hubs. Information being compared, if it is also to be printed, must be taken from the plug-to-print hubs to the typewheels.

15. *Interpret Emitter.* These hubs emit the impulses necessary to cause the printing of characters indicated at each hub. To print special characters, however, the machine must be equipped with the special character printing feature.

16. *Selectors.* These are the points of the selectors, five per selector. Each point consists of three hubs arranged vertically: The bottom hub is the C or common hub; the middle, the N or normal hub; the top, the T or transferred hub. A connection normally exists between the C and the N hub unless the pickup hub of the selector has been impulsed and the selector thus transferred. The connection then is between C and T. When used as a column split, the hubs are C or common, 11-12, and 0-9.

17. *SLP-25.*

ON. This switch must be wired to activate SLP-25.

OFLO. This is an exit hub that emits only after all 25 lines of the card have been posted, i. e., on the 26th pass of the card. This impulse can be used to select the filled card to one of the selective stackers or to stop the machine. Print suppression is automatic when OFLO-25 emits.

DATA CARD PRINT LINE (DCPL) hubs are exit hubs that control printing on the master-data card. They are normally wired to a print-line hub to print all data cards during a specific pass of the file.

18. *SLP-50.*

ON. This hub must be wired on for all SLP-50 operations.

OFLO. This hub emits an impulse after the 25 lines have been posted on the right half of the card, i. e., on the 51st pass of the card. It can be used to select ledger cards to the stackers or to stop the machine.

LL CTL. This is an entry hub usually wired from a posting hub immediately following the last desired posting pass of the card. If less than 25 lines are being printed on each half of the card, the impulse to LL CTL causes one of the OFLO hubs to emit. The OFLO impulse is then used to initiate further desired action.

19. *Card Counter.* A switch to control the counting of cards.

20. *Asterisk Control.*

ON. When this switch is wired ON, asterisk printing is available in six predetermined typewheels. Asterisks print to the left of the highest-order significant digit. With the switch wired ON and no other control wired, all six print entry positions *must* be wired.

C, *5, *4, *3. When only 5, 4, or 3 positions of the field are wired, the C hub *must* be wired to the 5, 4, or 3 hub as indicated by the number of print entry hubs wired. It is not possible to wire fewer than three positions of the field and have * print for zeros to the left of the highest-order significant digit.

21. *Zero Print Control.* A pair of hubs for each typewheel controls printing of 0, 11, and 12 coded characters.

22. *Stacker.* These are control hubs for the selective stackers (stackers 1, 2, and 3).

CONTROL x. These hubs accept impulses from control x read to select cards that are x punched in a given column.

IMMEDIATE PICK. These hubs are used with UNEQ or ALTN to select the card preceding the card causing UNEQ or ALTN to emit.

INTERPRET BRUSH. These hubs receive any impulse from interpret reading to select the card being read.

COMPARE. These hubs are used with UNEQ or ALTN to select the card for which UNEQ or ALTN emits.

23. Comparing.

STOP. This is an entry hub normally wired from UNEQ or ALTN hubs to stop the machine.

SUPPRESS. This hub accepts UNEQ, ALTN, or ISUP impulses to suppress printing on cards for which these impulses emit. When impulsed, SUP bypasses the non-suppress switch.

IMMEDIATE SUPPRESS. This hub emits when two or more master cards immediately follow each other.

UNEQUAL. This hub emits an impulse on the compare cycle when detail information compared to master information in storage is unequal.

ALTERNATE (ALTN). When the 557 is wired for comparing, the ALTN hub emits if the card sequence is not alternately master and detail.

24. Proof Reading. These are exits for reading 80 columns of the card. They are usually wired to proof entry hubs.

25. Proof Entry 1. These are sixty entry hubs to

prove that typewheels print correctly. They are wired from proof reading.

26. Proof Entry 2. These are sixty alternate entries used to prove printing using print entry 2. They are wired from proof reading.

27. Proof Emitter. These hubs emit impulses to be wired to the proof entry hubs to prove that characters emitted by the interpret emitter to the print entry hubs print correctly.

28. Print Entry Zero Selector. This is a 12-position selector operating under control of the print entry switch. It is normally used for selection of zero print control wiring when the setup for print entry 1 and print entry 2 is different. It may also be used to change wiring setups in much the same fashion as a selector except that the print entry zero selector is controlled manually by the print entry switch.

29. Posting. These hubs emit impulses used to select the line to be printed on a given pass of the file. They may also be wired to the COMP hub of a selective stacker to select a card on a specific pass of the file.

30. Print Line. These hubs accept posting impulses to position the card at a print line for printing.

31. SLP Selector. This is an automatic selector used with a posting impulse to select a ledger card directly after posting is completed. Since a posting impulse emits during an SLP-50 operation for the left and the right halves of the card, determination of its identity as either a 1-25 impulse or 26-50 impulse must be made. This is the function of the SLP selector.

IBM 557 Timing Chart

Notes

1. The asterisk control switch (left) is connected internally with the C hub (AJ-21); 3, 4, 5 hubs (AJ-22, AK-21 and 22) are entry hubs that accept impulses from the C hub only.

2. Wire to the right-hand hub only.

3. This hub emits only during a comparing operation if the card sequence is *not* alternately master and detail.

4. This hub emits only during a comparing operation when two or more master cards immediately follow each other.

5. This hub is to be used as an entry for 12, x, and digit punches only, from interpret and proof read.

6. The "hot zero" (zero print impulse) is part of the impulse emitted from 149 degrees to 169 degrees. See "Zero Print Control."

7. The "hot zero" (zero print impulse) is part of the impulse emitted from 149 degrees to 273 degrees. See "Zero Print Control."

8. The "hot zero" is the zero print impulse described in the "Zero Print Control" section.

9. The print entry zero selector hubs are used for selection of zero print control impulses from the upper zero print control hubs. They operate in conjunction

with print entries 1 and 2 and are controlled by the print entry switch at the operator's station.

10. When wiring from proof read for control purposes, send all impulses through a proof column split. Otherwise, the impulse from 172 degrees to 273 degrees would erroneously act as a control factor.

11. This is operative only when the machine is equipped with the pre-sense unit.

12. Wire to the lower hub only.

13. Connection is internal between C and 25 or C and 50, controlled by SLP-25 (left side of card) or SLP-50 (right side of card).

14. If suppress print is in use, either the N or the X switch must be wired—the N switch to suppress NX cards, the X switch to suppress X cards.

15. Non-suppress switch is operative only when proof is installed.

16. This is to be used as an entry *only* for X-0 split impulses or control X read impulses.

17. These hubs emit any card impulse accepted by the next hub to the left in print entry. If any digit 1 through 9 is read, the zero print-control upper hub also emits the "hot zero" (zero print impulse).

18. These hubs accept the "hot zero" (zero print impulse) if no impulse 1 through 9 is received by the corresponding print entry hub, and there is a significant digit to the left in print entry.

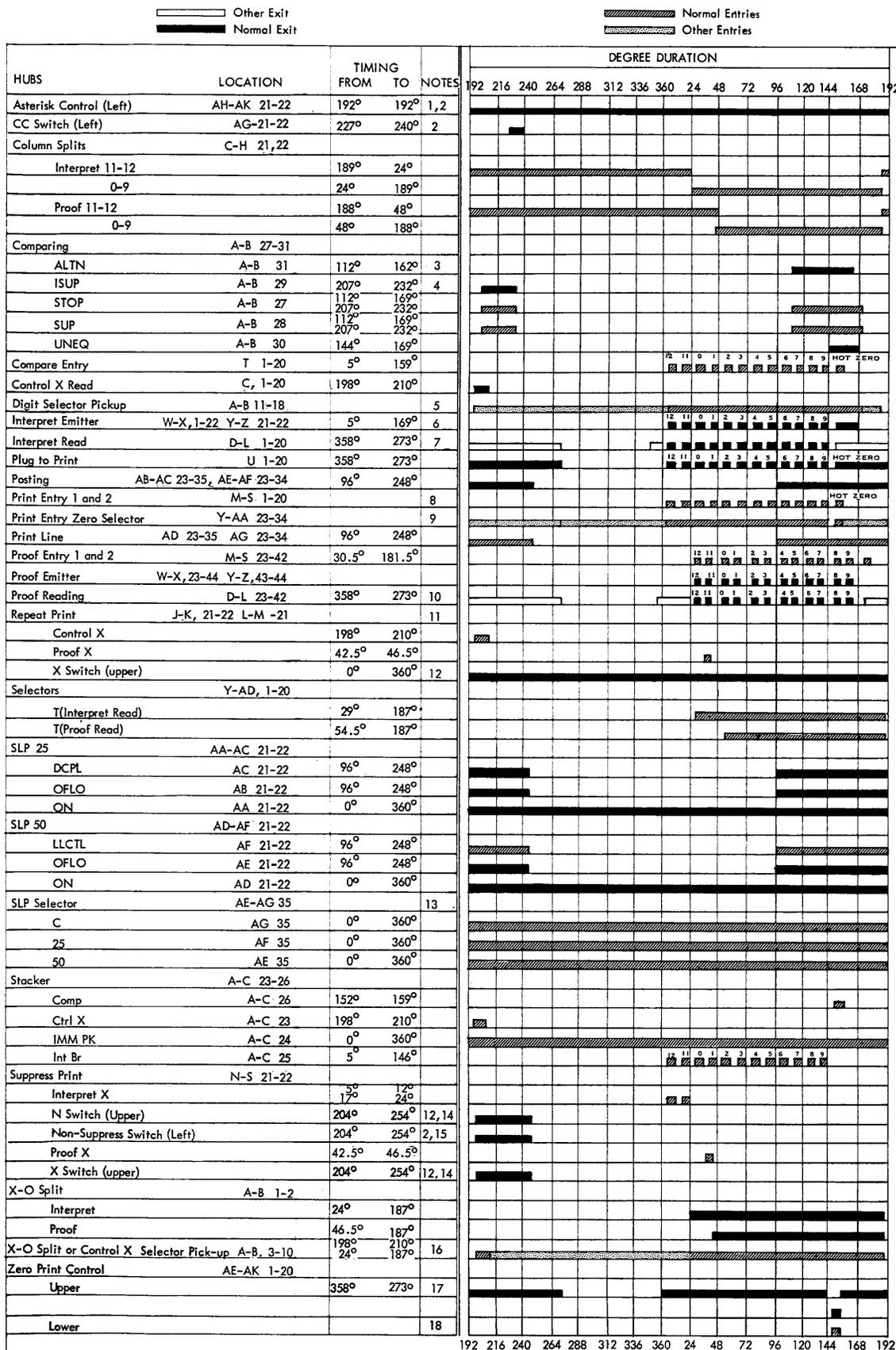


Figure 46. Timing Chart

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