GA21-9131-4

IBM Data Station Operator's Guide

3741

Fifth Edition (December 1975)

This is a major revision of, and osboletes, GA21-9131-3.

This edition includes information about cut forms for the IBM 3715 Printer. Changes are periodically made to the information in this manual and will be reported in subsequent revisions or technical newsletters.

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ABOUT THIS BOOK

This book gives a 3741 operator procedures for doing normal key entry operations. It is intended for people who are, or will be doing key entry jobs.

You should use the operator's guide as a reference to find out what the necessary steps are to perform a job. There is a table of contents at the beginning of each section to help you find the procedure for the particular job you want to do.

You should have typing experience and have taken either the IBM Data Processing self-study course or the IBM Field Engineering key entry course before using this book.

For additional information about the 3741, see the following:

- *IBM 3740 Data Entry System, System Summary and Installation Manual–Physical Planning,* GA21-9152.
- *IBM 3740 BTAM/TCAM Programmers Guide,* GC21-5071.
- *IBM 3741 Data Station Reference Manual,* GA21-9183.
- *The IBM Diskette General Information Manual,* GA21-9182
- *IBM 3741/3742 Reference Card,* GX21-9172.
- *IBM 3740 Job Instruction Form,* GX21-9186.
- *IBM 3740 Printer Chart,* GX21-9187.
- *IBM 3740 Run Sheet,* GX21-9185.
- *IBM 3741 Models 3 and 4 Programmable Work Station Programming Reference Manual,* GA21-9194.
- *IBM 3747 Data Converter Reference Manual,* GA21-9170.

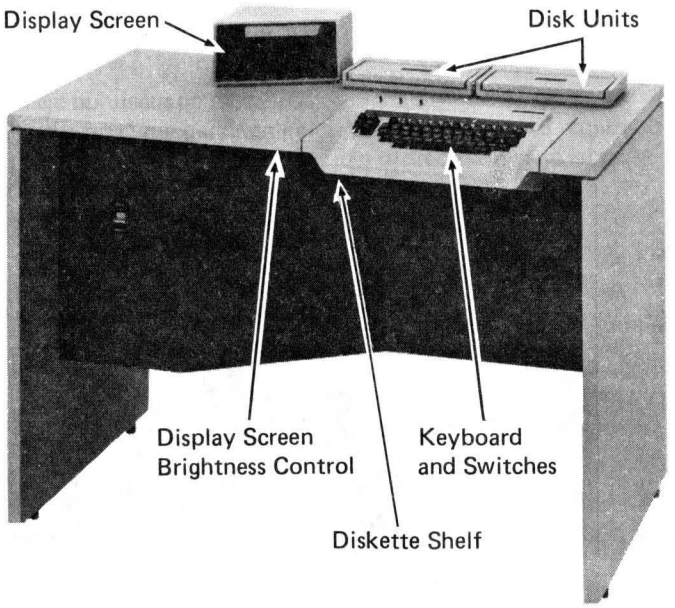
INDEX

YOU AND THIS MACHINE

As an operator you'll use the 3741 Data Station's display screen, disk units (for loading diskettes), and keyboard and switches.

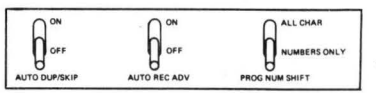
Use a cloth dampened with a mild soap solution to clean the covers, keyboard, display tube face, display mirror, and display filter.

CAUTION
Do not use spray cleaners on keys or near keyboard.

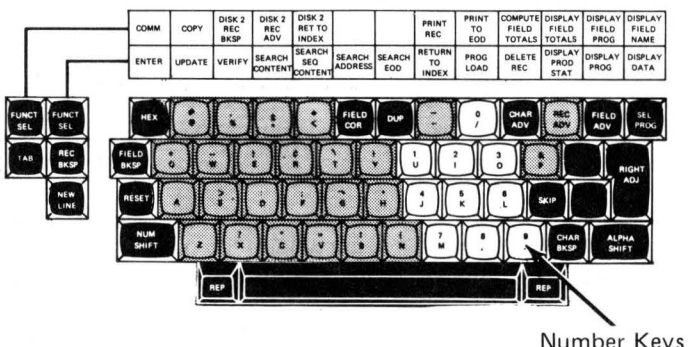


Keyboard and Switches

The 3741 is similar to a typewriter keyboard. The main differences are: the 3741 has function keys (the dark keys), and the number keys (0 through 9) are arranged similar to adding machine keys. The switches allow you to use the machine more efficiently by performing functions automatically such as automatic record advance.



Switches



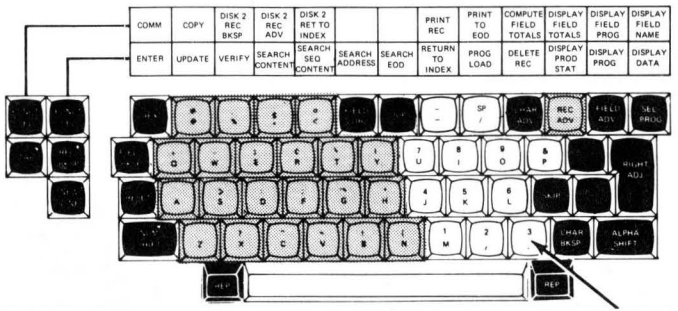
Number Keys

Note: The function keys are the dark keys.

For additional information on the keys and switches, see the *Switches and Keys* section.

Proof Keyboard

The proof keyboard differs from a standard 3741 keyboard only in the arrangement of its numeric keys. When the proof keyboard is in alpha shift, the keyboard function is unchanged.



Number Keys

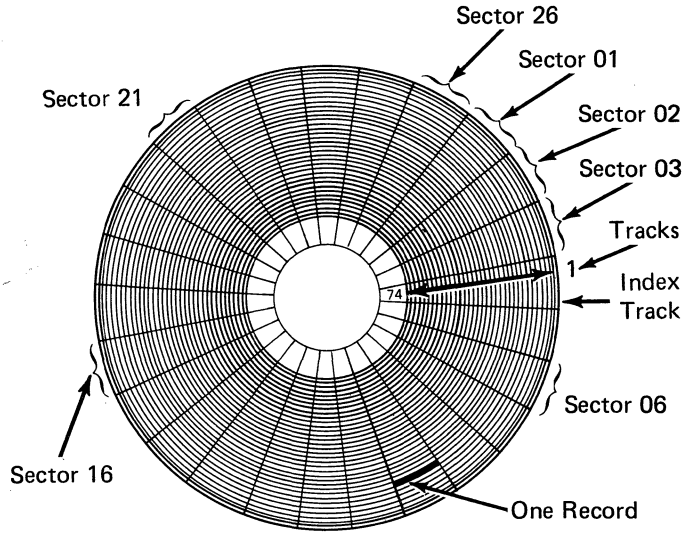
The Diskette

The diskette is a disk enclosed in a protective plastic jacket. On the disk, the data you key is recorded similar to recording music on magnetic tape.

The disk is initialized before it is shipped to you. Reinitializing should be avoided unless necessary; if it is required, see the *IBM 3741 Data Station Reference Manual,* GA21-9183, for information on disk initialization.

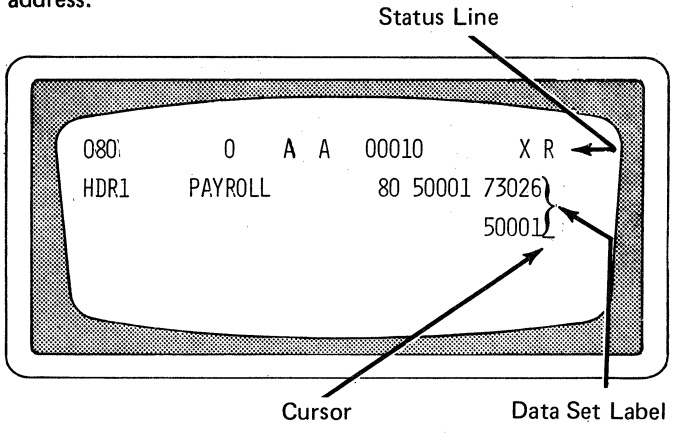
The disk has 75 circular tracks (index track through track 74). The index track is used to identify records in tracks 1 through 73. Track 74 is reserved. You don't enter data in track 74.

Each track has 26 sectors. You can record one record in each sector. A record is up to 128 character spaces. Since each disk has 73 data tracks, one disk can hold 1898 records.



The Display Screen

The display screen gives you information while you use the machine. The top line displayed is the status line. In the status line you have such information as the cursor (underscore character) position, the program number being used, and the record address.

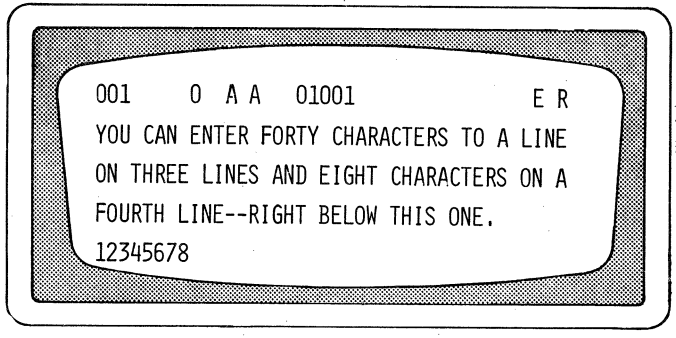


If you are at the index track, the data set label is displayed. The data set label identifies the associated data set. (A data set is a batch of information entered on the disk such as a payroll job.)

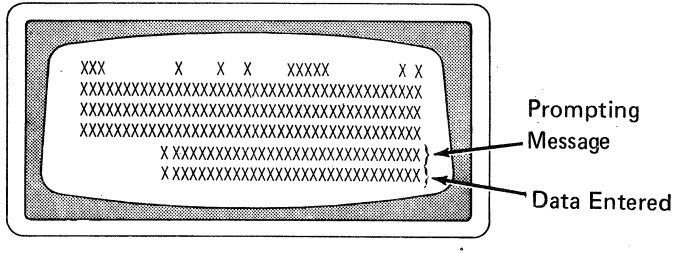
If you are beyond the index track, the machine displays the data you have keyed or are keying.

The display screen brightness control is located below the table top, under the display screen. Turn this knob to adjust the display screen brightness.

Data Entry



Operator Guidance feature information is displayed on the bottom two lines of the screen. This information is an additional aid to you while keying.



Switches and Keys

THE SWITCHES

AUTO DUP/SKIP

For Duplicate Fields: Automatically enters data from the corresponding field or positions of the previous record into the record you are currently keying. This way, you avoid keying repetitious material.

For Skip Fields: Automatically fills or verifies programmed skip fields with blanks.

When this switch is off, SKIP/DUP fields become manual fields.

AUTO REC ADV

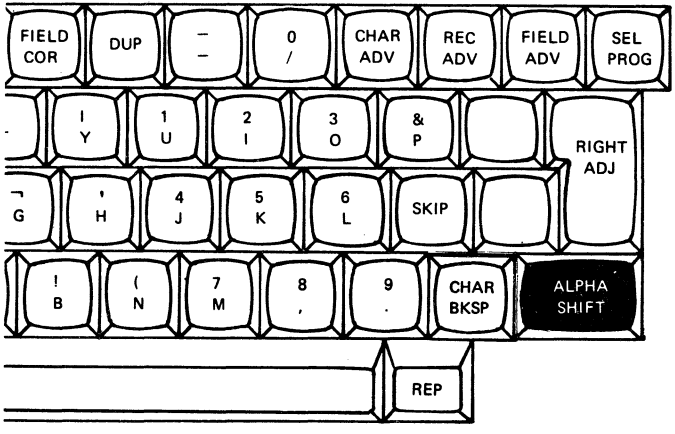
Use this switch to automatically enter records on the disk. That is, when the machine passes the last position in the record or comes to your program end character (E), the machine automatically advances the record onto the disk. Therefore, it saves you the time of pressing REC ADV after entering each record.

PROG NUM SHIFT

In the NUMBERS ONLY position, only the characters 0 through 9, dash, space, and plus are valid in programmed numeric shift. Either shift key overrides the programmed shift. In the ALL CHAR position, you can use all of the keys.

THE KEYS

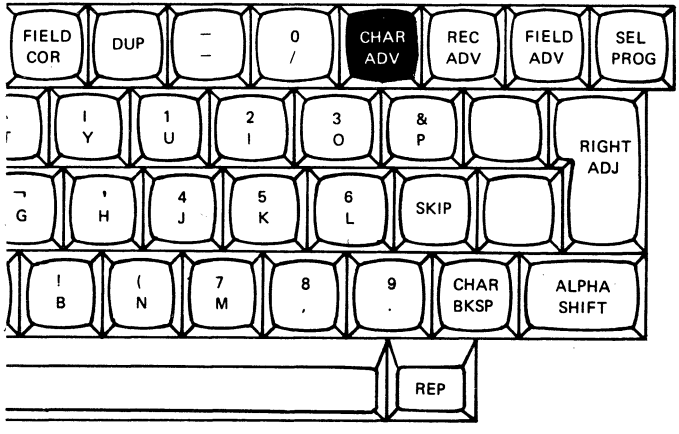
Alpha Shift



Use this key if the machine is in a field programmed for numeric shift and you want to enter alpha characters. To use:

1. Hold down ALPHA SHIFT.
2. Key in the alpha characters you want to enter.

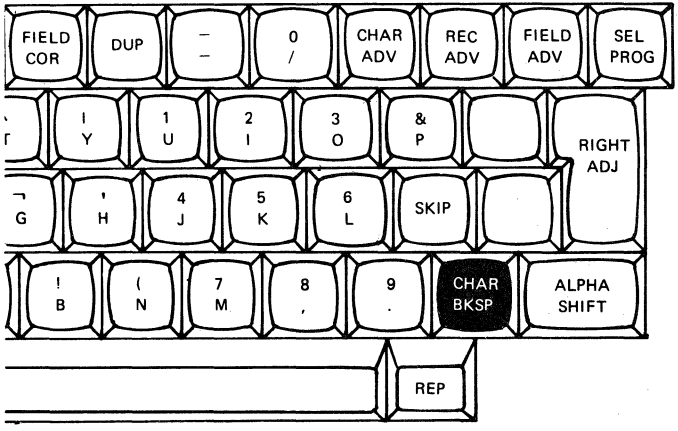
Character Advance



In all modes except Verify, CHAR ADV advances the cursor one position without changing the character stored in that position.

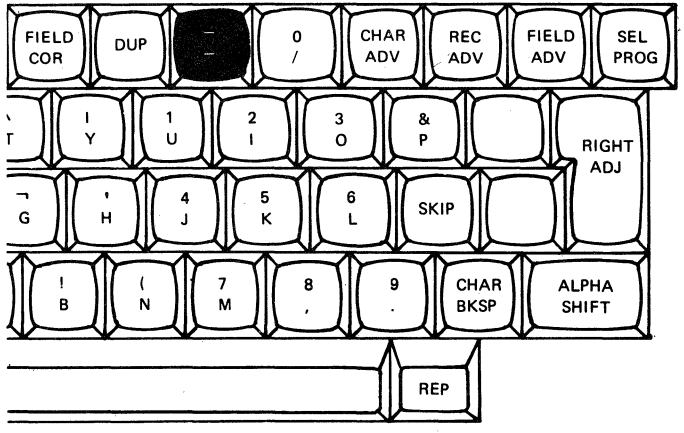
Pressing CHAR ADV in Verify mode causes an error.

Character Backspace



CHAR BKSP returns the cursor to the previous programmed manual position except when the cursor is in the first manual position of a record. In this case, the machine does nothing except in verify mode. In verify mode, leading auto fields are re-executed.

Dash

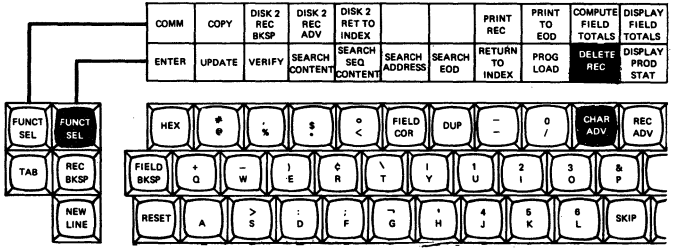


In all modes, you normally use the dash key to enter the dash character.

In right adjust fields, when used with programmed numeric shift fields (R or J), using the dash key gives a negative value to the number entered in that field and then exits the field. Also, the units (right-most) position of the negative number contains an alpha equivalent (1=J, 2=K, 3=L, 4=M, 5=N, 6=O,

7=P, 8=Q, 9=R) if the digit is 1 through 9 or a hex code if the digit is 0. The numbers in the other positions of the right-adjust field have their numeric value. For example, if 21 is entered in a five-position zero fill right-adjust field and the dash key is pressed, the field will contain 0002J (negative 21). See *Right Adjust* for information on exiting a right-adjust field.

Delete Record



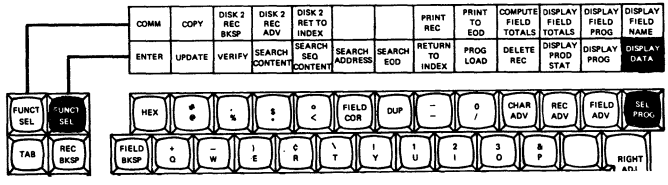
This key has two functions: to blank the display screen and to delete a record. To blank the display screen, you must be in Index, Enter or Search modes. After blanking the screen, the cursor returns to the first manual position of the record.

You can delete a record in Update, Verify, or Index mode. To delete a record in Update or Verify mode, you press FUNCT SEL lower and DELETE REC. But to delete a record in the Index mode, you must press FUNCT SEL lower, **M**, and DELETE REC.

After deleting a record in Verify mode, the machine advances to the next record; in Update or Index mode, it does not.

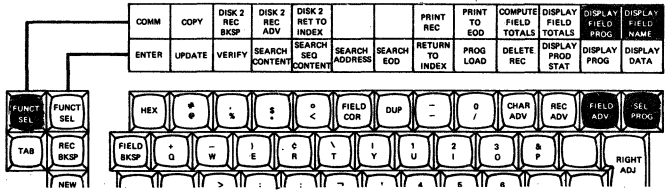
Holding NUM SHIFT key down while pressing DELETE REC deletes the record but does not replace the first position with a D. This method should not be used for data destined to be read by the 3747 or 3540.

Display Data



DISPLAY DATA displays the data in the current record. This key is normally used after displaying the program.

Display Field Name and Display Field Program

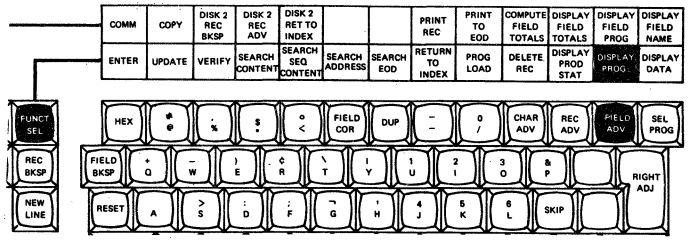


These two keys control the last 30 character positions of the fifth line on the display screen. See *Operator Guidance.*

DISPLAY FIELD NAME – shows current prompting message. If the message is longer than 30 characters, the characters beyond 30 aren't displayed.

DISPLAY FIELD PROGRAM – shows current program field. If the field is longer than 30 characters, only the first 30 are displayed.

Display Program

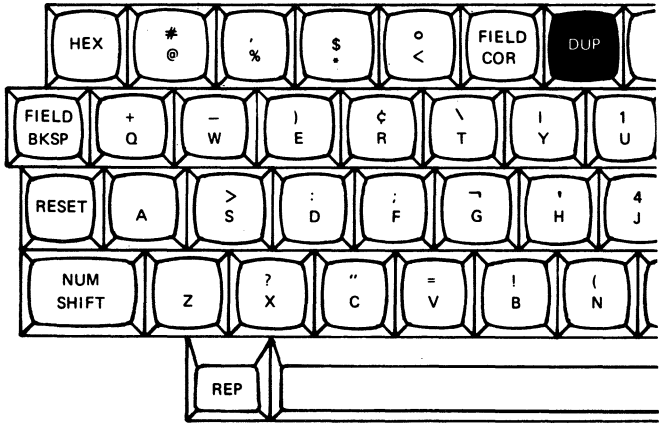


DISPLAY PROG displays the program in the storage area indicated by the program number in the status line. But this does not allow you to change the program.

To display the program so you can change it, press FUNCT SEL lower, *hold down* NUM SHIFT, and press DISPLAY PROG. After changing the program, you must load and select it again before using it.

Note: Displaying the program while in program 0 displays data in the current record.

Duplicate



In all modes except Verify mode, DUP transfers data from the previous record to the current record. Duplicating starts at the cursor position and goes to the end of the current field.

In Verify mode, DUP automatically verifies from the current position to the end of the field. Characters of the current record are compared to corresponding characters of the previous record.

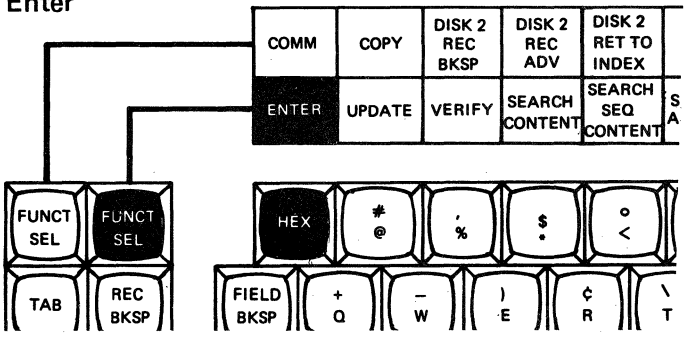
If pressing DUP causes a verify error, resetting the verify error and pressing DUP again duplicates one character from the previous buffer (or program level 4 if you use auxiliary duplication). Then the machine compares the rest of the field with the corresponding characters of the previous buffer (or program level 4).

You can't use DUP after the first position of a right-adjust or self-check field.

Auxiliary Duplication

For *auxiliary duplication,* hold down NUM SHIFT and press DUP. This transfers data from program level 4 to the current record. Duplicating starts at the cursor position and goes to the end of the current field.

Enter

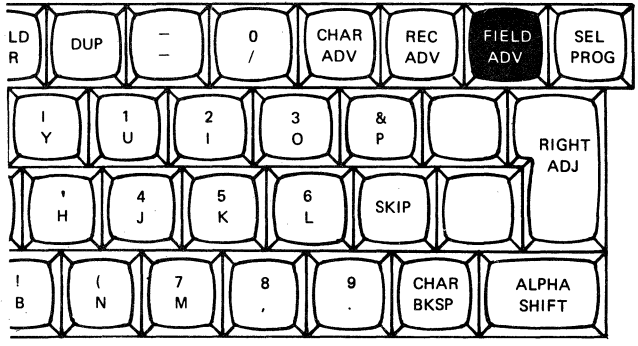


Use ENTER to select Enter mode for creating records for recording on a disk. You can select Enter mode from the Index mode only. When you select Enter mode, the 3741 blanks the screen.

In Enter mode the verify mark in the data set label is erased after you enter one record.

Note: After selecting Enter mode, new data entered destroys the previously entered data in the data set. Therefore, if you accidentally select Enter mode, press FUNCT SEL lower and RETURN TO INDEX.

Field Advance

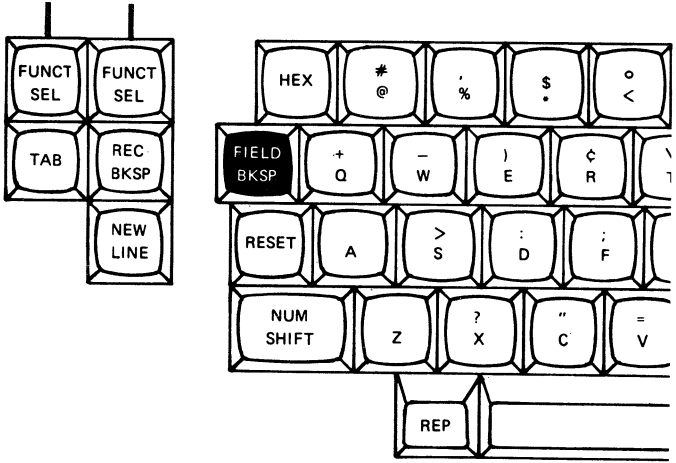


In all modes except Verify and Field Correct modes, FIELD ADV moves the cursor to the first position of the next manual field without changing the data in the field.

In Field Correct mode, FIELD ADV moves the cursor back to the first position of the current field and the 3741 goes to Verify mode.

Pressing FIELD ADV in Verify mode, causes an error.

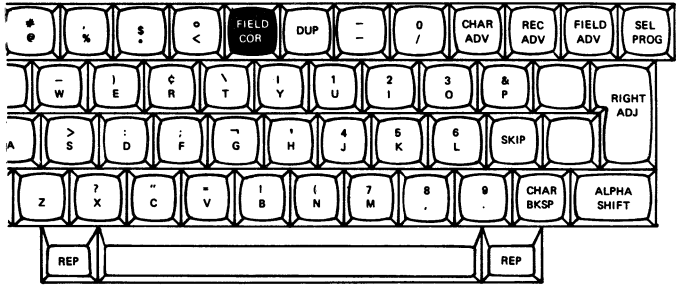
Field Backspace



In all modes, FIELD BKSP moves the cursor back to the first position of the current field. If the cursor is already in the first position of the field, this key moves the cursor back to the first position of the previous manual field.

In Verify mode, FIELD BKSP works the same as in Enter mode except that leading auto Fields are re-executed.

Field Correct



Use FIELD COR in Verify mode only. (See *Verify.*) When you press FIELD COR, the mode indicator position on the status line goes from V to C. The mode changes back to V whenever you exit the field, either by backspacing or advancing.

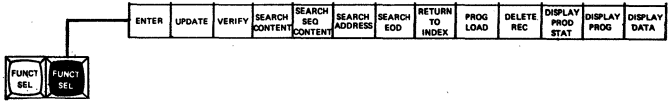
FIELD COR moves the cursor to the first position of the current field so that you can rekey the field as if in Enter mode. After rekeying, the cursor again goes back to the first position of the field so you can verify it.

When the 3741 is in the Field Correct mode it displays the record up to, *but not including,* the cursor position.

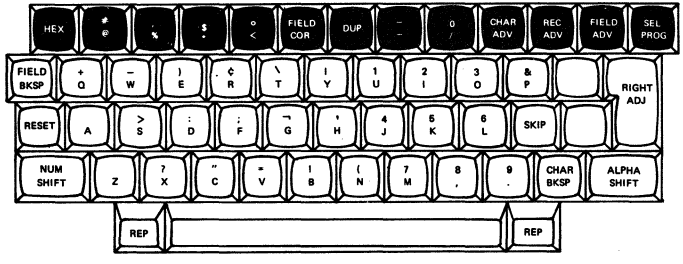
Note: If a verify error occurs in an auto field turn the AUTO DUP/SKIP switch off before selecting the Field Correct mode.

Function Select Lower

FUNCT SEL lower makes it possible to use these functions:



by pressing these keys:



To use:

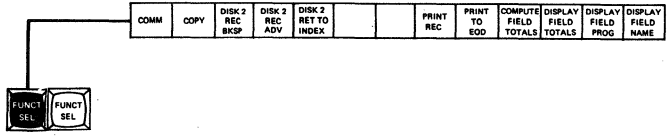
1. Press FUNCT SEL lower.

2. Then press the key below the function label.

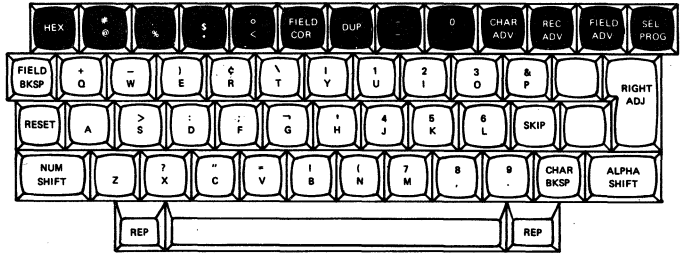
Pressing RESET or FUNCT SEL upper cancels the pending function selection.

Function Select Upper

FUNCT SEL upper makes it possible to use these functions:



by pressing these keys:



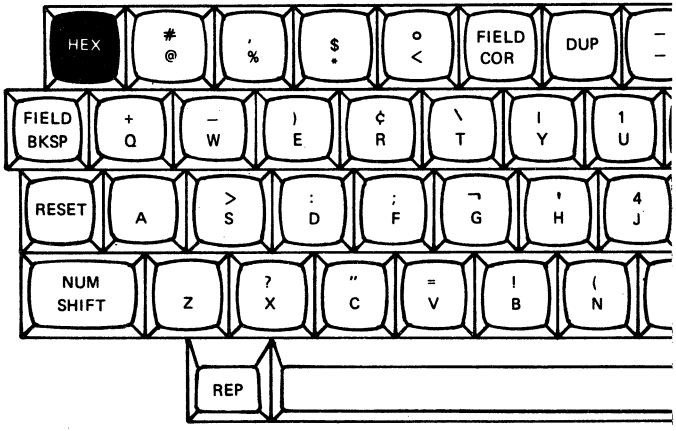
To use:

1. Press FUNCT SEL upper.

2. Then press the key below the function label.

Pressing RESET or FUNCT SEL lower cancels the pending function selection.

Hex



HEX provides a method of entering any of 256 codes in an eight-bit character. The hex key can also be used like the multipunch key on a keypunch machine except that the characters combined are sometimes different from the keypunch, and they must be keyed in a certain order.

To use:

1. Press HEX.
2. Key in two hex digits.

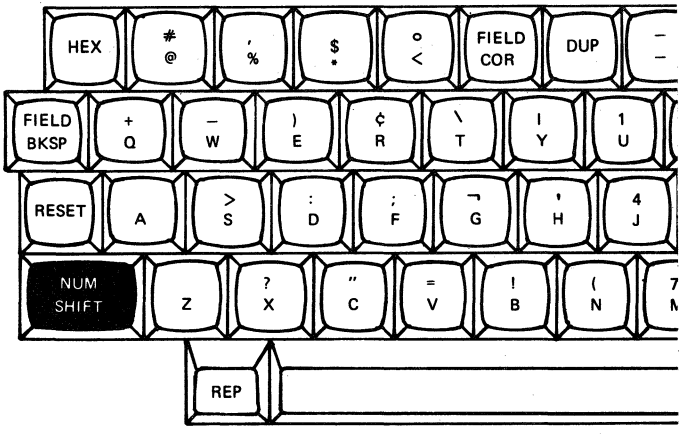
Hex digits are: 0 1 2 3 4 5 6 7 8 9 A B C D E F

When doing a job which was formerly a punched card job with overpunches, key the overpunch first. To overpunch a number:

1. Press HEX.
2. Key the overpunch. (Key in C for a 12-overpunch, D for an 11-overpunch, and E for a 0-overpunch unless the number to be overpunched is a 1. In this case, key in a 6.)
3. Key the number (0 through 9) to be overpunched.

For additional information on this key, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.

Numeric Shift



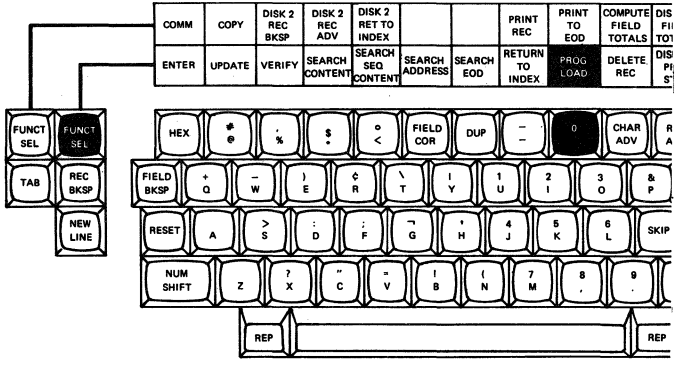
Use NUM SHIFT if the machine is in a field programmed for alpha shift and you want to enter numeric characters.

To use:

1. Hold down NUM SHIFT.

2. Key in the numeric characters you want to enter.

Program Load

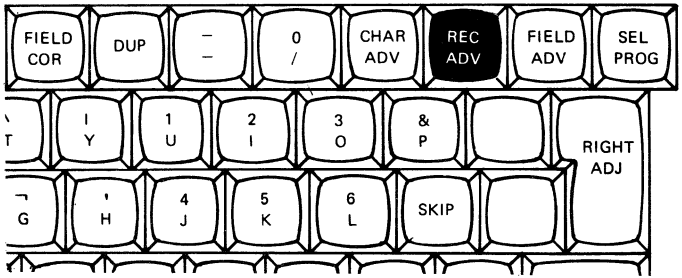


Use PROG LOAD to load a program into a storage area.

To do this: press FUNCT SEL lower, PROG LOAD, and the number representing the storage area you want to load your program into (that is, 1=stores program in storage area 1). This procedure also loads auxiliary duplication data into storage area number 4. The 3741 has ten program storage areas (1 through 9 and A).

If used in Verify or Field Correct modes, you get an M error.

Record Advance



In Index mode, REC ADV displays the next record on the index track (but doesn't enter a record on the disk).

In Enter mode, REC ADV executes remaining auto dup/skip fields, enters the current record on the disk, and advances to the first manual position of the next record.

In Update mode, REC ADV enters the changed record onto the disk, then displays the next record.

In Verify mode, REC ADV causes the 3741 to check for blanks in remaining manual fields and execute remaining auto fields.

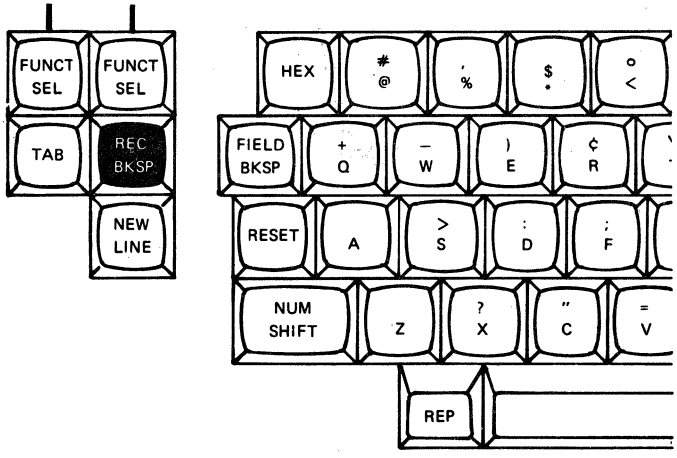
If corrections were made to a record, pressing REC ADV enters the corrected record on the disk.

If you press REC ADV in the first manual position of a record while verifying, the 3741 advances to the next record but doesn't verify the current record.

In Enter, Update, or Verify modes, pressing REC ADV when at the end of extent (EOE) returns the machine to the Index mode and displays the current data set label.

In Enter mode, an alternate method of record advance is available. To place the machine in this mode, press FUNCT SEL lower and R. (A dash (—) appears in position 39 of the status line.) In this mode, the 3741 bypasses all fields which are beyond the cursor position when you press REC ADV. To return to the normal mode, press FUNCT SEL lower and K. Inserting a diskette also restores the machine to the normal mode.

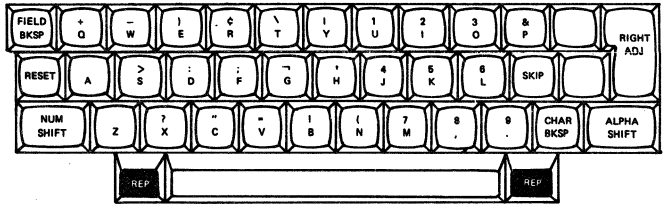
Record Backspace



In all modes except Field Correct mode, REC BKSP moves the cursor back to the first position of the first manual field of the current record.

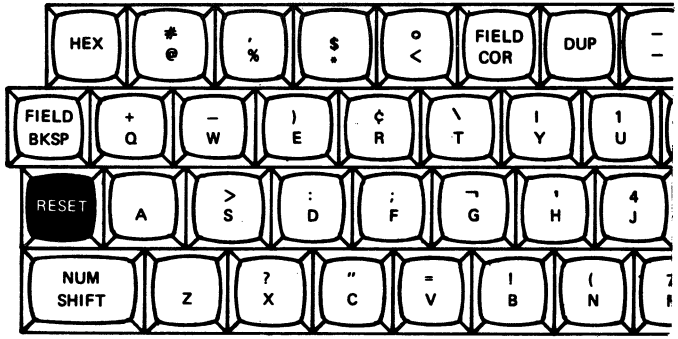
If the cursor is in the first manual position of a record, REC BKSP moves the cursor to the first manual position of the previous record. If the machine is in Enter mode, this key puts the machine in Update mode and displays the previous record. Record advancing restores the Enter mode.

Repeat



In all modes, REP pressed simultaneously with another key repeats that character or function until you release either key.

Reset



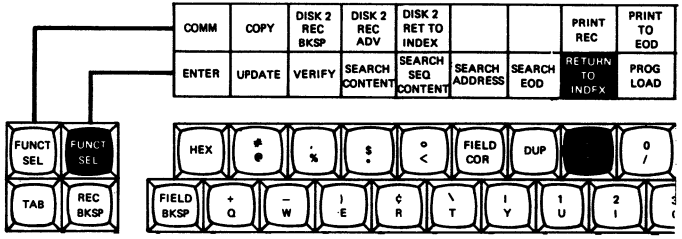
RESET reactivates the keyboard after an error. You can use this key in all modes.

Use RESET to cancel:

- A pending FUNCT SEL (that is, if either FUNCT SEL key has been pressed, pressing RESET cancels the action).
- A search operation while the machine is searching for content (SEARCH CONTENT) or sequential content (SEARCH SEQ CONTENT).
- A pending PROG SELECT or PROG LOAD.
- A modify index or delete index function (if attempting to change or delete a data set label).
- A hex keying sequence.

For *disk errors,* hold down NUM SHIFT and press RESET to reset errors.

Return to Index



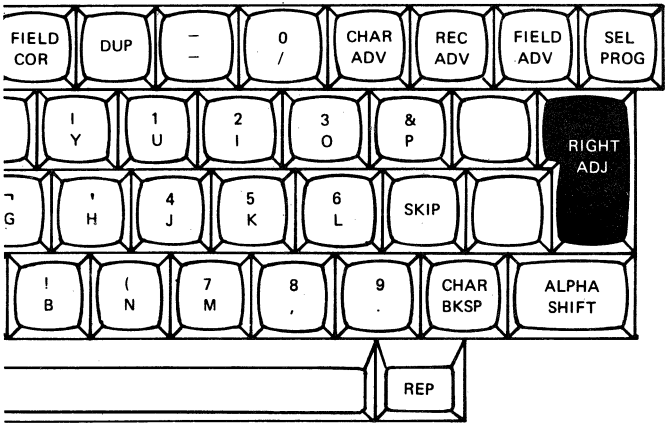
Use RETURN TO INDEX to:

- Return the machine to the index track and display the current data set label.
- Change the mode to the Index mode (X).
- Update the EOD (end of data) field in the data set label if changed. EOD is changed if at any time since the data set was entered at least one record was recorded in Enter mode.
- Select program 0.

You can use RETURN TO INDEX anytime in all modes.

CAUTION
Always press RETURN TO INDEX and wait for the XR mode before pressing the unlatch button to remove the disk.

Right Adjust



In Enter and Update modes, press RIGHT ADJ to exit a right-adjust field. When you do, the machine shifts characters previously keyed in the field (up to the current cursor position) to the right field boundary.

This key inserts fill characters to the left of the first keyed character. Blanks or zeros are inserted depending on the Begin Field Character of the program. (See *Dash* (–) key for information on negative right adjust fields.)

Pressing RIGHT ADJ in the first position of the field enters fill characters into the entire field.

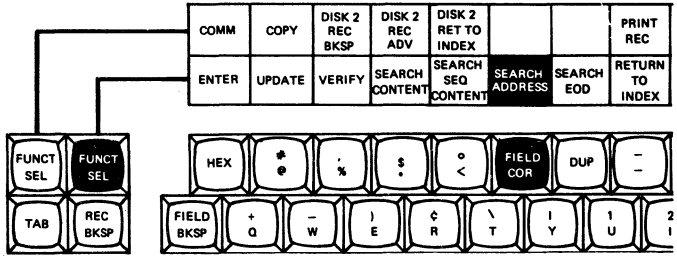
For more information see *Programs, Right-Adjust Fields.*

In Verify mode, RIGHT ADJ can be used only at the first position (to verify a zero or blank field) or after the last position of a right-adjust field. You must use this key or the dash key to exit a right-adjust field. Pressing any other key at the end of a right-adjust field causes an error.

With FUNCT SEL lower, RIGHT ADJ selects the Record Insert feature; see *Record Insert.*

Note: When the last character of a right-adjust field is entered or verified and the field is the last field of the record, the position indicator shows the record length plus one.

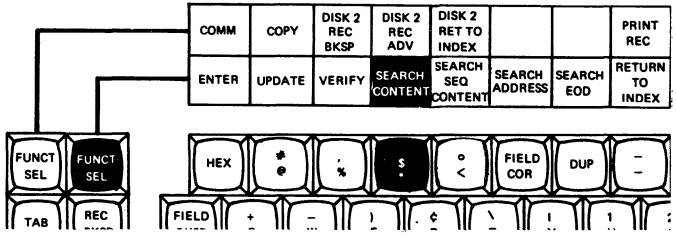
Search Address



You can use SEARCH ADDRESS in Index, Update, and Enter modes only. SEARCH ADDRESS sets up a search operation for a record by its disk address (that is, 11022=track 11, sector 22).

To use, see *Search.*

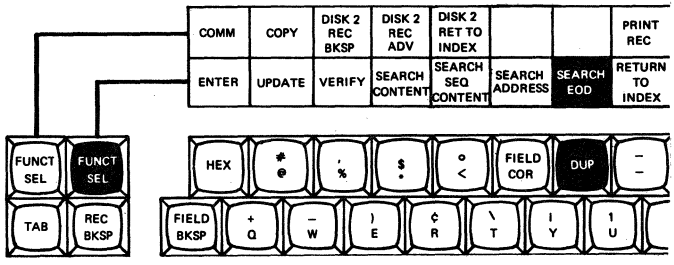
Search Content



You can use SEARCH CONTENT in the Index and Update modes only. This key sets up a search operation whereby you key part or all of the contents of a record, then the 3741 searches for a record with that content in the positions you keyed into.

To use, see *Search.*

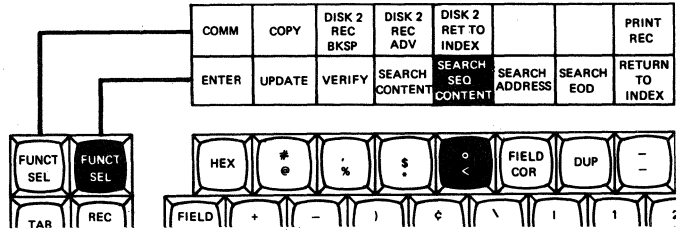
Search End of Data



You can use SEARCH EOD in Index and Update modes only. SEARCH EOD searches for the last record in a data set, then displays that record.

To use, see *Search.*

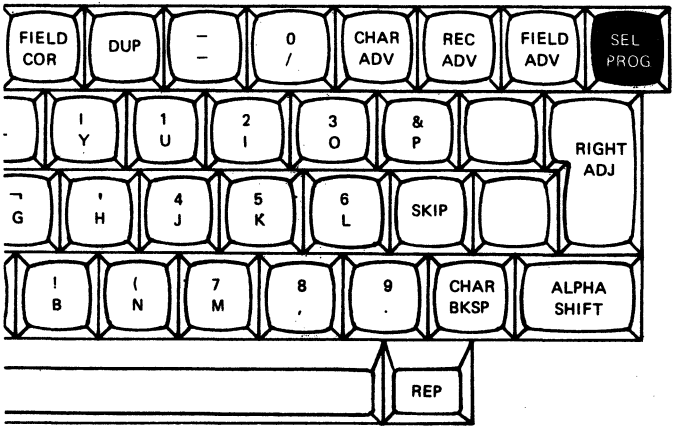
Search Sequential Content



You can use SEARCH SEQ CONTENT in the Index and Update modes only. This key's function is the same as SEARCH CONTENT except (1) this key provides a faster search, and (2) data being searched must be in ascending sequential order.

To use, see *Search.*

Select Program

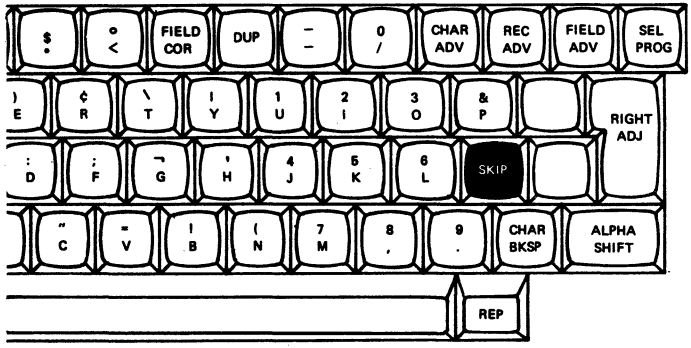


In all modes except Field Correct mode (can't use in Field Correct), SEL PROG activates the program storage area you want to use.

You must select your program when both the current program and the selected program are at the first position of a field (for example, when switching programs, etc.).

To use, see *Programs.*

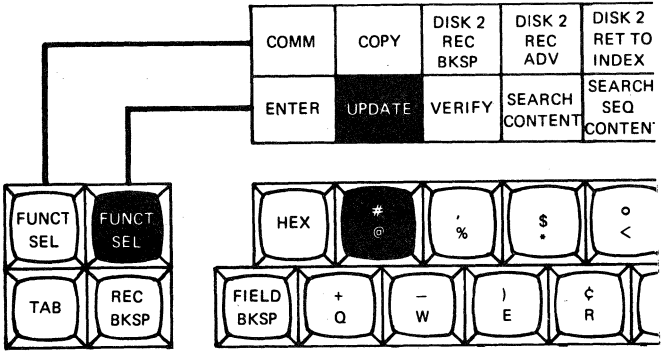
Skip



In all modes except Verify mode, SKIP enters blanks into the remaining positions of the present field. You cannot use SKIP after the first position of a right-adjust or self-check field.

In Verify mode, SKIP checks the field or remainder of the field for blank characters. If the 3741 finds a non-blank character, a verify error occurs. After resetting the verify error, pressing SKIP enters a blank character, then the 3741 checks the rest of the field for blank characters.

Update



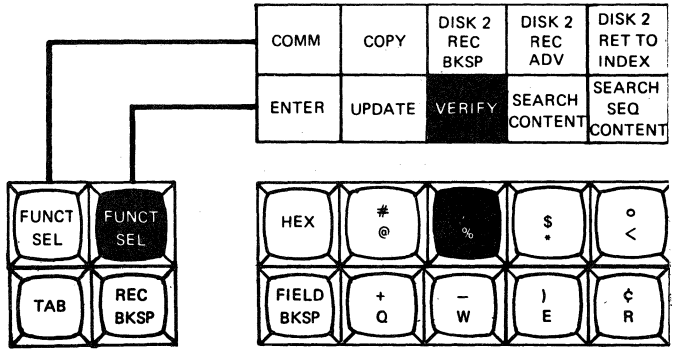
Use UPDATE to review records and/or change them.

If selected from Index mode, the 3741 reads and displays the first record of the data set.

You can't select Enter mode from the Update mode. However, record advancing beyond the end-of-data automatically selects Enter mode.

See *Enter and Update.*

Verify

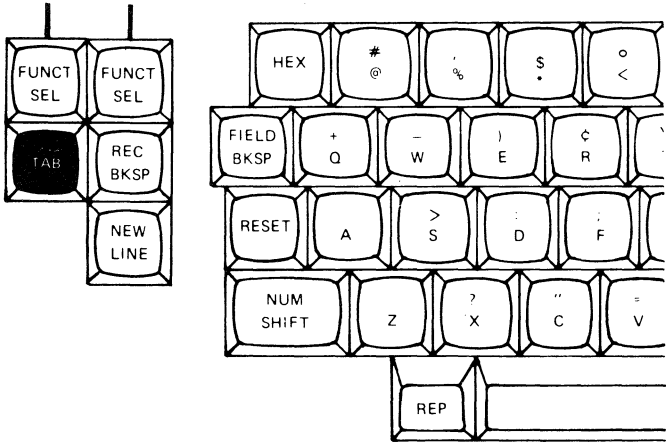


Use this key to select the Verify mode.

You can't select the Verify mode from the Enter mode.

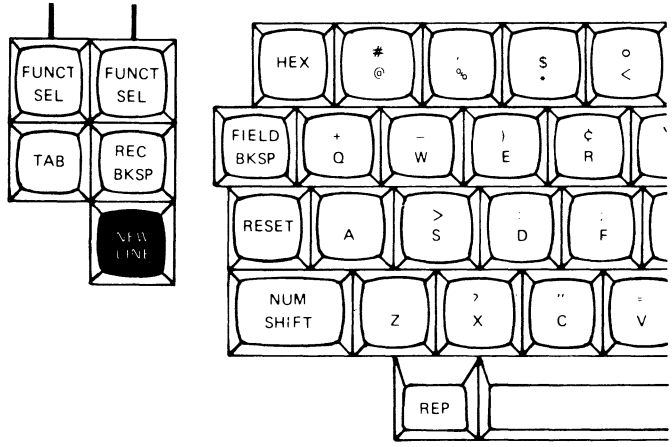
See *Verify.*

Tab



TAB generates a hex code 05 used for CPU format control. See the *IBM 3741 Data Station Reference Manual,* GA21-9183, for more information on CPU format control.

New Line



NEW LINE generates a hex code 15 used for CPU format control. See the *IBM 3741 Data Station Reference Manual,* GA21-9183, for more information on CPU format control.

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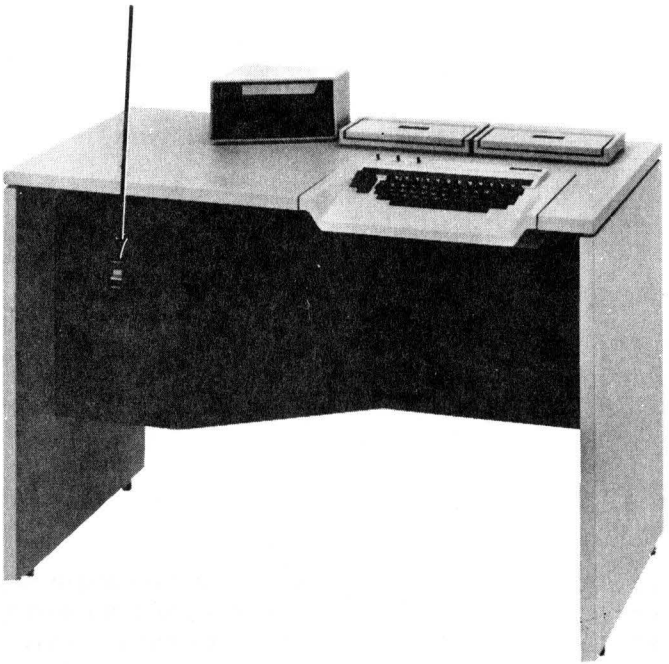
Insert and Remove Diskette

To Start the Machine

Put this switch in the POWER ON position.



Diskette Handling

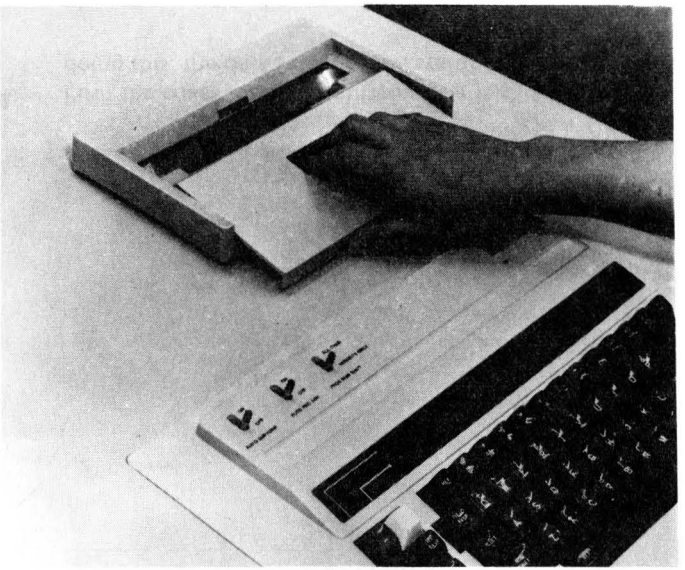
Some helpful hints:

- When you're not using the diskette, keep it in the cardboard envelope it came in.
- Put the diskette in the envelope before writing on the label so that the label is visible through the cut-away front of the envelope.
- Always handle the diskette by the label area to avoid touching the recording surface. Fingerprints on the surface may cause permanent disk errors.
- Use a file folder or carrier envelope to carry the diskette.
- Keep office utility magnets away from the diskette.
- If mailing diskettes, place in a box or heavy cardboard mailer to prevent bending or contact with stray magnetic fields as may be encountered in normal shipping and handling.

In short, HANDLE WITH CARE.

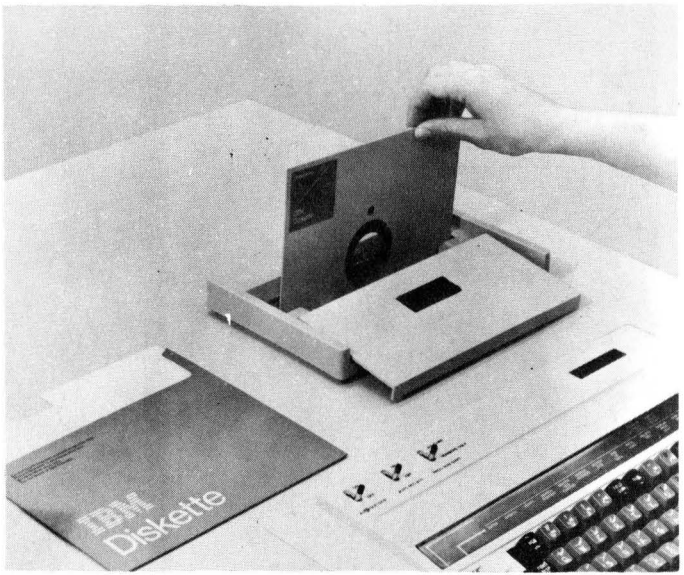
HOW TO INSERT THE DISKETTE

1. Remove the diskette from the envelope.

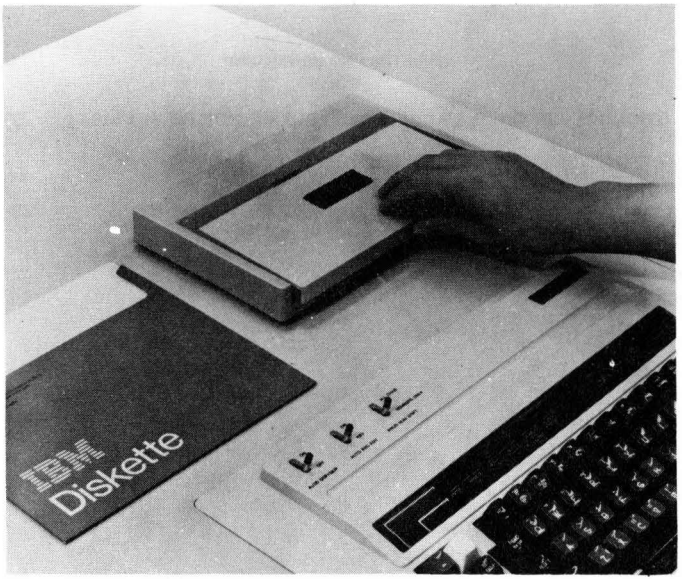


2. Press the button on the cover (allows the cover to move).

(continued on next page)



3. Insert the diskette in the slot (label should be in the upper, left corner as shown).



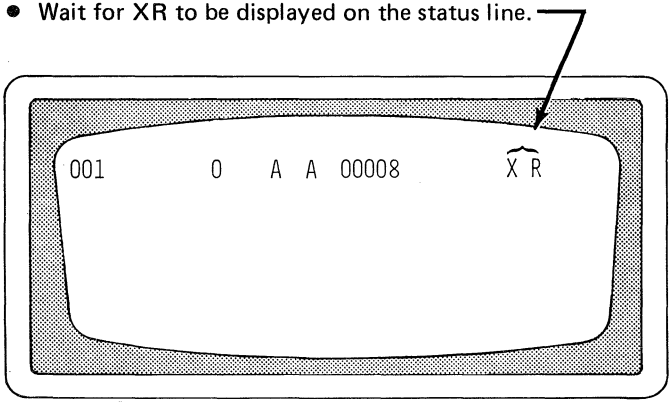
4. Push the cover forward until you hear it click. After doing this, the data set label and status line are displayed.

HOW TO REMOVE THE DISKETTE

CAUTION
Removing the diskette too soon causes a buzzing sound. A 0 error occurs and the EOD (end of data) address will not be updated.

Before removing the diskette, always make sure you:

- Press FUNCT SEL lower and RETURN TO INDEX.
- Wait for XR to be displayed on the status line.



1. Press the button on the cover (see step 2, inserting diskette).
2. Pull the cover towards you.
3. Remove the diskette from the slot.
4. Put the diskette in its envelope.

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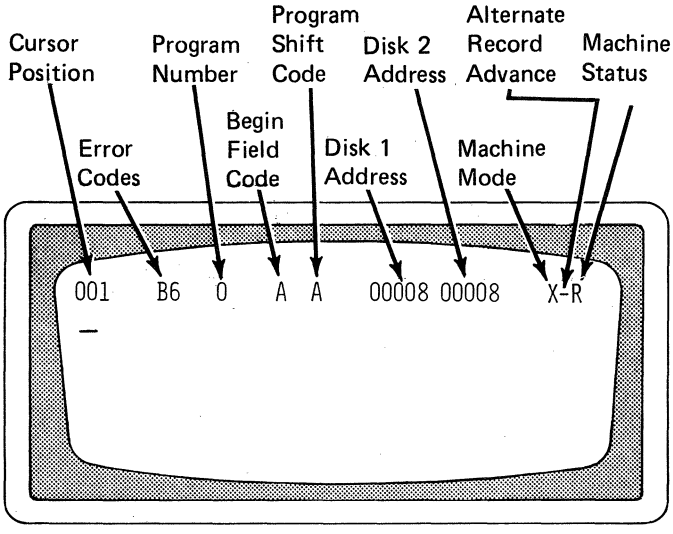
Status Line



Cursor (underscore character) Position

Indicates the current position you are at on your record.

Error Code

The right position shows disk errors only; the left position shows all other errors.

Program Number

Indicates the program storage area you are currently using.

Begin Field Code

Shows the Begin Field character for the current field of your program.

Program Shift Code

Shows the program shift (alpha or numeric) for the position you are now at. Either an A or an N is displayed: A=alpha shift, N=numeric shift.

Disk 1 Address

The first two digits represent the disk track you are using; the middle digit is always zero; the next two digits are the sector.

Disk 2 Address

Displays the disk address of the second disk.

Machine Mode

Indicates the machine mode you are currently in. The commonly used modes and their codes are: E=Enter, U=Update, V=Verify, C=Field Correct, X=Read Index, S=Search, and M=Modify Index.

Alternate Record Advance

Indicates the machine is in a mode which bypasses all fields beyond the cursor position when you press REC ADV in Enter mode.

Machine Status

Shows status of the machine. The codes for this are N=Not Ready (diskette isn't loaded), W=Wait, and R=Ready.

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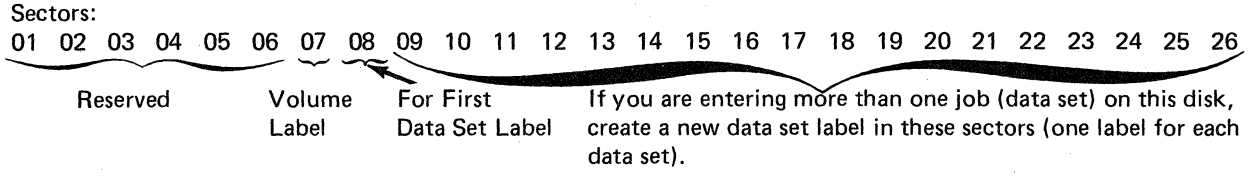
DATA SET LABELS

Index Track – Where You Enter Data Set Labels



How to Create/Change a Data Set Label

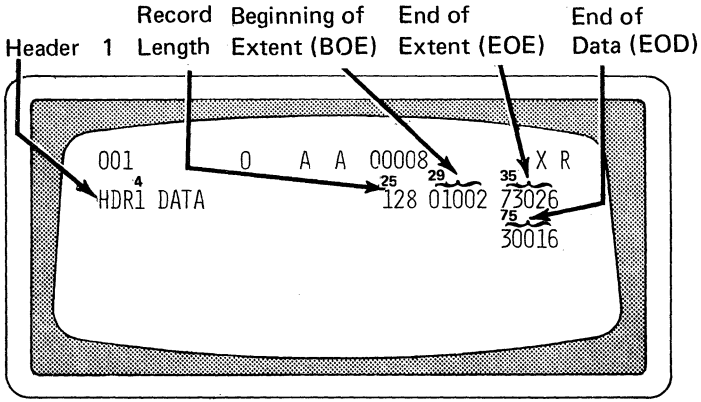
1. Key in the new data set label or change the existing data set label.
2. Press FUNCT SEL lower and M (modify mode).
3. Press REC ADV.

Note: Pressing REC ADV enters or changes a data set label on the disk but doesn't advance to the next sector. To advance to the next sector, press REC ADV again.

How to Delete Data Set Labels

1. Press FUNCT SEL lower and M (Modify mode).
2. Press DELETE REC.

Required Data Set Label Fields



Note the positions in which these fields are located.

Header 1 (Positions 1 through 4)

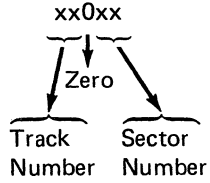
Enter HDR1.

Record Length (Positions 23 through 27)

Enter the record length (up to 128) for the records in the data set. The figure you enter must end in position 27. Positions not used must be blank or 0.

Beginning of Extent (Positions 29 through 33)

Enter the five-digit address designated for the first record of this data set. For example, if the first record is to go in track 01, sector 02, you'd enter 01002.



End of Extent (Positions 35 through 39)

Enter the five-digit address of the last position on the disk reserved for this data set. (For example, to reserve the entire disk for a data set, you'd enter 73026.)

End of Data (Positions 75 through 79)

If you are making a new data set label, enter the same address as you did in positions 29 through 33 (BOE). If you are changing the data set label, enter the address of the last record entered in the data set *plus one.* (For example, if the last record entered was in track 10, sector 15, you'd enter 30016.)

An unexpected power outage can result in the loss of the EOD address. Data can be recovered by reestablishing the EOD address of the partially destroyed data set. For more information, see *Data Recovery* in the *IBM 3741 Data Station Reference Manual,* GA21-9183.

Optional Fields

Data Set Name (Positions 6 through 13)

You can use this field to identify your data set.

Bypass Data Set (Position 41)

If you want the 3747 Data Converter, 3741 Communications Feaure, 3741 Data Recorder Attachment, or the 3741 I/O Adapter to bypass this data set, put a B in this field.

Data Set Accessibility (Position 42)

The 3741 tests this field and allows processing only if a blank is present. Any other character found in this field causes the 3741 to refuse the disk. Therefore, you'd have to use another diskette.

For more information, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.

Write Protect (Position 43)

This field defines the protected status of the associated data set. P = read only; blank = read/write. With the P in this position, you can only select the Update (U) mode.

Multi-volume (Position 45)

This field indicates whether a complete data set is on a disk. Blank = data set complete; C = data set continued on another disk; L = last disk of a multi-disk data set.

See *IBM 3741 Data Station Reference Manual,* GA21-9183, *Data Recorder Attachment,* and *I/O Adapter* for definitions of the C and L characters.

Note: If preparing data for the 3747 Data Converter, check the *IBM 3747 Data Converter Reference Manual,* GA21-9170, for the interpretation of the multivolume byte.

Expiration Date (Positions 67 through 72)

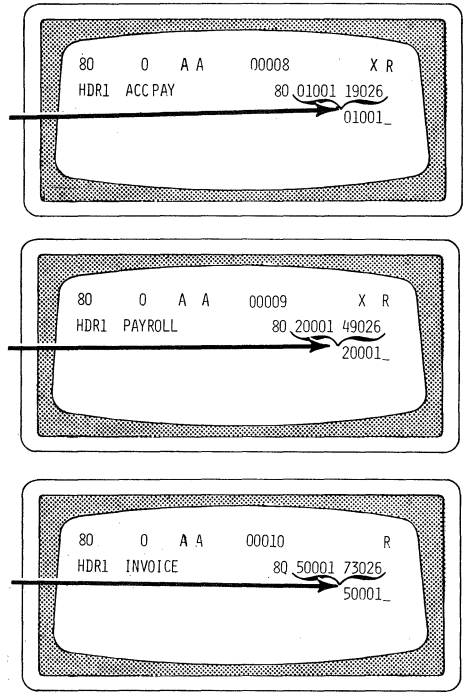
May be used to contain the date that the data set expires. The format of the expiration date is YYMMDD, where YY is the year, MM is the month, and DD is the day.

Verify Mark (Position 73)

This single character field shows if the data set is verified. If it is, this field has a V in it. If the data set isn't verified, this field is blank.

Multiple Data Set Labels

This is an example of how you would set up the data set labels when entering more than one job on one disk. For this example, there are three jobs to enter on one disk. Three jobs (data sets) = three data set labels.



Accounts Payable Data Set

Reserves space on disk from track 01, sector 01 through track 19, sector 26—space for 494 records.

Payroll Data Set

Reserves space on disk from track 20, sector 01 through track 49, sector 26—space for 780 records.

Invoice Data Set

Reserves space on disk from track 50, sector 01 through track 73, sector 26—space for 624 records.

HOW TO MAKE A PROGRAM

Here is what a typical program looks like.

A.....N---------A....D----R-----S------E

The letters, except for the E, begin a data field and, hence, are called *Begin Field codes.*

1. Start each field with a Begin Field code.

2. After the Begin Field code, put the number of Continue Field codes, – (dash) for numeric shifts and . (period) for alphabetic shifts, you need to complete the length of the field.

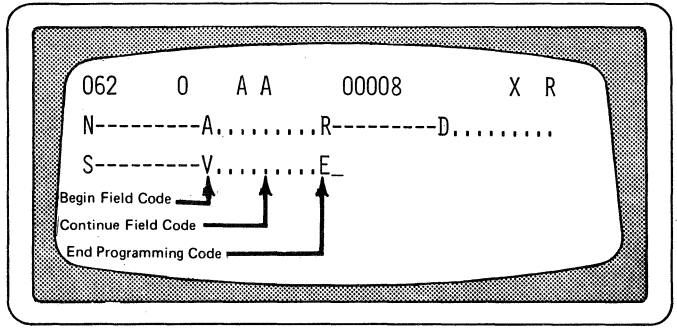
   You can allows numeric characters in an alphabetic field or allow alphabetic characters in a numeric field by intermixing Continue Field codes.

3. Put an E in one position past the end of your program (unless the program uses all positions specified in the record length field of the data set label). For a 50 character program you'd put the E in position 51.

The E, in effect tells the machine where the end of your program is. That is, when the machine reads the E in your program, it bypasses the remaining positions of your record and ends at cursor position 000. However, if the AUTO REC ADV switch is on, the 3741 advances to the next record.

A Program Code Chart containing the Begin Field and the Continue Field codes is provided later in this section.

The following shows a sample program for a 60-position record as displayed after keying. Note that the program supplies a code for each of the 60 positions.



How to Load a Program

You have two ways in which to load a program:

- From the keyboard.
- From a disk.

Loading a Program from the Keyboard

When a program is loaded using the following method, it will not be retained when the machine is turned off.

1. Insert a diskette (displays the sector 08 data set label).
2. Press FUNCT SEL lower and DELETE REC (blanks the screen but doesn't delete the record in track 00).
3. Turn the AUTO REC ADV and AUTO DUP/SKIP switches off.
4. Key in the program.
5. Press FUNCT SEL lower and PROG LOAD.
6. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area where you want the program stored). After the program is stored, the screen goes blank.

To load more programs, repeat steps 4 through 6.

Loading a Program from a Disk

1. Insert the diskette containing the programs you want to use (displays the sector 08 data set label).
2. Press FUNCT SEL lower and UPDATE.
3. Press REC ADV until the program you want to use is displayed.

   Note: You can also do search operations to find the programs you want to use. In this case, see *Search.*
4. When the program you want to use is displayed, press FUNCT SEL lower and PROG LOAD.
5. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area where you want the program stored). After storing the program, the screen goes blank. To load more programs, repeat steps 3 through 5.
6. Press FUNCT SEL lower and RETURN TO INDEX (machine returns to track 00 and displays the data set label).
7. Remove the diskette after the machine displays X R in the status line.

How to Select a Program in Storage

1. Press SEL PROG.
2. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area number of the program you want).

Your program is now active.

How to Display a Program

1. Select the program you want to display.
2. Press FUNCT SEL lower.
3. Press DISPLAY PROG (displays program currently being used).

   If, at this point, you want to restore the data display, press FUNCT SEL lower and DISPLAY DATA.

How to Change a Program that is in a Storage Area

1. Select the program to be changed.
2. Press FUNCT SEL lower.
3. Hold down NUM SHIFT and press DISPLAY PROG.
4. Change the program as desired.
5. Press FUNCT SEL lower and PROG LOAD (to store the changed program).
6. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area where you want the program stored).

After doing this, the display goes blank and the 3741 remains at the same record position, but the changed program is stored and ready to be used. To continue keying, select the program (press SEL PROG and the storage area number) and continue.

How to Update the Program Diskette With an Altered Program

Use this procedure if you have changed a program since loading it into storage from a program diskette.

1. Remove the data diskette. Be sure XR is displayed before removing diskette.

2. Insert the program diskette.

3. To get to the program you want to update, either select the Update mode and press REC ADV or do a search operation (see *Search*).

4. Select the altered program.

5. Press FUNCT SEL lower, hold down NUM SHIFT, and press DISPLAY PROG.

6. Key the first character in the program. (For example, the first character in the program is an N, press N).

7. Press REC ADV.

8. Press FUNCT SEL lower and RETURN TO INDEX.

Types of Fields Used in Programs

Manual Fields

Manual fields define the length of a field and the keyboard shift. The keyboard shift is either numeric or alpha. But the program shift can be overridden by pressing NUM SHIFT or ALPHA SHIFT.

A is the Begin Field code for alpha shift characters; N is the Begin Field code for numeric shift characters.

Duplicate Fields

Program for duplicate fields when you want data from the corresponding field or positions of the previous record automatically entered in the record you are currently keying. In other words, you eliminate keying repetitious material.

The Begin Field codes are D (numeric) and U (alpha). However, the shifts specified by these codes are ignored by the machine except when manually keying into a duplicate field.

Skip Fields

Program for skip fields when you want the machine to automatically fill or verify fields with blanks.

The Begin Field codes are S and K. But the machine ignores the shift specified by these codes except when manually keying. With the self-check feature, the Begin Field codes F and G define a combined self-check and skip field.

Bypass Fields

Program for bypass fields when you want the machine to pass over a field. This field isn't affected by AUTO DUP/SKIP.

The Begin Field code is B. Since you can't enter data in a bypass field, the shift is meaningless. But you must use either a . (period) or a – (dash) for Continue Field codes.

Verify Bypass Fields

Program for verify bypass fields when you want the machine to pass over a field in the Verify (V) mode only. The Begin Field characters are V, W, X, Y, and Z. In Enter (E) and Update (U) modes, these five characters have the same functions as the characters N, A, R, J, and I respectively, as shown in the *Program Code Chart.*

Right-Adjust Fields

Programmed right-adjust fields allow you to move data in the current field to the right field boundary by pressing RIGHT ADJ. Right-adjust fields must be at least two characters long, and can be as long as a whole record.

After moving the data to the right field boundary, the machine inserts fill characters to the left of the first keyed character. The fill characters are either blanks or zeros depending on the Begin Field character you use. Begin Field character R is for a numeric right-adjust field with zeros for fill characters; J is for a numeric right-adjust field with blanks for fill characters; I is for alpha right-adjust fields with blanks for fill characters.

Begin Field characters X (zero fill character) and Y (blank fill character) are numeric, right-adjust, verify-bypass fields. Begin Field character Z (blank fill character) is an alpha, right-adjust, verify-bypass field. These programmed fields are bypassed in Verify (V) mode. In Enter (E) and Update (U) modes, X, Y, and Z have the same function as R, J, and I respectively.

Press RIGHT ADJ or the dash key, if applicable, to exit from every programmed right-adjust field.

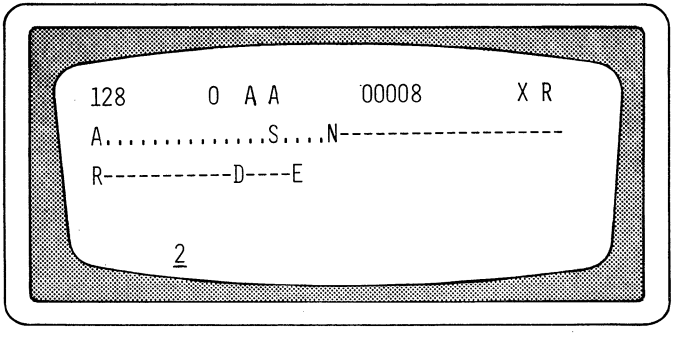
Program Code Chart

	Code	Verify Bypass	Shift	Function
Begin Field Codes	N	V	Numeric	Manual Fields
	A	W	Alpha	Manual Fields
	J	Y	Numeric	Right-Adjust, blank fill
	R	X	Numeric	Right-Adjust, zero fill
	I	Z	Alpha	Right-Adjust, blank fill
	B		---------	Bypass
	D		Numeric	Automatically Duplicates
	U		Alpha	Automatically Duplicates
	S		Numeric	Automatically Skips
	K		Alpha	Automatically Skips
Continue Field Codes	–		Numeric	Continues Field in Numeric Shift
	.		Alpha	Continues Field in Alpha Shift
End Program Code	E			Marks End of Program
Feature Begin Field Codes	H		Numeric	Self-Check, Modulus 10
	C		Numeric	Self-Check, Modulus 11
	F		Numeric	Auto Skip Self-Check, Modulus 10
	G		Numeric	Auto Skip Self-Check, Modulus 11
	L		Numeric	Auto Dup Self-Check, Modulus 10
	M		Numeric	Auto Dup Self-Check, Modulus 11
Any Begin Field code followed by 1, 2, or 3.				Field Totals Entry (See *Field Totals.*)
B	Bypass code followed by 4, 5, 6.			Field Totals Read Out – offline (See *Field Totals.*)
B	7, 8, or 9			Field Totals Read Out and Reset (See *Field Totals.*)

Program Chaining

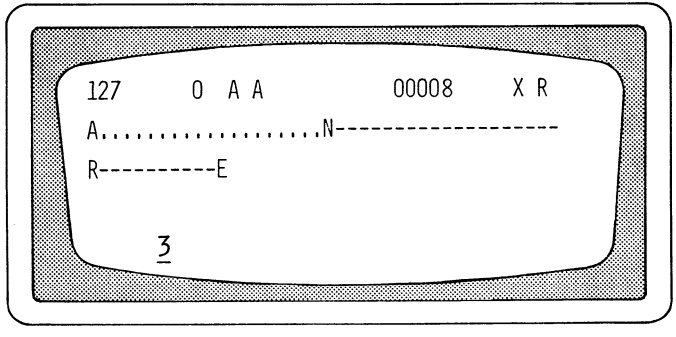
Program chaining allows you to program the machine so that it will automatically switch from one program to another. Positions 128 and 127 are the key to program chaining. Acceptable characters for program chaining are numbers 0 through 9 and hex FA (corresponding to program buffer A).

Position 128:



In position 128, enter the program storage area number that you want the 3741 to automatically switch to (for example, from program 1 to program 2) when record advancing.

Position 127:



In position 127, enter the program storage area number that you want the 3741 to automatically switch to (for example, from program 4 to program 3) when record backspacing.

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Operator Guidance

The Prompting Message

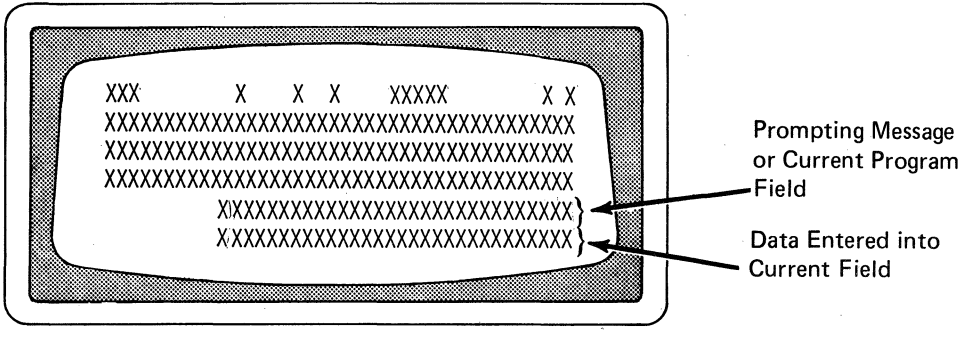
Operator guidance assists you while operating the machine by displaying either your program field or a prompting message as you enter data. Here is a typical prompting message:

*COMPANY NAME*ADDRESS*CITY AND STATE*DUP*SKIP*

Or if you didn't want a message in the dup and skip fields

*COMPANY NAME*ADDRESS*CITY AND STATE***

The prompting message is displayed in line five (positions 11 through 40); in line six (positions 11 through 40), the machine displays the data you've entered in the current field.



The machine displays the slash character (/) on line 6 for all data positions remaining to be keyed for the current field. As you key in data, the machine replaces the slash character with the data you've keyed. Backspacing within a record causes the machine to put the slash characters back on the line and remove the corresponding data on line six.

How to Use a Prompting Message

You key in a prompting message record the same way you would a data record. Then you load the record into even numbered storage areas (2, 4, 6, 8, or A) the same way you'd load a program.

When you select a program, the prompting message record in the *succeeding* storage area is automatically activated. For example, when you select program storage area 1, the prompting message record in program storage area 2 is also selected.

How to Make a Prompting Message

Three simple rules to follow:

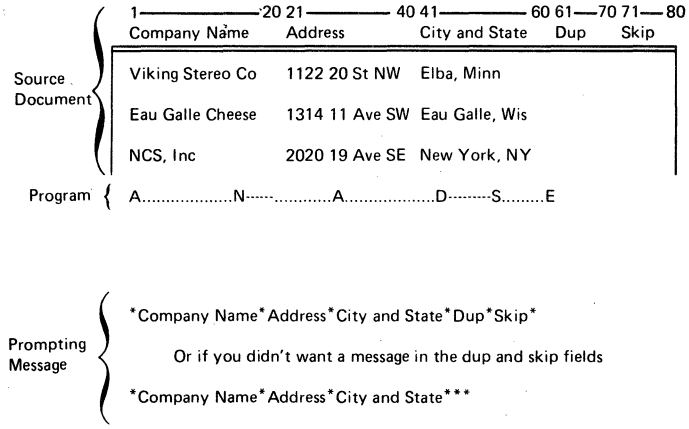
1. Put an asterisk in position 001.
2. If you have a prompting message for the first field, key in the message and an asterisk. If you don't have a prompting message, just key in the asterisk.
3. Repeat step 2 for each field.

When you have finished, you should have an asterisk in position 001 plus one asterisk for each field in the program.

Prompting messages cannot exceed 30 characters.

How to Make a Prompting Message (continued)

Here's an example of a source document, its program, and a typical prompting message record that might be used for the job.



DISPLAY FIELD PROG and DISPLAY FIELD NAME Keys

When you select your program, you automatically activate your prompting message record. But if you want to have your current program field displayed as you key in data, press DISPLAY FIELD PROG. To get the machine back to displaying prompting messages, press DISPLAY FIELD NAME.

Enter and Update

HOW TO ENTER AND UPDATE

You can enter data either with or without using a program.

Entering Data Without Using A Program

1. Set the AUTO REC ADV and the AUTO DUP/SKIP switches to OFF.

2. Set the PROG NUM SHIFT switch to ALL CHAR.

3. Insert a diskette (displays the sector 08 data set label).

4. Press FUNCT SEL lower and ENTER.

5. Key in the data from the source document. Press REC ADV after keying each record.

6. Press FUNCT SEL lower and RETURN TO INDEX after entering all the records (machine returns to track 00 and displays the data set label).

7. Wait for the machine to display X R in the status line; then remove the diskette.

Entering Data Under Control Of An Existing Program

1. Insert the diskette containing programs you want to use (displays the sector 08 data set label).

2. Press FUNCT SEL lower and UPDATE.

3. Press REC ADV until the program you want to use is displayed.

   Note: You can also do search operations to find the programs you want to use. In this case, see *Search.*

4. Press FUNCT SEL lower and PROG LOAD.

5. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area where you want the program stored). The screen goes blank after storing the program. To load more programs, repeat steps 3 through 5.

6. Press FUNCT SEL lower and RETURN TO INDEX (machine returns to the index track and displays the data set label).

(continue to step 7)

Entering Data Under Control Of An Existing Program (continued)

7. Wait for the machine to display X R in the status line; then remove the program diskette.

8. Insert another diskette (displays the sector 08 data set label).

9. Set AUTO REC ADV and AUTO DUP/SKIP switches to OFF.

10. Set the PROG NUM SHIFT switch to ALL CHAR.

    Note: When this switch is set to ALL CHAR, all upper shift characters will be accepted in numeric fields.

11. Press FUNCT SEL lower and ENTER.

12. Press SEL PROG.

13. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area number where you stored your program).

14. Key in the first record from the source document. Then set the AUTO REC ADV and AUTO DUP/SKIP switches to ON.

15. Press FUNCT SEL lower and RETURN TO INDEX after entering all the records (machine returns to the index track and displays the data set label).

16. Wait for the machine to display X R in the status line; then remove the diskette.

Entering Data Under Control Of A New Program

1. Set the AUTO REC ADV and the AUTO DUP/SKIP switches to OFF.

2. Set the PROG NUM SHIFT switch to ALL CHAR.

   Note: When this switch is set to ALL CHAR, all upper shift characters will be accepted in numeric fields.

3. Insert a diskette (displays the sector 08 data set label).

4. Press FUNCT SEL lower and DELETE REC (blanks the screen but doesn't delete the record in track 00).

5. Key in your program.

6. Press FUNCT SEL lower and PROG LOAD.

7. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area where you want the program stored). The screen goes blank after storing the program. To load more programs, repeat steps 5 through 7.

8. Press FUNCT SEL lower and ENTER.

9. Press SEL PROG.

10. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A.

11. Key in the first record from the source document. Then set the AUTO REC ADV and AUTO DUP/SKIP switches to ON.

12. Press FUNCT SEL lower and RETURN TO INDEX (machine returns to the index track and displays the data set label).

13. Wait for the machine to display X R in the status line; then remove the diskette.

Adding Records To A Data Set Already On A Disk

1. Load a program if necessary. (See *How to Load a Program.)*

2. Insert a diskette (displays the sector 08 data set label).

3. Set the AUTO REC ADV and AUTO DUP/SKIP switches to OFF.

4. Set the PROG NUM SHIFT switch to ALL CHAR.

   Note: When this switch is set to ALL CHAR, all upper shift characters will be accepted in numeric fields.

5. Press FUNCT SEL lower and SEARCH EOD.

6. Press REC ADV (machine advances one record position and goes to Enter mode).

7. Press SEL PROG.

8. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (program storage area where your program is stored).

9. Key in the first record from the source document. Then set the AUTO REC ADV and AUTO DUP/SKIP switches to ON.

10. Press FUNCT SEL lower and RETURN TO INDEX after entering all the records (machine returns to the index track and displays the data set label).

11. Wait for the machine to display X R in the status line; then remove the diskette.

Updating Records

To make changes to existing records, put the machine in Update (U) mode. The following example is a typical update procedure for changing data entered in a particular field or a record in a data set.

1. Set the AUTO REC ADV and AUTO DUP/SKIP switches to OFF.

2. Set the PROG NUM SHIFT switch to ALL CHAR.

   Note: When this switch is set to ALL CHAR, all upper shift characters will be accepted in numeric fields.

3. Load the programs. (See *How to Load a Program.)*

4. Insert the diskette (displays the sector 08 data set label).

5. Press FUNCT SEL lower and UPDATE.

6. Press REC ADV until the record you want to update is displayed.

   Note: You can also do search operations to find the records you want to update. In this case, see *Search.*

7. Press SEL PROG.

8. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area where the program is stored).

9. Move the cursor (press FIELD ADV or CHAR ADV) to the first position of the field to be changed.

10. Key in the new field information.

11. Press REC ADV (enters the updated record on the disk).

12. Press REC ADV or do a search address operation to get to other records requiring change, then repeat steps 9 through 11 for each record requiring a change.

(continue to step 13)

Updating Records (continued)

13. Press FUNCT SEL lower and RETURN TO INDEX (machine returns to the index track and displays the data set label).

14. Wait for the machine to display X R in the status line; then remove the diskette.

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Record Insert

Use this feature to open spaces (sectors) within a data set so records can be added. Space for up to 99 records can be created. To do this, the 3741 moves all records starting with the record currently being displayed through the last record in the data set. The records are moved, toward the end of extent, as many sectors as the number of records being inserted.

After moving the records, the 3741 fills the vacated space with deleted records. The deleted records are identified by a D in position 001 and an \ (inverse slash) in position 002.

The new EOD address, in the data set label, is updated when the 3741 returns to the Index (X) mode.

How To Insert Records

1. Position the disk at the address of the record you want moved forward, to allow for inserting records. (If in Verify (V) mode, press FUNCT SEL lower and UPDATE.)
2. Press FUNCT SEL lower and SEARCH ADDRESS.
3. Key in a two-digit number (01-99) indicating the number of records to be inserted.
4. Press FUNCT SEL lower and RIGHT ADJ. The machine mode changes to N, the status changes to W, and the display is blanked. When all the records are moved and the space is filled with deleted records, the machine returns to the disk address of the first deleted record, posts a 6 error, goes to program level 0 and Update (U) mode.
5. Press NUM SHIFT with RESET to remove the error condition.
6. Key the records you want to insert over the deleted records.
7. Press FUNCT SEL lower and RETURN TO INDEX.

Searching

There are four ways to search:

- Search End of Data.
- Search Address.
- Search Content (feature).
- Search Sequential Content (feature).

Search operations are confined to the current data set: you can't search from one data set to another data set.

To cancel a search operation before the machine has started its search (that is, before pressing REC ADV), press FUNCT SEL lower and RETURN TO INDEX or press FUNCT SEL lower and UPDATE.

The differences between SEARCH CONTENT and SEARCH SEQUENTIAL CONTENT are:

- Search Sequential Content is faster.
- When searching sequential content, data in fields being searched must be in ascending alpha (A through Z), numeric (0 through 9), or alphameric (A through Z then 0 through 9) sequence.
- Search Content only searches forward (to end of data); Search Sequential Content searches forwards and backwards.

Searching End of Data

Use this to find the last record in a data set. You can start this search from the Update (U) or Index (X) modes.

1. Press FUNCT SEL lower and SEARCH EOD.

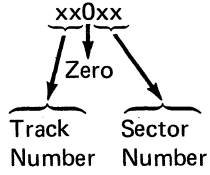
When the search is completed, the machine displays the last record in the data set and is in the Update (U) mode. To get the machine into Enter (E) mode, press REC ADV. The machine is now set so you can enter data.

Searching For A Record By Its Address

Use this to search for a particular record by its track and sector address on the disk. You can select this function from the Index (X), Update (U), or Enter (E) modes.

1. Press FUNCT SEL lower and SEARCH ADDRESS.

2. Key in the five-digit record address in positions 1 through 5:



3. Press REC ADV (starts the search).

The search stops on the specified address and displays the record even if a deleted record is at the address. In this case, the machine displays a 6 error.

After completing a search, the 3741 is in the Update (U) mode and under manual control (program 0). From this position, you can do another search by simply repeating the keying sequence above.

Search Content

Use this feature to search for records when you have the specific data they contain. The data can be part of or all of a record. You can select this feature from either the Index (X) or the Update (U) modes.

1. Press FUNCT SEL lower and SEARCH CONTENT. (A previously keyed record might appear; if so, press FUNCT SEL lower and DELETE REC.)

2. Key in the part of the record (or entire record) you are searching for. You must enter this data in the same positions as it was entered in the record you're searching.

3. Press REC ADV (starts search).

The search stops when a record containing the data you keyed in step 2 is found. Then the machine displays that record.

When the search stops, the machine is in Update (U) mode.

To Resume Searching for the Same Content after Updating a Record

1. Press REC BKSP.

   Note: The Search Content feature starts searching on the next record — not the current record. Therefore, by pressing REC BKSP you are assured of having all records searched.

2. Press FUNCT SEL lower and SEARCH CONTENT (previously keyed data appears).

3. Press REC ADV (starts the search).

Note: Occasionally the search may stop on a record in which a portion of the field in the record being displayed matches the data you keyed in step 2. If this should occur, restart the Search Content operation from the address where the search stopped to see if you can find the record.

Search Sequential Content

This feature searches forwards and backwards in the current data set. Use this feature to search for a record containing specific data in ascending sequential order (that is, the search field of each succeeding record must have a higher value than the previous record). This data must be in the same positions in all records.

You can select this feature from the Index (X) and the Update (U) modes.

1. Press FUNCT SEL lower and SEARCH SEQ CONTENT. (A previously keyed record might appear; if so, press FUNCT SEL lower and DELETE REC.)

2. Key in the part of the record (or entire record) you are searching for. You must enter this data in the same positions as it was entered in the record you're searching.

3. Press REC ADV (starts search).

The search stops when a record containing the data you keyed in step 2 is found. Then the machine displays that record.

When the search stops, the machine is in Update (U) mode.

If the search doesn't find the record sought, the machine displays an S error. This can happen even if the record is in the data set and if one or more records aren't in ascending order. If this happens, you can do a Search Content operation using the same search content. But first, return to the Index track (press FUNCT SEL lower and RETURN TO INDEX) to assure a search through the entire data set.

Note: Occasionally the search may stop on a record in which a portion of the field in the record being displayed matches the data you keyed in step 2. If this should occur, backspace a few records to see if you can find the record. If the record still cannot be found, return to the Index track (press FUNCT SEL lower and RETURN TO INDEX). Then do a Search Content operation using the search content.

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Verify

HOW TO VERIFY

You can select the Verify (V) mode from the Index (X) or Update (U) modes.

1. Load the programs. (See *How to Load a Program.*)
2. Insert the diskette to be verified (displays the sector 08 data set label).
3. Press SEL PROG.
4. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (storage area where the program is stored).
5. Press FUNCT SEL lower and VERIFY. (The first record of the data set is displayed.)
6. Key in the data from the source document.

After pressing the first key, the rest of the record disappears from the screen. From this point on, data is displayed up to the current cursor position.

What To Do When Interrupted While Verifying

1. Write down the address of the next record to be verified (see the address on the status line).
2. Press FUNCT SEL lower and RETURN TO INDEX.
3. Remove the diskette.

To Continue an Interrupted Job:

1. Load the programs. (See *How to Load a Program.*)
2. Insert the diskette.
3. Search for the address of the next record to be verified. To do this:
   a. Press FUNCT SEL lower and SEARCH ADDRESS.
   b. Key in the record address.
   c. Press REC ADV.
4. Press SEL PROG.
5. Key in a 1, 2, 3, 4, 5, 6, 7, 8, 9, or A (program storage area where the program is stored).
6. Select Verify (V) mode.
7. Continue verifying.

How to Correct a Mismatch

When you get a mismatch, the machine displays a Verify (V) error on the status line and also displays the entire record.

1. Press RESET.

2. Key in the correct character.

Changes made to the record are updated on the disk after you finish verifying the record and advance to the next record.

Note: A character is accepted only if keyed twice in succession or if it matches the original character.

If Several Characters or an Entire Field Is Incorrect:

1. Press FIELD COR (cursor goes to the first position of the current field and the machine mode changes to C).

2. Key in the correct field (as if in Enter mode). When completed, the cursor returns to the first position of the current field.

3. Rekey the field you have just keyed to verify it.

Note: This is the way you would normally correct a right-adjust Verify error.

When Extra Records Have Been Keyed:

If you have an extra record, simply delete it by pressing FUNCT SEL lower and DELETE REC.

When Records Have Been Omitted:

Use the Record Insert feature, if available, to insert the omitted records. Otherwise:

1. Insert the diskette from which records were omitted into the disk 2 slot.
2. Insert a blank diskette into the primary disk drive.
3. Create the data set label for the new diskette.
4. Press FUNCT SEL lower and ENTER.
5. Press FUNCT SEL upper and DISK 2 RET TO INDEX.
6. Press FUNCT SEL lower.
7. Hold down NUM SHIFT and press SEARCH ADDRESS.
8. Key in the record address just after the position you want the record in. (For example, if you want the record between 01014 and 01015, key in 01015.)
9. Press FUNCT SEL upper.
10. Hold down NUM SHIFT and press COPY.
11. After the searched record is found, key in the new record(s).
12. Press REC ADV after entering each record.
13. Press FUNCT SEL upper.
14. Hold down NUM SHIFT and press COPY (copies the remainder of the disk).
15. Press FUNCT SEL lower and RETURN TO INDEX.

Completion Of Verification For A Data Set

When you press REC ADV after verifying the last record in the data set, the 3741 automatically:

- Goes to the Index (X) mode and displays the data set label.
- Inserts the Verify mark, V, in the data set label.
- Selects program 0 (manual control).
- Displays E in the error code position of the status line.

  Note: This E simply indicates that you've completed verifying the data set. It is not an error.

Pressing REC ADV in the first manual position of a record does a record advance function but doesn't verify the data. If you are beyond the first manual position, the machine verifies manual fields as blanks and executes the remaining automatic fields. However, if the remaining automatic fields (other than DUP) aren't blank, or the DUP fields don't match the previous record, you'll get a Verify (V) error.

When advancing, deleted records are bypassed; when back-spacing, deleted records are displayed.

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Field Totals

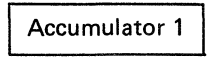
Online Field Totals

You can use this feature in Enter, Update, and Verify modes. The 3741 has three accumulators. Under program control, the 3741 sums data in these accumulators from a specified field or fields from any or all records. The program also specifies in which accumulator to put the total.

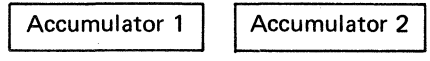
Once the program is made, operating the 3741 with the Field Totals feature is the same as normal operation. That is, you key data the same way as you ordinarily do in Enter, Update, or Verify mode.

How to Program:

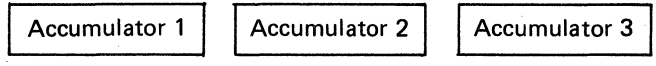
Use a Begin Field code (see *Program Code Chart),* and a number 1, 2, or 3, and Continue Field codes. 1 = Accumulator 1, 2 = Accumulator 2, 3 = Accumulator 3. For example R1----- accumulates data from this field and sums it in accumulator 1.



R12------ accumulates in accumulators 1 and 2.



R123------ accumulates in accumulators 1, 2, and 3.



For a Readout/Reset field (see the following illustrations) use the Begin Field code B and a 7, 8, or 9:

7 = accumulator 1
8 = accumulator 2
9 = accumulator 3

(continued on next page)

Online Field Totals (continued)

A Readout/Reset Field Where Totals Are Entered

In this example, the total price field is accumulated under program control into accumulator 1. Then under control of another program, the total from accumulator 1 is entered into a record.

Example 1 of a Readout/Reset Field

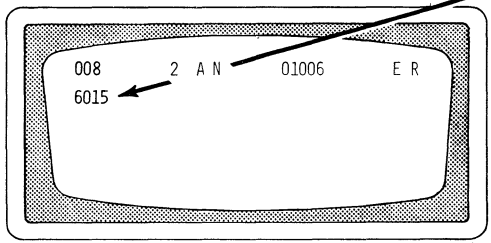
Stock No. 1-6	Description 7-30	Qty 31-34	Unit Price 35-40	Total Price 41-47
612481	Bananas Case	2	5 00	10 00
456269	Oranges Gross	3	9 85	29 55
307595	Grapefruit Gross	1	14 25	14 25
730747	Pineapples Dozen Return	1	6 35	6 35
237222	Display Rack	1	0	0

Program Field: R1-----

Accumulates totals from this field into accumulator 1.

1st record
2nd record
3rd record
4th record
5th record

Accumulator 1



Readout/Reset Program Field: B7-----

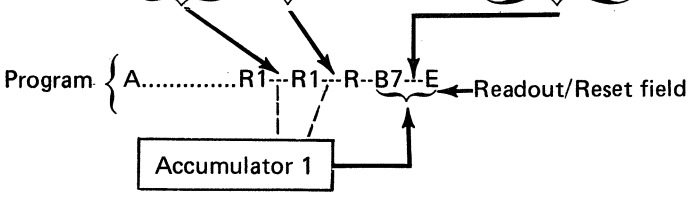
Tells machine to take total from accumulator 1 and enter this field into the record — then to reset the accumulator.

Online Field Totals (continued)

Example 2 of Readout/Reset Field

Business Repairs

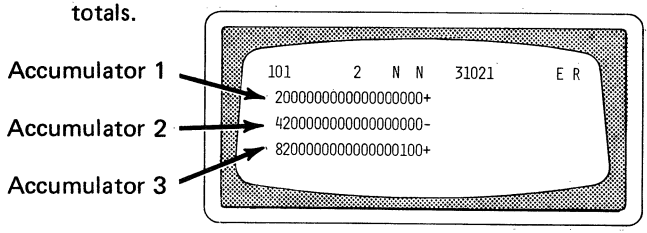
Type of Repair 1-15	Labor Cost 16-20	Part(s) Cost 21-25	Hours Delayed 26-28	Total Repair Cost 29-34
Furnace	150 23	149 49	15 0	
Lights	15 25	14 75	1 0	
Roof	575 64	589 10	0 0	



With the program above, the 3741 enters the labor cost and the part cost into accumulator 1, then enters this total into the Total Repair Cost field in the record. After doing this, the 3741 resets the accumulator.

How to Display Field Totals

1. Press FUNCT SEL upper and DISPLAY FIELD TOTALS.
   Result: Data currently displayed is replaced by field totals.



With the field totals displayed, you can use only the R and RESET keys.

After Displaying Field Totals

Press R to remove the field totals display, and display the data record. R also resets the accumulators to zero.

Press RESET to remove the field totals display, and display the data record. *But it doesn't reset the accumulators.*

About the Accumulators

In Enter mode, the accumulators carry true totals. If yo change data in an accumulate field, the accumulator reflects this change.

In Update and Verify modes, accumulators contain the differences between the original data and the changed data.

Deleting a record or backspacing to a previous record from a partially entered, updated, or verify-corrected record, subtracts all accumulate fields from accumulators. See the following field totals restrictions.

Field Total Restrictions

1. You can record backspace over a readout field in the current record and the previous record only.

2. When record backspacing from completed records, the accumulators reflect the most advanced record written on disk. No subtraction of accumulator fields occur as they are backspaced over.

3. Execute all succeeding readout/reset fields affected after updating, verify correcting, or deleting a record. To do this, you can record advance to the record with the readout/reset field, select the correct program, and field advance to and over the readout/reset field.

4. In Update mode or with the alternate Record Advance mode, a readout/reset field isn't executed if you press REC ADV with the cursor ahead of the readout/reset field. You can use FIELD ADV to advance the cursor to and over the readout/reset field to execute the field total operation.

5. If deleting a record or backspacing to a previous record from a partially entered, updated, or verify-corrected record, you must have the same program selected as when making that record.

6. Avoid selecting second disk functions, communications functions, and print functions (other than print record).

7. Load programs when the machine is at program level 0.

8. If you return the cursor to the first position of a record and then select a different program, this program must have identical field total fields.

Offline Field Totals

How to Start Processing the Field Totals

1. Load the field totals program and control statements. (Control statements are loaded in the same way as programs.) See the *IBM 3741 Data Station Reference Manual,* GA21-9183.

2. Position the disk to the data set label (for processing the entire data set) or to the first record to be processed.

3. Turn the AUTO REC ADV switch on.

4. Press FUNCT SEL upper and COMPUTE FIELD TOTALS.

Results:

- Mode indicator displays an F.
- The accumulators are reset to zero (before processing starts).
- The 3741 processes field totals to the end of the data.

When completed, the 3741 returns to the index track, displays the data set label, and changes to the Index (X) mode.

How to Stop Processing of Field Totals

You can stop field totals processing by turning the AUTO REC ADV switch OFF. When the 3741 stops, it displays the next record to be processed. However, the 3741 remains in the Field Totals mode (F). To process the record displayed, press REC ADV.

To continue processing, turn the AUTO REC ADV switch on and press REC ADV. To get the 3741 out of the F mode, press RESET. The 3741 then goes to the Update (U) mode.

How to Display the Field Totals

1. Press FUNCT SEL upper and DISPLAY FIELD TOTALS.

Pressing R clears the display, resets the accumulators, and displays the record previously displayed. Pressing RESET clears the display and displays the record previously displayed — but doesn't reset the accumulator.

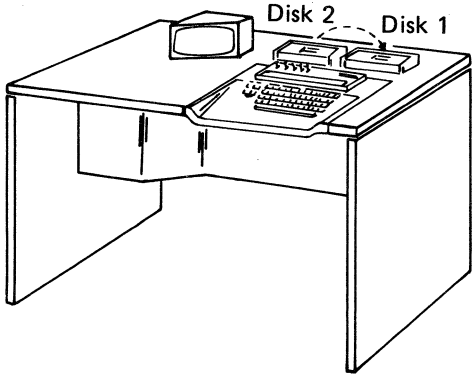
Disk Copy

DISK COPY OPERATIONS

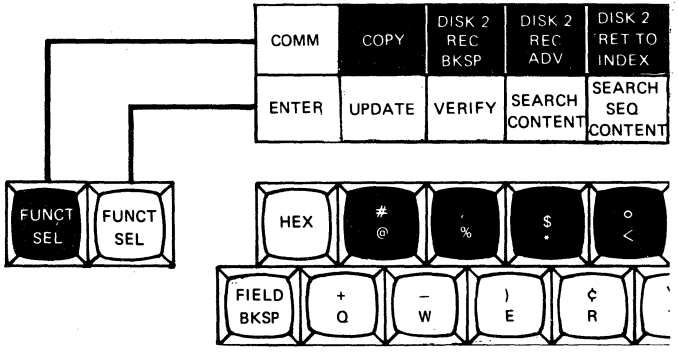
When doing disk copy operations, you copy data from disk 2 onto disk 1 (see illustration).

Four ways to use this feature:

- To copy all (image copy) or part of disk 2.
- To copy a data set.
- To copy up to a specified record on disk 2.
- To copy a single record.



Disk 2 Keys (Used with FUNCT SEL Upper)



DISK 2 REC BKSP:

- Displays the previous record from Disk 2.
- If this is the first Disk 2 operation since inserting the diskette, pressing this key displays sector 08 of the Index track.

DISK 2 REC ADV:

- Displays the next record from Disk 2.
- If this is the first Disk 2 operation since inserting the diskette, pressing this key displays sector 08 of the Index track.

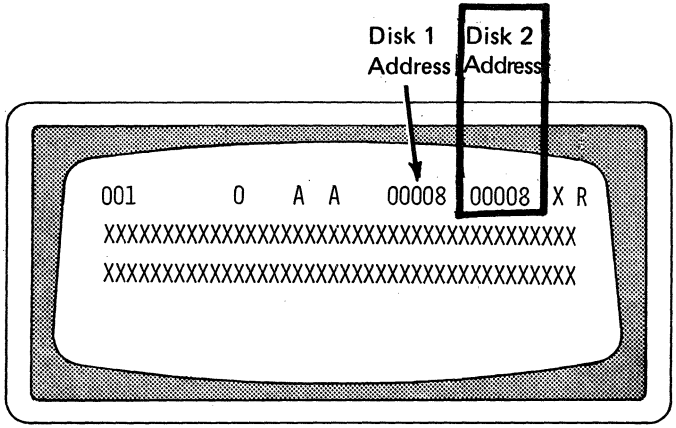
DISK 2 RET TO INDEX:

- Returns Disk 2 to the Index track and displays the current data set label.

COPY:

- Starts all copy functions.

The Disk 2 Address



The Disk 2 address appears in the status line in positions 31 through 35. The address is displayed, changed, or removed only when you do Disk 2 operations or remove Disk 1. A Disk 2 address isn't displayed when a diskette is inserted but is displayed after the first Disk 2 operation such as DISK 2 REC BKSP, DISK 2 REC ADV, or DISK 2 RET TO INDEX.

How to Find the First Data Record on Disk 2

1. Press FUNCT SEL upper and DISK 2 REC ADV. (Sector 8 of the disk 2 index track is displayed.)
2. Press FUNCT SEL lower and NUM SHIFT with SEARCH CONTENT.
3. Press FUNCT SEL upper and DISK 2 REC ADV. (The first data record is displayed.)

How to Search Disk 2

1. Press FUNCT SEL lower.
2. Hold down NUM SHIFT and press SEARCH CONTENT, SEARCH SEQ CONTENT, or SEARCH ADDRESS.
3. Press FUNCT SEL lower and DELETE REC (blanks the screen).
4. Key in the search data or address.
5. Press FUNCT SEL upper and DISK 2 REC ADV (starts the search).

To continue a search by content:

1. Press FUNCT SEL upper and DISK 2 REC ADV.

2. Press FUNCT SEL lower.

3. Hold down NUM SHIFT and press SEARCH CONTENT.

4. Press FUNCT SEL upper and DISK 2 REC ADV.

Note: If you are performing a Disk 2 Search Sequential Content operation, the search may stop with an S error. This may be because the record being searched for is not in the data set, one or more records do not meet the requirements of ascending order, or the record may occasionally be at a higher address then where the search is stopped. If you think the record is in the data set at a higher address, initiate a Search Content from the address where the search stopped.

Copying Disks

Copying is always done from Disk 2 to Disk 1.

How to Copy All (Image Copy) or Part of Disk 2

This copy operation takes the data from Disk 2 and enters it onto Disk 1. The 3741 starts entering this data in the sector of the Index track currently displayed for Disk 1. The last record entered onto Disk 1 is taken from the Disk 2 End of Extent address in the data set label (positions 35 through 39) where Disk 2 is positioned when copying started.

Each record is copied into the corresponding track and sector address. That is, the record from track 2, sector 14 of Disk 2 is copied into track 2, sector 14 of Disk 1. All records are copied regardless of content (for example, deleted records, records outside of the defined extents etc.).

Note: Normally you won't want to copy sectors 01 through 07 of the Index track. Therefore, the disk copy procedure should start with Disk 1 positioned at sector 08 of the Index track.

1. Insert the second disk (Disk 2).

2. Insert the diskette to be copied onto (Disk 1).

3. Position Disk 1 on the index track to the sector where copying should begin. If copying all of the disk, position the disk to sector 08.

4. Position Disk 2 to the data set label that contains the End of Extent (EOE) where copying is to stop. To do this, press FUNCT SEL upper and DISK 2 REC ADV. The first time you do this, you'll be at track 00, sector 08. If copying all of the disk, position the disk to the data set label with the highest EOE address.

5. Press FUNCT SEL upper.

6. Hold down NUM SHIFT and press COPY (starts the copying).

When copying is completed, the 3741 returns to the index track.

Note: During copy all or part of disk 2 operations, program buffers 1 through 8 are destroyed. If you are using key entry programs in these program buffers, the program buffers must be restored.

How to Recover from Disk Errors While Copying All or Part of Disk 2

For Disk Error Numbers 2, 4, or 5:

1. Write down the record address. (Disk 1 and Disk 2 have the same address in this copy mode.)

2. Hold down NUM SHIFT and press RESET.

3. When copying is finished, select the Update mode to correct the defective record located at the address recorded in step 1.

For Disk Error Number 3:

1. Write down the record address.

2. Hold down NUM SHIFT and press RESET.

3. After copying has finished, select the Update mode to correct all sectors of the track recorded in step 1.

This copy operation can be stopped by holding down ALPHA SHIFT and pressing RESET.

How to Copy a Data Set

The main reason for copying a data set is to combine data from two or more disks onto one disk. To do this, you add data from Disk 2 to the end of data already entered on Disk 1. This can require loading several diskettes into the second disk drive and, in turn, combining the work of several operators. Deleted records aren't copied when copying a data set.

1. Insert Disk 2 which you will copy data from.
2. Insert the diskette to be copied onto (Disk 1).
3. Position Disk 1 to the data set label of the data set to be copied onto. Set Disk 1 at the address where copying is to start. To do this, press FUNCT SEL lower and ENTER (for Enter mode). If copying on the end of an exisiting data set, press FUNCT SEL lower and SEARCH EOD (to find the end of data); then press REC ADV when the search is completed.
4. Position Disk 2 (use DISK 2 REC ADV) on the data set label where copying is to begin or on the first record to be copied.
5. Press FUNCT SEL upper.
6. Hold down NUM SHIFT and press COPY (starts the copying).
7. When copying is completed, press FUNCT SEL lower and RETURN TO INDEX. (If you are doing a field totals operation after a copy data set operation, press RESET. This prevents errors which occur if there are deleted records in the data set copied.)

How to Recover from Disk Errors While Copying a Data Set

For disk error numbers 2, 3, 4, or 5:

1. Write down the Disk 1 record address.
2. Hold down NUM SHIFT and press RESET.
3. Press FUNCT SEL upper and DISK 2 REC ADV.
4. Press REC ADV (to advance Disk 1).
5. Press FUNCT SEL upper.
6. Hold down NUM SHIFT and press COPY.
7. When copying is finished, select the Update mode to correct the defective record (on Disk 1) located at the address recorded in Step 1.

How to Copy Up to a Specified Record on Disk 2

This function can be used to merge records from Disk 2 with records being keyed on Disk 1. For example, you may want to use this procedure to enter missing records or to add records into a data set.

All records except deleted records are copied up to *but not including* the specified record. At the end of the copy, the specified record is displayed.

1. Insert Disk 2 which you will copy data from.

2. Insert the diskette to be copied onto (Disk 1).

3. Position Disk 1 at the data set label of the data set to be copied into. Then set Disk 1 at the address where copying is to start. To do this, either press FUNCT SEL lower and ENTER (for Enter mode) or press FUNCT SEL lower and SEARCH EOD (to find the end of data); then press REC ADV when the search is completed.

4. Position Disk 2 (use DISK 2 REC ADV) at the data set label where copying is to begin or on the first record to be copied.

5. Press FUNCT SEL lower.

6. Hold down NUM SHIFT and press SEARCH CONTENT or SEARCH ADDRESS.

7. Key in the search content data or the search address.

8. Press FUNCT SEL upper.

9. Hold down NUM SHIFT and press COPY (starts the copying).

10. When copying is completed, press FUNCT SEL lower and RETURN TO INDEX.

How to Recover from Disk Errors While Copying to A Specified Record

For disk error numbers 2, 3, 4, or 5:

1. Write down the Disk 1 record address.
2. Hold down NUM SHIFT and press RESET.
3. Press FUNCT SEL upper and DISK 2 REC ADV.
4. Press REC ADV (to advance Disk 1).
5. Press FUNCT SEL lower.
6. Hold down NUM SHIFT and press SEARCH CONTENT or SEARCH ADDRESS.
7. Key in the Search Content or the Search Address.
8. Press FUNCT SEL upper.
9. Hold down NUM SHIFT and press COPY.
10. When copying is finished, select the Update mode to correct the defective record (on Disk 1) located at the address recorded in Step 1.

How to Copy a Single Record

Find the record to be copied. To do this, either do a search operation (see *How to Search Disk 2*) or press DISK 2 REC BKSP or DISK 2 REC ADV whichever is necessary to find the record you want to copy.

If you are in Enter (E) mode after a record has been displayed from Disk 2, you can enter the record on Disk 1 by pressing REC ADV.

If you are in the Update (U) mode, first rekey the first character (if the first character in the record is a B, press B etc.), then press REC ADV.

If you are in the Index (X) mode, press FUNCT SEL lower, M, and REC ADV.

How to Stop Copying

1. Press RESET.

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Production Statistics

What Production Statistics Are

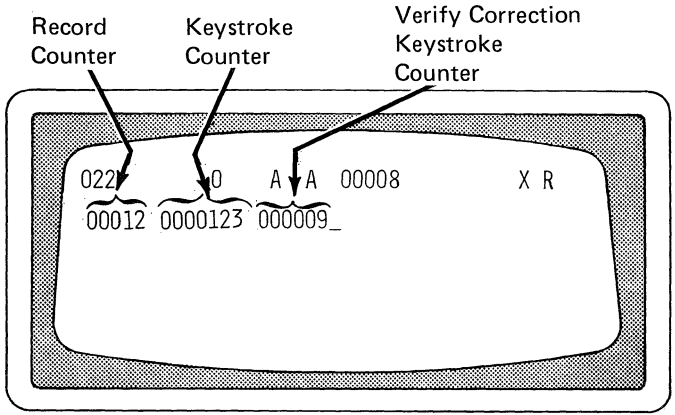
The Production Statistics feature has three counters:

- One counts keystrokes.
- One counts records processed.
- One counts characters corrected during Verify (V) mode.

The counters can be displayed only during Index (X) or Enter (E) mode.

How to Display the Production Statistics

Before production statistics can be displayed you must be in X R mode. (Press FUNCT SEL lower and RETURN TO INDEX if not in X R mode.) To display production statistics press FUNCT SEL lower and DISPLAY PROD STAT.



After Displaying the Statistics

– Press RESET to display the data set label again.

OR

– Press R to display the data set label and reset the counters to zero.

How to Record the Production Statistics on a Disk

Normally production statistics are recorded onto a separate disk.

1. Insert the diskette for production statistics.
2. Select the Enter mode by either:

   a. pressing FUNCT SEL lower and ENTER (for a new data set)

   OR

   b. press FUNCT SEL lower, SEARCH EOD; then press REC ADV after the search stops (to add to a data set).

3. Press FUNCT SEL lower and DISPLAY PROD STAT. (The cursor is at position 22; you can add data from here to the end of the record.)
4. Press REC ADV (records the statistics onto the disk).
5. Press FUNCT SEL lower and RETURN TO INDEX.

Note: In Enter mode, you can't reset the counters. To reset them, return to the index track, display the production statistics, and press R.

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Printer

Loading Programs for the Printer

Printer programs are loaded the same way key entry programs are loaded (see *How to Load a Program*).

Note: Program storage area A is reserved for vertical forms control, horizontal tab stops, and program selection control.

Because printer program selection can be automatic, you'll seldom have to select a program. But if you do, simply press SEL PROG and key in the appropriate storage area number (1 through 9).

For formatting instructions, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.

Print Procedures

The following procedures apply to printing records with or without format control.

How to Print a Single Record

When printing a single record, the 3741 prints the record currently displayed. Once you have it displayed, simply:

1. Press FUNCT SEL upper and PRINT REC (starts the printer).

After printing the record, the 3741 returns to the mode it was in before printing the record.

How to Get an Unformatted Data Set Printout

1. Insert the diskette.
2. Advance (if necessary) to the data set label for the data set to be printed.
3. Turn the AUTO REC ADV switch on (for continuous printing).

4. Select single or double spacing:

   For the 3713 printer, set the 3713 line-feed lever to single or double spacing (see *3713 Printer, How to Insert Forms,* step 10).

   For the 3715 and 3717 printers, set the 3741 AUTO DUP/SKIP to OFF for single spacing or to ON for double spacing.

5. Press FUNCT SEL upper and PRINT TO EOD (starts printer).

The entire data set is listed, one record per line.

Note: When printing an unformatted listing, you can't have a printer program in program level A.

To Stop Printing

Turn the AUTO REC ADV switch off. The printing stops at the end of the print line.

To Resume Printing

Turn the AUTO REC ADV switch on and press REC ADV.

Note: After stopping the printer, you can press RESET to exit the Printer (P) mode. In this case, the 3741 goes to the Update mode.

How to Print a Data Set

From the Index (X) mode:

1. Load the printer programs.

2. Advance (if necessary) to the data set label for the data set you want printed.

3. Turn the AUTO REC ADV switch on (for continuous printing).

4. Press FUNCT SEL upper and PRINT TO EOD (starts printer).

After printing the last record of the data set, the 3741 returns to the Index mode, and displays the data set label of the data set just printed.

You can't print a data set from the Enter or Verify mode.

How to Print Part of a Data Set

From the Update (U) Mode:

1. Load the printer programs.
2. Advance (if necessary) to the data set label for the data set you want printed.
3. Press FUNCT SEL lower and UPDATE.
4. Press REC ADV until the first record to be printed appears on the display screen (or you could do a search operation for this record, see *Search.)*
5. Turn the AUTO REC ADV switch on (for continuous printing).
6. Press FUNCT SEL upper and PRINT TO EOD (starts printer).

After printing the last record of the data set, the machine returns to the Index mode and displays the data set label of the data set just printed.

You can't print part of a data set from Enter or Verify modes.

How to Print Records by Using SEARCH CONTENT

Use this procedure to get a printout of records containing the same data in the same field. For example, if your program has a month field in position 20 through 22 and you'd like a printout of all records containing JAN in this field, you'd use this procedure.

From the Index (X) Mode:

1. Turn the AUTO REC ADV switch off.
2. Load the printer programs.
3. Advance (if necessary) to the data set label for the data set you want.
4. Press FUNCT SEL lower and SEARCH CONTENT.
5. Advance to the position the data is entered on the record (as in example above, position 20); then key in the search criteria in the same positions as it is on the records.

ARE YOU MANUALLY SELECTING A PRINTER PROGRAM?

6. *Yes* *No*

   a. Press REC BKSP. Proceed to step 7.

   b. Press SEL PROG and key in the storage area number (1 through 9).

7. Turn the AUTO REC ADV switch on (for continuous printing).

8. Press FUNCT SEL upper and PRINT TO EOD (starts printer).

When completed, the 3741 returns to the Index (X) mode and displays the data set label.

How to Print Jobs Requiring More Than One Disk per Data Set

If the 3741 has a single disk drive:

After the last record of a continued data set is printed, the 3741 displays the last record and you get a J displayed in the error indicator position of the status line. Then:

1. Press RESET (J disappears from the status line and the 3741 automatically returns to the index track).

2. Remove the diskette.

3. Insert the diskette containing the continued data.

4. Advance (if necessary) to the data set label for the data set to be printed.

5. Press FUNCT SEL upper.

6. Hold down NUM SHIFT and press PRINT TO EOD (starts printer).

Note: If printing using SEARCH CONTENT, the search criteria must be keyed for each new disk.

If the 3741 has a second disk drive (with a 3715 or 3717 Printer attached):

Printing can automatically continue from disk 1 to disk 2. See the *IBM 3741 Data Station Reference Manual,* GA21-9183, for information on the data set label requirements.

How to Print a Single Record from Disk 2

1. Load the printer programs if necessary.

2. Display the record on the second disk that you want to print.

   Note: If you aren't currently doing Disk 2 operations, you'll have to do a Disk 2 search to display the record. In this case, see *Searching Disk 2.*

3. Press FUNCT SEL upper and PRINT RECORD (starts the printer).

After printing the record, the 3741 returns to the mode it was in before printing the record.

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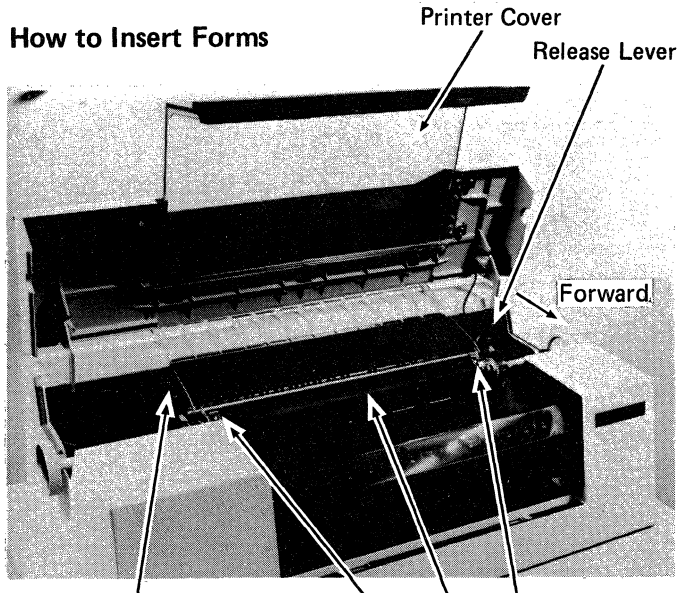
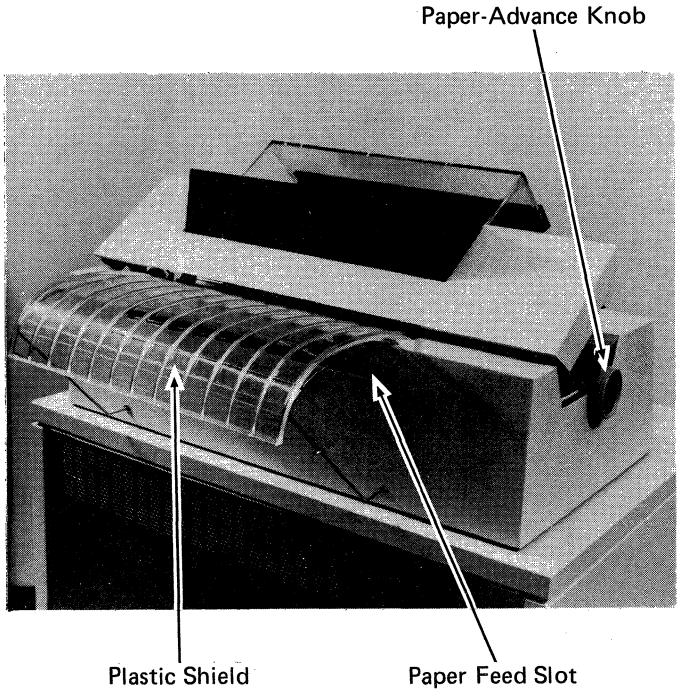
3713 PRINTER

How to Insert Forms



1. Raise the printer cover.
2. Set the impression-control lever for forms insertion.
3. Be sure the release lever is forward.
4. Raise both pin-feed levers.

How to Insert Forms (continued)

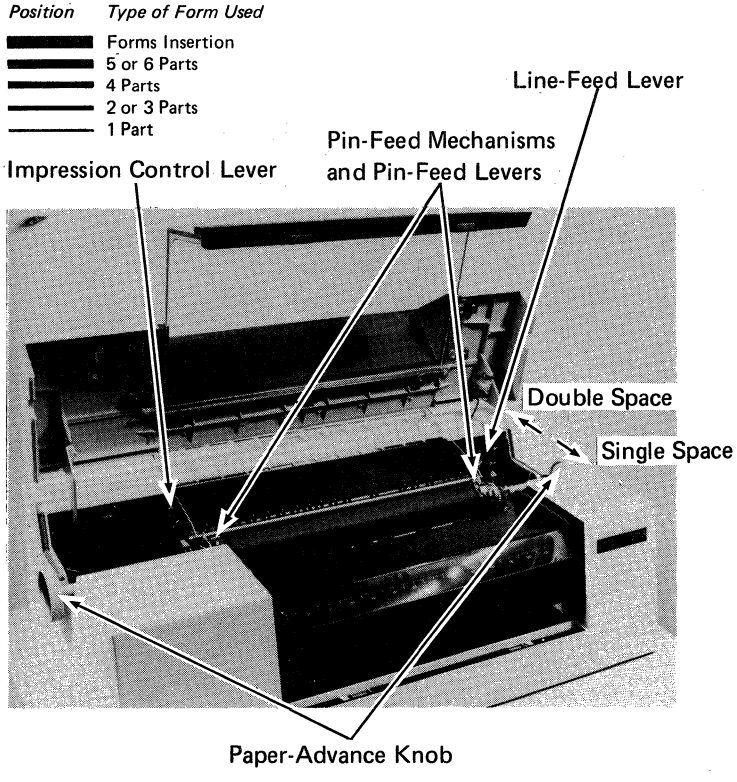


5. Insert the forms in the paper feed slot under the plastic shield with the side to be printed down.

6. Push the release lever back and turn the paper-advance knob to feed the form to the front of the platen.

7. When the edge of the form reaches the front of the platen, pull the release lever forward.

How to Insert Forms (continued)



8. Position the form on both platen pin-feed mechanisms; then close the pin-feed levers.

9. Set the impression-control lever to one of the form positions that matches the number of parts in the form being used.

10. Set the line-feed lever for single or double spacing.

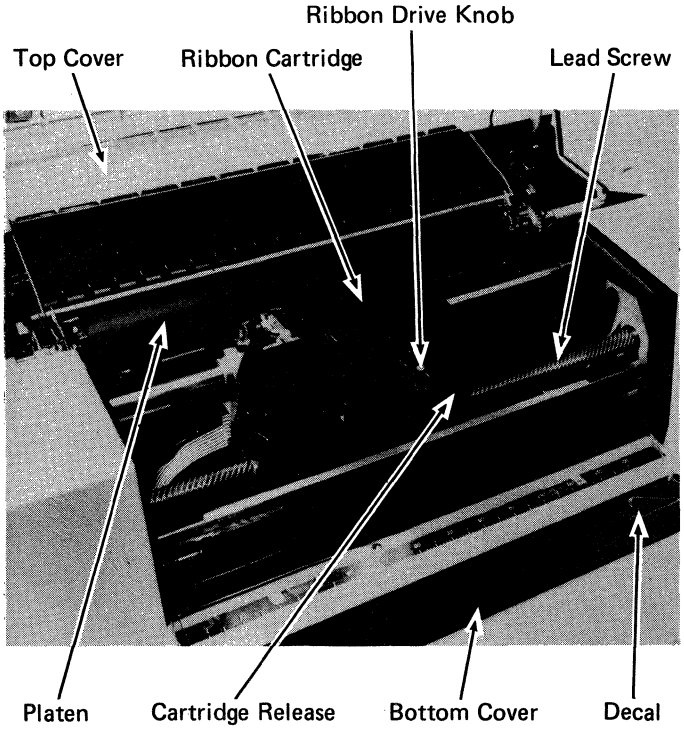
11. Advance the paper beyond the first sheet by turning the paper-advance knob.

12. Press in and turn the right paper-advance knob for final vertical alignment.

Note: After inserting forms, be sure the release lever is forward; otherwise the forms may buckle while printing.

13. Close the printer cover.

How to Replace a Ribbon Cartridge



1. Turn the 3741 power off, open the top and bottom covers, and move the ribbon cartridge to about the middle of the platen by turning the lead screw manually.

2. Pull the cartridge release forward and lift the cartridge, rotating the cartridge counterclockwise as you lift it.

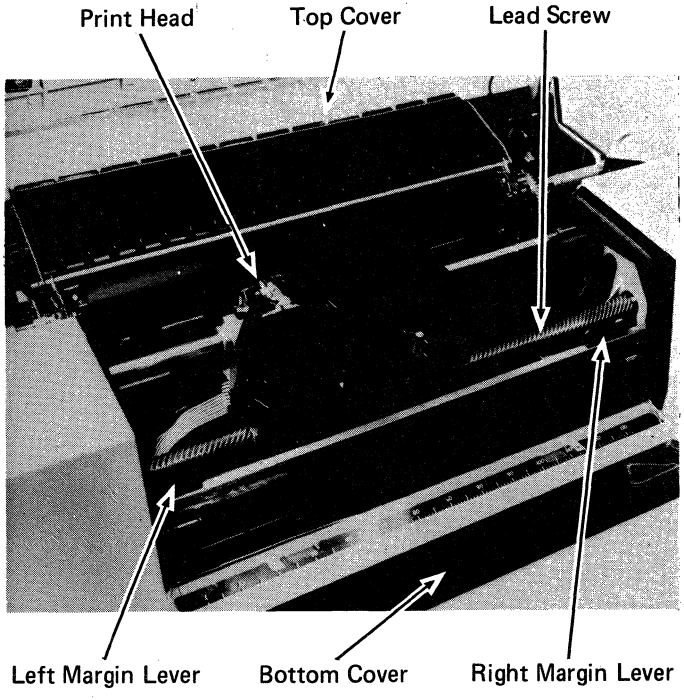
3. Remove the ribbon from the guides.

4. Hold the cartridge release lever toward you and rotate the new cartridge clockwise as you insert it.

5. Thread the ribbon through the ribbon guides as shown on the bottom cover decal. (Notice the ribbon twist on the decal.)

6. Remove the slack in the ribbon by turning the ribbon drive knob counterclockwise.

How to Use the Adjustable Margins Feature



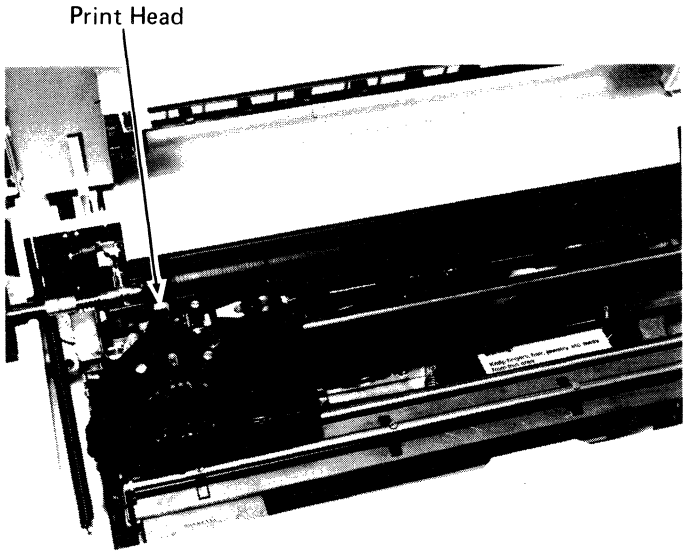
1. Turn power off and open top and bottom covers.

2. To set right margin, press down and position the right margin lever.

3. To set left margin, move the print head (by turning the lead screw) to the right far enough to allow positioning of the left margin lever; then press down and position the left margin lever. (The print head must always remain to the right of the left margin.)

4. Close the covers and turn power on.

3715 PRINTER



Notes About the Print Head

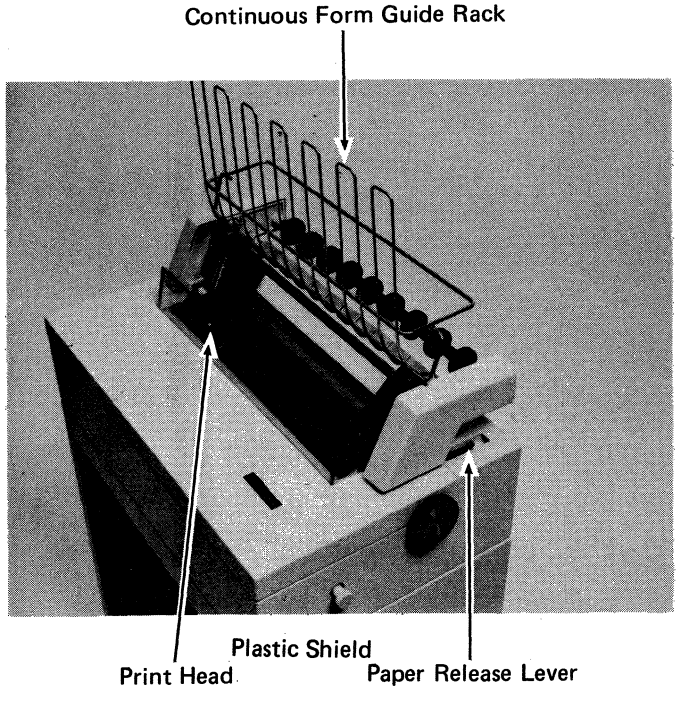
Observe the following pointers in using the 3715 printer:

CAUTIONS

1. When the machine is not in use, ensure that the print head is set at the extreme left position where it is retracted and the ribbon lifter holds the ribbon away from the print wires. If the print head is left anywhere except at the extreme left position, oil will bleed from the print wires onto the ribbon and cause poor quality printing.
2. Ensure that the print head does not print off the edge of the paper form. Damage may occur to the print wires if they catch on the right edge of the paper, when the print head returns.

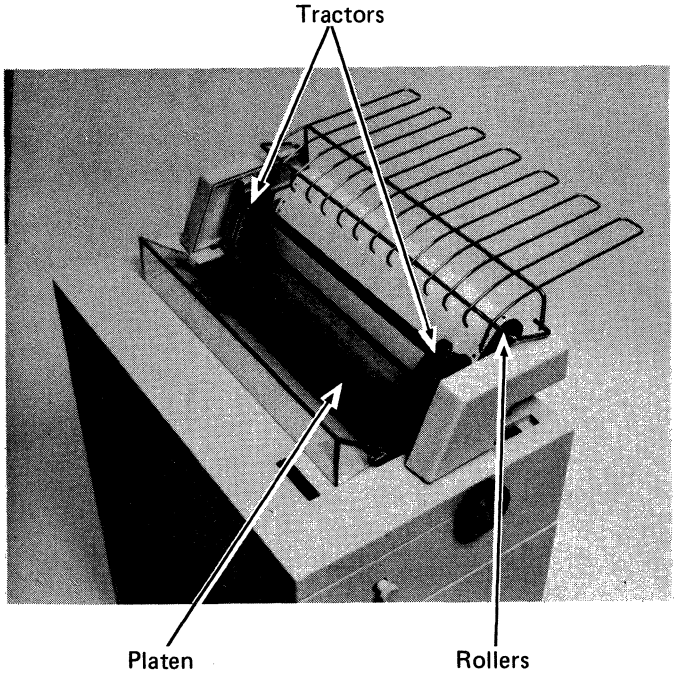
Note: If necessary to move the print head, apply light finger pressure to either the right or left side of the print mechanism.

How to Insert Continuous Forms



1. Raise the plastic shield.
2. Be sure the print head is in the extreme left position.
3. Be sure that the cut forms guide (shown under *How to Insert Cut Forms),* is flipped back.
4. Push the paper release lever to the rear.

How to Insert Continuous Forms (continued)



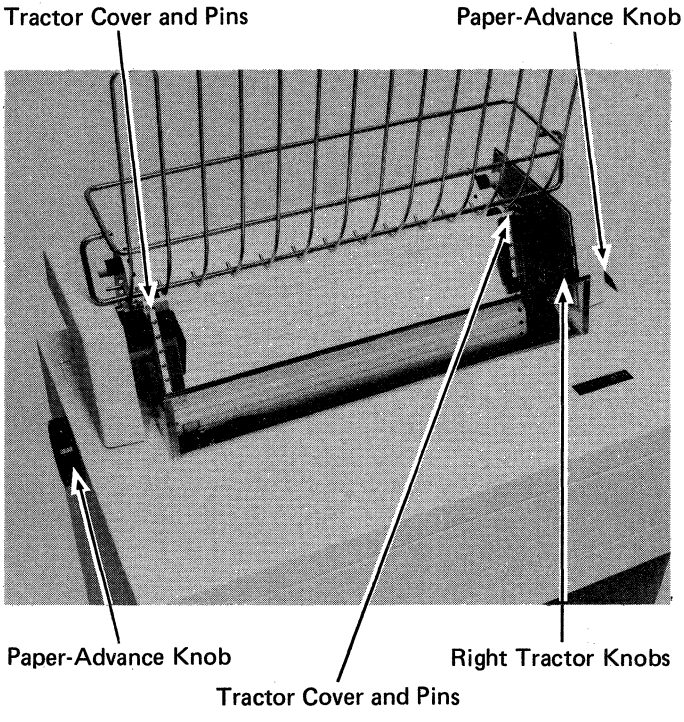
5. Place the forms in position behind the printer, next to the paper box guide on the left side of the base. The side to be printed must be down.

6. For single-part continuous forms, pivot the form guide rack up and forward to a vertical position. For multiple-part continuous forms, leave the form guide rack in the horizontal position.

7. Thread the paper over the rollers, behind the tractors (keeping the left margin of the paper behind the left tractor), and behind the platen. Refer to the illustration showing the different paths for single-part continuous forms and multiple-part continuous forms. If the plastic guides on the rear of the wire rack are in the way, slide them to the sides, out of the way.

   When wide forms are being used, it may be necessary to remove the plastic guides. If they are removed, they should be snapped in place elsewhere on the wire rack so they will not get lost and will be available for later use.

How to Insert Continuous Forms (continued)



8. Turn the paper-advance knob to move the paper around the platen until you can grasp it with your fingers.

9. If the form guide rack is in a vertical position, replace it in the horizontal position.

10. Open both tractor covers.

11. Pull the paper release lever forward.

12. Pull the paper up and place the left margin holes over the tractor pins.

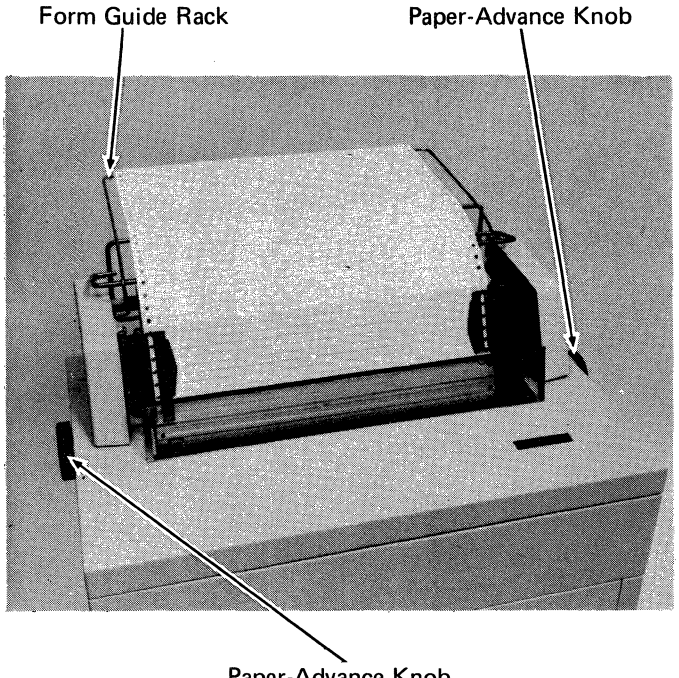
13. Close the left tractor cover.

14. Squeeze the two knobs on the right tractor and slide the tractor to align the pins with the right margin holes.

15. Place the right margin holes over the tractor pins.

16. Close the right tractor cover.

How to Insert Continuous Forms (continued)



17. Turn either paper-advance knob to position the form for the first line to be printed. The paper should exit over the form guide rack.

    Note: To move the form backward, turn either paper-advance knob backward and pull the form from behind the printer to keep the form from buckling at the print head.

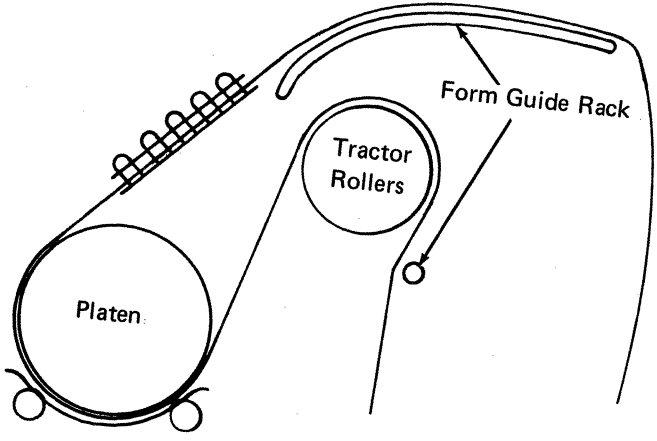
18. Close the plastic shield.

19. The plastic guides on the rear of the wire rack should be positioned (one on each side of the forms) so as to aid in guiding the forms for proper feeding. These guides are positioned by sliding them back and forth.

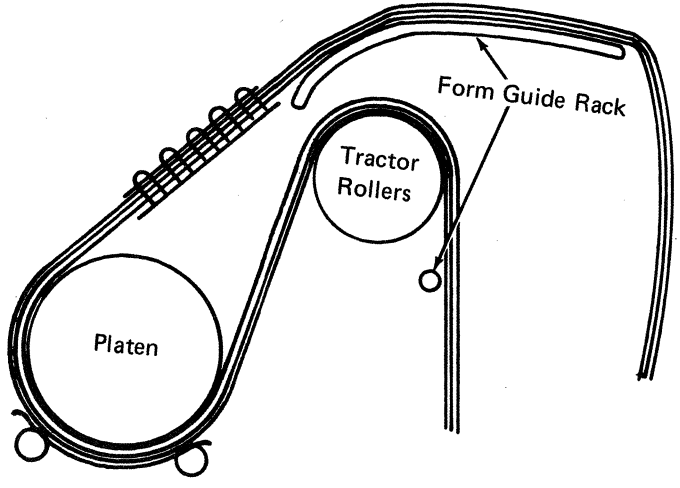
    When wide forms are being used, it may be necessary to remove the plastic guides. If they are removed, they should be snapped in place elsewhere on the wire rack so they will not get lost and will be available for later use.

    Note: Refer to the illustration showing the different paths for single-part continuous forms and multiple-part continuous forms.

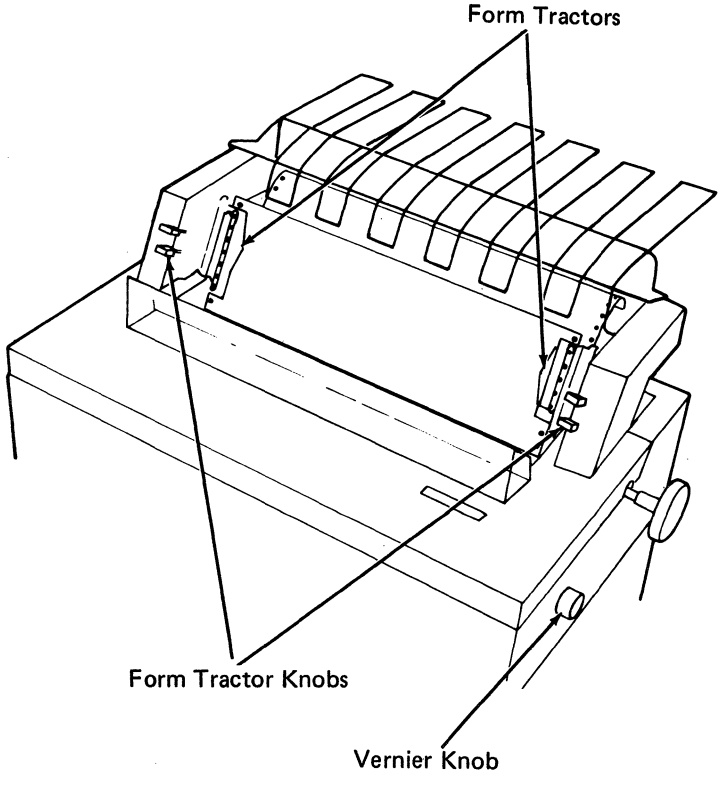
Single-Part Continuous Forms



Multiple-Part Continuous Forms



How To Horizontally Adjust Continuous Forms



1. Set the approximate left/right print position of the form by adjusting the form tractors using the form tractor knobs.[1] The plastic guides on the rear of the wire rack may have to be repositioned.

2. Turn the vernier knob for fine adjustment.

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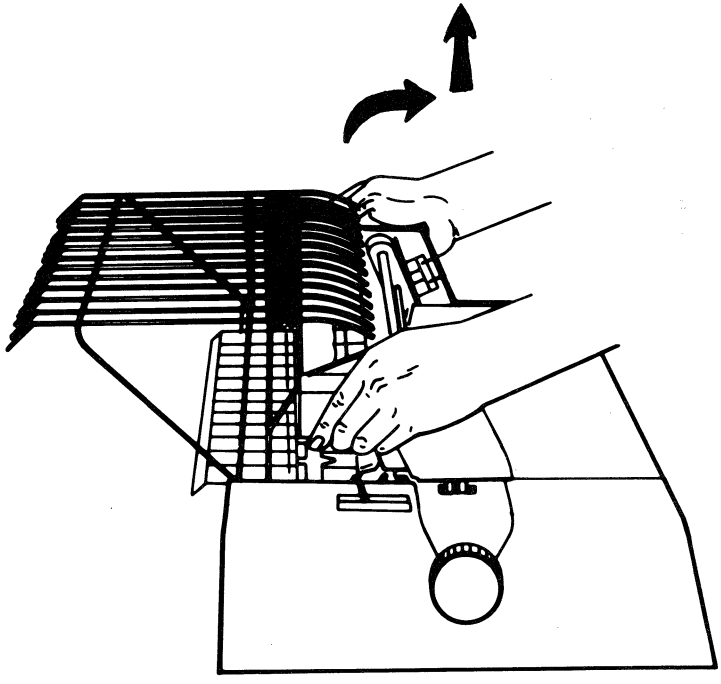
[1] Early models have a fixed left form tractor.

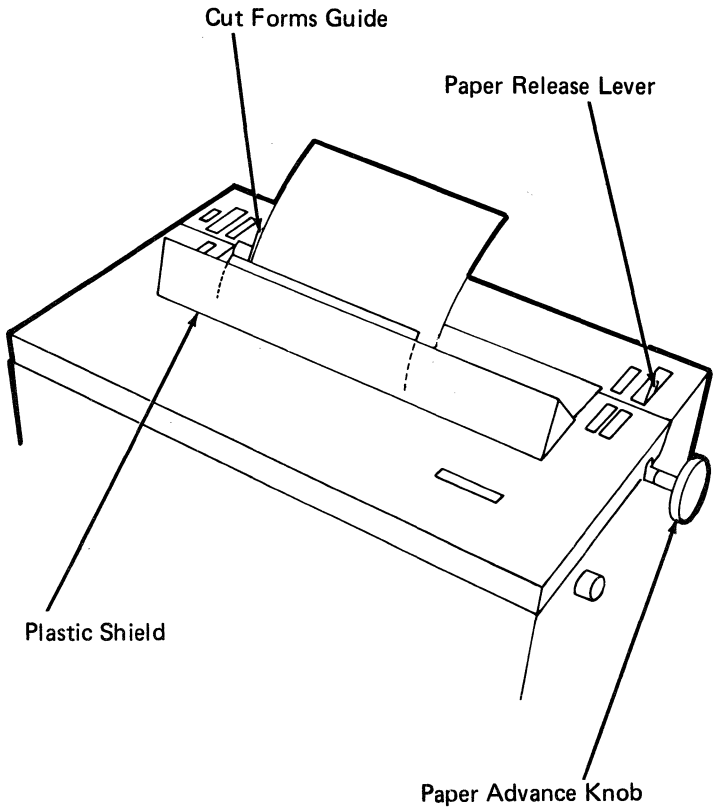
How To Remove and Replace The Continuous Forms Tractor Unit



1. Grasp both ends of tractor unit as shown. Before lifting, pull the unit toward the front of the machine until the rear legs snap free. Then lift straight up.

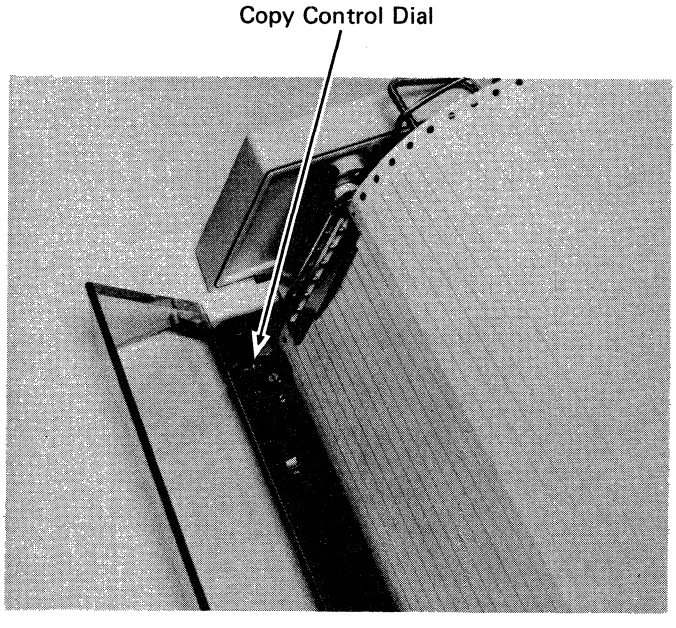
2. Replace the unit by inserting the rear legs in the back slots and pressing down on the tractor unit until the back legs snap into place. Then pull the unit toward the front of the machine until the front legs engage.

How To Insert Cut Forms



1. Remove the continuous forms tractor unit. See *How to Remove and Replace the Continuous Forms Tractor Unit,* preceding this subject.
2. Flip the cut forms guide forward.
3. Raise the plastic shield.
4. Be sure the print head is in the extreme left position.
5. Push the paper release lever to the rear.
6. Place the form in position behind the platen and against the cut forms guide.
7. Turn the paper advance knob to move the paper around the platen until it is in the position for printing. Improve the paper alignment if necessary by using the paper release lever.
8. Return the plastic shield.

How to Adjust the Copy Control Dial for Forms Thickness

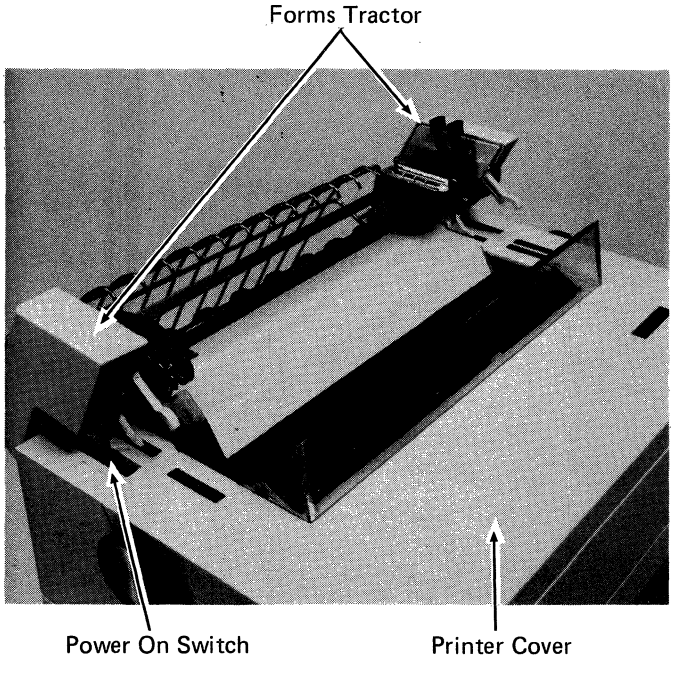


1. If you are using single-part forms, set the copy control dial on 0. If the ribbon is smudging, rotate the copy control dial toward 8 one click at a time, until the smudging stops.

2. If you are using multiple-part forms and the ribbon is smudging the first sheet, rotate the copy control dial toward 8 one click at a time, until the smudging stops.

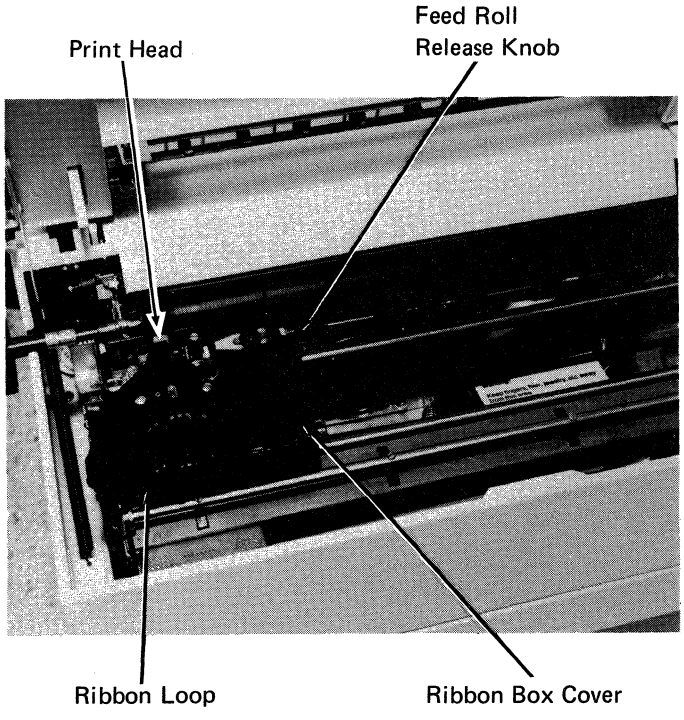
3. If you are using multiple-part forms and the last sheet is not legible, rotate the copy control dial toward 0 one click at a time to obtain the legibility you desire.

How to Replace a Ribbon



1. Turn off power to the printer.
2. Tilt the forms tractor back by lifting both sides at the front.
3. Raise the printer cover.

How to Replace a Ribbon (continued)



4. Be sure that the print head is to the extreme left.

5. Turn the feed roll release knob counterclockwise until it points to the right.

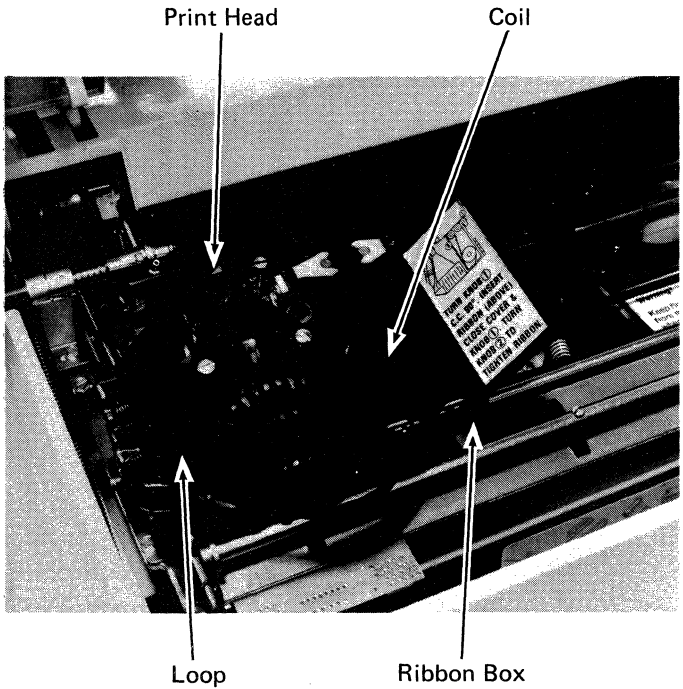
6. Open the ribbon box cover.

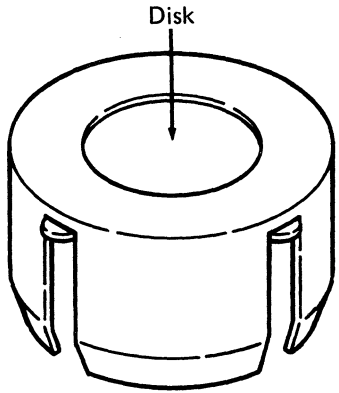
7. Put on the gloves supplied with the new ribbon.

8. Remove the old ribbon from the guides being careful to disengage it from the ribbon shield on the print head.

9. Lay the ribbon loop on the top of the ribbon in the ribbon box. Pick up the entire ribbon and discard it.

How to Replace a Ribbon (continued)





Ribbon Holder

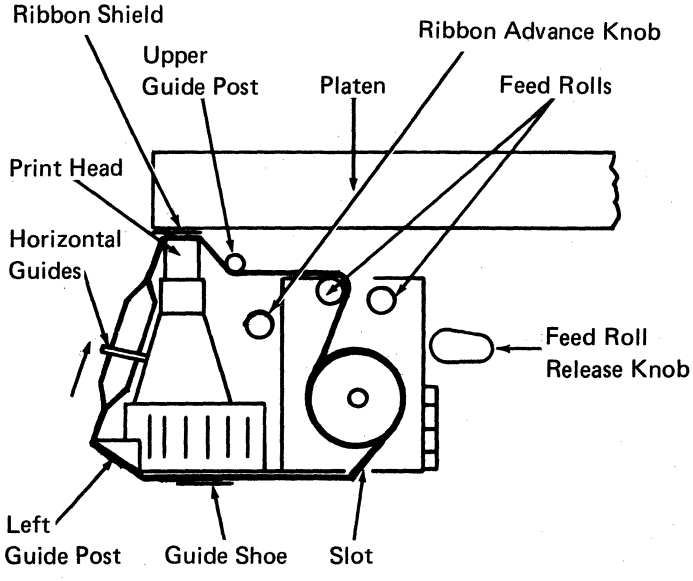
10. Eject the new ribbon from its holder into the ribbon box by pressing on the disk.

11. Remove the disk from the ribbon and discard the disk and the holder.

12. Hold the coil lightly with one hand and pull about 10 inches (254 mm) of ribbon from the coil.

13. Form a loop from the ribbon across the print head.

How to Replace a Ribbon (continued)



14. Thread the part of the loop nearest the platen between the feed rolls and on the inside of the upper guide post.

15. Turn the feed roll release knob clockwise to close the feed rolls.

16. Thread the ribbon between the print head and the platen. Be sure the ribbon is behind the ribbon shield on the print head.

17. Thread the other part of the loop through the slot in the bottom of the ribbon box.

18. Thread the ribbon through the guide shoe and around the left guide post.

19. Insert the horizontal part of the ribbon twist (bottom edge first) between the two horizontal guides.

How to Replace a Ribbon (continued)

20. Move the print head slowly back and forth across the platen or turn the ribbon advance knob clockwise to remove the slack from the ribbon. Continue moving the print head slowly or turning the ribbon advance knob clockwise until you are sure that the ribbon feeds properly.

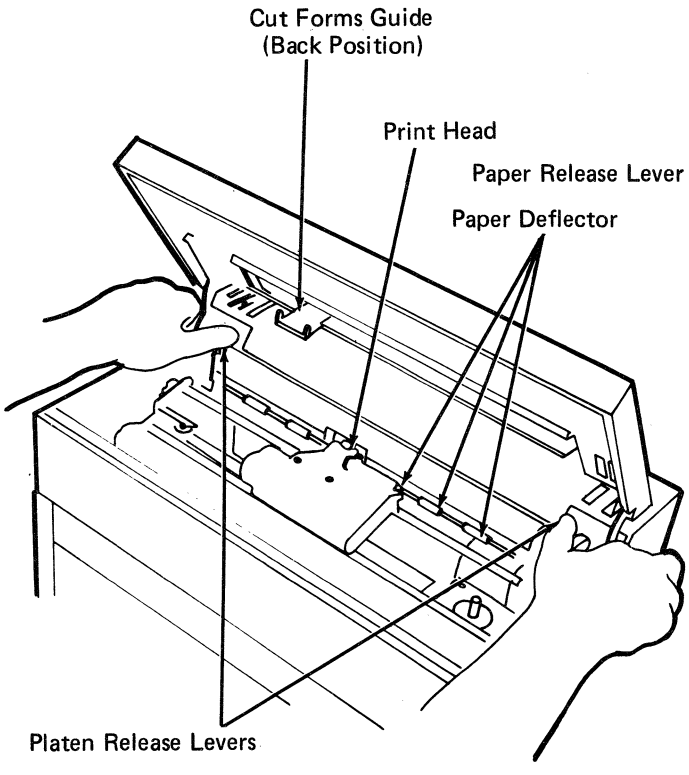
21. Return the print head to the extreme left position.

22. Close the ribbon box cover.

23. Close the printer cover and turn the power on.

24. Reposition the form tractor.

How To Remove and Reinstall The Platen



Removing:

1. Before removing the platen, be sure that the power is off and the print head is in the center of the platen.

2. Remove the continuous forms tractor unit, if installed. See *How to Remove and Replace the Continuous Forms Tractor Unit* in this chapter.

3. Raise the top cover.

4. Lift on the paper advance knobs (see photograph under *How to Insert Cut Forms*), while pressing down on the platen release levers.

Reinstalling:

1. Ensure that the print head is in the center of the platen.

2. Be sure the paper release lever is pointing to the front of the machine.

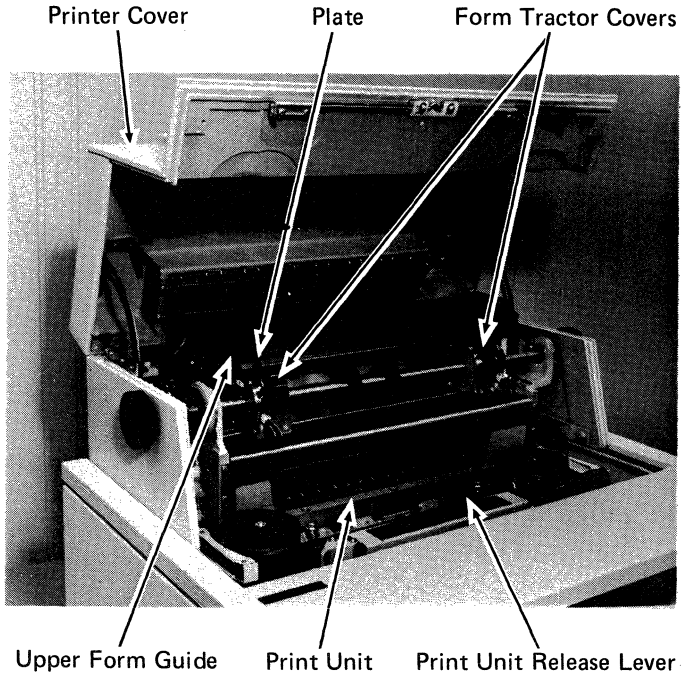
3. Make sure that the paper deflector tray which fits under the platen is properly seated with the rubber rollers extending up through the holes provided.

4. Holding the platen by the paper advance knobs, align it and press down gently until it snaps into place.

5. Return the print head to the extreme left position.

3717 PRINTER

How to Insert Forms



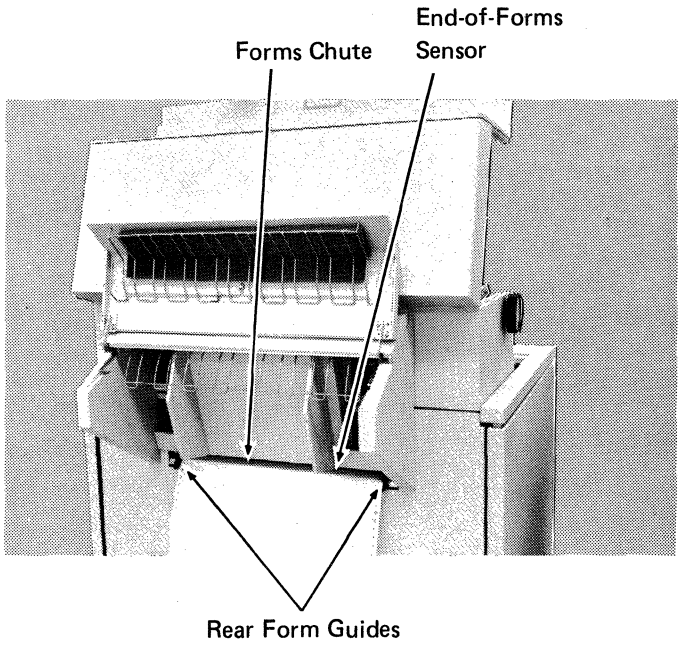
1. Raise the printer cover by pressing down on the cover latch, then pulling the latch up.

2. Pull the print unit release lever forward to open the print unit.

3. Open both form tractor covers.

4. Press the plate to open the upper form guide.

How to Insert Forms (continued)

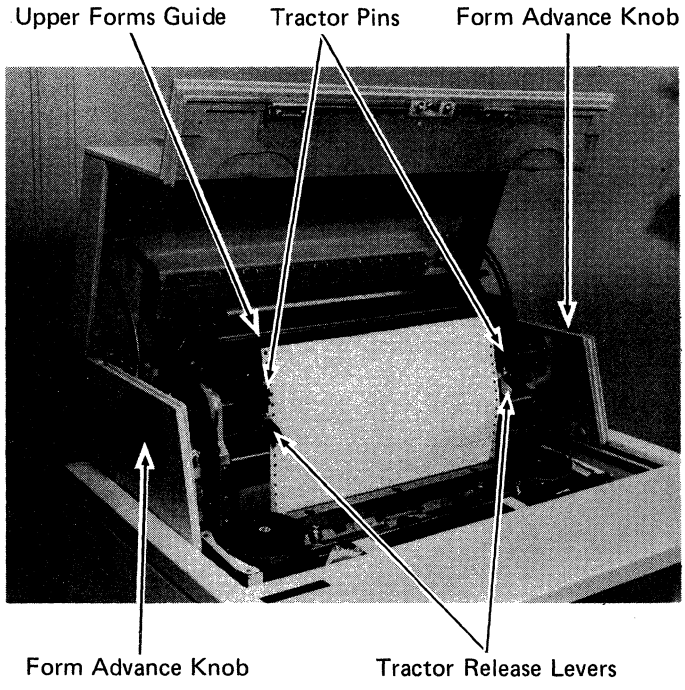


5. Slide the rear form guides apart and feed the forms squarely into the form chute. Be sure the forms pass under the EOF (end-of-forms) sensor.

6. Continue feeding the forms until you can grasp it over the print unit.

7. Pull the form out approximately nine inches (229 mm) and lay it over the print unit.

How to Insert Forms (continued)



8. Squeeze the tractor release levers and align each tractor with the form pinfeed holes.

9. Start the forms into the upper form guide.

10. Place the pinfeed holes on the tractor pins. (Be sure the forms are squarely on the tractors.)

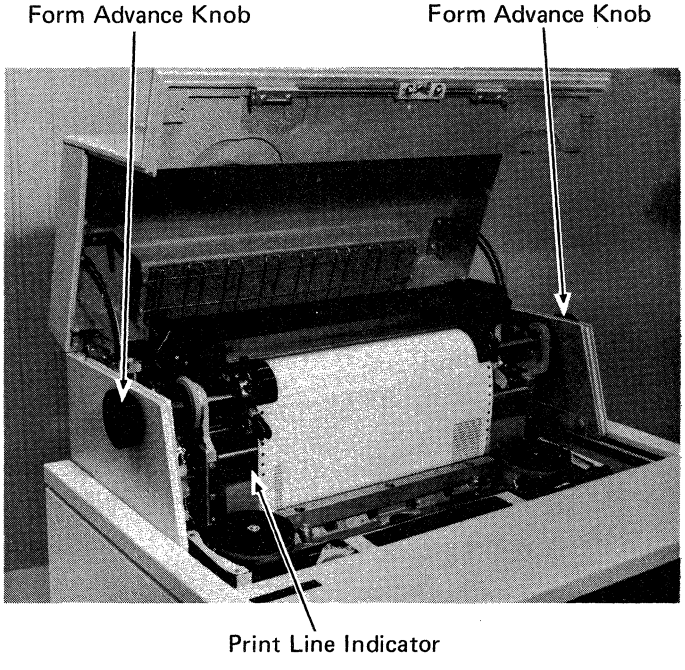
11. Close the form tractor covers, the upper form guide, and the print unit.

12. Turn the form advance knob to ensure the forms feed correctly. The tractor pins should keep the forms tight, but should not tear the pinfeed holes.

13. Position the form in the form chute so that the form is aligned with the same position on both the front and rear form alignment scales. Be sure the form is under the EOF (end-of-forms) sensor.

14. Place the rear form guides so they just touch the edge of the forms.

How to Insert Forms (continued)



15. Position the forms stack so that the forms feed squarely into the printer.

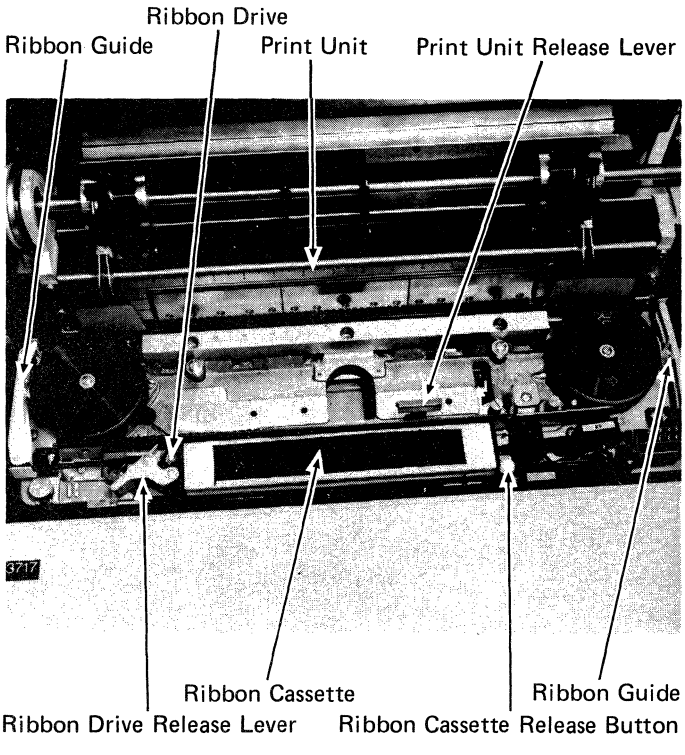
    Note: For proper operation, the 3717 forms stand (PN 4450) or its equivalent must be used and grounded through the grounding clips on the 3717 rear cover.

16. Rotate the form advance knob to align the horizontal perforations with the number on the print line indicator that corresponds to the first print line on the form. Push in on the left form advance knob for fine adjustment.

    Note: If you advance the paper too far, turn the form advance knob backwards and pull excess paper out the form chute. The paper must be tight against the print line and the print unit.

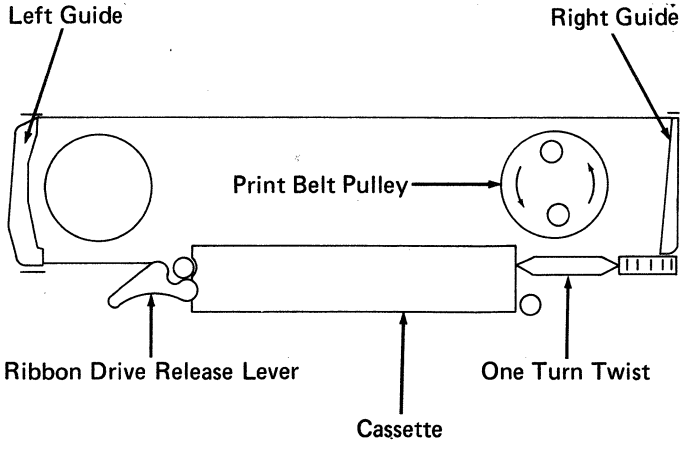
17. Close the cover.

How to Replace a Ribbon Cassette



1. Raise the printer cover.
2. Pull the print unit release lever forward to open the print unit.
3. Raise both ribbon guides.
4. Press the ribbon drive release lever to open the ribbon drive.
5. Press the ribbon cassette release button and slide the ribbon cassette to the right.
6. Lift out the ribbon cassette and remove ribbon from guides.
7. Lay the new cassette on the printer so the left end (the end with the curved surface) is approximately one inch (25 mm) from the ribbon drive rolls. The right end of the cassette covers the release button.
8. Pull approximately six inches (152 mm) of ribbon out of the left end and place it between the ribbon drive rollers.
9. Press down on the cassette and slide it to the left until it latches.

How to Replace a Ribbon Cassette (continued)



10. Using the ribbon feed diagram as a guide, start from the left end of the cassette and thread the ribbon through the ribbon drive release lever and around the left guide.

11. Close the ribbon drive release lever.

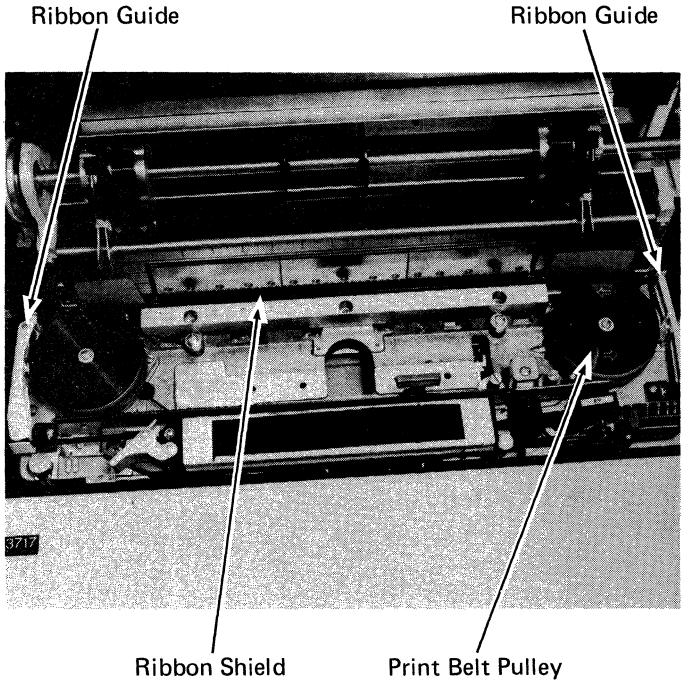
12. Pull approximately 12 inches (305 mm) of ribbon out the right end of the cassette.

13. Thread the ribbon from the left guide, around the right guide.

14. Turn the print belt pulley counterclockwise to take up any extra ribbon slack.

    Note: When the ribbon is tight, there should be a one-turn twist between the cassette and the right guide.

How to Replace a Ribbon Cassette (continued)



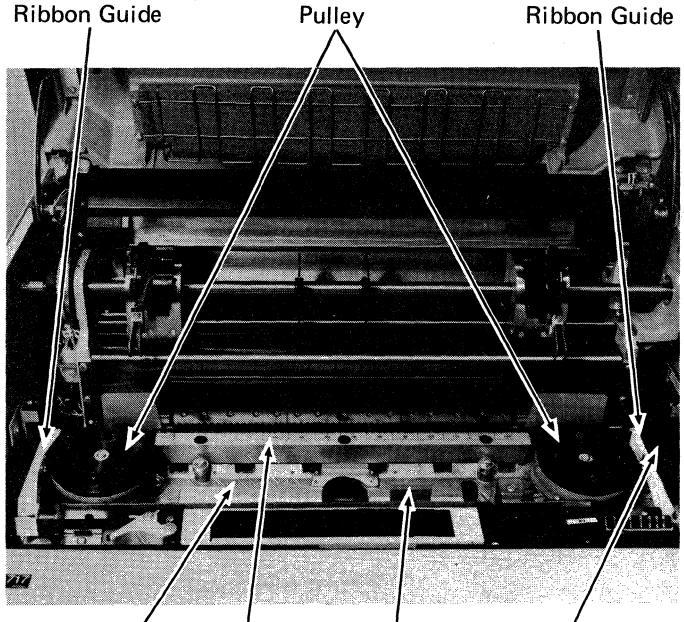
15. Lower the ribbon guides.

16. Turn the print belt pulley counterclockwise to feed ribbon down between the print belt and ribbon shield.

17. Verify that the ribbon feeds correctly by turning the print belt pulley counterclockwise.

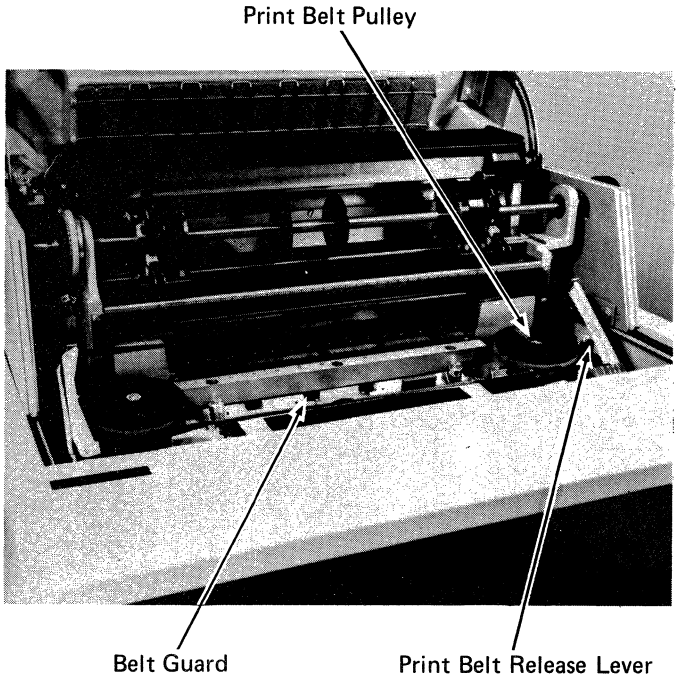
18. Close the print unit and the printer cover.

How to Change the Print Belt



1. Raise the printer cover.
2. Pull the print unit release lever forward to open the print unit.
3. Pull the print belt release lever forward.
4. Raise the ribbon guides.
5. Lift the print belt off the pulleys.
6. Clean any dirt from the emitter block area.

How to Change the Print Belt (continued)



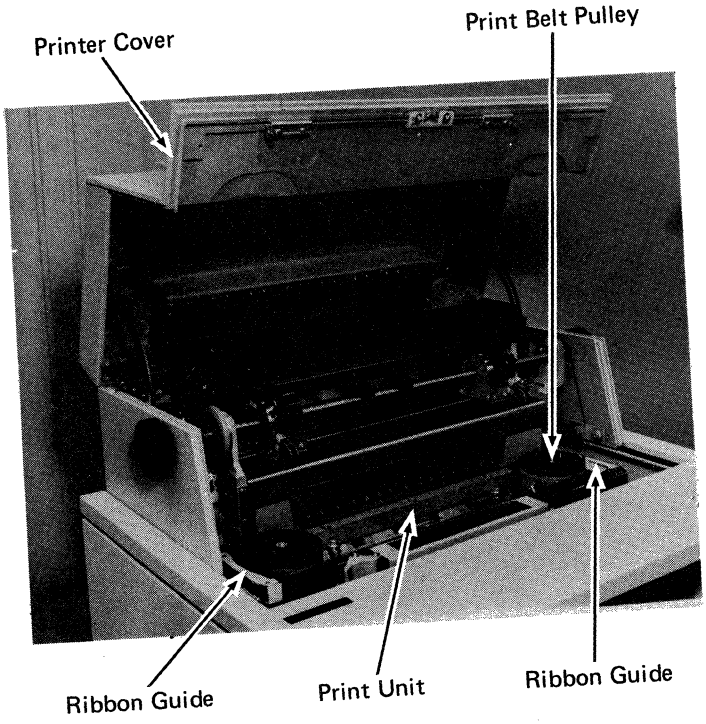
7. Place the new belt (with the type up) around the pulleys and in back of the belt guard. (The belt does not have to be all the way to the bottom of the pulleys.)

8. Push the print belt release lever to the rear to tighten the print belt on the pulleys.

9. Turn the print belt pulley counterclockwise, observing the belt as it moves down on the pulleys.

10. If the belt does not position itself at the bottom of the pulleys, remove the print belt, check the belt path for obstructions and repeat steps 6 through 9.

How to Change the Print Belt (continued)



11. Lower both ribbon guides.

12. Turn the print belt pulley manually and verify the print belt and ribbon feeds correctly.

13. Close the print unit and printer cover.

How to Select a Card Read/Punch Program

Card read/punch programs are loaded the same way key entry programs are loaded (see *How to Load a Program*).

Note: Program storage area A is used for program selection control, and program storage area 9 is used as an input/output buffer.

For formatting instructions, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.

If the card read/punch program selection is automatic, you are not required to select the program. If the card read/punch program is manually selected, you must select the program prior to initiating the card read or punch operation. To do this:

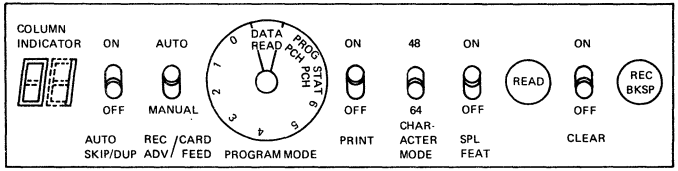
1. Press SEL PROG.

2. Key in the program storage area number (1 through 8) you want to use for keying. The program you selected is now active.

Notes:

1. Program storage area A specifies which program storage (format control) area is used for card read or punch operations when a keying program storage area is selected.
2. If the 3741 is programmed so that it is waiting for the operator to key and yet is still under format control of a card read or punch program, the operator must select a key entry program before keying data. Failure to do this could result in loss of data.

How to Prepare the 129 for Card Reading and Punching

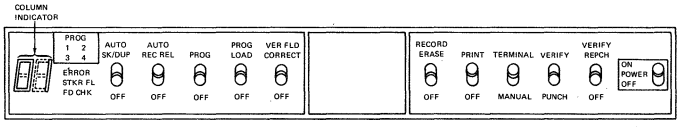


1. Switch AUTO SKIP/DUP to OFF.
2. Switch REC ADV/CARD FEED to AUTO.
3. Turn the PROGRAM MODE dial to DATA READ.
4. If the cards are to be punched and printed, switch PRINT to ON. Otherwise, switch PRINT to OFF.
5. Switch CHARACTER MODE to 64.
6. Switch CLEAR on and off to set the column indicator to 01.
7. Switch SPL FEAT to ON. (SPL FEAT must be switched to OFF before turning the 3741 power switch off.)

Note: Do not press READ, REC BKSP, CHAR BKSP, or FIELD/WORD BKSP, or an error condition can occur.

8. Place cards in the hopper.
9. *Press FEED until two cards are fed into the read/punch station.*

How to Prepare the 5496 for Card Reading and Punching



1. Switch AUTO SKIP/DUP to OFF.
2. Switch AUTO REC REL to AUTO.
3. Switch PROG to OFF.
4. Ensure that PROG LOAD, VER FLD CORRECT, RECORD ERASE and VERIFY REPCH are OFF.
5. If the cards are to be punched and printed, switch print switch to PRINT. Otherwise, switch PRINT to OFF.
6. Switch TERMINAL to TERMINAL.

   Note: Switch to MANUAL before powering down the 3741.
7. Switch VERIFY/PUNCH to PUNCH.
8. Place the cards in the hopper.

Punch Procedures

Use the following procedures when punching records with or without format control. When punching a data set, punching part of a data set, punching records under search address, or punching records under search content, the AUTO REC ADV switch has these characteristics:

- Switched to ON, the 3741 punches cards continuously.
- Switched to OFF, the 3741 punches the number of cards specified by the card read/punch program each time you press REC ADV.

Notes:

1. When sensitive data is being processed, proceed as follows to assure the last card of a punch operation cannot be duplicated:

   A. Place the data recorder off line.

   B. Feed a blank card by pressing REL on the data recorder.

2. To be sure that the last card is punched during punch operations, you must check for an error condition on the data recorder.

   - If using a 129 Data Recorder and an 88 appears in the column indicator:

     A. Register a blank card at the punch/read station.

     B. Turn off SPL FEAT and the last card sent is punched automatically.

   - If using a 129 Data Recorder and an 8A appears in the column indicator:

     A. Remove the jammed cards manually. (Do not use the CLEAR switch.)

     B. Switch SPL FEAT to OFF.

     C. Press DUP until a card feeds.

     D. Check the card for registration. If the registration is off, press DUP again until another card is punched.

   - If using a 5496 Data Recorder and the feed check light indicates a hopper misfeed:

     A. Place some good cards in the hopper.

     B. Switch TERMINAL to MANUAL.

     C. Press REL and a card is punched.

- If using a 5496 Data Recorder and the feed check light indicates a transport jam:

  A. Switch TERMINAL to MANUAL.

  B. Press REL.

  C. Remove jammed cards from the transport manually.

  D. Press DUP until a card is punched.

How to Get an Unformatted Data Set Punchout

1. Insert the diskette in disk drive 1.

2. Press REC ADV (if necessary) to advance to the data set label for the data set to be punched.

3. Switch AUTO REC ADV to ON (for continuous punching).

4. Press FUNCT SEL upper and PUNCH TO EOD. The entire data set is punched, one record per card.

Note: When punching an unformatted card record, you cannot have a card read/punch program in program level A. Also, program level 9 is used as an input/output buffer and cannot be used for card read/punch programs.

To Stop Punching

Turn AUTO REC ADV to OFF. The punching stops at the end of the punch cycle.

To Resume Punching

Turn AUTO REC ADV to ON and press REC ADV.

Note: You can press ALPHA SHIFT and NUM SHIFT with RESET to exit the punch mode at any time. In this case, the 3741 returns to the Index (X) mode.

How to Punch a Single Record

When punching a single record, the 3741 punches the record currently displayed. To enable the punch a single record mode:

1. Press FUNCT SEL lower and N.

2. Once the punch a single record mode is enabled:
   a. Press FIELD COR for each record that is to be punched.
   b. Press REC ADV to write the record to disk.

   Note: If you want to change the data content before punching, do so after pressing FUNCT SEL lower and N (or S); then the diskette and the card will both reflect the updated changes. If the changes are made previous to pressing FUNCT SEL lower and N (or S), the card will reflect the changes but the diskette will remain unchanged.

How to Cancel Punch a Single Record Mode

To cancel punch a single record mode, press FUNCT SEL lower and S. See the note under *How to Punch a Single Record.*

How to Punch a Data Set

When punching a data set, the 3741 punches the record at the current disk address.

1. Load the card read/punch programs.

2. Press REC ADV (if necessary) to advance to the data set label for the data set you want punched.

3. Press FUNCT SEL upper and PUNCH TO EOD.

After punching the last record of the data set, the 3741 returns to the Index mode, and displays the data set label of the data set just punched. You cannot punch a data set from Enter or Verify modes. This function is valid on disk drive 1 only. Attempts to initiate the punch a data set mode on disk drive 2 will result in the equivalent operation on disk drive 1.

How to Punch Part of a Data Set

When punching part of a data set, the 3741 punches the record at the current disk address. This function is valid on disk drive 1 only. Attempts to initiate the punch part of a data set mode on disk drive 2 will result in the equivalent operation on disk drive 1.

From the Index (X) Mode

1. Load the card read/punch programs.
2. Press REC ADV (if necessary) to advance to the data set label for the data set you want punched.
3. Press FUNCT SEL lower and SEARCH ADDRESS.
4. Key in the record address of the last record you want punched.
5. Press FUNCT SEL upper and PUNCH TO EOD.

After punching to the record address you specified, the 3741 returns to the Index (X) mode and displays the data set label of the data set just punched.

You cannot punch part of a data set from enter of verify modes.

From the Update (U) Mode

1. Load the card read/punch programs.
2. Press REC ADV (if necessary) to advance to the data set label for the data set you want punched.
3. Press FUNCT SEL lower and UPDATE.
4. Press FUNCT SEL lower and SEARCH ADDRESS.
5. Key in the record address of the first record you want punched.
6. Press REC ADV.

Note: Steps 4, 5, and 6 are not required if you press REC ADV until the first record you want punched appears on the display screen.

7. Press FUNCT SEL lower and SEARCH ADDRESS.

8. Key in the record address of the last record you want punched.

9. Press FUNCT SEL upper and PUNCH TO EOD.

After punching to the record address you specified, the 3741 returns to the Index (X) mode and displays the data set label of the data set just punched.

How to Punch Records by Using SEARCH CONTENT

Use this procedure to punch records containing the same data in the same field. For example, if your program has a month field in position 20 through 22 and you would like to punch all the records containing JAN in this field, you would use this procedure.

From the Index (X) Mode

1. Switch AUTO REC ADV to OFF.

2. Load the card read/punch programs.

3. Press REC ADV (if necessary) to advance to the data set label for the data set you want.

4. Key search criteria or read the search criteria from a card.

   If search criteria is to be keyed, do the following:

   A. Press FUNCT SEL lower and SEARCH CONTENT.

   B. Advance to the position where the data is entered on the record (position 20 in this example); then key in the search criteria in the same positions as it appears in the records.

   If search criteria is to be read from a card, do the following:

   A. Place the card containing the search criteria so that it is the first card in the hopper.

   B. Press FUNCT SEL lower and V. (This places the 3741 in read a card mode.)

C. Press FUNCT SEL lower and SEARCH CONTENT.

D. Press FIELD COR. (This causes the card containing the search criteria to be read.)

5. Switch AUTO REC ADV to ON (for continuous punching).

6. Press FUNCT SEL upper and PUNCH TO EOD (this starts punching operation).

When completed, the 3741 returns to the Index (X) mode and displays the data set label.

From the Update (U) Mode

1. Switch AUTO REC ADV to OFF.

2. Load the card read/punch programs.

3. Press REC ADV until the record where *punching records under search content* is to start appears on the display screen or do a search operation (see *Search*). Then press REC BKSP.

4. Key search criteria or read the search criteria from a card.

If search criteria is to be keyed, do the following:

A. Press FUNCT SEL lower and SEARCH CONTENT.

B. Advance to the position the data is entered on the record (position 20 in this example); then key in the search criteria in the same position it appears in the records.

If search criteria is to be read from a card, do the following:

A. Place the card containing the search criteria so that it is the first card in the hopper.

B. Press FUNCT SEL lower and V. (This places the 3741 in read a card mode.)

C. Press FUNCT SEL lower and SEARCH CONTENT.

D. Press FIELD COR. (This causes the card containing the search criteria to be read.)

5. Switch AUTO REC ADV to ON (for continuous punching).

6. Press FUNCT SEL upper and PUNCH TO EOD (this starts punching operation).

When completed, the 3741 returns to the Index (X) mode and displays the data set label.

How to Punch a Record from Disk 2

1. Load the card read/punch programs if necessary.

2. Display the record on the second disk that you want to punch.

   Note: If you are not currently doing disk 2 operations, you will have to do a disk 2 search to display the record. In this case, see *Searching Disk 2.*

3. Press FUNCT SEL lower and N.

4. Press FIELD COR to punch that record.

How to Punch a Program That is in a Storage Area

1. Press FUNCT SEL lower and N.

2. Press SEL PROG and key in the program number (1 through 8).

3. Press FUNCT SEL lower, hold down NUM SHIFT and press DISPLAY PROG.

4. Press SEL PROG and key in the program number of the program level to be used for punching.

5. Press FIELD COR. (This punches the program being displayed.)

After the 3741 punches the program, press REC ADV and REC BKSP to restore the data display.

How to Cancel a Punch Operation

To cancel a punch operation, press ALPHA SHIFT and NUM SHIFT with RESET.

Read Procedures

The following procedures apply to reading records with or without format control.

How to Read a Single Record (Card)

When reading a single record (card), the 3741 reads a card and displays it on the display screen. To enable the read a single record mode, press FUNCT SEL lower and V.

Once the read a single record mode is enabled:

1. Press FIELD COR each time a card is to be read.
2. Press REC ADV to write the record to disk.

How to Cancel a Read a Single Record Mode

To cancel a read a single record mode, press FUNCT SEL lower and S.

How to Read a Card File

The primary purpose of the read a card file operation is to do a card-to-disk operation in a batch environment. Single or multiple data sets can be created during the read a card file operation. See the *IBM 3741 Data Station Reference Manual,* GA21-9183, for information on creating multiple data sets.

From the Index (X) Mode

1. Load the card read/punch programs.
2. Press REC ADV (if necessary) to advance to the data set label of the data set where the records are to be written.
3. Press FUNCT SEL upper and READ TO EOF (starts read a card file operation).

Notes:

1. If AUTO REC ADV (on the 3741) is OFF, the number of cards specified by the card read/punch program are read each time REC ADV is pressed. If AUTO REC ADV is ON, the read a card file operation is continuous.
2. This function is valid on disk drive 1 only. Attempts to initiate the read a card file on disk drive 2 will result in the equivalent operation on disk drive 1.

From the Enter or Update Mode

1. Load the card read/punch programs.

2. Press REC ADV (if necessary) to advance to the data set label of the data set where the records are to be written.

3. If reading from ENTER mode, press FUNCT SEL lower and ENTER. If reading from UPDATE mode, press FUNCT SEL lower and UPDATE.

4. Press REC ADV until you reach the record address where the first record is to be written. Or do a search operation for this record; see *Search.*

5. Press FUNCT SEL upper and READ TO EOF (this starts read a card file operation).

Notes:

1. If AUTO REC ADV (on the 3741) is OFF, the number of cards specified by the card read/punch program are read each time REC ADV is pressed. If AUTO REC ADV is ON, the read a card file operation is continuous.
2. When the continuous card read function is started while residing in the middle of a data set the validity of the data set label is checked after the continuous card read function is completed, and the 3741 returns to the index.

How to Cancel a Read Operation

To cancel a read operation, press ALPHA SHIFT and NUM SHIFT with RESET.

How to Format the Record Being Displayed

The record currently being displayed can be formatted and written on the disk. To do this:

1. Load the card read/punch programs.

2. Press FUNCT SEL lower and X.

3. Press REC ADV.

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I/O ADAPTER

For information on how to operate the I/O adapter, refer to the manual associated with the system to which the 3741 is attached. It may be a general purpose manual or a reference manual.

Status Information

The following chart provides information on the I/O adapter status:

Position	Character	Meaning
5	0	System is offline
5	1	System is online
5	2	System is online and busy
37	I	3741 is reading
37	O	3741 is writing
38	1,2,3, 4,5	Mode of operation

Error Recovery Procedure

Positions 7 through 10 of the status line on the display are used for error indications. Errors in positions 7 and 8 are 3741 errors for which there are error recovery procedures included in this chapter. Errors in position 9 and 10 are system errors which are not recoverable, except for error code 86. When a system error occurs, any data file that is open will be left open and the operation will have to be aborted by holding both the ALPHA SHIFT and NUM SHIFT keys while pressing RESET.

Error codes for the I/O adapter can be different from the basic machine error codes. When doing an I/O adapter function, use only the error descriptions found in this chapter. Any error codes other than those listed are a result of selecting the wrong function or a keying error; the operation should be terminated and restarted after verifying the initialization procedure for the transfer mode you want.

Note: Error recovery procedures that allow continuing the operation can only be done if the status line of the display, positions 5 and 6, contain a '10'.

Error Recovery Procedures (continued)

Code	Type	Cause	What You Do
00	Early disk removal	Removed the diskette while a seek to or from the index track was in process.	Insert another disk and hold NUM SHIFT while pressing RESET. The 3741 will remain online.
01[1] 02	Early disk removal	The diskette was removed while processing a file, scanning for overlapped extents, or updating a data set label.	Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to take the 3741 offline.
11 12	Length	The actual record was not the same as was specified in the data set label.	Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to take the 3741 offline.
21 22	No record found	No record corresponding to the current disk address could be found.	Same procedure as 11.
31 32	Seek error	An error occurred while a seek to or from a data set was in process.	Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to take the 3741 offline.

[1] When column 8 contains a 1 or a 2, it refers to the drive number.

Error Recovery Procedures (continued)

Code	Type	Cause	What You Do
41 **42**	Read error	A read operation could not be accomplished.	Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to take the 3741 offline. or Hold NUM SHIFT while pressing RESET to continue the operation with the next valid label (except for modes 1 and 2).
51 **52**	Write error	A bad spot could not be written, or an error occurred after receiving the data set while updating the label.	Same procedure as 11.
86[1]	Attachment	This error occurs when the 3741 and the system are both initialized to the same mode, reading or writing, or A system drive problem occurred such as a card jam on the system reader/punch.	Press RESET and continue processing, or Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to terminate the operation, return to the index track, and take the 3741 offline.

[1] Positions 9 and 10 of the status line.

Error Recovery Procedures (continued)

Code	Type	Cause	What You Do
A1 **A2**	Security	Any data set on the diskette to be processed is marked secure.	For modes 1 and 2, hold both ALPHA SHIFT and NUM SHIFT while pressing RESET, and terminate the operation. The 3741 will be taken offline and will restore all format buffers to Ns.
B1	HDR1 or bypass	The data set label does not contain a valid HDR1, or the data set was defined as bypass.	For modes 1 and 2, do one of the following: • Press RESET, which will return the diskette to the label in error. The 3741 will remain online, correct the error in the label, and continue. • Hold ALPHA SHIFT while pressing RESET to cause the 3741 to ignore the error and continue with the label. • Hold both ALPHA SHIFT and NUM SHIFT SHIFT while pressing RESET to terminate the operation. The 3741 will return to the index track and go offline. The format buffers will be reinitialized to all Ns.

Error Recovery Procedures (continued)

Code Type	Cause	What You Do
B1 (continued)		For modes 3, 4, and 5 do one of the following: • Hold ALPHA SHIFT while pressing RESET to cause the 3741 to ignore the error and continue with the label. • Hold NUM SHIFT while pressing RESET to cause the 3741 to ignore the error and continue with the next valid label. • Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to terminate the operation. The 3741 will return to the index track and go offline. The format buffers will be reinitialized to all Ns.

Code	Type	Cause	What You Do
C1 C2	Drive ready	This error was caused when switching between drives and the drive switched to was not ready.	The following options are available: • Remove the diskette in drive 1, insert another diskette, and press RESET to continue processing on drive 1. • If the 3741 was writing, press FUNCT SEL upper and T while the error is posted, which will cause the 3741 to issue an EOJ (transmit the XZ record if in mode 4) to the system and go offline, returning to the index track and reinitiating the format buffers with Ns. • Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to terminate the operation and take the 3741 offline.

Error Recovery Procedures (continued)

Code	Type	Cause	What You Do
E1 **E2**	EOE	The EOE of the data set being processed was reached without having received an EOD from the system.	*Note:* The 3741 has read one more record into format buffer 10, returned to the index track, and updated the EOD in the data set. To continue processing records, do one of the following: • Press RESET, modify the current data set extents, search to EOD, press REC ADV and restart the operation by keying the device address, mode, and press FUNCT SEL upper and FIELD COR. • Press RESET, position the read head to another data set and restart the operation. • Press RESET, insert another diskette in drive 1, and restart. Each of the previous procedures will use the record in format buffer 10 as the first record written to the diskette. Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to cause the 3741 to go offline, return the diskette to the index track, and restore the format buffer to Ns (the record in buffer 10 will be lost).

Error Recovery Procedures (continued)

Code	Type	Cause	What You Do
V1 **V2**	Volume label	The volume label of the diskette (sector 7) does not contain a VOL1 in positions 1 through 4.	Use the same procedure as in codes B1 and B2, except that holding NUM SHIFT and pressing RESET is not valid for this error.
W1 **W2**	File overrun	Bad spots written onto a disk will cause file overrun as the last block of records are being written onto disk.	Hold both ALPHA SHIFT and NUM SHIFT while pressing RESET to terminate the operation, return the diskette to the index track, and cause the 3741 to go offline. Format buffers are reinitialzed to all Ns.
X1 **X2**	Extents overlap	The data set to be processed has extents which overlap another data set on the same drive.	Same procedure as B1 and B2.
Y1 **Y2**	Record length	The record length of the continued data set is not equal to the record length of the data set just processed.	Replace the diskette in drive 1 and press RESET.
Z1 **Z2**	Bad spot(s)	Bad spot(s) was written to the disk.	Press RESET to cause the 3741 to go offline and the diskette to return to the index track.

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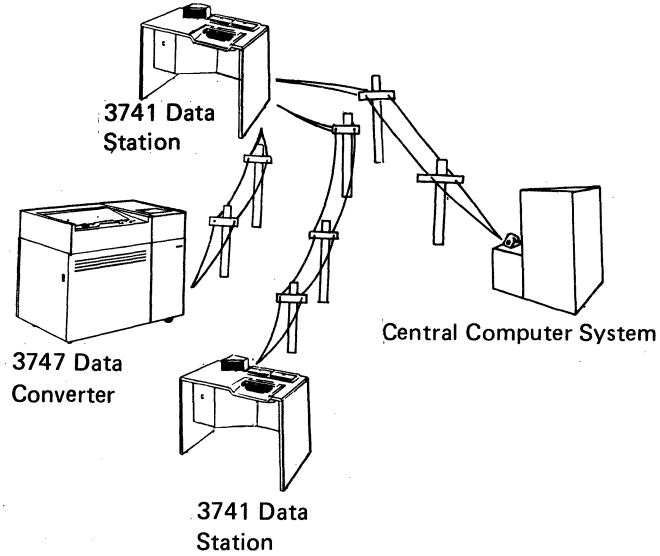
COMMUNICATIONS

Use this feature to transmit data to another location or to receive data from another location.

There are two types of communications: one-way communications and two-way communications. In one-way communications, you can both transmit and receive data but each requires a separate operating procedure. Whereas in two-way communications, you can transmit and then receive data without having to intervene.

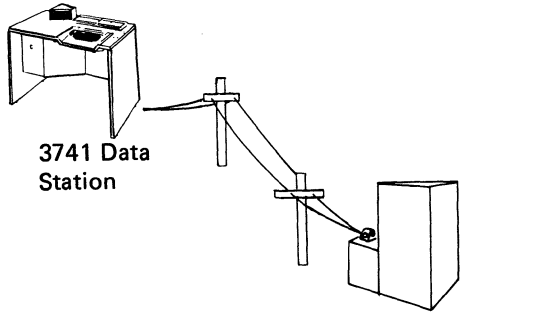
One-Way Communications

As shown below, you can transmit data to and receive data from a central computer system, another 3741, or a 3747. You can use four modes in one-way communications: Transmit (T), Expanded Communications Transmit (J), Transmit Transparent (P), and Receive (R). (Refer to the *Communications Procedure* in this section for a flowchart step-by-step illustration.)



Two-Way Communications

As shown below, you can transmit *and* receive data from *the 3741 to* a central computer system. You can perform two-way communications in Transmit Receive (B), Expanded Communications Transmit Receive (K), Transmit Transparent/Receive (R), and Inquiry (I) modes. (Refer to the *Communications Procedure* in this section for a flowchart step-by-step illustration.)

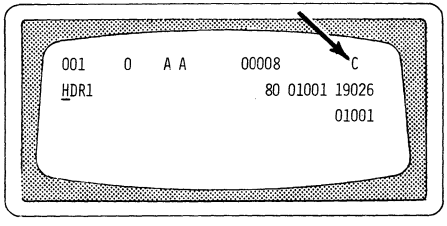


Communications Modes and Status Line Displays

The following displays show the communication modes and their associated meaning.

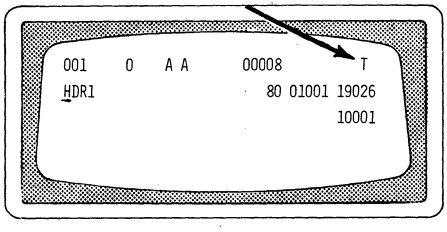
Communications Mode

Communications Mode (C)

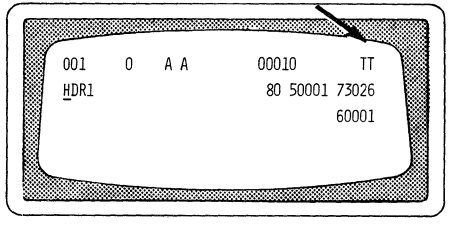


Transmit Mode

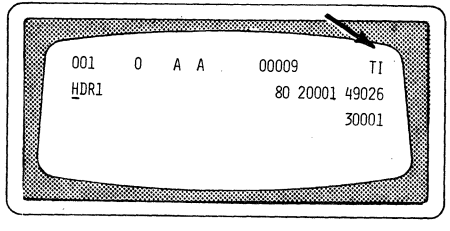
Transmit Mode (T)



Transmission Completed (TT)



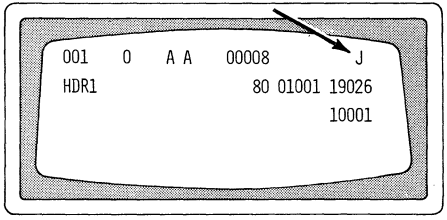
Transmission Incomplete (TI)



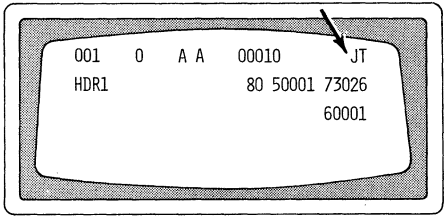
Communications Modes and Status Line Displays (continued)

Expanded Communications Transmit Mode

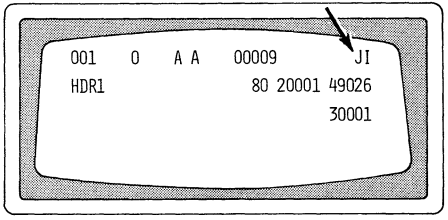
Transmit Mode (J)



Transmission Completed (JT)

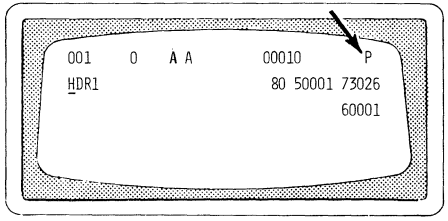


Transmission Incomplete (JI)

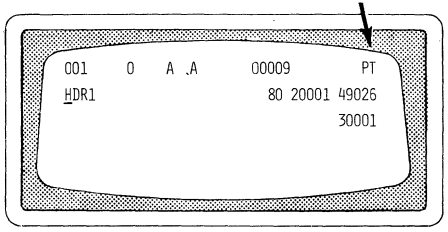


Transmit Transparent Mode

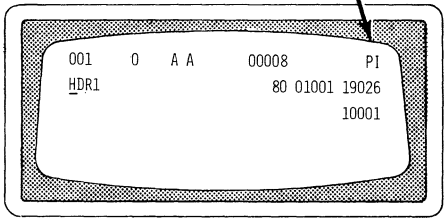
Transmit Transparent Mode (P)



Transmit Transparent Completed (PT)



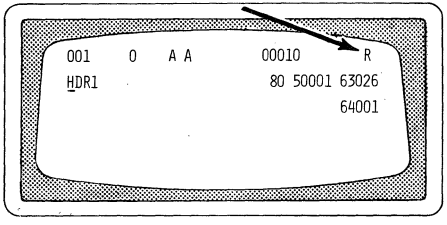
Transmit Transparent Incomplete (PI)



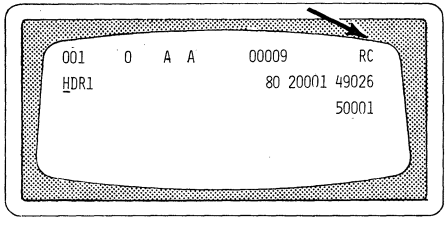
Communications Modes and Status Line Displays (continued)

Receive Mode

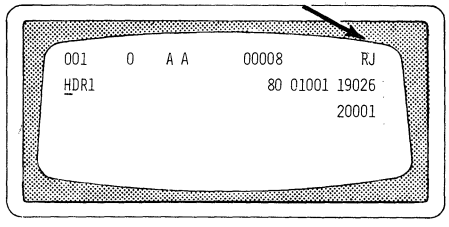
Receive Mode (R)



Reception Completed (RC)



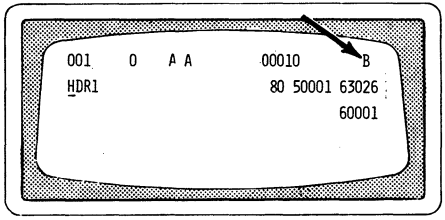
Reception Incomplete (RJ)



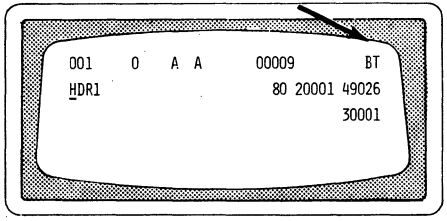
Communications Modes and Status Line Displays (continued)

Transmit/Receive Mode

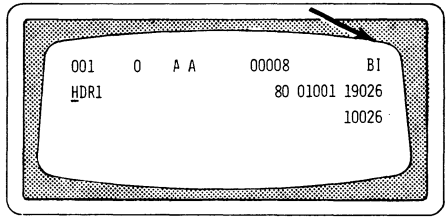
Transmit/Receive Mode (B)



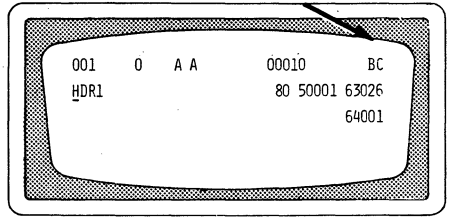
Transmit Completed (BT)



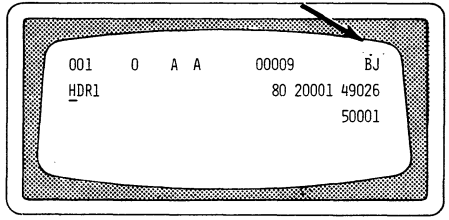
Transmit Incomplete (BI)



Reception Completed (BC)



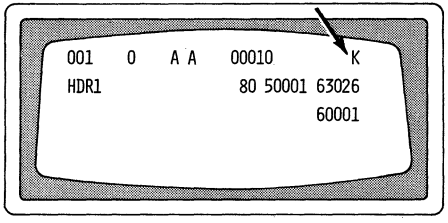
Reception Incomplete (BJ)



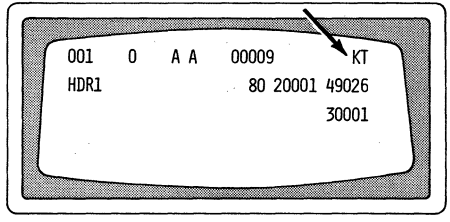
Communications Modes and Status Line Displays (continued)

Expanded Communications Transmit/Receive Mode

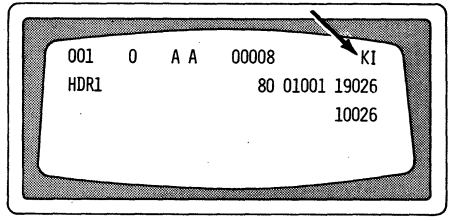
Transmit/Receive Mode (K)



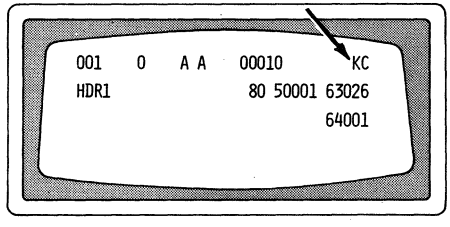
Transmit Completed (KT)



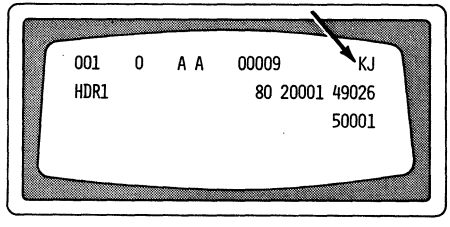
Transmit Incomplete (KI)



Reception Completed (KC)



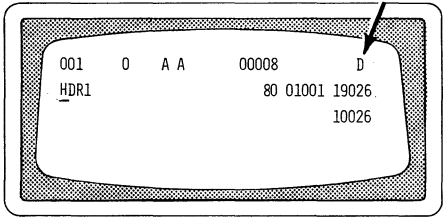
Reception Incomplete (KJ)



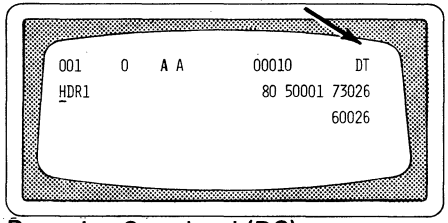
Communications Modes and Status Line Displays (continued)

Transmit Transparent/Receive Mode

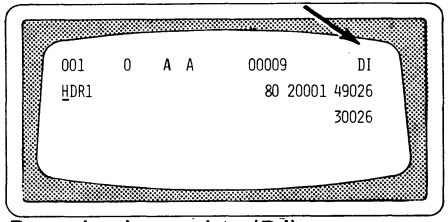
Transmit Transparent/Receive Mode (D)



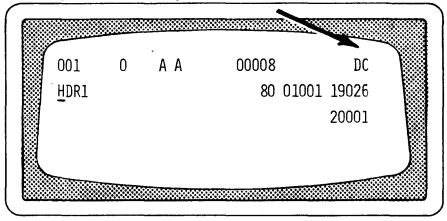
Transmission Completed (DT)



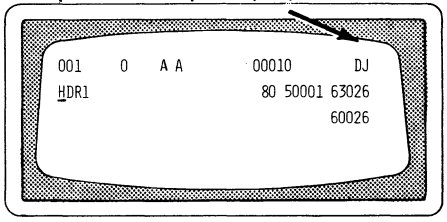
Transmission Incomplete (DI)



Reception Completed (DC)



Reception Incomplete (DJ)

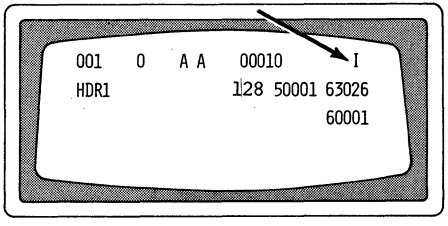


Note: If you have an I or a J in position 39 of the status line, (for example, as in Reception Incomplete above) you'll also have an error condition.

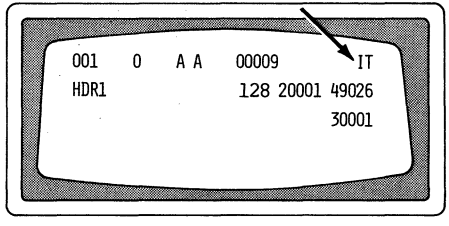
Communications Modes and Status Line Displays (continued)

Inquiry Mode

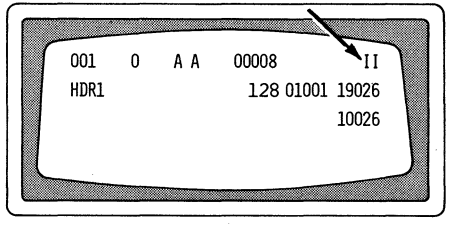
Inquiry Mode (I)



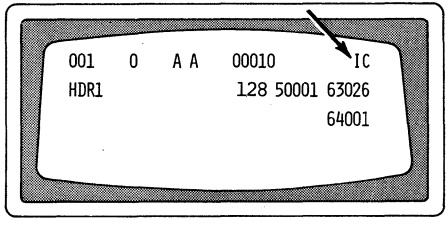
Transmit Completed (IT)



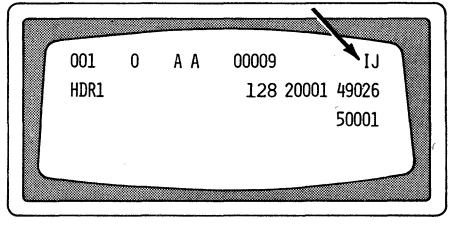
Transmit Incomplete (II)



Reception Completed (IC)



Reception Incomplete (IJ)



How to Load Programs for Communications

If your 3741 has the expanded communication feature, program buffers 8, 9, and A are used to store transmit selected fields programs, transmit selected records programs, and receive and insert constants programs. See *IBM 3741 Data Station Reference Manual,* GA21-9183, for considerations concerning the loading of these program buffers.

Transmit Selected Fields

The Transmit Selected Fields program you use must contain:

1. An apostrophe (') or quote (") in position 1. The apostrophe means the data in position 1 is not to be transmitted; the quote means the data in position 1 is to be transmitted.

2. Quotes in the remainder of the program for each position in the record to be transmitted. Leave blanks in the program for each position in the record that is not to be transmitted.

The following are examples of transmitting selected fields:

PUBLIC , ØJOHNØ602154	Data record
"""""""""""""""""ØØØØØØ	Program buffer
PUBLIC,ØJOHNØ	Transmitted data
PUBLIC,ØJOHNØ602154	Data record
'ØØØØØØØØØØØØØ""""""""	Program buffer
602154	Transmitted data

Transmit Selected Records

You use this program to transmit records that contain specific data (search argument). The data in the record must be in the same position as the search argument in the buffer. Transmit selected records programs must contain:

1. An equal (=) sign in position 1.

2. A search argument; each position that is not part of the search argument must contain an equal sign. (Position 1 cannot be part of the search argument.)

The following is an example of transmit selected records:

ØØØØ001ØØØØROCHESTERØMNØØØØ124	Data record
==========ROCHESTERØMN=======	Program buffer
ØØØØ001ØØØØROCHESTERØMNØØØØ124	Transmitted data

Receive Data and Insert Constants

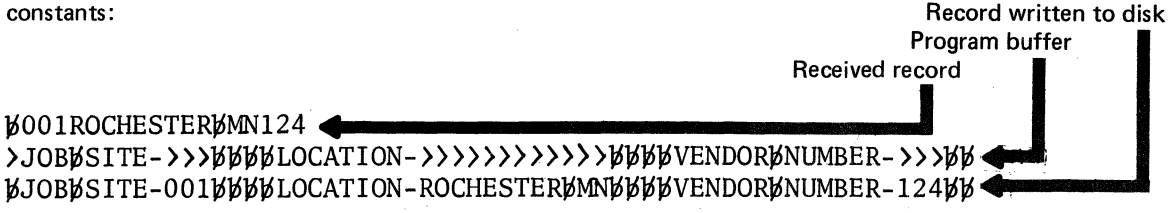
You use this program to insert constants into the data you are receiving. The records are written to disk with the constants (indicated in the program buffer) inserted in the corresponding position of the record. Receive data and insert constants programs must contain:

1. A greater than sign (>) in position 1.

2. The constant data in the positions that correspond to the positions that it is to occupy in the data record; each position that does not contain constant data must contain a greater than sign. (Position 1 cannot contain constant data to be inserted.)

The number of greater than signs must equal the number of characters received per record. The record written to disk contains a character (from the data received) for each greater than sign and for each character of constant data specified in the program buffer.

The following is an example of receiving data and inserting constants:



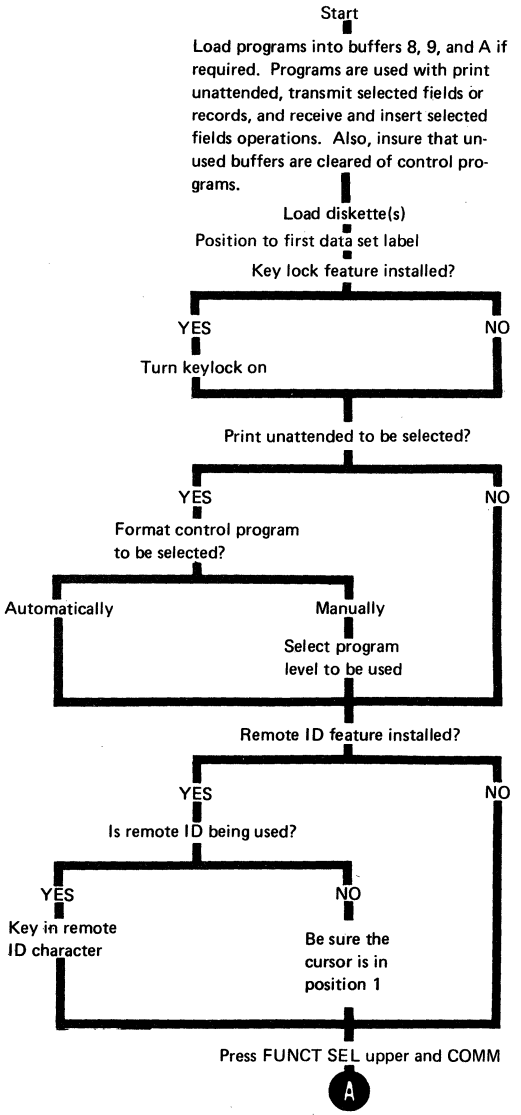
Multiple Network Audible Alarm

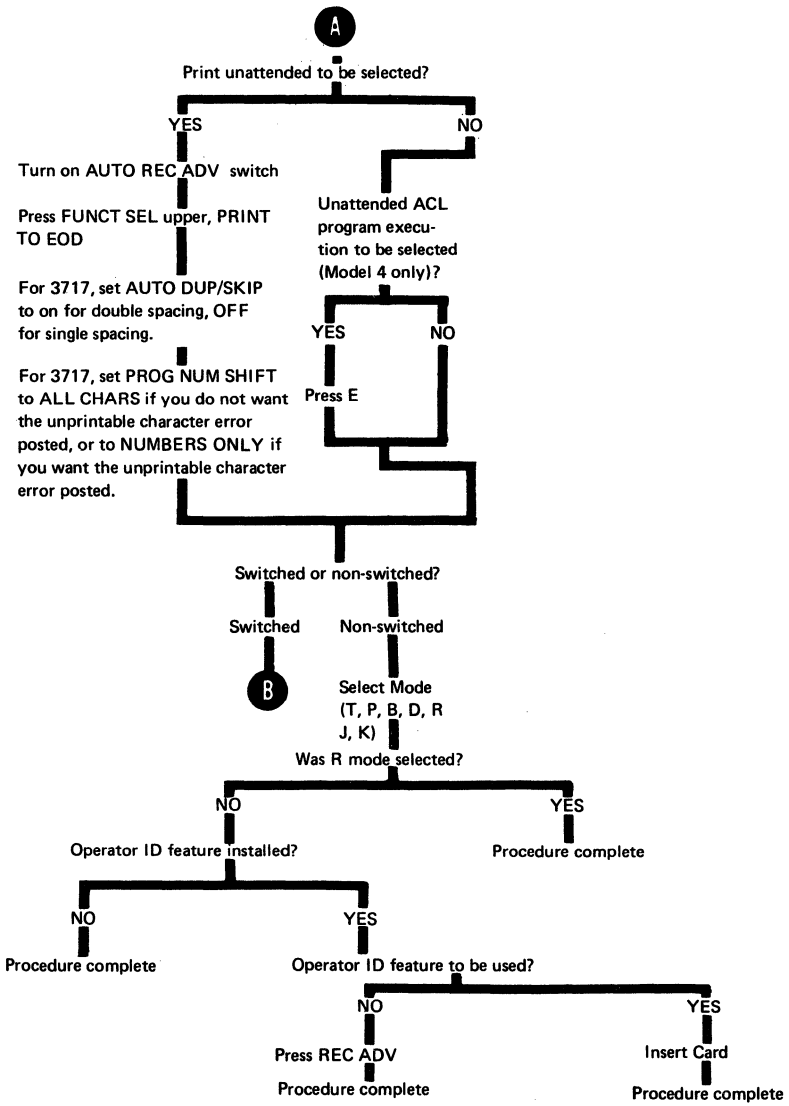
This alarm beeps when the host processing unit is attempting to transmit data to your 3741, but the 3741 is not set up in a Communication mode. It must be set up in Receive mode.

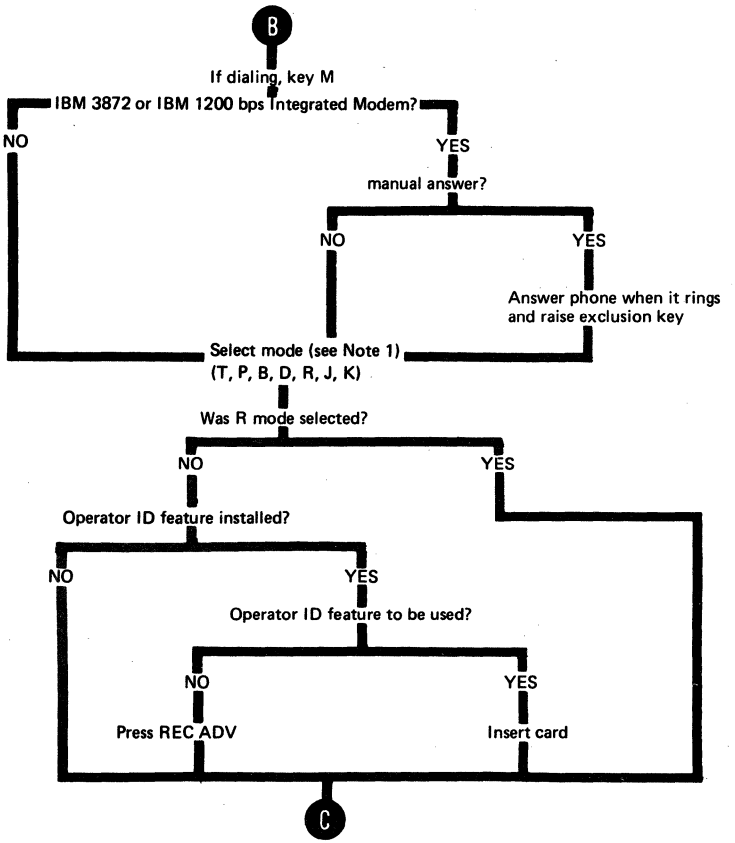
Communications Procedure

The following procedure can be applied to all communications modes.

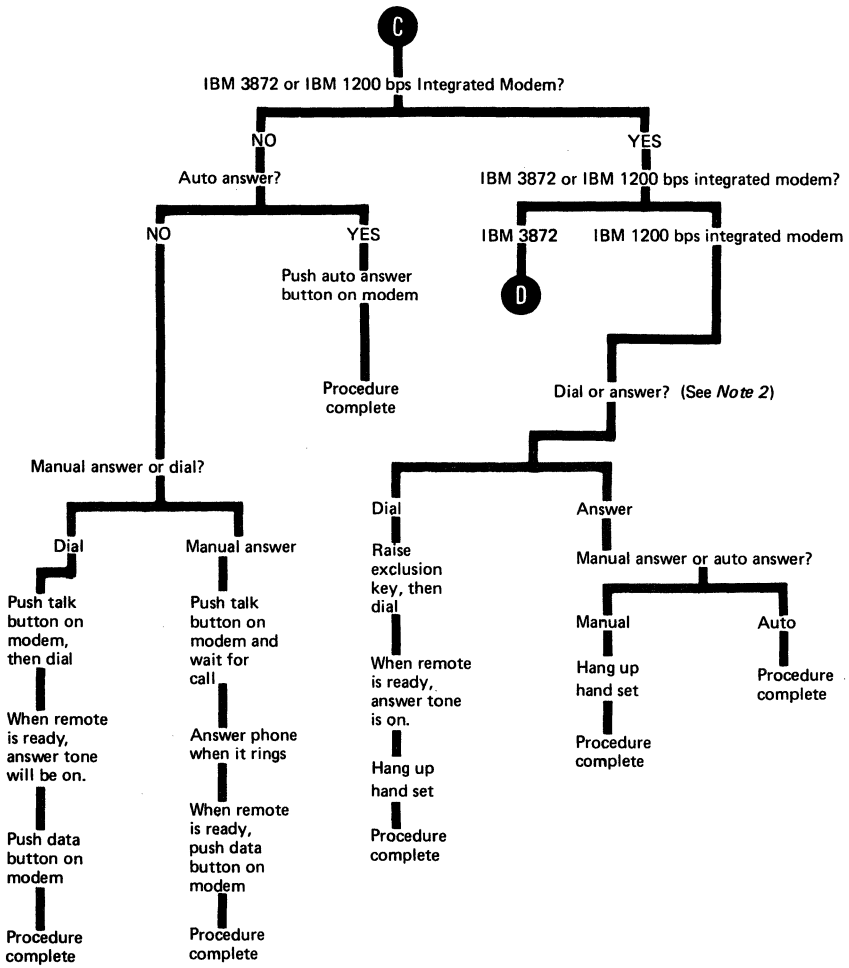
It is assumed that you have your data set labels properly identified, when doing this procedure. For more information, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.


Start
Load programs into buffers 8, 9, and A if required. Programs are used with print unattended, transmit selected fields or records, and receive and insert selected fields operations. Also, insure that unused buffers are cleared of control programs.
Load diskette(s)
Position to first data set label
Key lock feature installed?
YES
NO
Turn keylock on
Print unattended to be selected?
YES
NO
Format control program to be selected?
Automatically
Manually
Select program level to be used
Remote ID feature installed?
YES
NO
Is remote ID being used?
YES
NO
Key in remote ID character
Be sure the cursor is in position 1
Press FUNCT SEL upper and COMM
A

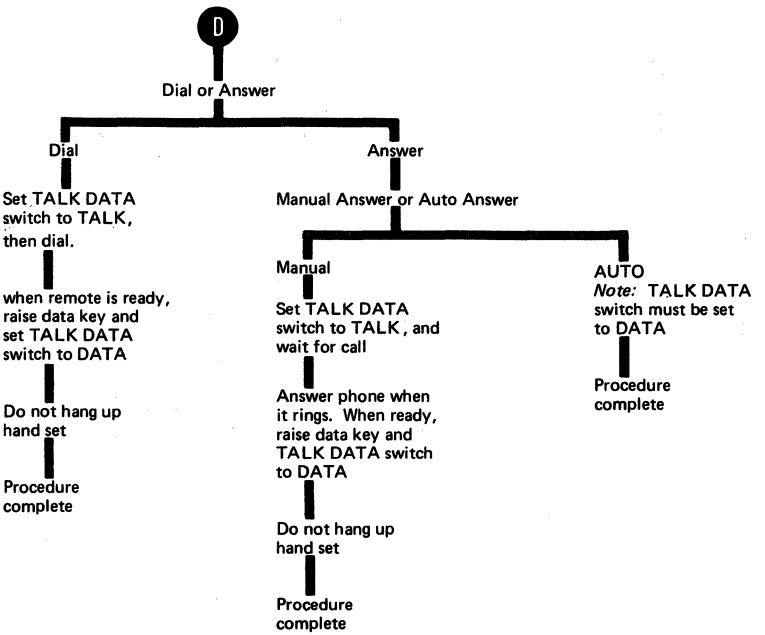

A
Print unattended to be selected?
YES
NO
Turn on AUTO REC ADV switch
Press FUNCT SEL upper, PRINT TO EOD
For 3717, set AUTO DUP/SKIP to on for double spacing, OFF for single spacing.
For 3717, set PROG NUM SHIFT to ALL CHARS if you do not want the unprintable character error posted, or to NUMBERS ONLY if you want the unprintable character error posted.
Unattended ACL program execution to be selected (Model 4 only)?
YES
NO
Press E
Switched or non-switched?
Switched
Non-switched
B
Select Mode (T, P, B, D, R J, K)
Was R mode selected?
NO
YES
Procedure complete
Operator ID feature installed?
NO
YES
Procedure complete
Operator ID feature to be used?
NO
YES
Press REC ADV
Procedure complete
Insert Card
Procedure complete



Note 1: If you are using a WT PSN 1200 bps integrated modem, and you do not want to use auto answer, do not select a mode key until the remote end is ready.

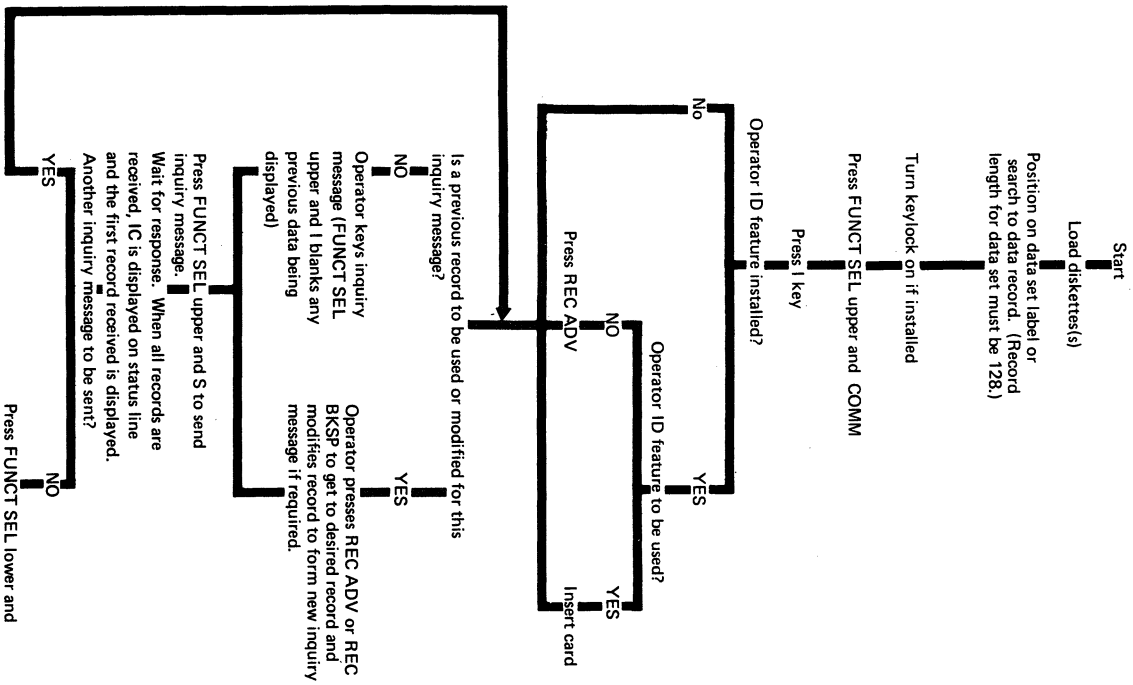


Note 2: Do not hang up the hand set until the status is displayed in line 6 of the CRT display.


D
Dial or Answer
Dial
Answer
Set TALK DATA switch to TALK, then dial.
when remote is ready, raise data key and set TALK DATA switch to DATA
Do not hang up hand set
Procedure complete
Manual Answer or Auto Answer
Manual
Set TALK DATA switch to TALK, and wait for call
Answer phone when it rings. When ready, raise data key and TALK DATA switch to DATA
Do not hang up hand set
Procedure complete
AUTO
Note: TALK DATA switch must be set to DATA
Procedure complete

INQUIRY PROCEDURE

Use this procedure to key a single record inquiry message, transmit the inquiry, and receive a response to the inquiry.



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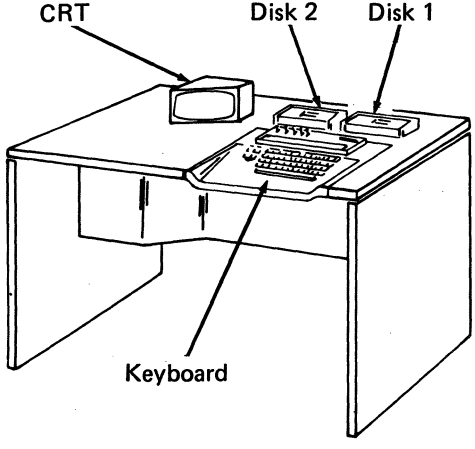
Programmable Work Station

The programmable work station (Models 3 and 4) has the same capabilities as the data station (Models 1 and 2), plus the ability to execute ACL (application control language) programs. The Model 3 has the same standard functions and available features as the Model 1. The Model 4 has the same standard functions and available features as the Model 2. Unless an ACL program is loaded into the programmable work station, the programmable work station operates as a data station.



ACL programs are coded by experienced programmers. The programmer codes these programs using source ACL instructions. The source program is then translated into an object program by a programmable work station with the translator feature. The object program is then executed by the programmable work station. For more information on ACL programs, see *IBM 3741 Models 3 and 4 Programmable Work Station Programming Reference Manual,* GA21-9194.

Keys and Switches

When an ACL program is loaded into the programmable work station, the function keys and switches may have different functions than they do when an ACL program is not loaded. That is, the ACL program controls the functions of the function keys and switches.

A job set up sheet should be given to you for each job using an ACL program. This job set up sheet should define any special key or switch functions for the job.

How to Translate an ACL Program

See *IBM 3741 Models 3 and 4 Programmable Work Station Programming Reference Manual,* GA21-9194, for information on translating ACL source programs.

How to Load an ACL Program for Execution

The information required to load an ACL program can be entered when the ACL program is to be executed, or the information can already exist on a sector of the index track.

Use this procedure to key in (enter) the information:

1. Insert the disk containing the object program in either disk drive 1 or 2. (If the object program is in disk drive 2, disk drive 1 must also contain a diskette.)

2. Press FUNCT SEL lower and DELETE REC.

3. Key in the following information.

Column	*Entry*
1 - 8	Object data set name.
9	1 or 2 depending on what disk drive the disk is mounted in. Default is disk drive 1.
11 - 14	The program name.

4. Press FUNCT SEL upper and E to start execution of the ACL program.

Use this procedure when the required information is already present on a sector of the index track:

1. Insert the disk containing the object program in either disk drive 1 or 2. (If the object program is in disk drive 2, disk drive 1 must also contain a diskette.)

2. Press REC ADV or REC BKSP to position the disk to the sector containing the information required to load the ACL program.

3. Press FUNCT SEL upper and E to start execution of the ACL program.

ACL Program Termination

After the ACL program has successfully completed, a job completion-system code 100 is posted in the status line. When this code is posted, press RESET to return to the Index (X) mode.

If an error condition occurs during execution, see the job setup sheet for error recovery procedures. If no error recovery procedures exist on the job setup sheet, see *Programmable Work Station Error Recovery.*

Programmable Work Station Error Recovery

Errors that occur during ACL program execution are displayed in positions 5, 6, 7, and 8 of display line 1. Use the following error recovery procedures if no error recovery procedures are specified in the job set up sheet.

Code	Type	Causes	What You Do
A1	Card read/punch	Data recorder is offline.	To retry the operation, use the error recovery procedure for error codes A1, A2, or A3 in the *Error Recovery* and *Glossary* section of this manual. Press NUM SHIFT with RESET to bypass the card read/punch operation. Press ALPHA SHIFT with RESET to bypass any remaining card read/punch operations. Press ALPHA SHIFT and NUM SHIFT with RESET to terminate the ACL program and return to Index (X) mode. *Note:* EOD is not updated. Follow your local procedures for a power outage to update the EOD and continue with the job.
A2	Card read/punch	• Data recorder hopper is empty. • Data recorder stacker is full. • Data recorder transport jammed. • Data recorder was online with the 3741 when the 129 Data Recorder power switch was turned on.	
A3	Card read/punch data error	Read or punch data miscompare.	

Code	Type	Causes	What You Do
A4	Card read/punch	Programming error	Press NUM SHIFT with RESET to bypass the card read/punch operation. Press ALPHA SHIFT with RESET to bypass any remaining card read/punch operations. Press ALPHA SHIFT and NUM SHIFT with RESET to terminate the ACL program and return to Index (X) mode. *Note:* EOD is not updated. Follow your local procedures for a power outage to update the EOD and continue with the job.
C01	COMM[1]	File is a 1-type file.	Press RESET to return to Index (X) mode.
C02	COMM[1]	File 1 is not on drive 1.	Press RESET to return to Index (X) mode.
C03	COMM[1]	File 1 is not open.	Press RESET to return to Index (X) mode.

[1] COMM identifies errors that occur during link to communications.

Code	Type	Cause	What You Do
C04	COMM[1]	File is an SU, SW, or SWE-type file, but the communications mode selected is not R or I.	Press RESET to return to Index (X) mode.
C05	COMM[1]	File 1 is a KU, KR, or SR-type file, but the communications mode selected is not T, P, B, D, J, or K.	Press RESET to return to Index (X) mode.
C06	COMM[1]	Unattended print is selected, but the AUTO REC ADV switch is not on.	Press RESET to return to Index (X) mode or set the AUTO REC ADV switch on and press RESET to continue.
C07	COMM[1]	Keylock is locked.	Press RESET to return to Index (X) mode or unlock key and press RESET to continue.
C08	COMM[1]	Unattended print and transmit mode are selected.	Press RESET to return to Index (X) mode.
C09	COMM[1]	Unattended ACL program execution and inquiry mode are selected.	Press RESET to return to Index (X) mode.

[1] COMM identifies errors that occur during link to communications

Code	Type	Cause	What You Do
C10	COMM[1]	Inquiry mode is selected, but file 1 record length does not equal 128.	Press RESET to return to Index (X) mode.
C11	COMM[1]	Inquiry or Receive mode is selected and the disk is positioned beyond sector 73026.	Press RESET to return to Index (X) mode.
C13	COMM[1]	Transmit mode is selected with the disk at EOD.	Press RESET to return to Index (X) mode.
C14	COMM[1]	There is a disk write error.	Press RESET to return to Index (X) mode.
C15	COMM[1]	There is a disk read error.	Press RESET to return to Index (X) mode.
C16	COMM[1]	No record is found.	Press RESET to return to Index (X) mode.
C17	COMM[1]	Volume label on disk 2 is secure.	Remove disk 2 and return to the Index (X) mode.

[1] COMM identifies the errors that occur during link to communications.

Code	Type	Cause	What You Do
C19	COMM[1]	Receive data and insert constants program is not equal to the file 1 record length.	Press RESET to return to Index (X) mode.
C21	COMM[1]	Disk drive 1 is not ready when the COMM instruction is executed.	Press RESET to return to Index (X) mode.
C22	COMM[1]	Unattended print is selected and byte 4 of register A does not equal 2 through 9.	Press RESET to return to Index (X) mode.
C23	COMM[1]	There is a disk seek error.	Press RESET to return to Index (X) mode.
C24	COMM[1]	Disk drive is not ready during ACL communications linkage execution.	Press RESET to return to Index (X) mode.
C28	COMM[1]	File 2 is not closed.	Press RESET to return to Index (X) mode.
C38	COMM[1]	File 3 is not closed.	Press RESET to return to Index (X) mode.

[1] COMM identifies errors that occur during link to communications.

Code	Type	Cause	What You Do
C48	COMM[1]	File 4 is not closed.	Press RESET to return to Index (X) mode.
C99	COMM[1]	Communications feature is not installed.	Press RESET to return to Index (X) mode.
C??	COMM[1]	There is a write gate error on disk drive 2.	Remove disk 1 and return to the Index (X) mode, or remove disk 2 and press RESET to continue, or press RESET to continue. (Any writing to disk 2 can be unpredictable.)
H	Feature selection	Feature not available (such as Data Recorder or Communication Link RPQ).	Turn the 3741 power switch off and then on to reset the machine
P1	Printer error	Printer not installed or programming error.	Press ALPHA SHIFT and NUM SHIFT with RESET to terminate the job and return to Index (X) mode. *Note:* EOD is not updated. Follow your local procedures for a power outage to update the EOD and continue with the job.

[1] COMM identifies errors that occur during link to communications.

Code	Type	Cause	What You Do
P2	Printer error	Print error during forms movement. (See note under P4 error code.)	If a printer error occurs, first check for the obvious problems, such as an open cover or no forms. You must then choose one of the following responses: • Reposition the forms and then press NUM SHIFT and RESET to continue. *Note:* If a P2 or P3 error occurs and you select to bypass the print instruction, manually check vertical forms alignment to ensure that it is correct for the next print instruction. • Press ALPHA SHIFT and RESET to bypass any remaining printing.
P3	Printer error	Print error during dump. (See note under P4 error code.)	• Press ALPHA SHIFT and NUM SHIFT with RESET to terminate the job and return to Index (X) mode. *Note:* EOD is not updated. Follow your local procedures for a power outage to update the EOD and continue with the job.

Code	Type	Cause	What You Do
P4	Printer error	Print error while printing or during trace to printer. (See note under this code.)	Press RESET to try and print the line again (P3 and P4).

Note: For a work station with the 3717 printer, the numbers 2 through 16 appears in position 5 and 6. These numbers indicate why the error occurred:

2	Print belt synchronization check	9	Forms jam
3	Not used	10	Busy-too-long check
4	Thermal overload check	11	Cover interlock open
5	Hammer check (1-22)	12	Throat interlock open
6	Hammer check (23-44)	13	Hammer echo check
7	Hammer check (45-66)	14	Print belt speed check
8	Carriage synchronization check	15	Printer not ready
		16	End of forms

Code	Type	Cause	What You Do
90	Keyboard error	Invalid key was pressed when entering data.	Press RESET to continue program execution.
91	Keyboard error	Key was pressed when the entering of data was not allowed.	Press RESET to continue program execution.
92	Keyboard error	Data being keyed in too rapidly.	Press RESET to continue program execution.
100		Job complete (not an error condition) or ACL program terminated.	Press RESET to go to Index (X) mode.
150	Programming error	.FIELD control statement error.	Press ALPHA SHIFT and NUM SHIFT with RESET to return to Index (X) mode. The program needs correction before execution can continue. *Note:* EOD is not updated. Follow your local procedures for a power outage to update the EOD and continue with the job.
151	Programming error	.FIELD control statement error.	Same procedure as 150.

Code	Type	Cause	What You Do
152	Programming error	.FIELD control statement error.	Same procedure as 150.
153	Programming error	.FIELD control statement error.	Same procedure as 150.
154	Programming error	.FIELD control statement error.	Same procedure as 150.
155	Programming error	.FIELD control statement error.	Same procedure as 150.
200	Program load failure	Disk error on program load.	Press ALPHA SHIFT and NUM SHIFT with RESET to return to Index (X) mode. Programmer assistance will probably be needed.
201	Program load failure	Object data set length is zero.	Same procedure as 200.
202	Program load failure	Object data set length less than two tracks for 4K, four tracks for 8K.	Same procedure as 200.

Code	Type	Cause	What You Do
203	Program load failure	Attempt to load an 8K program on a 4K machine.	Same procedure as 200.
204	Program load failure	Program name not found.	Press ALPHA SHIFT and NUM SHIFT with RESET to return to Index (X) mode. Load the ACL program again using the correct name and drive.
205	Program load failure	Invalid drive number (position 9 or 19) keyed.	Same as procedure 204.
206	Program load failure.	Program has been altered.	Press RESET to initiate execution with altered program. *Note:* Program operation can be unpredictable. Press ALPHA SHIFT and NUM SHIFT with RESET to return to Index (X) mode. Programmer assistance is required for new translation.
207	Programming error	Feature program selects not available.	Press ALPHA SHIFT and NUM SHIFT with RESET to return to Index (X) mode. Programmer assistance will probably be needed.

Code	Type	Cause	What You Do
253	Storage	Hardware failure.	Press ALPHA SHIFT and NUM SHIFT with RESET to return to Index (X) mode and then run hardware diagnostics to check out the machine. *Note:* EOD is not updated. Follow your local procedures for a power outage to update the EOD and continue with the job.
255	Storage	Hardware parity error.	Same procedure as 253.
5x0[1]	Data set	Drive door not latched shut.	Close drive and press RESET to retry.
5x1[1]	Data set	Data set name not found; probably the wrong disk.	Insert correct disk; then press RESET to retry. Press NUM SHIFT and RESET to terminate ACL program and go to code 100.
5x2[1]	Data set	Record length error; probably the wrong disk or incorrect label.	Insert correct disk, then press RESET to retry. Press NUM SHIFT and RESET to terminate ACL program and go to code 100. If the error occurred while creating or changing the data set label, make the correction to the label and reload the program. Get programmer assistance if required.
5x3[1]	Data set	Invalid label extent; probably the wrong disk or incorrect label.	Same as procedure 5x2.

[1] x=data set number (1 through 4).

Code	Type	Cause	What You Do
5x4[1]	Data set	Read error on disk index track.	Press NUM SHIFT and RESET to terminate ACL program and go to code 100. Get programmer assistance.
5x5[1]	Data set	A programming error or disk error from a bad spot on disk.	Press RESET to terminate ACL program and go to code 100. Try loading the program again with backup disk. Get programmer assistance if required.
5x6[1]	Data set	Programming error. Open instruction error.	Press NUM SHIFT and RESET to terminate ACL program and go to code 100. Get programmer assistance.
5x7[1]	Data set	Extents overlap with some other data sets on this disk. Probably the wrong disk or the data set label is incorrect.	Same procedure as 5x2.
5x8[1]	Data set	Not enough space to build a complete master file table.	This is a warning message. Press RESET to continue program execution or press NUM SHIFT and RESET to terminate ACL program and go to code 100.
5x9[1]	Data set	Entries in the master file are not in sequence.	Press RESET to terminate ACL program and go to code 100. Get programmer assistance.

[1] x=data set number (1 through 4).

Code	Type	Cause	What You Do
5xA[1]	Data set	Secured or protected data set. Probably the wrong disk or the data set label is incorrect.	Insert the correct disk and press RESET to retry. Press NUM SHIFT and RESET to terminate ACL program and go to code 100. Get programmer assistance.
5x?[1]	Data set	Write error.	Press NUM SHIFT and RESET to terminate ACL program and go to code 100. Try again with backup disk. If the problem still exists, get programmer assistance.
6x0[1]	Disk drive	Drive has been unlatched while program is running.	Continue pressing NUM SHIFT and RESET to terminate the ACL program and get code 100. *Note:* EOD is not updated. Follow your local procedures for a power outage to update the EOD and continue with the job.
6x2[1]	Disk error	Read error.	Press RESET to retry. If the error still exists, press NUM SHIFT and RESET to terminate ACL program and go to code 100. Get programmer assistance.
6x3[1]	Disk error	Seek error.	Same procedure as 6x2.
6x4[1]	Disk error.	Read error.	Same procedure as 6x2.

[1] x=data set number (1 through 4).

Code	Type	Cause	What You Do
6x5[1]	Disk error	Write error.	Same procedure as 6x2.
6x8[1]	Disk error	Write error.	Same procedure as 6x2.
6x9[1]	Disk error	Seek error.	Same procedure as 6x2.
7x0[1]	Disk drive	Either the drive has come unlatched while the program was running or a program error occurred.	Press RESET and note the next code. If the drive is open, a 6x0 or 100 error will appear. With a 6x0 code, follow the procedure outlined under 6x0 in this section. For a 100 code, the ACL program has terminated and you will have to follow your job restart procedure to continue the job. If the drive has not been opened, there is a programming error and you will have to get programmer assistance.

[1] x=data set number (1 through 4).

Code	Type	Cause	What You Do
7x2[1]	Disk error	Read ID error.	Press RESET to terminate ACL program and go to code 100. Follow your local procedures for restarting after a power outage. Use the backup disks. To continue with the job, the EODs will have to be updated.
7x3[1]	Disk error	Seek error.	Same procedure as 7x2.
7x4[1]	Disk er ror	Read error	Same procedure as 7x2.
7x5[1]	Disk error	Write check error.	Same procedure as 7x2.
7x7[1]	Disk error	Write special address to disk (WRTS).	Same procedure as 7x2.
7x8[1]	Disk error	Write error.	Same procedure as 7x2.
7x9[1]	Disk error	No record found during seek ERP (error recovery procedure).	Same procedure as 7x2.
7xB[1]	Programming error	Read to write only data set error.	Press RESET to terminate ACL program and go to code 100. Get programmer assistance.
7xC[1]	Programming error	WRT issued to a read only file or WRTE issued to a nonextended file.	Same procedure as 7xB.

[1] x=data set number (1 through 4).

Code	Type	Cause	What You Do
7xD[1]	Programming error	Attempt to read below BOE.	Press RESET to terminate ACL program and go to code 100. Get programmer assistance.
7xE[1]	Programming error	End of file encountered, but no EOF exit specified by program.	Same procedure as 7xD.
9x0[1]	Checkpoint	Drive not ready	Press RESET to terminate ACL program and go to code 100. Get programmer assistance.
9x1[1]	Checkpoint	Programming error.	Same procedure as 9x0.
9x2[1]	Checkpoint	Programming error.	Same procedure as 9x0.
9x3[1]	Checkpoint	Data set does not start at sector one.	Same procedure as 9x0.
9x4[1]	Checkpoint	Not enough space for checkpoint.	Same procedure as 9x0.
9x5[1]	Checkpoint	Programming error.	Same procedure as 9x0.

Code	Type	Cause	What You Do
9x6[1]	Checkpoint	Write error.	Same procedure as 9x0.
1YYY[2]	Operation code error	Programming error.	Press NUM SHIFT and RESET to terminate ACL program and go to code 100. Get programmer assistance.

[1] x=data set number (1 through 4).

[2] yyy=the decimal value of the invalid operation code. For example, if the invalid operation code was hexadecimal FF, the value of YYY would be 255.

How to Execute the Hardware Diagnostic Program

Each programmable work station is provided with a hardware diagnostic diskette. This diskette contains a hardware diagnostic program that you use to isolate the cause of an error to the ACL program or programmable work station hardware. If the diagnostic program executes successfully, the programmable work station hardware is functioning properly and the cause of the error may be in your program.

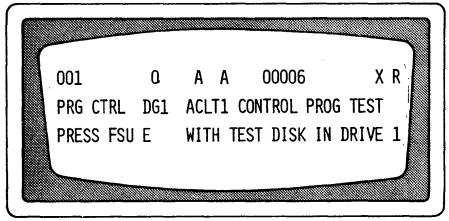
Note: The hardware diagnostic program should be run before you call for service assistance.

To execute the hardware diagnostic program:

1. Insert the diagnostic diskette in disk drive 1.

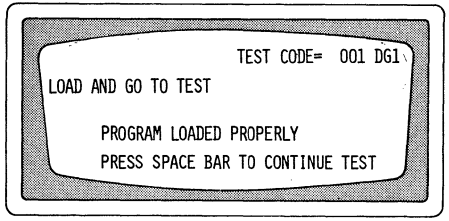
   Note: If your programmable work station has a printer attached, there is printed output from this diagnostic program. Be sure there is an adequate supply of printer paper or a printer error occurs.

2. Press REC BKSP to sector 6.



3. Press FUNCT SEL upper and E to load the diagnostic program.

4. When the following display message is displayed, press the space bar.



If the hardware diagnostic program executes successfully, a job completion (system code 100) is posted. When this code is posted, press RESET to return to the Index (X) mode.

If the hardware diagnostic program does not execute successfully (an error message is displayed), press ALPHA SHIFT and NUM SHIFT with RESET to return to the Index (X) mode. Then contact your service representative.

How to Execute the Translator Diagnostic Program

A translator diagnostic diskette is furnished with each programmable work station having the translator feature. It contains a translator diagnostic program that you use to isolate the cause of an error to your ACL program or to the programmable work station hardware. If the diagnostic program executes successfully, the programmable work station hardware is functioning properly and the cause of the error may be in your program.

Note: You should run the translator diagnostic program before you call for service assistance.

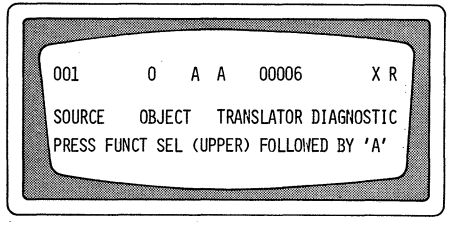
To execute the translator diagnostic program:

1. Do you want a printed listing of the diagnostic source program?

Yes	*No*
Place the AUTO REC ADV switch in the ON position.	Place the AUTO REC ADV switch in the OFF position.

Note: If you are printing the diagnostic source program, be sure there is an adequate supply of printer paper or a printer error occurs.

2. Press REC BKSP to sector 6.



3. Press FUNCT SEL upper and A. This starts the translator diagnostic program execution.

If the translator diagnostic program executes successfully, a job completion (system code 100) is posted. When this code is posted, press RESET to return to the Index (X) mode.

If the translator diagnostic program does not execute successfully (an error message is displayed), press ALPHA SHIFT and NUM SHIFT with RESET to return to the Index (X) mode. Then contact your service representative.

How to Dump Storage to Disk (Disk Dump)

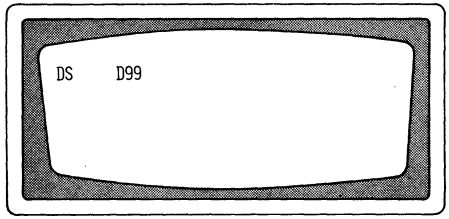
Use the disk dump function to write the contents of your programmable work station storage to disk. You can use the disk dump function at any time during execution. After the disk dump is completed, you can continue your program execution. You should not use the disk dump function, except upon request of your service representative.

You initiate a disk dump by using the following procedure:

1. Press ALPHA SHIFT and NUM SHIFT with FUNCT SEL lower.

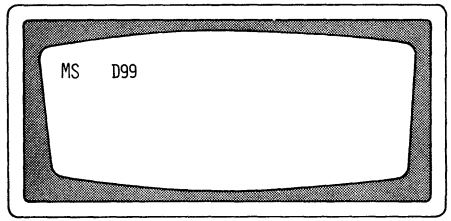
2. Key D and then 99 with numeric shift. This starts the disk dump.

3. When a DS message is posted in line 1, remove the diskette from the disk drive 1.



(The remaining information being displayed is from the program that was being executed when the dump was initiated.)

4. When a MS message is posted in line 1, insert the hardware diagnostic diskette in disk drive 1.

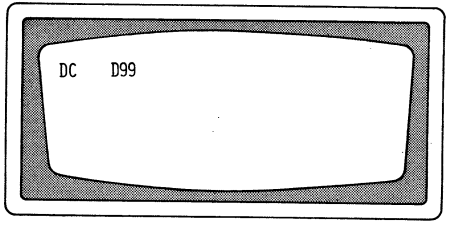


(The remaining information being displayed is from the program that was being executed when the dump was initiated.)

Note: You may use another diskette instead of the hardware diagnostic diskette. See *IBM 3741 Models 3 and 4 Programmable Work Station Programming Reference Manual,* GA21-9194, for volume name considerations when using another diskette.

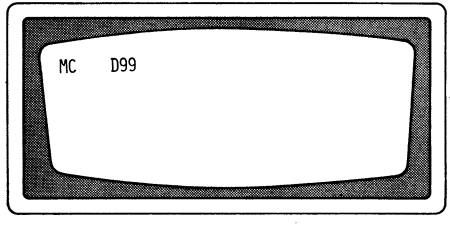
An RS message is posted in line 1 after the diskette is inserted in drive 1. If a disk write error occurs, a RS5 message is posted in line 1, but the disk dump continues.

5. When a DC message is posted in line 1, remove the diskette from drive 1.



(The remaining information being displayed is from the program that was being executed when the dump was initiated.)

6. When an MC message is posted in line 1, insert the original program diskette. The program continues from the point it was interrupted by the disk dump function.



(The remaining information being displayed is from the program that was being executed when the dump was initiated.)

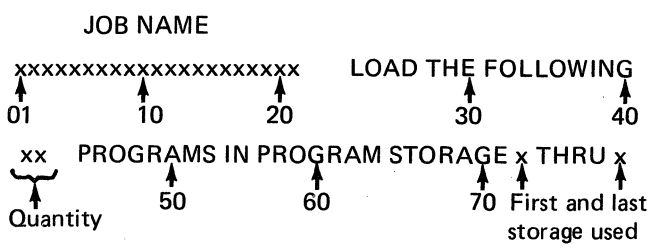
SAMPLE OPERATING PROCEDURES

This section complements the Field Engineering course which is taught by the customer engineer. Once you've taken this course, the procedures in this section help you to become productive on the 3741. The procedures may not be applicable to all key entry jobs but should apply to most of your jobs.

Entering Programs on a Disk

Note: All switches should be down.

1. Insert the program disk.
2. Press FUNCT SEL lower and SEARCH EOD (last program appears on the screen).
3. Press REC ADV.
4. Write down the 5-digit program address from the status line.
5. Key the following message:



6. Press REC ADV.
7. Key the program.
8. Press REC ADV.
9. Do steps 6 and 7 as many times as the quantity in Step 5.
10. Press FUNCT SEL lower and RETURN TO INDEX.

Altering Programs on a Disk

1. Insert the program disk.
2. Press FUNCT SEL lower and SEARCH ADDRESS.
3. Key the 5-digit program address.
4. Press REC ADV (program description record appears on the screen).
5. Press REC ADV to get to the program to be altered.
6. Alter the program.
7. Press REC ADV.
8. Press FUNCT SEL lower and RETURN TO INDEX.

Entering Data

To load the program:

1. Insert the program disk.
2. Press FUNCT SEL lower and SEARCH ADDRESS.
3. Key in the 5-digit program address.
4. Press REC ADV (program description record appears on the screen).

   Note: The Quantity of programs from the description tells you how many times to do steps 5, 6, and 7.
5. Press REC ADV (program to be loaded appears on the screen).
6. Press FUNCT SEL lower and PROG LOAD.
7. Key the program storage number (program disappears from the screen).
8. Press FUNCT SEL lower and RETURN TO INDEX.
9. Wait for X R to be displayed in the status line; then remove the diskette.

To enter data:

10. Insert the job disk.
11. If this is a continuation of a job:
    - Press FUNCT SEL lower and SEARCH EOD (last entered record appears on the screen).
    - Press REC ADV.
    - Select the program.
    - Key data.
12. If this is the beginning of a new job:
    - Press FUNCT SEL lower and ENTER.
    - Select the program.
    - Key data.
13. To end the job:
    - Press FUNCT SEL lower and RETURN TO INDEX.
    - Wait for X R to be displayed in the status line; then remove the diskette.

Verifying Data

1. Insert the program disk.
2. Press FUNCT SEL lower and SEARCH ADDRESS.
3. Key the 5-digit program address.
4. Press REC ADV (program description record appears on the screen).

   Note: The quantity of programs from the description tells you how many times to do steps 5, 6, and 7.
5. Press REC ADV (program to be loaded appears on the screen).
6. Press FUNCT SEL lower and PROG LOAD.
7. Key the program storage number (program disappears from the screen).
8. Press FUNCT SEL lower and RETURN TO INDEX.
9. Wait for X R to be displayed in the status line; then remove the diskette.

To load the program

10. Insert the job disk.
11. If this is a continuation of a job:
    - Press FUNCT SEL lower and SEARCH ADDRESS.
    - Key the 5-digit job continuation address (the address written down in step 14).
    - Press REC ADV.
    - Select the program.
    - Press FUNCT SEL lower and VERIFY.
12. If this is the beginning of a job:
    - Select the program.
    - Press FUNCT SEL lower and VERIFY.
13. Verify the data.
14. To interrupt the job:
    - Write down the address from the status line.
    - Press FUNCT SEL lower and RETURN TO INDEX.
    - Wait for X R to be displayed on status line; then remove the diskette.
15. The normal end to the job is:
    - Machine goes to Index (X) mode.
    - You get an E error.
16. Reset the error and remove the job disk.

To verify the data

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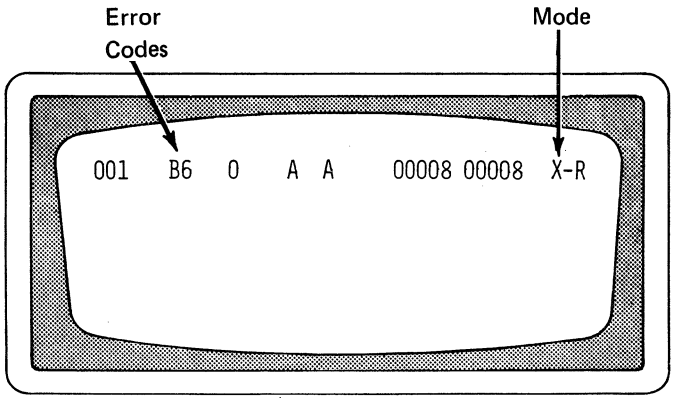
Error Recovery and Glossary



Error Codes

Code	Type	Mode	Causes	What You Do
A	Disk Accessibility	X	• The accessibility field in the data set label or volume label has a non-blank character (see *Data Set Accessibility).*	Remove the diskette.
A1	Card read/punch	P, R	• Data recorder is offline.	Check the switches on the data recorder to make sure they are in the correct position, then press RESET.
A2	Card read/punch	P (punching)	• 129 data recorder hopper is empty (88 is displayed in the column indicator).	1. Fill the hopper with blank cards. 2. Switch CLEAR on and off. 3. Press FEED until two cards are fed into the data recorder read/punch station. 4. Press VER RES. 5. Remove the card just punched and any blank cards from the stacker. 6. Press RESET (on the 3741) to continue.
		R (reading)	• 129 data recorder hopper is empty (88 is displayed in the column indicator).	1. Fill the hopper with more data cards. 2. Press FEED until two cards are fed into the data recorder read/punch station. 3. Press RESET (on the 3741) to continue.

Code	Type	Mode	Cause	What You Do
A2 (cont.)		P (punching)	• 129 data recorder stacker is full (88 is displayed in the column indicator).	1. Remove the cards from the stacker. 2. Switch CLEAR on and off. 3. Press FEED until two cards are fed into the data recorder read/punch station. 4. Press VER RES. 5. Remove the card just punched and any blank cards from the stacker. 6. Press RESET (on the 3741) to continue.
		R (reading)	• 129 data recorder stacker is full (88 is displayed on the column indicator).	1. Remove the cards from the stacker. 2. Press FEED. 3. Press RESET (on the 3741) to continue.
		P (punching)	• 129 data recorder hopper jam (88 is displayed on the column indicator).	1. Clear the jammed cards. 2. Switch CLEAR on and off. 3. Press FEED until two cards are fed into the data recorder read/punch station. 4. Press VER RES. 5. Remove the card just punched and any blank cards from the stacker. 6. Press RESET (on the 3741) to continue.

Code	Type	Mode	Cause	What You Do
A2 (cont.)		R (reading)	• 129 data recorder hopper jam (88 is displayed on the column indicator).	1. Clear the jammed cards. 2. If any cards are damaged, switch SPL FEAT to OFF. repunch the damaged cards, and switch SP FEAT to ON. 3. Place the repunched cards in the hopper. 4. Press FEED until two cards are fed into the data recorder read/punch station. 5. Press RESET (on the 3741) to continue.
		P (punching)	• 129 data recorder transport jammed (8A is displayed in the column indicator).	1. Manually remove card jam. (Do not use CLEAR switch.) 2. Switch SPL FEAT to OFF.

Code	Type	Mode	Cause
A2 (cont.)		P (cont.)	

What You Do

3. Is the 3741 AUTO REC ADV switch on?

Yes	*No*
Is the record that caused the jam being displayed?	Go to step 4.
Yes	*No*
Go to step 4.	Press DUP key until a card is punched and check to see if the card is punched correctly. If it is not, repeat this procedure.

4. Switch CLEAR on and off.
5. Remove two blank cards from the data recorder stacker.
6. Switch SPL FEAT to ON.
7. Press FEED until two cards are fed into the read/punch station.
8. Press VER RES.
9. Press RESET (on the 3741) to continue.

Code	Type	Mode	Cause	What You Do
A2 (cont.)		R (reading)	• 129 data recorder transport jammed (8A is displayed in the column indicator).	1. Clear the card jam. 2. Switch CLEAR on and off. 3. Switch SPL FEAT to OFF. 4. Repunch the damaged cards. 5. Switch SPL FEAT to ON. 6. Place the repunched card that caused the transport jam first in the hopper, followed by the two cards that were in front of the read/punch station. 7. Press FEED until two cards are fed into the data recorder read/punch station. 8. Press VER RES. 9. Press RESET (on the 3741) to continue.
		P (punching)	• 129 data recorder was online with the 3741 when the 129 data recorder power switch was turned on (8A is displayed in the column indicator).	1. Switch CLEAR on and off. 2. Load the hopper with blank cards. 3. Press FEED until two cards are fed into the data recorder read/punch station. 4. Press VER RES. 5. Press RESET (on the 3741) to continue. 6. Remove the first card punched from the stacker.

Code	Type	Mode	Cause	What You Do
A2 (cont.)		R (reading)	• 129 data recorder was online with the 3741 when the 129 data recorder power switch was turned on (8A is displayed in the column indicator).	1. Switch CLEAR on and off. 2. Place all the data cards back into the hopper. 3. Press FEED until two cards are fed into the data recorder read/punch station. 4. Press VER RES. 5. Press RESET (on the 3741) to continue.
		P (punching)	• 5496 data recorder hopper is empty (FD CK is displayed on the data recorder).	1. Fill the hopper with blank cards. 2. Is the record that caused the error being displayed? *Yes* — Go to step 6. *No* — Go to step 3. 3. Switch TERMINAL to MANUAL. 4. Press REL on the 5496. A card will be punched. 5. Switch TERMINAL to TERMINAL. 6. Press RESET (on the 3741) to continue.
		R (reading)	• 5496 data recorder hopper is empty (FD CK is displayed on the data recorder).	1. Fill the hopper with data cards. 2. Press RESET (on the 3741) to continue.

Code	Type	Mode	Cause	What You Do
A2 (cont.)		P (punching)	• 5496 data recorder hopper jam (FD CK is displayed on the data recorder).	1. Clear the card jam. 2. Is the record that caused the error being displayed? *Yes*: Go to step 6. *No*: Go to step 3. 3. Switch TERMINAL to MANUAL. 4. Press REL on the 5496. A card will be punched. 5. Switch TERMINAL to TERMINAL. 6. Press RESET (on the 3741) to continue.
		R (reading)	• 5496 data recorder hopper jam (FD CK is displayed on the data recorder).	1. Clear the card jam. 2. Switch TERMINAL to MANUAL. 3. Repunch any damaged cards. 4. Place the repunched cards first in the hopper. 5. Switch TERMINAL to TERMINAL. 6. Press RESET (on the 3741) to continue.

Code	Type	Mode	Cause	What You Do
A2 (cont.)		P (punching)	• 5496 data recorder transport jam (FD CK is displayed on the data recorder).	1. Switch TERMINAL to MANUAL. 2. Press REL one time. 3. Clear the card jam. 4. Is the 3741 AUTO REC ADV switch on? *Yes*: Is the record that caused the jam being displayed? *Yes*: Go to step 6. *No*: Go to step 5. *No*: Go to step 6. 5. Press DUP key until a card is punched. 6. Switch TERMINAL to TERMINAL. 7. Press RESET (on the 3741) to continue.
		R (reading)	• 5496 data recorder transport jam (FD CK is displayed on the data recorder).	1. Switch TERMINAL to MANUAL. 2. Clear the card jam. 3. If the data recorder has stopped running, press REL. 4. Repunch the damaged cards. 5. Place the repunched cards in the first card position of the hopper. 6. Switch TERMINAL to TERMINAL. 7. Press RESET (on the 3741) to continue.

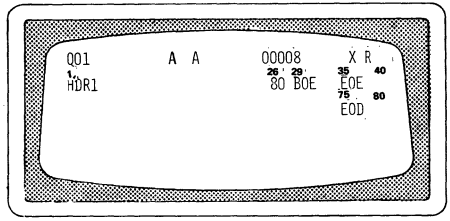
Code	Type	Mode	Cause	What You Do
A2 (cont.)		P (punching)	• 5496 Data recorder stacker is full (FD CK and STK FL is displayed on the data recorder). Read or punch data miscompare.	1. Remove the cards from the stacker. 2. Is the record that caused the error being displayed? *Yes*: Go to step 6. *No*: Go to step 3. 3. Switch TERMINAL to MANUAL. 4. Press REL on the 5496. A card will be punched. 5. Switch TERMINAL to TERMINAL. 6. Press RESET on the 3741 to continue.
		R (reading)	• 5496 data recorder stacker is full (FD CK and STK FL is displayed on the data recorder).	1. Remove the cards from the stacker. 2. Press RESET (on the 3741) to continue.
A3	Card read/punch data error	P, R	• Read or punch data miscompare.	*Read miscompare:* Place the last card in the stacker in the first position in the hopper and press RESET on the 3741. *Punch miscompare:* Press RESET on the 3741.
	Non EBCDIC character read	R	• 129 data recorder card read had a character that does not have a EBCDIC conversion.	Check the last card in the stacker for an invalid character.

Code	Type	Mode	Causes	What You Do
A5	Card read/punch format error	P, R	• Invalid format control program.	Press RESET, correct the card read/punch format control program (see *IBM 3741 Data Station Reference Manual,* GA21-9183, for information on card read/punch format control programs), and restart card read or punch operation.
A6	No data set space available	R	• Data set filled before an end of file or end of job card was read.	• 129 data recorder 1. Turn the CLEAR switch ON and OFF. 2. Remove the last three cards from the stacker and place them in the hopper. 3. Press FEED until two cards are fed. 4. Select one of the following options: • 5496 data recorder 1. Remove the last card read from the stacker and place it first in the hopper. 2. Select one of the following options.

Code	Type	Mode	Causes	What You Do
A6 (cont.)				*Option 1.* If you want to continue reading cards onto another disk, press ALPHA SHIFT and NUM SHIFT with RESET, then change position 45 of the data set label to a C. Remove the diskette and insert a new one; then reselect the format program, if necessary, and press FUNCT SEL upper and READ TO EOF. *Option 2.* If you want to change EOE address and continue reading cards onto the same data set, press ALPHA SHIFT and NUM SHIFT with RESET, then modify the EOE address (be sure that data set label extents do not overlap). Search for EOD, press REC ADV, reselect the format program if necessary, and press FUNCT SEL upper and READ TO EOF.

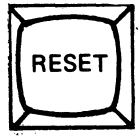
Code	Type	Mode	Cause	What You Do
A6 (cont)				*Option 3.* If you want to continue the card read operation on the same disk at the next valid data set location, press RESET (on the 3741) to continue. *Note:* Do not use option 3 if you intend to use the data being read onto disk in any communications operation.
A8	Card punch error	P	• An invalid key was pressed during a punch data set or punch using search content operation.	Compare the last card punched with the record being displayed. If the card was not punched from the record being displayed, write down the current disk address from the status line; otherwise, write down the current disk address plus one. Press RESET to return the 3741 to the Index (X) mode. Restart the card punch operation from the address you wrote down.

Code	Type	Mode	Causes	What You Do
A9	No disk space available	R	All data set labels are deleted, protected, bypassed, or used on a continuous card read operation.	Press RESET, remove the diskette and replace with a new diskette. To continue: • 129 data recorder 1. Turn the CLEAR switch ON and OFF. 2. Remove the last four cards from the stacker (2 that were read, plus 2 cleared from the read/punch station), and place them in the hopper. 3. Press FEED until 2 cards are fed. 4. Restart the card read operation on the new diskette. • 5496 data recorder 1. Place the last 2 cards read in the hopper. 2. Restart the card read operation on the new diskette.

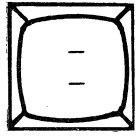
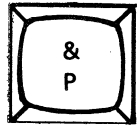
Code	Type	Mode	Causes	What You Do
B	Incorrect Data Set Label			*Note:* You must press FUNCT SEL lower, M, and REC ADV after making a correction to the label.
		X	• BOE is greater than EOE or EOD.	Reset and correct the BOE, EOE, and/or EOD.
		X	• BOE is less than track 01, sector 01.	Reset and correct the BOE.
		X	• EOE is greater than track 74, sector 26.	Reset and correct the EOE.
		X	• EOD is greater than EOE+1.	Reset and correct the EOD and/or the EOE.
		X	• EOD is greater than track 75, sector 01.	Reset and correct the EOD.
		X	• Record length is 00 or greater than 128.	Reset and enter the correct record length.
		X	• BOE, EOE, or EOD, sector number is 00 or is greater than 26.	Reset and enter the correct sector number.
		X	• The third position in the BOE, EOE, or EOD is not a zero.	Reset and insert a zero in the third position.

Code	Type	Mode	Causes	What You Do
B (cont.)		X	• Data is entered in positions 23 and/or 24.	Delete data entered in these positions.
		X	• One of the following conditions existed when you tried to select a mode from the Index track. —The current sector address displayed in the status line is either: 01, 02, 03, 04, 05, 06, or 07. —Position 4 in the label doesn't contain a 1. —The data set label has been deleted.	Reset and press REC ADV to locate the desired label. Reset, enter a 1 in position 4 of the label. Change to another label or enter an undeleted label.
		R	A card read function was selected in a data set that had a label containing a B in position 41 (bypass indicator).	Advance to a data set with a valid label and reinitiate the card read function. Remove the bypass indicator. If a card read was initiated while in the enter or update modes, the EOD was not updated to reflect the new records. To recover the data, change the EOD to equal the EOE. Search the data set for the last record written, press REC ADV, note the current disk address from the status line, return to the index track, and change the EOD to the correct address.

C	Self-Check	E, U, V	• The self-check digit doesn't compare properly.
		V	• The self-check field is blank in Verify (V) mode.



You can use the RESET key to recover from self-check errors. It unlocks the keyboard and prepares the system to accept a new character in the units position. And, it allows you to backspace to change preceding positions. If you backspace to the first position of a field, you can press SKIP to exit that field if you are in the Enter or Update mode.

Code	Type	Mode	Causes	What You Do
C (cont.)				If you are unable to solve the self-check error, use the – (dash) key or the & (ampersand) key to mark the field, and continue keying. However, you must use these keys while you have the error condition. *Do not press RESET first.*  Must use with either shift key. Removes the error condition and changes the units position to one of these letters: J through R (1 through 9 correlates to J through R – 1 = J, 2 = K etc.) and ╪ for zero. Then the 3741 exits the self-check field.  Must be used with NUM SHIFT. Removes the error condition and changes the units position to one of these letters: A through I (1 through 9 correlates to A through I – 1 = A, 2 = B etc.) and ╪ for zero. Then the 3741 exits the self-check field.

Code	Type	Mode	Causes	What You Do
C (cont.)	Line Check	COMM[1]	• The line or remote station malfunctioned.	Try to re-establish the connection. (If you are in Auto Answer mode, you don't have to do anything.)
D	Disk 2 Not Ready	ALL	• The Disk 2 drive isn't ready.	Reset, press FUNCT SEL upper and DISK 2 REC ADV.
		E	• Removed Disk 2 while doing a Disk Copy operation.	Insert the diskette, hold down NUM SHIFT, and press RESET.
	Disk Full	COMM[1]	• If receiving: You have written a record into the last available disk location or else there are no more valid data set labels available. If transmitting: The last data set to be transmitted indicates a continued data set.	Receiving: Insert another diskette and re-establish connection at the appropriate place. Transmitting: Insert the next diskette and re-establish the connection. You must inform the remote location of what you are doing.
	Inquiry Error	COMM[1]	• The last received response was written in position 73026 of disk 1 or the responses overflowed onto disk 2.	Use another disk to continue. Restart communications at the appropriate place.

[1] COMM identifies errors that occur during communications; see *Communications.*

Code	Type	Mode	Causes	What You Do
D0	Early Disk Removal	N	• Diskette was removed before a disk error was cleared.	Write down the disk address from the status line. Insert diskette and press NUM SHIFT with RESET. Modify the data set label by adding the number of records to be inserted to EOD. Position the disk to the address of the first record inserted. Inspect the records for the number of records inserted, and delete any records that were not deleted. If the record cannot be deleted, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.
D5	Write	N	• An inserted record was not written as a deleted record.	Press RESET to continue the record insert function. When the machine is no longer in the Record Insert (N) mode, inspect the records that were inserted. If an error 6 is not posted for each record, delete that record. If the record cannot be deleted, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.

Code	Type	Mode	Causes	What You Do
E	End of Extent	E	• Tried to copy from Disk 2 beyond the last record in the data set.	Reset and continue on another data set or diskette.
		E, U	• Tried to record advance on Disk 1 beyond the EOE.	Reset and modify the EOE in the data set label.
		V	• The disk has returned to the Index track after the last record in the data set is verified.	Reset.
		E	• Encountered EOE on Disk 1 during a copy operation.	Reset and modify the EOE in the data set label or continue on another diskette.
F	Function Not Available	ALL	• The selected function isn't available.	Reset, press FUNCT SEL, and rekey the appropriate key or keys for the desired function.
		ALL	• Improper Disk Copy setup.	Prepare disk 2.
G	Write Protect	X, U	• Tried to select Enter (E) or Verify (V) mode with the data set protected.	Reset and inspect position 43 of the data set label.
		U	• Tried to enter on the disk in Update mode with the data set protected.	Reset, press RETURN TO INDEX, and inspect position 43 of the data set label.
		U	• Pressed REC ADV with the data set protected while at the last record in the data set and in Update (U) mode.	Reset and inspect position 43 of the data set label.
		COMM[1]	• The first data set label (which is made available for a receive operation) is write protected.	Insert a new diskette or remove the P from position 43 of the data set label.

[1] COMM identifies errors that occur during communications; see *Communications.*

Code	Type	Mode	Cause	What You Do
H	Copy Setup	ALL	• After pressing COPY: —The Disk 2 address is less than track 00, sector 08. —Disk 2 isn't ready. —Didn't hold down NUM SHIFT when pressing COPY.	Reset and advance to proper Disk 2 address. Reset and press DISK 2 RET TO INDEX. Reset, hold down NUM SHIFT and press COPY.
		X	• Disk 1 is on track 00, but Disk 2 isn't on track 00.	Reset, press DISK 2 RET TO INDEX, then position Disk 2 to the correct label.
		S	• Pressed SEARCH SEQ CONTENT in copy setup.	Reset and select proper function.
	BSCA Setup	COMM[1]	• The keylock is locked or the terminal ID feature is installed and the cursor is past position 016.	Unlock the keylock or key in the proper ID characters.
		COMM[1]	• Inquiry (I) mode was selected and the current data set record length is not 128.	Use a data set with a record length of 128.
		COMM[1]	• Communications was selected from the Update (U) mode and the record length of the current data set is not the same as the receive data and insert constants program.	Correct the receive data and insert constants program. Restart communications.

[1] COMM identifies errors that occur during communications; see *Communications.*

Code	Type	Mode	Cause	What You Do
H (cont.)		COMM[1]	• Transmit (T, P, or J) or Inquiry (I) mode was selected after unattended printing was selected.	You cannot use the unattended print function when using Transmit or Inquiry mode. Restart communications.
		COMM[1]	• Unattended printing was selected and the AUTO REC ADV is not switched to ON.	Switch AUTO REC ADV to ON. Restart communications.
		COMM[1]	• Receive (R) or Inquiry (I) mode was selected and the first data set BOE is greater than 73026.	Insert a new diskette or correct the data set label. Restart communications.
		COMM[1]	• Communications was selected from the Update (U) mode and current disk address is greater than 73026.	Insert a new diskette and restart communications.
		COMM[1]	• Inquiry (I) mode was selected from Update (U) mode and EOD is greater than 73026.	Insert a new diskette. Restart communications.
		COMM[1]	• Inquiry (I) mode or unattended printing was selected after the unattended ACL program function was selected.	You cannot use the Inquiry (I) mode or unattended printing when using the unattended ACL program function. Restart communications.

[1] COMM identifies errors that occur during communications, see *Communications.*

Code	Type	Mode	Cause	What You Do
I	Search Address	S	• The search address contains a non-decimal character or the third position is not zero.	Reset and enter the correct address.
		S	• The search address isn't within the extents of the data set.	Reset and enter the correct address.
	Incorrect Number of Records Specified	S	• Insufficient room in the data set to insert the number of records specified.	Press RESET and key in the correct number of records.
		S	• Number of records specified is not 01-99. This must be a two-digit number.	
	Modem Not Ready	COMM[1]	• The line connection is broken.	Reestablish the connection.
J	Incomplete Print	P	• Printed the last record of a data set entered on current disk but data set continues on another disk.	Reset (the 3741 automatically returns to the index track), remove the diskette, insert the next diskette in sequence, select the proper data set label, and press FUNCT SEL upper, NUM SHIFT, and PRINT TO EOD to continue printing. (If printing using SEARCH CONTENT, the search criteria must be keyed for each new disk.)

[1] COMM identifies errors that occur during communications, see *Communications.*

Code	Type	Mode	Causes	What You Do
K	Keying	ALL	• Pressed NUM SHIFT and A or Z.	Reset and press the correct key.
		ALL	• The PROG NUM SHIFT switch is set to NUMBERS ONLY, the 3741 is in a programmed numeric field and the character keyed isn't 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, dash, space, or plus.	Reset and press the correct key or set PROG NUM SHIFT to all characters.
		ALL	• One of the two keys pressed following the hex isn't a hex character.	Reset and press HEX and the two hex characters.
L	Incorrect Function	V	• Pressed CHAR ADV or FIELD ADV in Verify (V) mode.	Reset and press appropriate key.
		C	• Pressed REC BKSP or REC ADV in Field Correct (C) mode.	Reset and press appropriate key.
		S, U, V	• Pressed DISPLAY PROD STAT when not on track 00 or Enter (E) mode.	Reset and reselect appropriate function.
		C, V	• Pressed a DISK 2 key when in Verify (V) or Field Correct (C) mode.	Reset and reselect appropriate function.

Code	Type	Mode	Causes	What You Do
M	Mode Selection	C, V	• Tried a search, offline field totals, print to EOD or copy function from the Verify (V) or Field Correct (C) mode.	Reset and reselect a correct mode.
		U	• Tried to copy from the Update (U) mode.	Reset and reselect a correct mode.
		E	• Tried to search content from the Enter (E) mode.	Reset and reselect a correct mode.
		C, E, S, U, V	• Tried to select Enter (E), Modify Index (M), or Initialized (I) mode from other than Index (X) mode.	Reset and reselect a correct mode.
		E, S	• Tried to select Verify (V) mode from the Enter (E) or Search (S) mode.	Reset and reselect a correct mode.
		ALL	• Tried to select the Field Correct (C) mode while (1) not in Verify (V) mode, (2) while in an auto dup/skip field, (3) when currently at the end of the record.	Reset and reselect a correct mode.
		E	• Tried to select the Update (U) mode from the Enter (E) mode.	Reset and reselect a correct mode.
		S	• Selected the Search mode while in Enter mode, then tried to select the Update mode (from the Search mode) before the Search started.	Reset and reselect a correct mode.

Code	Type	Mode	Causes	What You Do
M (cont.)		U	• Tried to search content from the Update (U) mode when currently on the last record in the data set.	Reset and reselect a correct mode.
		C, S, U, V	• Didn't select enter mode before copying to a record.	Reset, select enter mode, and retry copy operation.
		C, V	• Pressed DISPLAY PROG in conjunction with either shift key in Verify (V) or Field Correct (C) mode.	Reset and reselect a correct mode.
		C	• Tried to select a program in the Field Correct (C) mode.	Reset and reselect a correct mode.
		C, V	• Tried to load a program in the Verify (V) mode or the Field Correct (C) mode.	Reset and reselect a correct mode.
		C, E, S, V	• Tried to select the communications mode from the Verify (V), Enter (E), or Search (S) mode.	Reset and reselect a correct mode.
N	Keyboard Overrun	ALL	• Keying rate exceeded the machine capacity.	Reset and continue.

Code	Type	Mode	Causes	What You Do
O	Operation	E, U, V	• Tried to select a program when the cursor wasn't at the beginning of the field.	Reset and position the cursor at the beginning of the field.
		ALL	• Pressed RIGHT ADJ and not in a right adjust field.	Reset and press the correct key.
		ALL	• Press SKIP, DUP, or REC ADV in a right adjust field but not at the first position of the field.	Reset and position the cursor to the first position of the field.
		ALL	• Pressed SKIP, DUP, or REC ADV in a self-check field but not at the first position of the field.	Reset and position the cursor to the first position of the field.
		S	• Pressed DISK 2 REC ADV, DISK 2 REC BKSP, or DISK 2 RET TO INDEX when in the search mode for Disk 1.	Reset and press the appropriate key.
		S	• Pressed REC ADV after selecting second disk search mode.	Reset and press the appropriate key.
		E, X	• Pressed DISPLAY PROD STAT while not under program level 0, or while in Enter (E) mode and data has been entered into the current record.	Reset, select program 0, and reselect the function.
		ALL	• Pressed DISPLAY FIELD TOTALS and not at the beginning of a field or at position 000.	Reset and move cursor to the beginning of a field.

Code	Type	Mode	Causes	What You Do
P	Program	E, S, U, V, X	• The key following SEL PROG or PROG LOAD isn't a program number.	Reset and rekey the sequence.
		E, S, U, V, X	• Selected a new program while not at a begin field character.	Reset and position the cursor on a begin field character or change the program.
		E, S, U, V, X	• Incorrect program.	Reset and modify the program or reselect the program.
		E, S, U, V, X	• Selected a printer program that does not have an N in the first position.	Reset and rekey the program with an N in the first position.
Q	Field Totals	U	• No . (period) or digit following the program character.	Reset and rewrite the control statement.
		U	• The position number is greater than 128.	Reset and rewrite the control statement.
		U	• No N or W follows the position number.	Reset and rewrite the control statement.
		U	• An invalid character follows the mask (must be , ; : . &).	Reset and rewrite the control statement.
		U	• Program 1 through 9 or A isn't specified in the mask statement.	Reset and rewrite the control statement.
		U	• No < sign found in the first position of any program buffer.	Reset and rewrite the control statement.
	Message Aborted	COMM[1]	• The 3741 is having trouble transmitting each record.	Re-establish the connection.

[1] COMM identifies errors that occur during communications, see *Communications.*

Code	Type	Mode	Causes	What You Do
R	Right Adjust	ALL	• Pressed a data key after the right adjust field was filled.	Reset, press RIGHT ADJ or FIELD BKSP, and re-enter the field.
		V	• Entered a data key after all characters were verified.	Reset and press RIGHT ADJ.
		ALL	• A mismatch occurred on a fill character for a right adjust field.	Reset and correct the program.
		V	• Pressed – (dash) or RIGHT ADJ at the start of a field that isn't all fill characters or contains the wrong type of fill characters. (The error occurs when the first non-fill character is encountered.)	Reset and if the dash and RIGHT ADJ are correct, press FIELD COR and change the field.
		V	• Pressed RIGHT ADJ or – (dash) before all characters in the field were verified.	Reset and correct the field.
	Remote Abort	COMM[1]	• The remote location is prematurely ending the job.	When the remote location is ready, re-establish the connection.

[1] COMM identifies errors that occur during communications, see *Communications.*

Code	Type	Mode	Causes	What You Do
R0	Early Disk Removal	N	• Diskette was removed before a disk error was cleared.	Write down the disk address from the status line. Insert diskette and press NUM SHIFT with RESET. Modify the data set label by adding the number of records to be inserted to EOD. Inspect the data set for duplicate records, from the address you copied down to EOD. There are as many duplicate records as the number of records being inserted. Delete the duplicate records. If the records in the data set are in sequence, delete the duplicate records that are out of sequence.
R1	Length	N	• The record read from disk did not have the record length specified in the data set label.	Write down the disk address from the status line. Press RESET to continue the record insert function. The record is written to disk (with a record length equal to the record length in the data set label) at the disk address you wrote down plus the number of records to be inserted.

Code	Type	Mode	Causes	What You Do
R2	Record Not Found	N	• No record corresponding to the current disk address could be found.	Write down the disk address from the status line. Press RESET to continue the record insert function. A blank record is written to disk at the address you wrote down plus the number of records to be inserted.
R4	Read	N	• The record at the current disk address was in error.	Write down the disk address from the status line. Press RESET to continue the record insert function. The record in error was written to disk at the address you wrote down plus the number of records to be inserted.
S	Search	U	• The Search data didn't match any record during a Search Content or Search Sequential Content operation.	Reset and inspect the search data and the data set label.
	Operator Stopped Communication	COMM[1]	• You pressed RESET which stops communications.	No action required. (The machine displays the S temporarily.)
T	Truncation	E, U, V, X	• Tried to enter data beyond the record length (specified in data set label).	Reset, backspace or advance to the next record.

[1] COMM identifies errors that occur during communications, see *Communications.*

Code	Type	Mode	Causes	What You Do
T (cont.)		E, U, V, X	• Pressed RIGHT ADJ at the end of the record.	Reset, advance to the next record or backspace to the field within the record.
		E, X	• Pressed DISPLAY PROD STAT in Enter mode with record length in data set label less than 21.	Reset and display statistics in Index mode or change the record length in the data set label.
	Transparency Check	COMM[1]	• BSCA control characters are recorded on the disk.	Select the appropriate transparent mode (P or D) and re-establish the connection.
U	Printer	P, U, X	• Printer has run out of forms.	Reset and check forms.
		P, U, X	• Left margin stop moved too far to the right (3713 printer).	Turn off the power, wait five seconds, and turn the power back on.
	Printer Error	P, U, X	• Illegal character (a nondisplayable character) was encountered.	Press REC ADV to continue printing or press RESET twice to exit the printer mode. (See the *IBM 3741 Data Station Reference Manual.* GA21-9183. for more information on correcting printer errors.)
			• 3715 Printer power switch is off.	Turn the 3715 power switch on and press RESET.
	Received Data Block	COMM[1]	• You and the remote location are both trying to transmit data.	After selecting compatible modes, re-establish the connection.
	Inquiry Error	COMM[1]	• A conversational or text reply was received in response to the transmission of the operator ID card data.	Call the remote location and have them correct the problem. Restart communications.

[1] COMM identifies errors that occur during communications; see *Communications.*

Code	Type	Mode	Causes	What You Do
U4	Printer and Disk Error	P	• (3715 Printer only.) Both a printer hardware error and a disk read error occurred at the same time.	Press RESET to exit the printer mode and then press RESET again to clear the disk error.
V	Verify Mismatch	V	• A mismatch occurred between the current data keystroke and the data character in the record.	Reset and key the correct character.
		V	• A non-blank character was found during a skip operation or during a record advance operation in a following manual or skip field.	Reset and correct the character.
		V	• A mismatch occurred between the characters in the current record and the corresponding character in the previous record in a duplicate operation.	Reset and correct the character.
	Received Line Bid	COMM[1]	• The remote location wants to send data but the 3741 isn't ready to receive it.	Select Receive mode (R) and re-establish the connection.

[1] COMM identifies errors that occur during communications; see *Communications.*

Code	Type	Mode	Causes	What You Do
W	Printer Error	P, U, X	• Invalid printer format character or invalid format sequence is used. • Link to invalid program number. • Missing skip stop or tab stop in program A. • Printer format control crossed record boundary. • Format character R is used in print current program.	Reset, correct the printer format program. See the *IBM 3741 Data Station Reference Manual,* GA21-9183, for information on printer format programs. If you have a 3715 Printer, see *Printer Error Conditions.*
	Wrong Length Check	COMM[1]	• Records received have inconsistent or invalid record lengths.	The remote location has the problem. After they correct it, re-establish the connection.
		COMM[1]	• The number of characters in the received data is not equal to the number of greater than signs (>) in the receive data and insert constants program.	Correct the receive data and insert constants program. Restart communications.
		COMM[1]	• A continued data set on disk 2 has a different record length from the data set on disk 1.	Make sure that disk 2 contains the correct data set. Restart communications.

[1] COMM identifies errors that occur during communications; see *Communications.*

Code	Type	Mode	Causes	What You Do
W0	Early Disk Removal	N	• Diskette was removed before a disk error was cleared.	Write down the disk address you get by subtracting the number of records being inserted from the disk address displayed in the status line. Insert the diskette and press NUM SHIFT with RESET. Modify the data set label by adding the number of records to be inserted to EOD. Inspect the data set for duplicate records, from the address you copied down to EOD. There are as many duplicate records as the number of records being inserted. Delete the duplicate records. If the records in the data set are in sequence, delete the duplicate records that are out of sequence.
W5	Write	N	• Record was written in error. • Sector at the current disk address could not be found.	Write down the disk address from the status line. Press RESET to continue the record insert function. When the machine is no longer in the Record Insert (N) mode, see the *IBM 3741 Data Station Reference Manual,* GA21-9183, to correct the error condition at the address you wrote down.

Code	Type	Mode	Causes	What You Do
W6	Write Deleted Record	N	• Record at the current disk address was written as a deleted record, but was not read as a deleted record.	Write down the disk address from the status line. Press RESET to continue the record insert function. When the machine is no longer in the Record Insert (N) mode, return to the address you wrote down. Press NUM SHIFT with RESET. Correct the error condition by keying the correct character in position 001 and pressing REC ADV.
X	Right Adjust Sign	V	• A sign mismatch occurred at the end of a right adjust field in Verify (V) mode.	Reset and press RIGHT ADJ or – (dash) depending on the corresponding sign.
	Negative Bid Response	COMM[1]	• You are trying to transmit but the remote location isn't ready to receive.	When remote location is ready, re-establish the connection.
Y	Empty Data Set	X	• Tried to select Verify (V), Update (U) or Search (S) mode when BOE equals EOD.	Reset, inspect the data set label.

[1] COMM identifies errors that occur during communications; see *Communications.*

Code	Type	Mode	Causes	What You Do
Z	Last Record Write Error	E, U	• In Enter (E) or Update (U) mode, the write error occurred when performing a record advance at EOE.	Reset, search EOD and inspect the record displayed. Update the record if necessary and record advance to rewrite the record.
		V	• In Verify (V) mode, the write error occurred when performing a record advance on the last record of the data set.	Reset, search EOD, select Verify mode and reverify the record if necessary. Then record advance to rewrite the record.
Disk Errors (Numbers)				
0	Early Disk Removal	ALL	• Removed the diskette while the disk operations were in process.	Insert diskette, press NUM SHIFT with RESET key. Inspect and modify the data set label if incorrect.
		ALL	• Removed the diskette while not on track 00.	Write down the current disk address from the status line. Insert diskette and press NUM SHIFT and RESET (positions the disk on track 00; sector 08). If in Enter mode when the diskette was removed, modify the corresponding data set label with EOD set to the recorded address. If not in Enter mode but had been since leaving track 00, set EOD equal to EOE and search for the last record entered. Record advance, write down current disk address, return to index, and modify the label with EOD set to the recorded address.

Code	Type	Mode	Causes	What You Do
0 (cont.)		N	• Removed the diskette while the disk operations were in process.	Write down the disk address from the status line. Insert diskette and press NUM SHIFT with RESET. Modify the data set label by adding the number of records to be inserted to EOD. Inspect the data set for duplicate records, from the address you copied down to EOD. There are as many duplicate records as the number of records being inserted. Delete the duplicate records. If the records in the data set are in sequence, delete the duplicate records that are out of sequence.
1	Length	ALL Except P (Punch), R	• The record length read from the disk did not match the record length in the data set label.	Numeric shift and reset, return to index and inspect the data set label for proper record length.
	Card Read/ Punch	P, R	• The record length read from the disk did not match the record length in the data set label.	Press NUM SHIFT and ALPHA SHIFT and RESET to return to Index (X) mode; then inspect the data set label for proper record length.
	Improperly Deleted Label	COMM[1]	• The data set was deleted by placing a D in position 1 of the label rather than using the FUNCT SEL and DELETE REC keys. Correct the data set label, restart communications.	Correct the data set label, restart communications.

[1] COMM identifies errors that occur during communications; see *Communications.*

Code	Type	Mode	Causes	What You Do
2	No Record Found	ALL Except P (Punch), R	• No record corresponding to the current disk address could be found.	If copying a disk, see *Disk Copy.* Otherwise, press NUM SHIFT and RESET. Then retry the operation. If the error persists, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.
2 (cont.)	Card Read/ Punch	P, R	• No record corresponding to the current disk address could be found.	Press ALPHA SHIFT and NUM SHIFT with RESET to return to the Index (X) mode. Then retry the operation. If the error persists, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.
3	Seek	ALL Except P (Punch), R	• No track could be found. The current disk address contains the address of the record corresponding to the seek error or the address of the last record read. (In Printer (P) mode the current disk address contains the address of the last record read.)	If copying a disk, see *Disk Copy.* Otherwise, press NUM SHIFT and RESET. Then retry the operation. If the error persists, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.

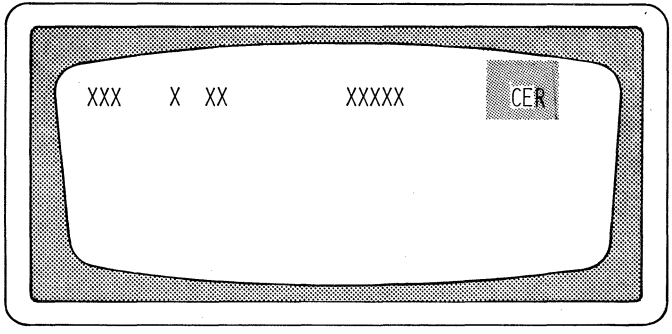
Code	Type	Mode	Causes	What You Do
	Card Read/ Punch	P, R	• No track could be found. The current disk address contains the address of the record corresponding to the seek error or the address of the last record read. (In Punch (P) mode the current disk address contains the address of the last record read.)	Press ALPHA SHIFT and NUM SHIFT with RESET to return to the Index (X) mode. Then retry the operation. If the error persists, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.
		N	• No track corresponding to the current disk address could be found.	Inspect the data set for duplicate records. Delete any duplicate found. See the *IBM 3741 Data Station Reference Manual,* GA21-9183, to correct the error condition.
4	Read	ALL Except P (Punch), R	• The record at the current disk address could not be read.	If copying a disk, see *Disk Copy.* Otherwise, press NUM SHIFT and RESET. Then retry the operation. If the error persists, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.
	Card Read/ Punch	P, R	• The record at the current disk address could not be read.	Press ALPHA SHIFT and NUM SHIFT with RESET to return to the Index (X) mode. Then retry the operation. If the error persists, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.

Code	Type	Mode	Causes	What You Do
5	Write	ALL Except P (Punch), R	• The record could not be written to disk.	If copying a disk, see *Disk Copy.* Otherwise, press NUM SHIFT and RESET. Then press REC BKSP, enter data, and press REC ADV. If the error persists, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.
	Card Read/ Punch	P, R	• The record could not be written to disk.	Press ALPHA SHIFT and NUM SHIFT with RESET to return to the Index (X) mode. Then retry the operation. If the error persists, see the *IBM 3741 Data Station Reference Manual,* GA21-9183.
6	Deleted Record	ALL Except I (Inquiry)	• This code is not an error. It merely indicates that the current record is a deleted record. A 6 can appear momentarily during operations where deleted records are passed automatically such as Search Content, Disk Copy, Communications, etc. In these cases, you can ignore this 6.	Press NUM SHIFT and RESET.
		I	• A deleted record was encountered while record advancing or backspacing in Inquiry (I) mode. Deleted records are not processable records.	Press NUM SHIFT and RESET to return to Index (X) mode. Select update mode and advance to desired record, then select inquiry mode. If required, press FUNCT SEL upper and I to blank display screen.

Code	Type	Mode	Causes	What You Do
7	Search	E, U	• The search data didn't match any record during a Search Sequential content operation.	Reset and inspect the search data and the data set label.

Accidental Selection of CE Mode

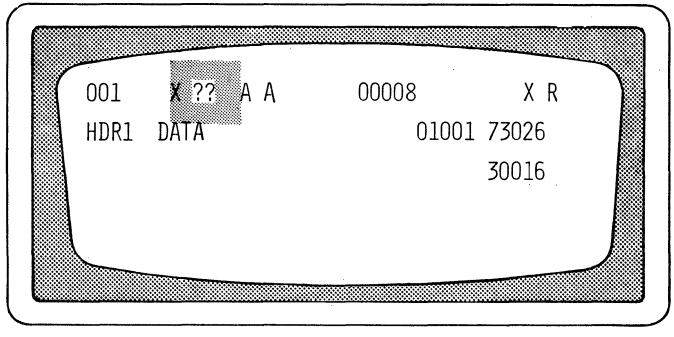
In Case This Happens:



If by accident, you press FUNCT SEL lower, NUM SHIFT, and C, you'll get the mode displayed above. This is a mode for the customer engineer only. To get out of this mode, press RESET repeatedly until the XR mode is displayed.

?? Error

If ?? is displayed in positions 9 and 10 of the status line, try inserting a couple more diskettes to see if the question marks disappear. If they don't, notify your supervisor.



GLOSSARY

Accumulator: A counting device that retains an accumulated sum until reset.

Alphameric: Any of the 26 characters of the alphabet or the 10 numeric digits 0 through 9.

Alpha shift: The A and Z keys plus the bottom letters on all the other keys.

Auto answer mode: Mode the machine is operating in when the Communications feature is set up to automatically respond to a call.

Automatic field: A field that is completed by the machine automatically such as an auto dup or auto skip field which the operator does not have to key manually.

Begin field code: The letter used in a program to make the beginning of a data field. The letter also defines the shift and the type of field, such as R for a right adjust field, S for a skip field, etc.

BOE (Beginning of Extent): The beginning of a data set, defined by a track and sector number; pertains to positions 29 through 33 in the data set label.

Blank character: An unused character position in a record. Results when the space bar is pressed.

Bypass: Moving the cursor across a field or portion of a record without changing the content in the field or portion of the record.

Continue field code: Characters following the Begin Field code in the program and indicating the program shift (alpha or numeric) for the remaining positions in the program.

Continuation character: (synonymous with Continue Field code).

Control statement: A set of instructions stored in the program storage area of the machine when doing Field Totals operations.

Copy: The duplication of data from one disk onto another disk.

Counters: Devices that count keystrokes, records, and corrections (made while verifying). These counters are used for production statistics.

Current field: The field being processed by the operator.

Cursor: The underscore character (_) on the display screen that indicates what character position (referred to as cursor position) you are at.

Data: Information that you key from a source document.

Data set: The various types of information related to a particular job and entered as a group of records.

Data set label: The information in track 00 that identifies a particular data set.

Disk: The media you use for recording data.

Diskette: The square plastic jacket which contains the disk.

Disk error: An error condition caused by the disk or the machine. Disk errors are numbers 1, 2, 3, 4, or 5.

Duplicate fields: Fields programmed to repeat information from the same field in the previous record.

End of program character: (synonymous with End Programming code).

End programming code: The letter (E) used to mark the end of the program.

EOD (End-of-Data): The address of the next available sector on the disk for a record. (Given in positions 75 through 79 in the data set label.)

EOE (End-of-Extent): The address of the last available sector in a data set. (Given in positions 35 through 39 in the data set label.)

Error code: A character displayed in the status line to indicate the type of error occurring.

Extent: The sectors on the disk that are reserved for a particular data set.

Field: A specific number of character positions reserved by means of a program for a particular category of data for a record(s). For example, the positions in which the cost of a part is entered.

Field definition character: (synonymous with Begin Field code).

Fill character: Either a blank or zero. Used in right adjust fields, from the first position to the first non-fill character entered in the field.

Index track: The first track on the disk (track 00). Used for data set labels.

Load: To enter a program into a storage area.

Machine mode: Pertains to what the machine is set up to do (i.e., Enter, Verify) and is indicated in the status line.

Machine status: Refers to the code in the status line that tells you whether the machine is ready (R) or not ready (N), or requires you to wait (W).

Manual fields: Any field that the machine doesn't automatically process.

Modem: The telephone used when doing Communications operations.

Numeric shift: The top character on each key (except A and Z).

Offline: An operation you are currently doing with a previously keyed job when doing a Field Totals operation.

Online: A Field Totals operations done while keying.

Program: A set of instructions that tell the machine what to do with data as you key it.

Program chaining: A method used for automatic program selection.

Program code: The characters that make up a program.

Program field: A field containing program code characters to specify the type of field, program shift, and length of the field.

Program number: The number in the status line that gives the storage area number of the program you are currently using.

Program shift code: The letters in the status line that indicate the program shift (alpha or numeric) of the current and next character to be keyed respectively.

Record: A piece of data no more than 128 characters long that is usually only one part of a related set of data.

Record address: The track and sector number for a record.

Right adjust: To enter characters at the right end of the field.

Sector: A section in a track on the disk for a record.

Skip field: A field in which data is erased as the machine advances beyond it.

Source document: Material containing the information you are keying (that is, the records you are entering).

Status line: The top line on the display screen. Gives information such as cursor position, record address, and machine mode.

Verify bypass field: A field that is bypassed during a Verify operation but not during an Enter operation.

Verify indicator field: (synonymous with Verify mark).

Verify mark: A single character field showing if the data set is verified. The field contains a V if verified, is blank if not verified.

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Printed in USA **GA21-9131-4**