IBM 5280
Distributed Data System
Operator’s Guide
Second Edition (February 1981)

This is a major revision of, and obsoletes, GA21-9364-0 and incorporates TNL GN20-9566.

Because the changes and additions are extensive, this publication should be reviewed in its entirety.

This edition applies to the following IBM 5280 programs and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters.

Release 3, modification 0 of the IBM 5280 DE/RPG Program Product (Program 5708-DE1)

Release 3, modification 0 of the IBM 5280 Utilities Program Product (Program 5708-UT1)

Release 3, modification 0 of the IBM 5280 Sort/Merge Program Product (Program 5708-SM1)

Release 3, modification 0 of the IBM 5280 Communications Utilities Program Product (Program 5708-DC1)

Release 3, modification 0 of the IBM 5280 System Control Programming Product (Program 5708-SC1)

Release 3, modification 0 of the IBM 5280-3270 Emulation Program Product (Program 5708-EM1)

Changes are periodically made to the information herein; these changes will be reported in technical newsletters or in new editions of this publication.

Use this publication only for the purposes stated in the Preface.

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Publications are not stocked at the address below. Requests for copies of IBM publications and for technical information about the system should be made to your IBM representative or to the branch office serving your locality.

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This operator's guide is intended primarily for persons who are using a 5280 system with DE/RPG programs or the Key Entry Utility (KEU). The following topics are discussed:

- General information about using the 5280 system.
- Procedures for operating the system.
- Specific information and procedures for using DE/RPG programs or KEU.
- Specific information about how the command keys and the function keys work with DE/RPG, KEU, or the utility programs.

This operator's guide also contains the program names required for using system control planning, utilities, sort/merge, and communications utility programs. More specific information on how these programs operate can be found in the related reference or reference/operation manual.

Specific information on how to operate the printer(s) attached to a 5280 system can be found in the printer operator's guide that is shipped with the printer.

Information concerning emulation of an IBM 3270 can be found in the IBM 5280-3270 Emulation Reference Manual.

Related Publications

- IBM 5280 Machine Verification Manual, GA21-9357

Note: A set of insert tabs are available for this manual to help you locate a section quickly.

Requests for these insert tabs (GX21-9366) should be made to your IBM representative or the IBM branch office serving your locality.
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As an operator, you can use the IBM 5280 system to process a number of business applications at your location.

The following overviews of the system keyboards, display screen, control panel, diskette, and diskette drives should help you become more familiar with the system. A short exercise at the end of the discussion allows you to start and operate the system.

KEYBOARD OVERVIEW

The keyboard on the 5280 system is an arrangement of keys that allows you to operate the system.

See Keyboards in this manual for a detailed discussion of the 5280 keyboards.

DISPLAY SCREEN OVERVIEW

The display screen is the interface between you and the system. Data, messages, and other information are displayed on the screen.
Cursor

The cursor appears on the display screen as an underline to a character position. The cursor shows the position on the 5280 display screen that the next character entered from the keyboard will occupy. It may be moved on the display screen using the cursor movement keys without interfering with other characters.

Status Line

The status line, when displayed, is the first row information on the display. This line provides information about the job currently being processed in the system, such as the mode of operation, keyboard shift, and current record number.

Display Prompt

A display prompt is a request for you to enter information or to perform some other action. For example, the following prompt requests that you enter information to load a program.

0 0001  A 16 40
Program name:  
Device address:  
Partition number:  
Press ENTER
CONTROL PANEL OVERVIEW

The data station control panel contains the Brightness control, Contrast control, and the Power switch. The Brightness control allows you to adjust the brightness of the display characters. The Contrast control allows you to adjust the brightness of the high intensity fields and of the cursor. The Power switch turns the device on or off.

The control panel on the 5288 contains the Power On and Off switch. Depending on your system, the control panel might also contain the diskette drive-in-use indicator(s) and/or the keylock feature. This information is presented later.

DISKETTE OVERVIEW

A diskette is a small, flexible, magnetic disk permanently enclosed in a protective jacket.
As an operator, you can load programs from the diskette, save information on the diskette, and retrieve information that has previously been entered on the diskette.

An additional storage envelope is provided to protect the diskette when it is not in use. The diskette must be handled carefully when it is removed from the envelope.

**DISKETTE DRIVE OVERVIEW**

The diskette drive is a device used to read and write data on diskettes. The diskette locking lever holds the diskette inside the drive during operation. The diskette drive label identifies the diskette drive type. There are two drive types: 1 and 2D. See Diskettes for information on what kind of diskettes can be inserted into the two drive types. When the diskette drive-in-use indicator is on, the diskette in that drive is being used.
GETTING FAMILIAR WITH THE SYSTEM: A SHORT EXERCISE

1. If your system is powered on and the following prompt is displayed, do the following exercise. If the prompt is not displayed, see Starting the System or contact your supervisor.

This number depends on which data station you are using.

```
0 0001 A 16 40
Program name: 1111111111111111
Device address:
Partition number:
```

Press ENTER 05-00

2. Adjust the display screen for visual comfort:

To adjust the brightness of the cursor turn the (Contrast control) to the left or right.

To adjust the brightness of the characters displayed on the display screen, turn the (Brightness control) to the left or to the right. Turning it to the right makes the display image brighter; to the left, dimmer. There is no correct setting for the brightness of the image. Experiment with this control until you find the setting that is most convenient and comfortable for your viewing. You may find that you want to change the brightness as more characters are
displayed on the display screen. Even the job you are working on might influence the brightness that you find comfortable.

**Note**: On the 5282 and 5286, one switch controls the brightness at both stations.

*5282/5286 Mirror Adjustment*

The mirror can be placed in one of two positions for your easiest viewing. To adjust the mirror, lift up on the mirror, as shown, and position its front edge on the top or bottom ledge of the mirror housing.
Entering Data To The Load Prompt

When you press a data type key, you should hear a click that indicates the keystroke is accepted. At the same time the character should appear on the screen. Some of the keys on the keyboard are typematic keys. This means that the keys repeat their character or their function automatically if held down. Press and hold the S key until five or six S’s appear on the display screen. Notice that when the key is held down, the character is automatically entered again. Always press and release a data key immediately, unless you want to enter multiples of that character. Now press and hold the ⬇ (Character Backspace) key until the cursor moves back to the beginning of the field.

Before you perform the next task, write down the contents of the status line. Now key the word SYSTEN. The screen should look like this:

```
Character Position in the Input Record

Number of Positions Remaining in the Input Field

0 0007 A 10 40

Program name: SYSTEN
Device address:
Partition number:

Press ENTER 05-00
```

Now look at the status line; notice that the number of positions remaining in the input field changed from 16 to 10. Also, notice that the input record character position changed from 1 to 7.

The vertical bars on the screen are called column separators. Each space between the bars can contain one character. In the following example SYSTEN occupies 6 of the 16 spaces.

```
The status line indicates 10 remaining spaces.

Column Separators

0 0007 A 10 40
Program name: SYSTEN
Device address:
Partition number:

Press ENTER 05-00
```

10 Remaining Spaces
There are 10 remaining positions within the input field, as indicated on the status line.

**Changing Data on the Load Prompt**

To update or correct the displayed data, position the cursor under the character to be changed and then enter the correct data. Use the \[ \text{Backspace} \] (Character Backspace) key to position the cursor under the N in SYSTEN.

The \[ \text{Backspace} \] (Character Backspace) key did not erase the data, but only moved the cursor. This key along with the \[ \text{Advance} \] (Character Advance) key, the \[ \text{Up} \] (Cursor Up) key, the \[ \text{Down} \] (Cursor Down) key, and the \[ \text{New Line} \] (New Line) key are known as cursor movement keys. The cursor movement keys move the cursor in either the horizontal (left or right) or vertical (up or down) direction on the display screen. The Character Backspace key and the Character Advance key can always be used; whereas the Cursor Up key, the Cursor Down key, and the New Line key only work when format 0 is active. See the Glossary for a description of format 0.

Now, enter the character M. The display looks like this:
Now press one of the following two keys, according to your keyboard type to move the cursor to the next input field.

The cursor is now at the next input field.

Program name: SYSTEM
Device address:
Partition number

Press ENTER

Next Input Field

The N shown on the status line indicates that the current input field is in numeric shift. When you are using a data entry keyboard, numeric shift means that the top character on a data key is entered when you press the key.

For example, if you press the 0 key in numeric shift, the quote (" ) character is entered. To enter the bottom character on the key, press and hold the Alpha shift key and press the 0 key. The character C is entered. If the keyboard is in alpha shift (an A replaces the N on the status line), you must press the Num key to enter the top character on the key. (If you are using a typewriter keyboard, the keyboard shift indicated on the status line does not determine which character is entered when a key is pressed.)
Now, enter the device address 5C00. Remember, if you are using a data entry keyboard, you must press and hold the Alpha shift key as you press the GJ key.

The display screen should look like this:

```
0 0021     N 01 40
Program name: SYSTEM
Device address: 5C00
Partition number: U
```

Press ENTER

Next Input Field

After you enter 5C00, the cursor should automatically advance to the next input field. For the purpose of this exercise, enter the character 1.

```
0 0000     N 00 F1
Program name: SYSTEM
Device address: 5C00
Partition number: U
```

Press ENTER

Blinking Cursor

You see a blinking cursor. The blinking cursor means one of the following conditions occurred as you entered data:

1. The input record or prompt has been filled with data. In this case, the input record character position on the status line equals 0 and the auto record advance function is not active. This condition is called *awaiting record advance* and you must press the Enter/Rec Adv key to continue.

2. The input field (which has been specified as field exit required) has been filled with data. In this case, the positions remaining in the field counter on the status line equals 1. This condition is called *awaiting field exit* and
you must press a field exit key such as the Field Exit key or the (Field Advance) key.

Now, for this exercise, remove the character 1 from the display prompt by first pressing the (Character Backspace) key. (Notice that the cursor stopped blinking but did not move. Attempting to change or remove data when the cursor is blinking causes an error.) Now press the Spacebar once; the character 1 is deleted.

For more information on removing data from the display screen, see Command Keys and Function Keys.

Recovering from an Error Condition

Press the Enter key; this causes an error for this exercise. Notice a blinking status line.

The error code means that you pressed the wrong key or you entered the wrong information. Normally, when you encounter an error condition, you should refer to the Message Manual for the correct recovery procedure. For this example, press the Reset key or the Error Reset key to bring back the load prompt.
The operations that you have just performed are very basic operations on the 5280 system. Operations or procedures for performing specific tasks on the system, such as entering and updating records, are presented in various sections of this manual.
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This section describes the basic functions and procedures for:

- Starting the system
- Stopping the system
- Dumping the error log
- Operating the security features
- Cleaning the system
- Determining system problems

STARTING THE SYSTEM (IPL)

Whenever the system has been powered off, you must start the system.

1. Unlock the keylock feature if it is installed on your device; turn the key to the right. Only one of the two keys supplied with your system allows you to turn the key to the right. For the location of the keylock on your controller, see Keylock Feature in this section.

2. If there are auxiliary data stations (5281s or 5282s) attached to your 5280 system, set the Power switch on each of these devices to the I (On) position.

3. Insert the IPL diskette into any diskette drive and close the diskette locking lever.

Make sure that only one IPL diskette is inserted into the system.

Although the IPL program can be loaded from any diskette drive, the system indicators are displayed (during system checkout) at keyboard 0 only. Keyboard 0 can be identified by a label in the upper left corner of the keyboard.

4. Set the Power switch on the controller (5285, 5286, or 5288) to the I (On) position.
Turning the power switch on causes the 5280 system to load the IPL program. You might see changing display patterns on the screen(s) and hear buzzing sounds. When the IPL program has been successfully loaded into the system, either the load prompt or the date prompt appears. You can now remove the IPL diskette from the diskette drive. If you do not see one of the following prompts, go to Determining System Problems in this section.

Load Prompt

Enter date.

Day ———— Use a number from 1 to 31.
Month ———— Use a number from 1 to 12.
Year ———— Use the last two digits of the year.
Day of year ——— This entry is optional. Use a number from 1 to 366.

Date Prompt

5. Enter the information requested by the prompt.

RESTARTING THE SYSTEM AFTER IT HAS BEEN RUNNING

Contact the other operators before you restart (perform another IPL) the system to be sure that they do not have any programs in process or open data sets.

There are two methods to restart the system: using a keying sequence from the keyboard or using the Power switch. Using the keying sequence is the recommended procedure.
Keying Sequence

1. Insert the IPL diskette and close the diskette locking lever.
2. Press the Cmd key, press and hold the Num key or the \( \uparrow \) (Shift key), and then press the G key.

Power Switch

1. Remove all diskettes from the system.
2. Set the Power switch on the controller (5288, 5286, or 5285) to the 0 (Off) position.
3. Insert the IPL diskette and close the diskette locking lever.
4. Wait at least 10 seconds, and then set the Power switch to the 1 (On) position.

STOPPING THE SYSTEM

1. Be sure that all programs have completed processing:
   a. All red (diskette drive-in-use) indicators are off (data sets closed).
   b. Load prompts are displayed on all data stations (that are powered on).
2. Check with your supervisor to be sure that no background programs are active.
3. Remove all diskettes.
4. Dump the error log (see the next procedure).
5. Set the switch on the control unit to the 0 (Off) position.

DUMPING THE ERROR LOG

The error log is information that will assist your service representative when your system requires service. Do the following:

1. Begin this procedure with the load prompt displayed.
2. Insert the machine verification diskette.
3. Enter TSYSLOG, and press the Field Exit key or the Field + key.
4. Enter the device address of the diskette drive that contains the machine verification diskette, and press the Enter key.

When the program is loaded, the following display appears.
When the error log has been written on diskette, the following display appears.

**Test complete**

**Options are**

1. **Restart**
2. **Exit**

**Select option: \ Press ENTER**

5. Enter 2 and press the Enter key. The load prompt is displayed.

6. Remove the verification diskette, insert it into its protective jacket, and return it to the binder.

**SECURITY FEATURES**

Some IBM 5280 devices are equipped with a keylock and/or magnetic stripe reader(s).

**Keylock Feature**

The keylock feature prevents the entry and the display of data at all data stations when the key is in the locked position.
How To Use The Keylock Feature

The keylock, if present, is in different locations on the 5288, 5286, and 5285 as indicated.

If your controller has the keylock feature, use procedure (a) for normal operation, such as data entry or running a utility. Use procedure (b) for setting up a communications job. Use procedure (c) for preventing the use of any or all of the keyboards attached to the 5280 system.

Separate keys are required for normal operations and for setting up communications jobs. Also, the keys can be inserted and removed only in the upright (locked) position.

a. For normal operation, insert the correct key and turn it to the right.
b. To set up a communications job, insert the correct key and turn it to the left. Once the communications job has been set up, turn the keylock to the right for normal operation (see step a).

![Keylock](image)

c. To prevent the use of your system, turn the key to the upright (locked) position and remove the key. After a 5280 has been set up for an unattended communications job, it is recommended that you position the key in the locked position to prevent accidental data entry.

![Key](image)

**Magnetic Stripe Reader Feature**

The magnetic stripe reader is an optional feature that reads magnetic encoded stripes on identification cards.

**How To Use The Magnetic Stripe Reader**

To use the magnetic stripe reader:

1. If your device has the keylock feature, you must turn the key to the left or right before you can use the magnetic stripe reader.

2. Place the card to be read, as shown:
3. Move the card smoothly and continuously from right to left through the reader. (The card must remain against the bottom surface of the slot.)

CLEANING YOUR SYSTEM

CAUTION
Do not use a cleaner that contains isopropyl alcohol, which can damage the surface of the 5280 system.

Use a cloth dampened with a mild soap solution to clean the covers, the keyboard, the display tube face, and the display mirror (5282 and 5286 only).

To remove the mirror: lift up on the edge of the mirror and slowly pull it out.

To replace the mirror: lay the mirror on the top or bottom ledge of the mirror housing; then lower the bottom of the mirror into its position.

DETERMINING SYSTEM PROBLEMS

The following checks can help you determine what is wrong with your system. If the problem cannot be fixed with the following checks, contact your supervisor.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>ACTION</th>
</tr>
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<tbody>
<tr>
<td>Blank Screen</td>
<td>1. Check to make sure that the Power switch is set to the I (On) position at all devices.</td>
</tr>
<tr>
<td></td>
<td>2. Check the key position on the keylock. It must not be in the upright (locked) position.</td>
</tr>
<tr>
<td></td>
<td>3. Make sure that the Brightness control is turned to the right far enough for you to see the display.</td>
</tr>
<tr>
<td>PROBLEM</td>
<td>ACTION</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Display too dark</td>
<td>1. Turn the Brightness control to the right.</td>
</tr>
<tr>
<td>Display too bright</td>
<td>2. Turn the Brightness control to the left.</td>
</tr>
<tr>
<td>System Indicator checkout</td>
<td>Twelve system indicators (●) appear on the display screen, in a column.</td>
</tr>
<tr>
<td>sequence halts (the indicators</td>
<td>As each part of the 5280 is checked, the indicator changes to a (-) dash.</td>
</tr>
<tr>
<td>appear on keyboard 0 only,</td>
<td>If the checkout sequence stops, the 5280 has encountered a problem.</td>
</tr>
<tr>
<td>during the IPL)</td>
<td></td>
</tr>
</tbody>
</table>

If the checkout sequence stops with six indicators remaining on the display screen, one of the following problems has occurred:

1. The IPL diskette has not been properly inserted into a diskette drive. Check to see that the diskette is in a diskette drive, and that the diskette locking lever is down. The IPL will continue.

2. The IPL diskette has been inserted into a defective diskette drive. Move the IPL diskette to another diskette drive. The IPL will continue.

3. The IPL diskette is defective. Use another IPL diskette. The IPL will continue.

If the checkout sequence stops with two indicators remaining on the display screen, there might be a problem with the user-written IPL diskette. Contact your programmer.
3. Move the card smoothly and continuously from right to left through the reader. (The card must remain against the bottom surface of the slot.)

CLEANING YOUR SYSTEM

CAUTION
Do not use a cleaner that contains isopropyl alcohol, which can damage the surface of the 5280 system.

Use a cloth dampened with a mild soap solution to clean the covers, the keyboard, the display tube face, and the display mirror (5282 and 5286 only).

To remove the mirror: lift up on the edge of the mirror and slowly pull it out.

To replace the mirror: lay the mirror on the top or bottom ledge of the mirror housing; then lower the bottom of the mirror into its position.

DETERMINING SYSTEM PROBLEMS

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<td>3. Make sure that the Brightness control is turned to the right far enough for you to see the display.</td>
</tr>
<tr>
<td>PROBLEM</td>
<td>ACTION</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Continued</td>
<td>4. Check to make sure that the device is plugged into a grounded receptacle.</td>
</tr>
<tr>
<td></td>
<td>5. Check to make sure that you have power at the receptacle.</td>
</tr>
<tr>
<td></td>
<td>6. Check to make sure that the correct IPL diskette was used for the IPL of the system.</td>
</tr>
<tr>
<td></td>
<td>7. Check with your supervisor to make sure that the system has been configured correctly.</td>
</tr>
<tr>
<td></td>
<td>8. Make sure that the auxiliary data station cables are connected properly.</td>
</tr>
<tr>
<td>Display too dark</td>
<td>1. Turn the Brightness control to the right.</td>
</tr>
<tr>
<td>Display too bright</td>
<td>2. Turn the Brightness control to the left.</td>
</tr>
</tbody>
</table>

System Indicator checkout sequence halts (the indicators appear on keyboard 0 only, during the IPL). Twelve system indicators (■) appear on the display screen, in a column. As each part of the 5280 is checked, the indicator changes to a (−) dash. If the checkout sequence stops, the 5280 has encountered a problem. If the checkout sequence stops with six indicators remaining on the display screen, one of the following problems has occurred:

1. The IPL diskette has not been properly inserted into a diskette drive. Check to see that the diskette is in a diskette drive, and that the diskette locking lever is down. The IPL will continue.

2. The IPL diskette has been inserted into a defective diskette drive. Move the IPL diskette to another diskette drive. The IPL will continue.

3. The IPL diskette is defective. Use another IPL diskette. The IPL will continue.

If the checkout sequence stops with two indicators remaining on the display screen, there might be a problem with the user-written IPL diskette. Contact your programmer.
<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued</td>
<td>If the checkout sequence stops with one indicator remaining on the display screen, one of the following has occurred:</td>
</tr>
<tr>
<td></td>
<td>1. There was not a 10-second wait between turning the system off and turning it on again. Turn off the system, wait 10 seconds, then turn it on and perform another IPL.</td>
</tr>
<tr>
<td></td>
<td>2. The IPL diskette has a configuration that requires more storage than is available in your system. Contact your supervisor or programmer.</td>
</tr>
<tr>
<td></td>
<td>If the system checkout stops at any other position, call your service representative.</td>
</tr>
<tr>
<td></td>
<td>When no display indicators are present, the checkout process is complete.</td>
</tr>
<tr>
<td>Blinking Status Line</td>
<td>If there is an error code, see the Message Manual. Otherwise, press the Reset key.</td>
</tr>
<tr>
<td>Keystrokes are not accepted</td>
<td>1. Check to make sure that the keyboard cable is plugged in.</td>
</tr>
<tr>
<td></td>
<td>2. Check the key position in the keylock.</td>
</tr>
<tr>
<td></td>
<td>3. Make sure that the auxiliary data station cables are connected.</td>
</tr>
<tr>
<td></td>
<td>4. Check to make sure that the correct IPL diskette was used for the IPL of the system.</td>
</tr>
<tr>
<td></td>
<td>5. Check with your supervisor to make sure that the system has been configured correctly.</td>
</tr>
<tr>
<td>Keystrokes are not displayed as they are shown on the keytops.</td>
<td>The keyboard is configured wrong for that partition or the keyboards have been changed. Check with your supervisor or programmer.</td>
</tr>
</tbody>
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DISKETTE HANDLING ........................................... 29
DISKETTE TYPE ................................................ 29
HOW TO INSERT THE DISKETTE .................................. 30
HOW TO REMOVE A DISKETTE .................................... 32
DISKETTE WEAR ............................................... 32
DEFECTIVE DISKETTE DATA RECOVERY .......................... 32
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DISKETTE HANDLING

Some helpful hints for protecting diskettes:

• When you are not using the diskette, keep it in the protective envelope.

• Put the diskette in the envelope before writing on the label so that the label is visible through the cutaway front of the envelope.

• Always handle the diskette by the label area to avoid touching the recording surface. Fingerprintson the surface can cause permanent diskette errors.

• Use a file folder or a carrier envelope to carry the diskette.

• Keep magnets away from the diskette.

• If you are mailing diskettes, place them in a box or a heavy cardboard mailer to prevent bending that might be encountered in normal shipping and handling.

DISKETTE TYPE

You can determine a diskette type by looking at the label on the diskette.

There are three diskette types. The labels for the three diskette types are:
A diskette 1 can be used in either a type 1 or type 2D diskette drive; however, diskettes 2 and 2D can be used only in the 2D diskette drive. The diskette drive type is located near the diskette drive.

**Note:** If a diskette 2 or 2D is inserted into a type 1 diskette drive, a 3151 error code is displayed when the program attempts to use the data set.

**HOW TO INSERT THE DISKETTE**

1. Make sure that the diskette type you insert matches the diskette drive type. (Diskettes 2 and 2D cannot be used in a type 1 diskette drive).

2. Make sure that the diskette drive-in-use indicator is off. Turn the diskette locking lever up. If there is a diskette in the diskette drive, remove it and place it in the protective envelope.
CAUTION
Insert the diskette slowly to ensure that it is seated properly in the drive. If it is not resting against the back of the drive, the diskette might be damaged when you turn the diskette locking lever.

3. Remove the diskette from the envelope and insert the diskette into the drive with the label facing to the left, as shown.

4. Turn the diskette locking lever down.
HOW TO REMOVE A DISKETTE

CAUTION
Do not remove a diskette when the diskette drive-in-use indicator is on (the data set is open and data can be lost). Removing a diskette when the diskette drive-in-use indicator is on causes a loud buzzing sound. If this sound is heard, close the diskette locking lever without removing the diskette.

1. Turn the diskette locking lever up.
2. Pull the diskette from the drive.
3. Put the diskette in its envelope and label it, if you have not already done so.

DISKETTE WEAR

The use of flexible diskette storage provides some significant advantages, such as low cost, compact size, multiple system functions, and ease of media handling and storage. It should be recognized, however, that during recording and reading, the read/write head is in contact with the media, causing diskette wear over time. Variations in the rate of wear will depend on the particular operating environment and application characteristics. Care in the storage, use and handling can also affect diskette life. Excessive wear, handling, or contamination can cause possible failures in recording and/or reading.

Ultimate wear is to some extent dependent upon total usage of individual tracks. Care taken to distribute data so that accessing occurs over the entire recording surface with about the same frequency can extend the useful life of the diskette. Actual experience with individual applications and environments will allow development of guidelines as to when the media should be replaced.

Unpredictable circumstances such as contamination or severe handling can cause an early error to occur.

DEFECTIVE DISKETTE DATA RECOVERY

CAUTION
Use this procedure only if you are familiar with diskette labels and the data on the diskette.

If a diskette becomes defective after data is already stored on it, data can be lost. To recover the maximum amount of data from a defective diskette, use the diskette data recovery procedure (SYSRCVR) in the Machine Verification Manual.
PRINTER .................................................... 33
Stopping the Printer ........................................ 35
Ending the Job After Stopping the Printer ............... 36
Initiating End of Job from the Printer .................... 36
Printer Out of Forms ....................................... 36
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STOPPING THE PRINTER

If you must stop the printer to adjust the forms or observe the printed output, follow the procedure for your type of printer.

If your printer has a control panel with a Stop or Stop/Reset switch, such as the 5256 or 5225 printers:

1. Press the Stop switch on the control panel. The printer will stop after printing a few lines.
2. Adjust the forms or observe the printed output.
3. When you are ready to continue printing, press the Start switch on the printer control panel.
4. Press the Reset key on the keyboard. This will clear the error message on the display screen and start the printer.

If your printer does not have a control panel, such as the 5222 printer, follow this procedure from the keyboard attached to the partition controlling the printer.

1. Press the Sys Req key. The Load prompt is displayed. The printer will stop after printing a few lines.
2. Adjust the forms or observe the printed output.
3. When you are ready to continue, press the Cncl key. This cancels the Load prompt and starts the printer.
ENDING THE JOB AFTER STOPPING THE PRINTER

To end a job after pressing Stop to stop printing:

1. Press Start on the printer to empty the internal buffers of the printer. (If this is not done, any data left in the internal buffers will be held and printed when Start is pressed.)

2. Press Command and End of Job, and select Exit at the exit prompt.

INITIATING END OF JOB FROM THE PRINTER

To end a job from the printer or to stop printing without data held in the internal buffers, press Cancel on the printer (if the printer is so equipped). This causes an error message (2601) on the display screen and the printer will print the remaining data contained in the internal buffers. To change or align forms after the printer ceases printing, press Stop.

You now have the option of continuing with the job by pressing Start on the Printer and Reset on the keyboard, or ending the job by pressing Command and End of Job.

PRINTER OUT OF FORMS

When a printer out of form condition occurs, the 2150 message code will be displayed. The necessary action in response to this message varies according to the type of printer. See the IBM 5280 Messages Manual for the action required for your printer.
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  Input Record Character Position .......................... 40
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The status line is the first line of information on the display. It is displayed after the system has been started and during the loading and execution of DE/RPG programs, KEU programs, and some utilities.

This section describes the first 39 positions of the status line. The status line is displayed in one of two ways: for normal operation or for error conditions.

Note: During COBOL program execution, the contents of the status line will be different than described in this section. See the *IBM 5280 COBOL Programmer's Guide* for the correct description.

### NORMAL OPERATION

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>XXXX</td>
<td>XXXX</td>
<td>XX</td>
<td>XXXXXX</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

1. Partition number
2. Input record character position
3. Field definition
4. Character insert mode
5. Positions remaining in a field
6. Hex value
7. Record number
8. Automatic duplicate/skip function
9. Automatic record advance function
10. Format number or format ID
11. Program mode
12. Record verify/Record mark
13. Highest format number
Partition Number

The partition number indicates the partition to which your keyboard is attached.

Input Record Character Position

Indicates the position in the record where the next character will be stored. When awaiting record advance, this position equals 0.

Field Definition

Indicates the keyboard shift of the current field. One of the following characters is displayed.

A—Alphabetic shift  Y—Numeric only
N—Numeric shift     D—Digits only
H—Hexadecimal       W—Right half shift
X—Alpha only        V—Right half only

For definitions, see the DE/RPG Reference Manual or the Utilities Reference/Operation Manual.

Character Insert

The symbol (> is displayed when character insert mode is active.

Positions Remaining In A Field

Indicates the number of character positions remaining in the current field as follows:

- When the number of positions remaining to be keyed is greater than 99, two asterisks (**) are displayed.
- When the cursor is in the first position of a field, the field length is displayed.
- When the cursor is in the last position of a field, 01 is displayed.
- When the cursor is in the last position of a field and awaiting field exit, the cursor is flashing and 01 is displayed.
- When the cursor is in the last position of a record and awaiting record advance, the cursor is flashing and 00 is displayed.

Hex Value

Indicates the hexadecimal value of the character in the current record that corresponds to the current cursor position.
Record Number

Indicates the number of the record in the data set for the record currently displayed. This number includes both data records and deleted records.

Automatic Duplicate/Skip

Displays the reverse image D when the automatic duplicate/skip function is on. When this function is off, this position is blank.

Automatic Record Advance

Displays the reverse image $ when the automatic record advance function is on. When this function is off, the position is blank.

Format Number or Format ID

Indicates the number or ID of the format that you are currently using.

Program Mode

Indicates the mode in which the program is operating. The mode appears in one or two parts. The first part indicates the primary mode. The second part indicates a secondary mode:

Primary  Secondary
U-I

The valid mode combinations are:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter</td>
<td>E</td>
</tr>
<tr>
<td>Update</td>
<td>U</td>
</tr>
<tr>
<td>Update-Insert Record</td>
<td>U-I</td>
</tr>
<tr>
<td>Update-Search</td>
<td>U-S</td>
</tr>
<tr>
<td>Verify</td>
<td>V</td>
</tr>
<tr>
<td>Verify-Record Correct</td>
<td>V-C</td>
</tr>
<tr>
<td>Verify-Insert Record</td>
<td>V-I</td>
</tr>
<tr>
<td>Verify-Search</td>
<td>V-S</td>
</tr>
<tr>
<td>Verify-Display</td>
<td>V-D</td>
</tr>
<tr>
<td>Rerun</td>
<td>R</td>
</tr>
<tr>
<td>Rerun-Display</td>
<td>R-D</td>
</tr>
<tr>
<td>Copy</td>
<td>C</td>
</tr>
<tr>
<td>Copy-Search</td>
<td>C-S</td>
</tr>
<tr>
<td>Copy-Transfer</td>
<td>C-T</td>
</tr>
<tr>
<td>Print</td>
<td>P</td>
</tr>
<tr>
<td>Execute</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Status Line 41
Record Verify/Record Mark (DE/RPG)

This position contains a V if the record has been verified or an E if the record has been marked.

Highest Format Number (KEU)

Indicates the highest format number available for the current KEU job.

ERROR CONDITIONS

There are two types of status lines that display error conditions: the keyboard or program detected error and the device error.

Keyboard Error or Program Detected Error

When this type of error occurs, the system displays an error code, as shown below. The status line blinks.

```
X XXXX-XXXX-XXXX XX XXXXXX XX XX X-X X
```

Error Code

The information on the status line is the same as the status line for normal operation, except for the error code (—XXXX—). See the IBM 5280 COBOL Programmer’s Guide for an explanation of the format of the error codes while COBOL program is executing.

**Note:** When an error code appears, do not press the Reset key until you write the error code on a piece of paper or know the correct recovery procedure. See the Message Manual for description of the recovery procedures.
Device Error

When this type of error occurs, the system displays an error code and changes the status line. The status line blinks. The device error status line is different from the status line used for normal operation, as shown.

These positions can contain * or -.  

1 Partition number  
2 Device address  
3 Error code  
4 Logical device ID  
5 Program name  
6 Data set name  

Partition Number

The partition number indicates the partition to which your keyboard is attached.

Device Address

Displays the address of the device where the error occurred.

Error Code

Displays the error code for the error that occurred.

Note: When an error code appears, do not press the Reset key until you write the error code on a piece of paper or know the correct recovery procedure. See the Message Manual for a description of the recovery procedures.

Logical Device ID

Indicates the logical ID of the device where the error occurred.

Program Name

Displays the name of the program that is loaded. If an error occurs when you are loading a program, the name of a previously loaded program might be displayed.
Data Set Name

Displays the name of the data set for which the error occurred. If an error occurs when you are loading a program, the name of the program you attempted to load is displayed.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARTITIONS</td>
<td>47</td>
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<tr>
<td>STARTING A BACKGROUND PROGRAM</td>
<td>47</td>
</tr>
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<td>BACKGROUND PROGRAM REQUEST</td>
<td>48</td>
</tr>
<tr>
<td>ENDING A BACKGROUND PROGRAM</td>
<td>49</td>
</tr>
<tr>
<td>CANCELING A BACKGROUND PROGRAM</td>
<td>49</td>
</tr>
</tbody>
</table>
This page intentionally left blank.
All programs operate in partitions. Two kinds of partitions exist: foreground and background. Every foreground partition is automatically attached to a keyboard. A background partition can be temporarily attached to a keyboard for one of the following reasons:

- To start a job in a background partition.
- To respond to a program that is operating in the background partition and wants your attention (a program request).
- To interrupt a program operating in a background partition (ending or cancelling a background program).

Use one of the following procedures to attach to a background partition.

**STARTING A BACKGROUND PROGRAM**

To start a job in the background partition while the load prompt is displayed in a foreground partition:

1. Respond to the load prompt and enter the background partition number where the program is to be loaded. After you press the Enter key, the partition number on the status line changes to indicate which background partition you are in. Note, that for some utilities, the status line is not displayed.

2. Start the program. If you are executing a utility program, wait until the *utility in process* prompt is displayed before you go to step 3.

3. Press the Attn key to return to the foreground partition. The partition number on the status line changes to indicate which partition you are in.

**Note**: If the load prompt is not completely displayed, press the Attn key to redisplay the load prompt.

To start a job in the background partition while processing a job in the foreground partition:

1. Press the Sys Req key. The load prompt is displayed.

2. Respond to the load prompt and enter the background partition number where the program is to be loaded. After you press the Enter key, the partition number on the status line changes to indicate which background partition you are in. Note, that for some utilities, the status line is not displayed.

3. Start the program. If you are executing a utility program, wait until the
utility in process prompt is displayed before you go to step 4.

4. Press the Attn key to return to the foreground partition. The partition number on the status line changes to indicate which partition you are in.

BACKGROUND PROGRAM REQUEST

A program operating in a background partition can request operator intervention by displaying a solid rectangular block, located in the rightmost position of the 6th line on the display. On a secondary display of a dual data station (5282 and 5286), the indicator appears in the leftmost position of the 6th line on the display.

5281, 5282, 5285, and 5286
(Side with the Power Switch)

5282 and 5286
(Side without the Power Switch)

To respond to a background program request:

1. Complete the record or prompt you are entering and press the Enter/Rec Adv key.

2. Press the Attn key to connect to the background partition.

3. Respond to the program request. If you select an option that ends the program, the system automatically returns to the foreground partition. Otherwise, go to step 4.

4. Press the Attn key to return to the foreground partition. If more than one background partition is active, you may have to press the Attn key more than once to get back to the foreground partition.
ENDING A BACKGROUND PROGRAM

When you are in a foreground partition and a background program has completed executing, you should respond to the program request that is displayed. A program request is discussed in the previous procedure.

CANCELING A BACKGROUND PROGRAM

To cancel a program in the background partition which does not have a program request displayed:

1. Press the Cmd key, the C key, the B key, and the partition number to connect to the background partition.

2. See the appropriate section (KEU Job, DE/RPG Job, or Communications) for the procedures for ending a job. For other utilities, see the appropriate reference/operation manual.

3. Once the program in the background partition ends, the system automatically returns to the foreground partition.

Note: If the load prompt in the foreground partition is not completely displayed, press the Attn key to redisplay the load prompt.
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The KEU (key entry utility) allows you to enter data without the use of a compiled program. The utility has three primary modes of operation: enter, update, and verify.

The key entry utility can also be used to create, change, and save formats and prompting records. A format is a set of codes that control how data is entered into a record. The codes indicate the position, type, and length of each field in the record. A prompting record contains messages that can be displayed to identify the contents of the fields in the associated format.

Production statistics, such as the number of keystrokes used for a specific job, are accumulated by the system during data entry operations. These statistics can be written to a diskette at the end of a KEU job.

This section gives an overview of the procedures required to create and maintain data sets in the system using KEU. The second part of this section describes how to create and maintain formats and prompting records.

**PROCESSING A KEU JOB**

**Loading KEU**

1. Begin this procedure with the load prompt on your display.

2. Insert the diskette containing the KEU program.
3. **Program name:** Enter SYSKEU and press the Field Exit key or the Field + key.

4. **Device address:** Enter the device address of the diskette drive containing the KEU program.

5. **Partition number:** When using the key entry utility, no entry is required. Press the Enter key. The primary mode menu appears, as follows:

```
0.0001    D 01 40
SYSKEU - KEY ENTRY UTILITY
Options are
  1. Enter-NEW/REPLACE
  2. Update
  3. Verify
  4. Enter-ADD
Select option:  Press ENTER
```

---

**Preparing for Operation**

1. Select the mode of operation. The modes function as follows:

   The enter–NEW/REPLACE mode begins with the first record of a data set. It is normally used only for initial entry of data; all data previously entered for this data set is lost.

   The enter–ADD mode begins at the record following the last record of the data set. It is normally used to add data to an existing data set.

   The update mode begins with the first data record in the data set. It is normally used to correct or change data in an existing data set.

   The verify mode begins with the first data record in the data set. It is normally used to check the accuracy of entered data.

   After you select the mode and press the Enter/Rec Adv key, the following prompt appears:
2. Insert the diskette to which you are going to key data.

3. **Data set name:** Enter the name of the data set to which you are going to key data.

4. **Device address:** Enter the device address of the diskette drive where you inserted the diskette, then press the Enter key.

5. If the diskette is volume protected, the following prompt appears:

The device and data set name fields in the prompt contain the information you entered on the previous prompt.

**Owner identifier:** Enter the owner identifier for the diskette, then press the Enter key. After you press the Enter key, the data set open prompt is
redisplayed with the information you entered in steps 3 and 4. Press the Enter key again. If you did not enter the correct owner identifier, you are not allowed to access the diskette and the volume protected prompt is redisplayed.

6. If the data set you specified was not found on the diskette and you selected option 1 (enter-NEW/REPLACE) on the primary mode menu, the following prompt appears:

```
00001   D 01 40   I
Data set open failed
Options are
1. Retry
2. Allocate
Select option:   Press ENTER
```

**Retry:** Select option 1 and press the Enter key to redisplay the data set open prompt. Selecting this option allows you to insert the correct diskette, correct the data set name, or correct the device address. Then return to step 3.

**Allocate:** If you select enter-NEW/REPLACE, you can use option 2 to create a new data set for this job, then press the Enter key. See Allocating a Data Set, next in this section.

7. When the data set is opened, the display screen is blank if you selected enter-NEW/REPLACE), enter-ADD, or verify. The first record is displayed if you select update.

You are now ready to enter, update, or verify the data set, depending on the option you selected in response to the primary mode menu. Continue with the job by following the appropriate procedure listed under Entering Data, Updating Data, or Verifying Data in this section.

**Allocating A Data Set**

1. The following prompt is displayed containing information about the data set you tried to open.
0 0001 A 26 xx E

Enter data for data set allocate

Data set name: xxxxxxx
Device address: xxxx Owner ID:
Exchange type: I Number of records: 000000 Record length: 128

Press ENTER 06-84

2. **Data set name:** If the data set name is correct, press the (Field Advance) key. Otherwise, correct the data set name, then press the Field + key or the Field Exit key. Blanks are not allowed in a data set name. The system will use only the part of the data set name before the blank.

3. **Device address:** If the device address is correct, press the (Field Advance) key. Otherwise, correct the device address, then press the Field + key or the Field Exit key.

4. **Owner ID:** If the owner ID (identification code) is correct or if no owner ID is required, press the (Field Advance) key. Otherwise, enter the correct owner ID, then press the Field + key or the Field Exit key.

5. **Exchange type:** If the exchange type shown is correct, press the (Field Advance) key. Otherwise, enter a blank (space) for basic exchange, enter an H for H exchange, or enter an I for I exchange.

6. **Number of records:** If the remainder of the space on the diskette is to be allocated for this job, leave the value 000000 and press the (Field Advance) key. Otherwise, enter the number of data records to be allocated in the data set, then press the Field + key or the Field Exit key to exit the field and right-adjust the entry.

7. **Record length:** Enter the record length (1 through 128) for the data set, then press the Field + key or the (Field Advance) key to exit the field and right-adjust the entry. If the entry for the record length is not changed, press the (Field Advance) key and the maximum record length (128 characters) is used.

When you are allocating a data set for production statistics, the record length must be 128.

8. Press the Enter key. After the data set has been allocated it is automatically opened.

KEU Job 57
Entering Data

If you selected option 1 (enter-NEW/REPLACE), the cursor is at the first input position of the first data record. If you selected option 4 (enter-ADD), the cursor is at the first input position of the record following the last record in the data set.

If the auto record advance function is active, the next record is automatically displayed when you complete the current record. If the auto record advance function is not active, you must press the Enter/Rec Adv key when you finish keying the current record. To activate the auto record advance function, press the Auto Enter key.

1. Select a format, if required (see Selecting a Format or Prompting Record).
2. Key the data for each input field in the record.
3. If the auto record advance function is not active, press the Enter/Rec Adv key when you have keyed all of the data for that record.
4. Repeat steps 2 and 3 for each source record.
5. When you have entered all the source records for the job, see Ending A KEU Job in this section.

Updating Data

This procedure allows you to review data records and to make changes to them.

If the auto record advance function is active, the next record is automatically displayed when you complete the current record. If the auto record advance function is not active, you must press the Enter/Rec Adv key when you finish keying the current record. To activate the auto record advance function, press the Auto Enter key.

1. Use the Enter/Rec Adv key, or the Page Fwd key, or the Home key, (see Function Keys) or use one of the search functions (see Search) to find the record you want to update.
2. Select a format, if required (see Selecting a Format or Prompting Record).
3. Move the cursor (by pressing the Field Advance key or the Character Advance key) to the field in the record to be updated.
4. Enter the new data over the data you want to update.
5. After you have updated the data record, press the Enter/Rec Adv key. The updated record is written back to the data set.
6. Repeat steps 1 through 5 for each record that requires a change.
7. If you update the last record in the data set, the mode changes from update to enter mode.

8. To end the job, see Ending a KEU Job in this section.

Verifying Data

This procedure is valid in the verify (V) mode. Verify mode can be selected only from the primary mode menu.

After the data set is opened, you are ready to verify the first record of the data set. The cursor is at the beginning of the first input field. The data record is not displayed.

If the auto record advance function is active, you do not need to press the Enter / Rec Adv key when you have completed the current record. To activate the auto record advance function, press the Auto Enter key.

1. Select a format, if required (see Selecting a Format or Prompting Record).

2. Enter the data from the source document. As you enter each data character, it appears on the screen if it matches the original character in the record. If the data character keyed does not match the original character, an error code is displayed (see Correcting a Data Key Mismatch). If an error results from a duplicate or skip field, see Correcting a Dup or Skip Mismatch in this section.

3. At the end of each record, press the Enter / Rec Adv key. The record is written back to the data set if changes were made.

4. When the last record in the data set is verified, the system automatically closes the data set and displays the end-of-job prompt. See Ending a KEU Job in this section.

Correcting A Data Key Mismatch

When a data key mismatch occurs, the system displays an error on the status line and the remainder of the field is displayed.

1. See the Message Manual for the proper recovery procedures, then press the Reset key or the Error Reset key.

2. If the character mismatch resulted from a keying error, rekey the original character.

   If the character mismatch resulted from an incorrect character in the record in the data set, rekey the correct character.

Changes made to the record are updated on the diskette after you finish verifying the record and advance to the next record.
Note: A character is accepted only if it is keyed twice in succession or if it matches the original character.

To correct several characters or an entire field:

1. Press the Corr key or Field Corr key (see Function Keys). The system fills the field with blanks, and the cursor moves to the first position of the current field so you can rekey the field as you would in enter mode.

2. Enter the correct field data. When the field is completed, the system displays blanks in the field, and the cursor returns to the first position of the field so you can verify it.

3. Rekey the field to verify it.

To correct an entire record:

1. Press the Rec Corr key or press and hold the Num key, then press the Corr key (see Function Keys). The system displays the entire record with the cursor in the first position of the record. The mode indicator on the status line changes from V to V-C.

2. Enter the correct record data (as if in the update mode). When the record is complete, press the Enter/Rec Adv key if the auto record advance function is not active. The system displays a blank record with the cursor in the first position of the record so you can verify it. The mode indicator changes back to V.

3. Rekey the record to verify it.

Correcting a Dup or Skip Mismatch

If a mismatch occurs when using the Dup or Skip key, or when a dup field or skip field is being automatically verified, the following sequence occurs:

1. The cursor stops at the position that caused the mismatch.

2. The entire field is displayed.

3. An error code for a verify mismatch is displayed on the status line.

To correct a dup mismatch:

1. Press the Reset key.

2. If the character from the corresponding position of the previous record is correct, press the Dup key. The character from the previous record replaces the character in the current record. The system then continues automatic verification to the end of the field.

3. If the character in the current record is correct, rekey that character, then press the Dup key. The system then continues automatic verification to the end of the field.
To correct a skip mismatch:

1. Press the Reset key.

2. If the record is supposed to contain a blank in that position, press the Skip key. A blank replaces that position in the record. The system then continues to check the remainder of the field for blanks.

3. If the character in the record is correct, rekey that character, then press the Skip key. The system then continues to check the remainder of the field for blanks.

Inserting a Record or a Group of Records

If an entire record or a group of records is missing:

1. Write down the record number that is displayed on the status line. (This is the record number of the first record inserted.)

2. Press the Cmd key, then press the Insert Record key.

3. The following prompt is displayed:

   0 0001  D 02 40 xxxxx  0  x-1
   Enter number of records to insert  1

4. Enter the number of records to be inserted. (Valid entries are 1 through 99.) Press the Field + key or the Field Exit key, then press the Enter key. (The system displays a blank screen with format 0 selected.)

5. Select a format, if required (see Selecting a Format or Prompting Record).
6. Key in the record and press the Enter/Rec Adv key. Repeat this step until insert mode ends. Insert mode ends when one of the following conditions occurs:
   a. You have inserted the number of records that you specified in step 4.
   b. You press the Cancel key and then the Rec Adv key. In this case, deleted records are automatically inserted until the number of records you specified in step 4 has been satisfied. The cursor is positioned in the first manual position of the next record.
   c. You press the Home key while the cursor is in the first manual position of a record. In this case, deleted records are automatically inserted until the number of records you specified in step 4 has been satisfied. The cursor is positioned in the first manual position of the last record inserted.

   Note: After you have keyed the last insert record, the status line positions that indicate the program mode blinks until the insert function has been inserted.

   When the insert mode ends, the mode indicator on the status line changes back to V so you can verify the records you just inserted.

7. To verify the records, press the Home key or use one of the search keys (see Search) to return to the record number that you wrote down in step 1. Verify the records.

What To Do When Interrupted While Verifying

1. Finish verifying the current record.

2. Write down the record number of the last record verified (see Status Line).

3. See Ending a KEU Job.

To continue an interrupted job:

1. Do the steps necessary to open the data set (see Loading KEU) and/or Preparing for Operation).

2. Use the Search Record Number key to find the data record (see Search).

3. Continue verifying (see Verifying Data).

Ending A KEU Job

1. Press the Cmd key, then press the End of Job key. If you press the End of Job key while at a prompt (except the primary mode menu) and the data set is not open, the primary mode menu is automatically displayed. Otherwise, the following prompt is displayed:
End of job. Do you want to write statistics?

Options are
1. Yes
2. No

Select option:  ] Press ENTER

2. Select and enter one of the options. (If you select option 1, the following prompt is displayed; continue with step 3. If you select option 2, go to step 4).

Enter data for data set open
Data set name:  [ ]
Device address:  [ ]
Press ENTER

3. **Data set name**: Enter the name of the data set to which you want the production statistics written.

**Device address**: Enter the device address of the diskette drive containing the diskette on which the production statistics will be written.

Press the Enter key. If the data set does not exist, the data set open failed prompt is displayed to allow you to allocate a data set. The data set you allocate must have a record length of 128. (See Allocating A Data Set). After you have allocated the data set or if the data set already exists, the following prompt appears:
To write the statistics for your job, select option 1. To write the statistics for your station, select option 2. To write statistics for both job and station, select option 3. Press the Enter key. The statistics are written to the specified data set on your diskette.

4. If you select option 2 in step 2, or after the statistics have been written to the diskette, the primary mode menu is displayed:

At this time you can start another KEU job or end the key entry utility.
To run another KEU job, go to step 1 in Preparing for Operation.
Ending the Key Entry Utility

When the primary mode menu is displayed, press the Cmd key, then press the End of Job key. The load prompt will appear.

FORMATS AND PROMPTING RECORDS

A format is a set of codes that control how data is entered into a record. A prompting record can be associated with a format to identify the contents of each field in the record.

Loading a Format or Prompting Record

There are three ways to load a format or prompting record:

• From a diskette
• From the keyboard with the primary mode menu displayed
• From the keyboard when a data set is open (during enter or update modes only)

The loaded formats and prompting records normally are retained until you exit from the utility (to the load prompt) or until you load another format or prompting record with the same format number.

From a Diskette

Loading formats or prompting records from a diskette is a KEU job in itself. This means that after you have loaded the formats and/or prompting records, you must end that job as described in Ending a KEU Job. After the job has been ended, the primary mode menu is displayed to allow you to select the mode of operation for the job whose formats you have just loaded.

1. Begin this procedure with the primary mode menu on your display.
2. Select option 2 for update mode.
3. Insert the diskette containing the formats (and prompting records) you want to use.
4. Respond to the data set open prompt.

Data set name: Enter the name of the data set that contains the formats and/or prompting records you want to load.

Device address: Enter the device address of the diskette drive containing the diskette with the formats or prompting records.

Press the Enter key.
5. Press the Enter/Rec Adv key, the Page Fwd key, or use one of the search keys (see Search) until the format or prompting message you want to use is displayed.

6. Press the Cmd key, hold down the Num key or the (Shift) key, then press the Load Format key.

7. Key in a format number (1, 2, 3, 4, 5, 6, 7, 8, or 9). After loading the format or prompting record, the system displays a blank screen.

8. To load more formats or prompting records, repeat steps 5 through 7.

9. End the job (see Ending a KEU Job in this section).

**From the Keyboard with the Primary Mode Menu displayed**

1. Press the Cmd key, hold down the Num key or the (Shift) key, then press the Clear Screen key. The system automatically selects format 0 and displays a blank screen.

2. Key in the format or prompting record (see Making a KEU Format and Making a Prompting Record in this section).

3. Press the Cmd key, hold down the Num key or the (Shift) key, and press the Load Format key.

4. Key in a format number (1, 2, 3, 4, 5, 6, 7, 8, or 9). After loading the format or prompting record, the system displays a blank screen.

5. To load more formats or prompting records, repeat steps 2 through 4.

6. End the job (see Ending a KEU job in this section).

**From the Keyboard When a Data Set is Open**

1. Begin this procedure while you are in the enter mode (E) or update mode (U) only.

2. Press the Cmd key, hold down the Num key or the (Shift) key, then press the Clear Screen key. The system automatically selects format 0 and displays a blank screen.

3. Make sure that the auto record advance and auto Duplicate/Skip functions are off.

4. Key in the format or prompting record (see Making a KEU Format and Making a Prompting Record in this section).

5. Press the Cmd key, hold down the Num key or the (Shift) key, then press the Load Format key.
6. Key in a format number (1, 2, 3, 4, 5, 6, 7, 8, or 9). After loading the format or prompting record, the system displays a blank screen.

7. To load more formats or prompting records, repeat steps 4 through 6.

8. You can now select the desired format and continue entering or updating data records. To redisplay the record that was displayed before you began this procedure, press the Cmd key, hold down the Num key or the (Shift) key, then press the Display Data key.

**Saving A Format or Prompting Record On A Diskette**

Formats and prompting records can be saved in a data set after they are created and loaded into the system.

1. Begin this procedure while the primary mode menu is displayed.

2. Insert the diskette (on which the formats or prompting records will be saved) into a diskette drive.

3. Select the enter-NEW/REPLACE or enter-ADD mode and respond to the data set open prompt.

4. Select the format or prompting record (see Selecting a Format or Prompting Record).

5. Press the Cmd key, hold down the Num or (Shift) key, then press the Change Format key. (The format or prompting record is displayed.)

6. Press the Enter/Rec Adv key. (The format or prompting record is written to the data set.)

7. Repeat steps 4 through 6 until all formats and prompting records are saved on the diskette.

8. Go to Ending a KEU Job in this section.

**Selecting a Format or Prompting Record**

1. Press the Sel Fmt key on the data entry type keyboards, or press the Cmd key and then press the Sel Fmt key on the typewriter keyboard.

2. Key in the format number (0, 1, 2, 3, 4, 5, 6, 7, 8, or 9) for the format or prompting record you want to select. You select a prompting record only if you want to perform some operation on the prompting record itself (such as to display or change the prompting record).

3. If you have selected a format, the format and any associated prompting record is now active. If you have selected a prompting record, error code 9413 is displayed. In this case, press the Reset key or the Error Reset key. The prompting record is now selected and can be displayed or changed.
Displaying a Format or Prompting Record

1. Select the format or prompting record you want to display:
   a. Press the Sel Fmt key on the data entry type keyboards, or press the
      Cmd key and then press the Sel Fmt key on the typewriter keyboard.
   b. Key in the format number (1, 2, 3, 4, 5, 6, 7, 8, or 9) for the format or
      prompting record you want to select.

   **Note:** If you selected a prompting record, error code 9413 is displayed.
   Press the Reset key and continue.

2. Press the Cmd key, hold down the Num key or the (Shift) key, then press the Display Format key. The format or prompting record is displayed.

3. To redisplay the data, you must press the Cmd key, hold down the Num key or the (Shift) key, then press the Display Data key.

Changing a Format or Prompting Record

1. Select the format or prompting record to be changed:
   a. Press the Sel Fmt key on the data entry type keyboards, or press the
      Cmd key and then press the Sel Fmt key on the typewriter keyboard.
   b. Key in the format number (1, 2, 3, 4, 5, 6, 7, 8, or 9) for the format or
      prompting record you want to select.

   **Note:** If you selected a prompting record, error code 9413 is displayed.
   Press the Reset key and continue.

2. Press the Cmd key, hold down the Num key or the (Shift) key, then press the Change Format key. (The format or prompting record is displayed and format 0 is active.)

3. Change the format or prompting record, as desired.

4. To load the changed format or prompting record, press the Cmd key, hold down the Num key or the (Shift) key, then press the Load Format key.

5. Key in a format number (1, 2, 3, 4, 5, 6, 7, 8, or 9).

A blank screen is now displayed and the system remains at the same record position. The changed format or prompting record is loaded and ready to be selected and used. To continue keying, select the desired format and continue.

Updating a Format or Prompting Record on a Diskette

Use this procedure if you have updated a format or prompting record since you loaded it from a diskette and you want to save the updated version.

1. Begin this procedure with the primary mode menu on the display.
2. Select update mode (option 2).

3. Insert the diskette that contains the formats and prompting records.

4. Respond to the data set open prompt.

Data set name: Enter the name of the data set containing the format or prompting record that you want to update.

Device address: Enter the device address of the diskette drive containing the diskette with the formats and/or prompting records.

Press the Enter key.

5. Press the Enter/Rec Adv key or the Page Fwd key until the format or prompting record you want to update is displayed, or do a search operation (see Search).

6. Select the altered format or prompting record:
   a. Press the Sel Fmt key on the data entry type keyboards, or press the Cmd key and then press the Sel Fmt key on the typewriter keyboard.
   b. Key in the format number (1, 2, 3, 4, 5, 6, 7, 8, or 9) for the format or prompting record you want to select.

Note: If you selected a prompting record, error code 9413 is displayed. Press the Reset key and continue.

7. Press the Cmd key, hold down the Num key or the 0 (Shift) key, then press the Change Format key. The format or prompting record is displayed.

8. Key the first character of the format or prompting record. (For example, if the first character in the format is an N, press N.)

9. Press the Enter / Rec Adv key. The format or prompting record is written to the diskette.

10. If you have other formats or prompting records to update on the diskette, repeat steps 5 through 9.

11. Go to Ending a KEU Job in this section.

FORMATS AND PROMPTING RECORDS

Formats

Here is what a typical format looks like.

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

The letters, except for the E, begin a data field and, hence, are called Field Definition Characters.
Making A KEU Format

1. Start each field with a field definition character.

2. After the field definition character, put the number of continuation characters, a - (dash) for numeric shift and a period . (period) for alphabetic shift, needed to complete the length of the field.

Picture check fields (fields that contain both alphabetic and numeric subfields) can also be defined. Start the field with the field definition character that applies to the first position of the field. Use the appropriate continuation characters to identify the shift for each subfield.

For example, assume that a picture check field has a length of ten characters. The field consists of four subfields. The first subfield is for alphabetic shift and is three positions long. The second subfield is numeric shift and is four positions long. The third subfield is alphabetic shift and is two positions long, and the fourth is a one-position numeric shift.

The field definition is:

\[ A----.---- \]

3. Put an E one position past the end of your format (unless the length of the format equals the record length for the data set, in which case the E is not required). For example, if the record length is 80 and you have a 50-character format, you would put the E in position 51.

In effect, the E tells the system where the end of your format is. That is, when the system reads the E in your format, it bypasses any remaining positions of your record.

Use the Format Code Chart (provided later in this section) when you make your KEU format.

The following shows a sample format for a 79-position record as displayed after keying. Note that the format supplies a code for each of the 79 positions.

```
N--------------A..................R---------D..................V---------------E
```

Field Definition Character
Field Continuation Character
End of Format Character

When a format is loaded in the system, it is given a format number. The valid numbers for formats are 1, 2, 3, 4, 5, 6, 7, 8, and 9.
Prompting Records

The prompting record assists you by displaying a prompting message as you enter data. Here is a typical prompting record:

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

Or if you did not want a message in the dup and skip fields:

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

The prompting message is displayed on line two.

---

First prompting message:

| X XXXX | X XX XX | X |
| COMPANY NAME | First prompting message |

Cursor is at the beginning of the first manual field.

---

Second prompting message (After the operator enters the company name and advances to the next field):

| X XXXX | X XX XX | X |
| ADDRESS | IBM | Second Prompting Message |

Cursor is at the beginning of the second manual field.
How To Use a Prompting Record

You key in a prompting record the same way you would key in a format. You then load the prompting record into an even-numbered format (2, 4, 6, or 8) the same way you would load a format. When you select an odd-numbered format, the prompting record is automatically activated. For example, when you select format 1, the prompting record in format 2 is also selected.

How To Make a Prompting Record

1. Put an asterisk in position 1.

2. If you have a prompting message for the first field, key in the message and an asterisk. If you do not have a prompting message for the first field, key in only the asterisk in position 2.

3. If you have a prompting message for the next field, key in the message and an asterisk. If you do not have a message for this field, key in only the asterisk.

4. Repeat step 3 for the remaining fields in the format.

When you have finished, you should have an asterisk in position 1 plus an asterisk for each field in the format.

The following example shows a source document, its format, and a typical prompting record that might be used for a job.
<table>
<thead>
<tr>
<th>Field Definition Characters</th>
<th>Format Codes</th>
<th>Keyboard Shift</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Numeric</td>
<td>Manual</td>
<td>Manual field</td>
</tr>
<tr>
<td>A</td>
<td>Alphabetic</td>
<td>Manual</td>
<td>Manual field</td>
</tr>
<tr>
<td>J</td>
<td>Numeric</td>
<td>Right-adjust, blank fill</td>
<td>Right-adjust, blank fill</td>
</tr>
<tr>
<td>R</td>
<td>Numeric</td>
<td>Right-adjust, zero fill</td>
<td>Right-adjust, zero fill</td>
</tr>
<tr>
<td>I</td>
<td>Alphabetic</td>
<td>Right-adjust, blank fill</td>
<td>Right-adjust, blank fill</td>
</tr>
<tr>
<td>B</td>
<td>Alphabetic</td>
<td>Bypass</td>
<td>Bypass</td>
</tr>
<tr>
<td>D</td>
<td>Numeric</td>
<td>Automatically duplicates</td>
<td>Automatically duplicates</td>
</tr>
<tr>
<td>U</td>
<td>Alphabetic</td>
<td>Automatically duplicates</td>
<td>Automatically duplicates</td>
</tr>
<tr>
<td>S</td>
<td>Numeric</td>
<td>Automatically skips</td>
<td>Automatically skips</td>
</tr>
<tr>
<td>K</td>
<td>Alphabetic</td>
<td>Automatically skips</td>
<td>Automatically skips</td>
</tr>
<tr>
<td>C</td>
<td>Numeric</td>
<td>Manual field</td>
<td>Manual field</td>
</tr>
<tr>
<td>H</td>
<td>Numeric</td>
<td>Manual field</td>
<td>Manual field</td>
</tr>
<tr>
<td>F</td>
<td>Numeric</td>
<td>Automatically skips</td>
<td>Automatically skips</td>
</tr>
<tr>
<td>G</td>
<td>Numeric</td>
<td>Automatically skips</td>
<td>Automatically skips</td>
</tr>
<tr>
<td>M</td>
<td>Numeric</td>
<td>Automatically duplicates</td>
<td>Automatically duplicates</td>
</tr>
<tr>
<td>L</td>
<td>Numeric</td>
<td>Automatically duplicates</td>
<td>Automatically duplicates</td>
</tr>
<tr>
<td>V</td>
<td>Numeric</td>
<td>Manual field, verify bypass</td>
<td>Manual field, verify bypass</td>
</tr>
<tr>
<td>W</td>
<td>Alphabetic</td>
<td>Manual field, verify bypass</td>
<td>Manual field, verify bypass</td>
</tr>
<tr>
<td>Y</td>
<td>Numeric</td>
<td>Right-adjust, blank fill, verify bypass</td>
<td>Right-adjust, blank fill, verify bypass</td>
</tr>
<tr>
<td>X</td>
<td>Numeric</td>
<td>Right-adjust, zero fill, verify bypass</td>
<td>Right-adjust, zero fill, verify bypass</td>
</tr>
<tr>
<td>Z</td>
<td>Alphabetic</td>
<td>Right-adjust, blank fill, verify bypass</td>
<td>Right-adjust, blank fill, verify bypass</td>
</tr>
<tr>
<td></td>
<td>Numeric</td>
<td>Continues field in numeric shift</td>
<td>Continues field in numeric shift</td>
</tr>
<tr>
<td></td>
<td>Alphameric</td>
<td>Continues field in alphabetic shift</td>
<td>Continues field in alphabetic shift</td>
</tr>
</tbody>
</table>

1Self-check is not performed by the key entry utility. Thus the footnoted codes are supported for compatibility with the IBM 3740 System, but they only function as they are described.

2Keyboard shifts have no meaning when a typewriter keyboard is used. All lowercase alphabetic characters are automatically converted to uppercase by this utility.

3See the IBM 5290 Utilities Reference/Operation Manual for a detailed description of the formats.
For the data entry keyboard, the keyboard shifts function as follows:

- **Alpha shift**: The system automatically selects the lower character on the key top.

- **Numeric shift**: The system automatically selects the upper character on the key top.

Field totals are not supported by the key entry utility and any digit in the format is interpreted by the system as a numeric continuation character.

### Types of Fields Used in Formats

#### Manual Fields

Manual fields define the length of a field and the keyboard shift. The keyboard shift is either numeric or alpha. But the shift specified by the format can be overridden by pressing the Num Shift key or the Alpha Shift key on the data entry type keyboards.

A is the field definition character for alpha shift fields; N is the field definition character for numeric shift fields.

#### Duplicate Fields

Duplicate fields are used when you want data from the corresponding field or positions of the previous record automatically entered or verified in the current record when the auto dup/skip function is active. In other words, you eliminate keying repetitious material (see Dup/Skip in Function Keys).

The field definition characters are D (numeric) and U (alpha). However, the shifts specified by these characters are ignored by the system except when you are manually keying into a duplicate field.

#### Skip Fields

Skip fields are used when you want the system to automatically fill or verify fields with blanks when the auto dup/skip function is active. (See Dup/Skip in Function Keys).

The field definition characters are S (numeric) and K (alpha). However, the shifts specified by these characters are ignored by the system except when you are manually keying data into a skip field.
**Bypass Fields**

Bypass fields are used when you want the system to pass over a field and not allow you to key into it. This field is not affected by the Auto dup/skip function.

The field definition character is B. Since you cannot enter data in a bypass field, the shift is meaningless. But you must use either a . (period) or a – (dash) for field continuation characters.

**Verify Bypass Fields**

Verify bypass fields are used when you want the system to pass over a field only when in verify (V) mode. The data in the field is not verified. The field definition 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 Format Code Chart.

**Right-Adjust Fields**

Right-adjust fields allow you to move data in the current field to the right field boundary by pressing the Field Exit key, or the Field + key, or the Field- key, or the – (dash) (data entry type keyboards only) key. Right-adjust fields must be at least two characters long; they can be as long as a whole record.

After moving the data to the right field boundary, the system inserts fill characters to the left of the first keyed character. The fill characters are either blanks or zeros depending on the field definition character you use. Field definition 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 an alpha right-adjust field with blanks for fill characters.

Field definition characters X (zero fill character) and Y (blank fill character) are numeric, right-adjust, verify-bypass fields. Field definition character Z (blank fill character) is an alpha, right-adjust, verify-bypass field. These 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.

A picture check field cannot be specified as a right-adjust field.

**Format Chaining**

Format chaining allows you to program the system so that it automatically switches from one format to another. Positions 127 and 128 of the format are the key to format chaining. Position 127 indicates the next format to select when a record backspace occurs. Position 128 indicates the next format to
select when a record advance occurs. Acceptable characters for format chaining are numbers 0 through 9.

In the following example, the format number is entered in position 128 to show the format that the system is to select automatically when a record advance occurs:

```
2 0128 A 01 F2 000001 0 E 9

2

Format number in position 128
```

In the following example, the format number is entered in position 127 to show the format that the system is to select automatically when a record backspace occurs:

```
2 0128 A 01 40 000001 0 E 9

Format number in position 127
```
DE/RPG JOB ............................................. 79
STARTING A DE/RPG DATA ENTRY JOB ...................... 79
OPENING THE DATA SETS USED BY THE DE/RPG DATA ENTRY PROGRAM ........................................ 81
ALLOCATING A NEW DATA SET USING DE/RPG DATA ENTRY PROGRAM ........................................ 82
ENTERING DATA USING A DE/RPG DATA ENTRY PROGRAM ........................................ 84
SELECTING FORMATS FOR DATA-ENTRY PROGRAMS . . . 85
UPDATING DATA USING A DE/RPG DATA ENTRY PROGRAM ........................................ 86
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This section contains procedures for executing two different kinds of DE/RPG programs:

1. Data entry programs (which include the TFILE keyword and use transaction data sets)

2. Application programs (which are controlled from the C specification)

STARTING A DE/RPG DATA-ENTRY JOB

1. Begin with the load prompt.

```
0 0001          A 16 40
Program name:   
Device address: 
Partition number: 

Press ENTER
```

2. Insert the diskette containing the DE/RPG compiled program into a diskette drive.

3. If the transaction data set is on another diskette, insert the diskette containing the transaction data set into another diskette drive.

4. Enter the name of the DE/RPG compiled program in the program name entry of the load prompt. Enter the drive number where the program is located into the device address entry. Press the Enter key.

5. The data set open prompt might be displayed. See Opening the Data Sets Used by the DE/RPG Data Entry Program in this section.

6. The mode selection prompt appears:
The following actions depend on the mode that is selected.

The enter-NEW/REPLACE mode always begins with the first record of a data set. It is normally used only for initial entry of data; all data previously entered for this data set is lost.

The enter-ADD mode begins at the record following the last record of the data set. It is normally used to add data to an existing data set.

The update mode begins with the first data record in the data set. It is normally used to correct or change data in an existing data set.

The verify mode begins with the first data record in the data set. It is normally used to check the accuracy of entered data.

The rerun mode begins with the first data record in the data set. It is normally used to update automatically generated fields. When it reaches the end of the data set, the mode automatically changes to enter.

The next step in using a DE/RPG program is opening the data sets that are used.
OPENING THE DATA SETS USED BY THE DE/RPG DATA ENTRY PROGRAM

The mode of operation that is selected affects the following sequence. Steps 4 through 7 indicate the relationship of the mode and the open sequence.

1. Immediately after you have selected the mode of operation for the DE/RPG program, the following data set open prompt appears:

   Enter data for data set open
   Data set name:         
   Device address:        

   Press ENTER

2. This prompt contains the name of the transaction data set and the device number.

   Unless otherwise specified by your supervisor, accept the values that are displayed and press the Enter key. What follows depends on whether or not the data set that is named in the open prompt exists, whether it is volume protected, and the mode that is in effect.

3. If the data set exists and the diskette is volume protected, the volume protect prompt is displayed:

   Diskette is volume protected.
   Device xxxx Data set xxxxxxxx
   Enter owner identifier to access volume:

   Press ENTER
You must respond to this prompt before you can access the data set. If you do not know the owner identifier, contact the supervisor or programmer. When you have entered this information, press the Enter key. The data set open prompt is redisplayed. Press the Enter key.

4. If the data set exists and the mode that you selected is either enter-NEW/REPLACE or enter-ADD, the next display shows the first format in the program (display prompts and literals) but does not contain data.

Note: If the mode is enter-NEW/REPLACE, the record that is entered is the first record in the data set. If the mode is enter-ADD, the record that is entered is the one after the last data record in the data set.

5. If the data set exists, is not volume protected, and the mode that you selected is update, verify, or rerun, the next display shows the first format in the program and may display the data. The exact sequence of events for these modes is described in the appropriate topic later in this section.

6. If the data set does not already exist and you are in enter-ADD, update, verify, or rerun mode, a 3215 error occurs. The data set open prompt reappears when you press the Reset key. See the Message Manual for information on how to recover from this error.

7. If, however, you are in enter-NEW/REPLACE mode and the data set does not already exist, you can allocate it immediately. This procedure is described in the next topic.

ALLOCATING A NEW DATA SET USING DE/RPG DATA ENTRY PROGRAM

1. The data set open failed prompt appears when there is no data set that matches the one named in the specified drive of the data set open prompt.
If you select option 1, the data set open prompt is redisplayed, allowing you to correct the name or address.

```
0 0001 A 26 xx xx C
Enter data for data set open
Data set name: xxxxxxx
Device address: xxxx

Press ENTER
```

If you select option 2, the allocate prompt is displayed, allowing you to specify the conditions of the allocation.

```
0 0001 A 26 xx
Enter data for data set allocate
Data set name: xxxxxxx
Device address: xxxx Owner ID.
Exchange type: 1 Number of records: 000200

Press ENTER
```

The cursor will be positioned at the beginning of the first field. If you do not want to change the data in a field, exit the field with the (Field Advance) key.

If you do change the data in a field, exit the field with the Field + key or the Field Exit key.
You can change the name of the data set and the device address. Before you do, you should check with your supervisor.

The owner ID entry allows you to specify the user name under which the data set can be accessed. Do not enter anything in this field unless instructed by the supervisor.

The exchange type field also contains a system-supplied entry. You can change this value if necessary. The programmer should tell you which value to use. The values that are valid in this field are as follows:

- Space = Basic exchange
- H = H exchange
- I = I exchange

Normally a system-supplied number appears in the number of records entry. Change this number if so instructed by the supervisor or programmer. If the remainder of the space on the diskette is to be allocated for this data set, enter the value 000000 and use the Field Exit key or the Field + key to leave the field.

When you have completed the entries for this display, press the Enter key.

**ENTERING DATA USING A DE/RPG DATA ENTRY PROGRAM**

To enter data, you must have selected either option 1 (enter-NEW REPLACE) or option 4 (enter-ADD) from the select initial data entry mode prompt. If you selected option 1, you are at the first data record in the data set, and the remainder of the records are blank. If you selected option 4, you are at the next available data record in the data set, and the preceding records (if any) contain data.

1. The first format in the DE/RPG program is displayed. Enter the data for the input fields.

2. If the auto record advance function is active, the next record is automatically available for data entry upon completion of the current record. If the auto record advance function is not active, you must press the Enter key when you have completed the current record.

If you want to manually select formats to use for entering data, see the topic *Selecting Formats for Data-Entry Programs* in this section.

3. Repeat steps 1 and 2 until all the data has been entered.
4. End the job by following the procedure in Ending a DE/RPG Data Entry Program.

SELECTING FORMATS FOR DATA-ENTRY PROGRAMS

1. To select a format within the program.
   
   For data entry type keyboards: press the Sel Fmt key followed by the format identifier. If the format identifier contains an alphabetic character, press and hold the Alpha shift key to enter the alphabetic character.

   For typewriter keyboards: press the Cmd key and the Sel Fmt key followed by the format identifier.

2. To select the next format in the program.
   
   For data entry type keyboards: press the Next Fmt key.

   For typewriter keyboards: press the Cmd key and the Next Fmt key.

UPDATING DATA USING A DE/RPG DATA ENTRY PROGRAM

If you selected option 2 from the select initial data entry mode prompt to update data, you are at the first data record in the data set.

1. Press the Enter/Rec Adv key or the Page Fwd key, or use a search function to display the record you want to change. You may need to select the proper format.

2. Move the cursor to the field that is to be changed and enter the new data.

3. After you have updated the data record, press the Enter /Rec Adv key. The updated record is written in the data set.

   Note: If the DE/RPG job has mandatory enter fields, you must reenter the field or press the Cmd key and the Edit Release key to bypass these fields before you can advance to the next record.

4. Locate the next record to be updated using the Enter/Rec Adv key, the Page Fwd key, or the Home key, or the search functions.

5. Repeat steps 2, 3 and 4 until you have updated all the data records within the data set. At EOD (end of data), the mode changes to enter mode. See Entering Data Using a DE/RPG Data Entry Program.

6. End the job by following the procedure in Ending a DE/RPG Data Entry Program.
VERIFYING DATA USING A DE/RPG DATA ENTRY PROGRAM

To verify data, you must have selected option 3 of the select initial data entry mode prompt. The first data record in the data set is the record that is displayed. Input fields are not displayed.

If the auto record advance function is active, you do not need to press the Enter/Rec Adv key when you have completed the current record. To activate the auto record advance function, press the Auto Enter key.

1. Enter the data from the source document. As you enter each data character, the character appears on the display if it matches the original character in the record. If a data character does not match the original character in the record, an error code is displayed (see Correcting a Data Key Mismatch).

2. At the end of each record, press the Enter/Rec Adv key. The record is written back to the data set if changes were made.

3. When the last record is verified, the program automatically ends. (See Ending a DE/RPG Data Entry Program.)

Correcting a Data Key Mismatch

When a data key mismatch occurs, the system displays an error on the status line and the remainder of the field is displayed.

1. See the Message Manual for the proper recovery procedures, then press the Reset key or the Error Reset key.

2. If the data character mismatch resulted from a keying error, rekey the original character.

   If the data character mismatch resulted from an incorrect character in the record in the data set, rekey the correct character.

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

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

To correct several characters or an entire field:

1. Press the Rec Corr key, or press and hold the Num key, and then press the Corr key (see Function keys). The system fills the field with blanks, and the cursor moves to the first position of the current field so you can rekey the field as you would in enter mode.

2. Enter the correct field data. When the field is complete, the system displays blanks in the field, and the cursor returns to the first position of the field so you can verify it.

3. Rekey the field to verify it.
To correct an entire record:

1. Press and hold the Num key, then press the Corr key, or press the Cmd key, then press the Rec Corr key (see Function Keys). The system displays the entire record with the cursor in the first position of the record. The mode indicator on the status line changes from V to V-C.

2. Enter the correct data (as if in update mode). When the record is complete, press the Enter/Rec Adv key if the auto record advance function is not active. The cursor returns to the first manual position of the record so you can verify it. The mode indicator changes back to V.

3. Rekey the record to verify it.

Correcting a Dup or Skip Mismatch

If a mismatch occurs when using the Dup or Skip key, or when a dup field or skip field is being automatically verified, the following sequence occurs:

1. The cursor stops at the position that caused the mismatch.

2. The entire field is displayed.

3. An error code for a verify mismatch is displayed on the status line.

To correct a dup mismatch:

1. Press the Reset key.

2. If the original character from the field being duplicated is correct, press the Dup key. The original character from the field being duplicated replaces the character in the current record. The system then continues automatic verification to the end of the field.

   If the character in the current record is correct, rekey that character, then press the Dup key. The system then continues the automatic verification to the end of the field.

Note: If the AUXDUP keyword is specified for the field, the field being duplicated is a field in storage. If the AUXDUP keyword is not specified for the field, the corresponding field in the previous record is the field being duplicated.

To correct a skip mismatch:

1. Press the Reset key.

2. If the record is supposed to contain a blank in that position, press the Skip key. A blank replaces that position in the current record. The system then continues to verify the remaining positions of the field for blanks.
If the character in the data set record is correct, rekey that character, then press the Skip key. The system then continues to verify the remaining positions of the field for blanks.

Correcting An Automatic Field

Verification of fields with insert or substitution data (INSERT or SUBST keywords were used in a DE/RPG program) is automatic. A unique verify mismatch error is displayed for automatic fields. (See the Message Manual.)

To correct an automatic field mismatch:

1. Press the Reset key.
2. If the data in the field is correct, press the (Field Advance) key.
3. If the data in the field is incorrect, initiate the field correct function. The data being supplied by the DE/RPG program replaces the data in the record.

Inserting a Record or Group of Records

If an entire record or a group of records is missing, follow these procedures:

1. Write down the record number that is displayed on the status line. (This is the record number of the first record inserted.)
2. Press the Cmd key, then press the Insert Record key.
3. The following prompt is displayed:

```
0 0001  D 02 40 xxxxxx  0 x-1
Enter number of records to insert: 7
```

4. Enter the number of records to be inserted. (Valid entries are 1 through 99.) Press the Field + key or the Field Exit key, then press the Enter key. (The system displays a blank screen with format 0 selected.)
5. Select a format, if required (see Selecting Formats for Data Entry Programs in this section).

6. Key in the record and press the Enter/Rec Adv key. Repeat this step until insert mode ends. Insert mode ends when one of the following conditions occurs:
   a. You have inserted the number of records that you specified in step 4.
   b. You press the Cncl key and then the Rec Adv key. In this case, deleted records are automatically inserted until the number of records you specified in step 4 has been satisfied. The cursor is positioned in the first manual position of the next record.
   c. You press the Home key while the cursor is in the first manual position of a record. In this case, deleted records are automatically inserted until the number of records you specified in step 4 has been satisfied. The cursor is positioned in the first manual position of the last record inserted.

   **Note:** After you have keyed the last insert record, the status line positions that indicate the program mode blink until the insert function has been completed. When insert mode ends, the status line positions change back to V so you can continue to verify records.

7. To verify the records you just inserted, return to the record number you wrote down in step 1. You can return to this record number by pressing the Home key, or by using one of the search functions (see Search). Verify the records using the procedures described in this section.

**RERUNNING A DATA SET USING A DE/RPG DATA ENTRY PROGRAM**

To rerun a data set, you must have selected option 5 on the select initial data entry mode prompt. The first record in the data set is displayed, and each succeeding record is displayed without operator interaction.

When all data records in the data set have been displayed, the system displays the next record past the end of data as if enter-ADD mode were in effect. If an error is detected during the rerun mode, the program stops and displays the error code.

1. If data in the record is in error, press the Reset key to stop the status line from blinking. Press the Cmd key and the Mark Field key to mark the field in error.

2. If data in the record is correct, press the Reset key to stop the status line from blinking. Press the Cmd key and the Edit Release key to proceed to the next field.

**ENDING A DE/RPG DATA ENTRY PROGRAM**

The program determines the way in which the DE/RPG job must be ended. If the DE/RPG programs contains an EOJ (end of job) operation, the program automatically ends when the EOJ is encountered. If the program does not
contain an EOJ operation, the operator must end the program by using the Cmd key and the End of Job key.

When a DE/RPG program is ended, the following prompt may be displayed:

```
0 0001 D 01 40 xxxxx xx E
End of job. Do you want to write statistics?
Options are
1. Yes
2. No
Select option:  \ Press ENTER
```

To respond to this prompt, see Writing Statistics for DE/RPG Jobs in this section.

The programmer can include an operation in the program that prevents this prompt from being displayed. If the prompt is not displayed, the load prompt is immediately displayed.

**STARTING A DE/RPG APPLICATION JOB**

1. Begin with the load prompt.

```
0 0001 A 16 40
Program name:  \ Press ENTER
Device address:
Partition number:
```

Press ENTER
2. Insert the diskette containing the DE/RPG compiled program into a diskette drive.

3. If the data sets to be used are on another diskette, insert the diskette containing the data sets to be used into another diskette drive.

4. Enter the name of the DE/RPG compiled program in the program name entry of the load prompt. In the device address entry, enter the device address for the diskette drive where you inserted the diskette. Press the Enter key.

5. The data set open prompt might appear next. If it does, follow the procedures in the topic Opening Data Sets for a DE/RPG Application Program.

OPENING DATA SETS FOR A DE/RPG APPLICATION PROGRAM

It is possible that multiple data sets may be used by a single DE/RPG program. In this case, once you conclude an open for one data set, you immediately see the open prompt for the next data set. Proceed through the open prompts as described until the last prompt is displayed and processing begins.

1. Begin at the data set open prompt.

```
0 0001 A 26 xx
Enter data for data set open
Data set name: U""""""""""""
Device address: xxxx

Press ENTER
```

2. This prompt contains the data set name and device address. In the case of application programs, this address can reference a printer, in addition to a diskette drive. Unless otherwise specified by your supervisor or programmer, accept the values shown in the prompt. Press the Enter key. What follows depends on whether the data set exists and whether it is volume protected.

3. If the data set exists and the diskette is volume protected, the volume protect prompt is displayed.
You must respond appropriately to this display before you can access the data set. If you do not know the owner identifier for the data set, ask your supervisor or programmer to help you. When you have entered this information, press the Enter key. The data set open prompt is displayed again. Press the Enter key.

4. If the data set exists and is not volume protected, the processing begins.

5. If the data set does not already exist and allocation is not allowed, a 3215 error occurs. The data set open prompt reappears when you press the Reset key. See the Message Manual for information on how to recover from this error.

6. If the data set does not already exist and allocation is allowed, you can allocate it immediately. This procedure is described in the next topic.

ALLOCATING A NEW DATA SET FOR A DE/RPG APPLICATION PROGRAM

1. When the data set is not on the diskette, the data set open failed prompt is displayed.
If you select option 1, the data set open prompt is redisplayed, allowing you to correct the name or address.

```
0 0001   A 26 xx
Enter data for data set open
Data set name:                    xxxx
Device address:                   xxxx

Press ENTER
```

If you select option 2, the allocate prompt appears allowing you to specify the conditions of the allocation.

```
0 0001   A 26 xx
Enter data for data set allocate
Data set name:                    xxxx
Device address:                   xxxx   Owner ID:
Exchange type:                    I   Number of records:  000200

Press ENTER
```

The cursor will be positioned at the beginning of the first field. If you do not want to change the data in a field, exit the field with the [Field Advance] key.

You can change the name of the data set and the device address. Before you do, you should check with your supervisor.

The owner ID entry allows you to specify the user name under which the data set can be accessed. Do not enter anything in this field unless instructed by the supervisor.

The exchange type field also contains a system-supplied entry. You can change this value if necessary. The programmer should tell you which value to use. The values that are valid in this field are as follows:
Space = Basic exchange

H = H exchange

I = I exchange

Normally a system-supplied number appears in the number of records entry. Change this number if so instructed by the supervisor or programmer. If you do change the entry in the number of records field, use the Field Exit or Field + key to leave the field and right-adjust the entry.

When you have completed the entries for this display, press the Enter key.

ENDING A DE/RPG APPLICATION PROGRAM

To end the DE/RPG application program, follow the procedure described in Ending a DE/RPG Data Entry Program in this section.

WRITING STATISTICS FOR A DE/RPG JOB

When the job statistics prompt is displayed, you have the option of either writing statistics or of bypassing the statistics. If you choose option 2 and press the Enter key, the load prompt is immediately displayed and you are ready to load the next program.

If you select option 1 and press the Enter key, the following prompt is displayed.

```
0 0001   A 26 xx xxxxxx   xx E
Enter data for data set open
Data set name:   xxxxxxxx
Device address:   xxxx

Press ENTER
```

1. Enter the name of the data set that will contain the production statistics and its device address. Press the Enter key.

2. If the data set that will be used for statistics does not already exist, the data set open failed prompt is displayed. See the procedure in Allocating a Data Set for a DE/RPG Application Program in this section. Your supervisor or programmer should supply the data set name.
3. The next prompt requests the selection of the type of statistics.

```
0 0001  D 01 40 xxxxx   xx E
Select statistics to be written
   Options are
   1. Job      3. Both
   2. Station
Select option: [ ] Press ENTER
```

Select the appropriate option and press the Enter key. The statistics are written in the data set specified in the open prompt (or allocated in the allocate prompt).

4. When the statistics have been written, the load prompt appears.

**COMPILING A DE/RPG PROGRAM**

1. Begin at the load prompt.

```
0 0001  A 16 40
Program name: [ ]
Device address:
Partition number:
Press ENTER
```

2. Insert the compiler diskette into one drive and the diskette that contains the source program (program to be compiled) into another drive.

3. Enter the name SYSDERPG in the program name entry. Enter the device address for the compiler in the device address entry. Press the Enter key.
**Note:** Enter a number in the partition number entry only if you want to use a background partition.

The following prompt is displayed.

```
0 0001   A 16 E2    DE/RPG COMPILER

Enter the following information for Source file.

Data set name: SYSIN
Device address: xxxx

Press ENTER
```

The device address depends on the location of the source program.

4. Enter the name of the source program (replace SYSIN) and press the Field + key or the Field Exit key.

5. Enter the device address for the source program.

6. Press the Enter key for the next display.

The next three displays have values supplied by the system. This means that you can accept the allocated data set name and address, for example, SYSUT001 and 4400 (as shown in the following display) or you can enter your own allocated data set name and address. Steps 7 and 8 assume that you accept the values supplied by the system. If not, enter your own data set name and address.

```
0 0001   A 16 E2    DE/RPG COMPILER

Enter the following information for Work file 1.

Data set name: SYSUT001
Device address: xxxx

Press ENTER
```
In the preceding display, the data set name appearing on the display means that the name for work file 1 in the compiler diskette has been defined as SYSUT001. This is a system default work file name.

If SYSUT001 and SYSUT002 are not present, you can automatically allocate them by selecting option 2 from the data set open failed prompt. Then press the Enter key.

**Note:** If you automatically allocate these data sets, they are deleted when the normal end of job for the compile occurs.

7. Press the Enter key. The next prompt is displayed.

```
0001 A 16 E2
Enter the following information for Work file 2.  
Data set name: SYSUT002
Device address: xxxx

Press ENTER
```

8. Press the Enter key. The next prompt is displayed.

```
0001 A 16 E2
Enter the following information for Object file.  
Data set name: SYSOUT7
Device address: xxxx

Press ENTER
```

9. If there is no data set existing with this name, the data set open failed prompt is displayed:
If you select option 1, the object file prompt reappears allowing you to change the name or address. Make the corrections and press the Enter key. The listing prompt appears next.

If you select option 2, the listing prompt appears. (The compiler automatically allocates the object data set at the completion of the compilation).

10. Select one of the three options and press the Enter key. If you select option 1, follow steps 11 through 13. If you select option 2, follow step 14. If you select option 3, follow step 15.

11. If you selected option 1, make sure that the printer switch is set to the (On) position and that the Start key has been pressed. The following display appears:
12. Always use the name SYSPRNT. However, the device address and form length defaults (8000 and 066) can be changed. Respond to the preceding prompt and press the Enter key. The compilation begins and the listing is printed. The following prompt appears:

```
0
DE/RPG compile in process.
```

13. If the compiler encounters an error in the program, a message is displayed. The following message appears only when you are listing to a printer.

```
0001      D 01 40

Warning errors have occurred in this program.
Options are
1. Terminate compile
2. Continue compile

Select option:  [ ] Press ENTER
```

You have the option to continue the compilation or to end the compilation. If you select option 2, the compilation continues until you end the job or the compilation is complete. Go to step 16.
14. If you selected option 2 in step 10, the following prompt appears:

```
0 0001 A 16 E2
Enter the following information for Listing file.
Data set name  00001
Device address  xxxx
```

Press ENTER

You must enter both the data set name and the device address. In this case, the data set name must have been preallocated. Press the Enter key. If it has not been allocated, press the Cmd key and the End of Job key, then allocate the data set using the SYSLABEL utility.

If the data set has been allocated, the compilation begins. A DE/RPG in process prompt appears. Go to step 16.

15. If you selected option 3, the DE/RPG compiler in process prompt appears.

```
0
DE/RPG compile in process.
```
16. If noncorrectable errors are encountered while the program is being compiled, the following display appears.

```
0   -9921-
Terminal source errors have occurred in the program.
```

**Note:** Noncorrectable errors are errors that will prevent the program from being executable.

To respond to the terminal error prompt, press the Reset key. The load prompt appears. Have the programmer correct the source program, and return to step 1 to begin this procedure.

17. When the compilation is complete, the end of compile prompt appears.

```
0 0001   A 01 40
End of compile.
```

Press ENTER

18. Press the Enter key. The files are closed and the load prompt appears.

19. If you want to terminate the compilation before it has been completed, press the Cmd key and then press the End of Job key. The compilation terminates.
COPYING RECORDS USING DE/RPG

Copying records from a data set into a transaction data set is done in the enter mode only and only with programs that contain the CFILE and TFILE keywords.

Note: If you select enter-NEW/REPLACE, the system will copy the record to the beginning of an empty data set. If you select enter-ADD, the system will copy the record to the end of an existing data set.

1. Press the Cmd key and the Review Second Data Set key to begin the copy operation. The data set open prompt for the data set to be copied from appears.

```
0001. D 0140 E
Enter data for data set open
Data set name: xxxxxxxx
Device address: xxxx

Press ENTER
```

2. Change the name or address (if necessary) and press the Enter key. If the data set exists but is volume protected, follow the procedure in steps 3 and 4 of the topic Opening the Data Sets Used by the DE/RPG Data Entry Program. Return to this procedure after completing step 4.

If the data set exists and is not volume protected, the first record is displayed and format 0 is automatically selected. If the data set does not exist, error 3215 occurs. If the data set does not exist, you cannot continue with this operation. End the job using the Cmd key and the End of Job key. Call the supervisor.

Go to the topic Copying Records One at a Time or Copying Groups of Records as needed.

Copying Records One at a Time

1. Locate the record you want to copy. When the record you want to copy is displayed you can make changes. Press the Cmd key and the Transfer Record key, and the record is copied into the transaction data set. If you changed data in the record, the changes are copied, but the original record is not affected.
2. When you have completed the copy operation, press the Cmd key and the Return to Transaction Data Set key, and the current format for the DE/RPG program is displayed.

You can continue entering or updating data in the data set as needed. To end the job see the topic Ending a DE/RPG Data Entry Program in this section.

Copying Groups of Records

Deleted records are never copied.

1. If the Auto record advance function is active, press the Auto Enter key to turn it off.
2. Locate the beginning record of the block of records you want to copy.
3. Press the Cmd key, then press either the Search Record Number key or the Search Content key, depending on the type of search you want.

If you use the search record number function, the following prompt is displayed:

```
0 0001  D 06 40 xxxxxxxx 0 C-S
Enter number for search relative record: _________
```

Press ENTER

a. Enter the relative record number of the record that follows the last record you want to copy. (Do not press the Enter key. This starts a search function rather than a copy function and you must return to step 1 to copy the records.)
b. Press the Field Exit key or the Field + key.
c. Press the Cmd key, then press the Transfer Record key. The mode indicator on the status line changes to C-T.

The records from the current record up to, but not including, the specified record number are copied to the transaction data set. The record with the specified record number is displayed.

If you use the Search Content key, the following prompt is displayed:
a. Enter a search mask, enclosed in apostrophes. For example, 'Minnesota' could be entered for the mask. If fewer than 18 positions are used for the mask, use the Field Exit key or the Field + key to exit the field.

b. Enter the position within the record where the mask begins. For example, if the word Minnesota begins in the first position of the record, enter 1. Use the Field Exit key or the Field + key to exit the field.

c. Enter the position within the record where the mask ends. If left blank, the length of the mask determines the end position. For example, if the word Minnesota begins in position 1, it ends in position 9. Use the Field Exit key or the Field + key to exit the field.

You can repeat steps a through c to enter more search masks, up to three masks. The masks are used to search up to three fields of the record. (Do not press the Enter key or the Home key. This starts a search function rather than a copy function and you must return to step 1 to copy the records.)

d. Press the Cmd key, then the Transfer Record key. The mode indicator on the status line changes to C-T.

The records are copied up to, but not including, the first record that contains a match on the masks. If no match is found, all records up to, but not including, the last record in the data set are copied.

4. Press the Cmd key and the Return to Transaction Data Set key to end the copy operation.

5. Terminate the job using the procedure described in the topic Ending a DE/RPG Data Entry Program in this section.

PRINTING RECORDS USING DE/RPG

Records can be printed by data entry DE/RPG programs by using the Print key or by application DE/RPG programs by using the formatted print operation.
PRINTING RECORDS IN DATA ENTRY PROGRAMS

Printing a record in a DE/RPG data entry program is valid in enter, update, verify, or copy mode. If an error code is displayed when you press the Print key, see the Message Manual.

1. Begin at the load prompt.

2. Enter the name and address of the DE/RPG program containing the PRTFILE operation. Press the Enter key. The select initial data entry mode prompt appears.

3. Respond to the select initial data entry mode prompt and press the Enter key. The data set open prompt appears.

4. Follow steps 2 through 7 in the topic Opening the Data Sets Used by the DE/RPG Data Entry Program in this section and the topic Allocating a New Data Set Using a DE/RPG Data Entry Program.
5. Locate and display the record you want printed. If this is a new data set, you must first enter the record, press the Enter/Rec Adv key and then press the Home key to redisplay the record.

6. Check to make sure that the printer is ready.

Go to the topic Printing a Single Record Using a DE/RPG Program or Printing a Block of Records Using a DE/RPG Program.

Printing a Single Record Using a DE/RPG Program

1. Press the Print key. If the data set for the print operation has not already been opened, the data set open prompt is displayed.

   The printed data does not necessarily represent the format of the displayed data. (This is due to reformatting. The printed record exactly matches the diskette record.)

2. You can display the next record you want printed and repeat the process in step 1 until all records are printed.

3. To terminate the job, see the topic Ending a DE/RPG Data Entry Program in this section.

Printing a Block of Records Using a DE/RPG Program

1. Press the Auto Enter key (a reverse image R appears in the status line).

2. Press the Print key.

   If the data set for the print operation has not been opened, the data set open prompt is displayed. Respond to the data set open prompt.

   The printed data does not necessarily represent the format of the displayed data. (This is due to reformatting. The printed record matches the diskette record.)

3. Successive records are printed until one of the following conditions has been met:
   a. You press the Auto Enter key again to turn off the auto enter function.
   b. The end of the data is reached.
   c. You press the Cncl key.

4. To terminate the job, see the topic Ending a DE/RPG Data Entry Program in this section.
INSERTING A RECORD

This procedure is valid only in update and verify modes, to open one or more spaces within a data set:

1. Display the record that will immediately follow the records to be inserted.

2. Press the Cmd key and the Insert Record key. The following prompt appears.

   \[
   \begin{array}{c}
   00001 \quad D \ 02 \ 40 \ xxxxx \quad 0 \ x-I \\
   \text{Enter number of records to insert:} \ \underline{4} \\
   \end{array}
   \]

   Press ENTER

3. Enter the number of records to be inserted (1 through 99). Press the Field + key or the Field Exit key, and then press the Enter key.

   The system displays a blank screen, with format 0 selected for the creation of the first record to be inserted.

4. Select a format, if required.

5. Key in the record and press the Enter key.
6. Repeat step 5 until insert mode ends. Insert mode ends when one of the following conditions occur:
   a. You have inserted the number of records that you specified in step 3.
   b. You press the Cncl key and then the Enter/Rec Adv key. In this case, deleted records are automatically inserted until the number of records you specified in step 3 has been satisfied. The cursor is positioned in the first manual position of the next record.
   c. You press the Home key while the cursor is in the first manual position of a record. In this case, deleted records are automatically inserted until the number of records you specified in step 3 has been satisfied. The cursor is positioned in the first manual position of the last record inserted.

   **Note:** After you have keyed the last insert record, the status line positions that indicate the program mode blinks until the insert function has been completed.

**DELETING A RECORD**

Deleted records take up space in the data set and are included in the numbering of the records in the data set. To delete one or more records in the data set:

1. Make sure you are in the enter, update or verify mode.
2. Press the Page Fwd key, or use one of the search functions, until the record you want to delete is displayed.
3. Press the Cmd key and the Delete Record key to delete the record.

In enter mode, pressing the Delete Record key blanks the display screen, transfers a deleted record to the data set, and positions the cursor to the first manual field of the next record.

In update or verify modes, pressing the Delete Record key causes the currently displayed record to be deleted in the data set and the next sequential record is displayed.

4. Repeat steps 2 and 3 for each record to be deleted.
This page intentionally left blank.
There are four ways to search a data set that has been opened:

- Search end of data
- Search relative record number
- Search content
- Search sequential content

These search operations can be used during the following modes:

- DE/RPG–Copy, update, and verify
- KEU–Update and verify

When a search operation is active, the program mode positions on the status line contain x-S.

Search content and search sequential content differ as follows:

- When searching sequential content, data in fields being searched must be in ascending alpha (A through Z), numeric (0 through 9), or alphanemic (A through Z, then 0 through 9) sequence.
- Search sequential content is faster.
- Search content searches only in the specified direction; forward to the end of the data set or backward to the beginning of the data set. Search sequential content searches in both directions (forward and backward) for the desired record.
- Search content uses from 1 to 3 search masks. Search sequential content uses only one search mask.

SEARCH END OF DATA

This search operation finds the last record in a data set. When the search is completed, the last record in the data set is displayed. To use this search:

1. Press the Cmd key, hold down the Num key or the Shift key, and press the Search End of Data key.
SEARCH RELATIVE RECORD NUMBER

This search operation finds a particular record by its relative record number within the data set. The relative record number is the physical location of a record relative to the beginning of the data set. For example, if a data set contains the following records:

```
AAAA  BBBB  CCCC  DDDD  EEEE  FFFF
```

Beginning of the Data Set

Record DDDD has a relative record number of 4, because it is in the fourth physical record location from the beginning of the data set.

When the search is complete, the record at the specified relative record number position is displayed. To use this search:

1. Press the Cmd key and the Search Record Number key.
2. When the following prompt appears:

```
0 0001  D 06 40 xxxxx  O  x-S
Enter number for search relative record: " " " " "
```

Press ENTER

Enter the relative record number of the record you want to display.

3. Press the Field Exit key or the Field + key.
4. Press the Enter key.

SEARCH CONTENT

This search operation finds the record in a data set that contains specified data. The data can be located in up to three different areas in the record. If a record containing the specified data is found, that record is displayed. If a record is not found, an error occurs. When the Reset key is pressed, the first
record in the data set is displayed for a backward search or the last record in
the data set is displayed for a forward search. To use this search:

1. Press the Cmd key and the Search Content key.

2. The following prompt appears:

```
0001 A 18 40 xxxxx 0 C-S
Enter data for search content
MASK START END
...........................
```

   a. **Mask**—Enter the data for the record for which you are searching. The
      mask can consist of up to 16 characters, and it must begin and end
      with an apostrophe. For example, 'MINNESOTA'. If you do not fill the
      MASK field, press the Field Exit key or the Field + key.

   b. **Start**—Enter the starting position where the data you specified is
      located in the record, and then press the Field Exit key or the Field + key.
      If the starting position is not specified, position 1 of the record is
      used as the starting position.

   c. **End**—Enter the ending position where the data you specified is located
      in the record, and then press the Field Exit key or the Field + key. If
      the ending position is not specified, the ending position equals the
      starting position plus the number of characters specified in the mask.

**Note**: To search the entire record for the specified mask, specify the
starting position as 1 and the ending position as the number of
characters in the record.

3. You can specify up to three masks for the search operation. To specify
   another mask, repeat step 2.

4. To search forward from the next record (not the current record) to the
   end of the data set, press the Enter key.
   To search backward from the current record to the beginning of the data
   set, press the Home key.

**SEARCH SEQUENTIAL CONTENT**

This search operation finds a record in a data set that contains specified data.
The data field being searched must be in ascending order from record to
record. The entire data set is searched, regardless of which record is displayed.
when the search begins. If a record containing the specified data is found, that record is displayed. If a record is not found, an error occurs. When the Reset key is pressed, the record in the ascending order that would follow a record containing the specified data is displayed. To use this search:

1. Press the Cmd key and the Search Seq Content key.

2. The following prompt is displayed:

```
0 0001   AE 40 xxxxx   C x-S
Enter data for search sequential content
MASK    START

Press ENTER
```

   a. **Mask**—Enter the data for the record for which you are searching. The mask can consist of up to 16 characters, and is must begin and end with an apostrophe. For example, 'MINNESOTA'. If you do not fill the mask field, press the Field Exit key or the Field + key.

   b. **Start**—Enter the starting position where the data you specified is located in the record, and then press the Field Exit key or the Field + key.

   If the starting position is not specified, position 1 of the record is used as the starting position.

3. Press the Enter key to start the search.

The search might not stop on the first record of a group of records containing the data specified in step 2. If the search stops at a record not sought, perform a record backspace or a record advance operation to find the record sought.

**Notes:**

1. If records in the data set are not in ascending order, the record being searched for might not be found using search sequential content even though the record exists in the data set.

2. If the record cannot be found, return to the first record in the data set and do a search content operation.
RESUMING THE SEARCH CONTENT AND SEARCH SEQ CONTENT OPERATIONS

If you have used a search content or search sequential content operation for the current data set, the next time you use these searches, the old search mask you previously specified appears. You can either reuse these values or enter new ones.

CANCELING A SEARCH OPERATION

A search operation (search record number, or search content, or search sequential content) can be canceled while the search prompt is displayed, by pressing the Num key or the (Shift) key and the Cncl key. When the search is canceled, the record from which the search was requested is displayed. Once the search operation has started, it cannot be canceled.
SYSTEM CONTROL PROGRAMMING (SCP), UTILITIES,
AND SORT/MERGE ................................................ 121
This page intentionally left blank.
The following tables contain the program names that must be used to load system control programs (SCP), or the utility programs, or the sort/merge program when the load prompt is displayed.

### SCP (Use the SCP diskette)

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Program Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Configuration</td>
<td>SYSCON</td>
</tr>
<tr>
<td>Patch</td>
<td>SYSPTF</td>
</tr>
<tr>
<td>Close Failure Recovery</td>
<td>SYSCLOSE</td>
</tr>
</tbody>
</table>

### Utility (Use the Utilities diskette)

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Program Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Entry Utility</td>
<td>SYSKEU</td>
</tr>
<tr>
<td>Diskette Initialization Utility</td>
<td>SYSINIT</td>
</tr>
<tr>
<td>Diskette/Data Clear Utility</td>
<td>SYSCLEAR</td>
</tr>
<tr>
<td>Diskette Label Maintenance Utility</td>
<td>SYSLABEL</td>
</tr>
<tr>
<td>Diskette Label List Utility</td>
<td>SYSLIST</td>
</tr>
<tr>
<td>Diskette Copy Utility</td>
<td>SYSCOPY</td>
</tr>
<tr>
<td>Diskette Print Utility</td>
<td>SYSPRINT</td>
</tr>
<tr>
<td>Resource Allocation Utility</td>
<td>SYSRAU</td>
</tr>
<tr>
<td>3740 Format Conversion Utility</td>
<td>SYS3740C</td>
</tr>
<tr>
<td>System Status Utility</td>
<td>SYSSTAT</td>
</tr>
<tr>
<td>Diskette Compress Utility</td>
<td>SYSCOMP</td>
</tr>
<tr>
<td>Sort/Merge Program Product (Use the Sort/Merge diskette)</td>
<td>Program Name</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Command Data Set Display</td>
<td>SYSCMDSP</td>
</tr>
<tr>
<td>Sort</td>
<td>SYSSORT</td>
</tr>
<tr>
<td>Merge</td>
<td>SYSMERGE</td>
</tr>
</tbody>
</table>

For more information on how to use these programs, see the following manuals:

**SCP programs**—see the *System Control Programming Reference/Operation Manual*.

**Utilities**—see the *Utilities Reference/Operation Manual*.

**Sort, Merge, or Command Data Set Display**—see the *Sort/Merge Reference/Operation Manual*. 
This section describes the keyboards and the location of each key. Three basic types of keyboards are available:

- Data entry keyboard
- Data entry keyboard with the proof arrangement
- Typewriter keyboard

**HOW TO IDENTIFY YOUR KEYBOARD TYPE**

The following drawings show the keyboard types. An easy way to identify your keyboard type is to look at the U key: \( U \) is data entry; \( CD \) is data entry with proof arrangement; and, \( 0 \) is typewriter.
Data Entry Keyboard With Proof Arrangement

The data entry and data entry with proof arrangement keyboards are identical, except for the location of the numeric keys and the spacebar function. When using the data entry keyboard with proof arrangement, the Spacebar functions as a dual purpose key. When the keyboard is in alpha shift, pressing the Spacebar creates a space (blank character). When the keyboard is in numeric shift, pressing the Spacebar creates a zero (0) character. In addition to the Spacebar, the CIJ key can be used to create a space (blank character). The space function on the CD key is only active when the keyboard is in numeric shift. Both keyboards support only the uppercase (A through Z) alphabetic characters.

For data entry type keyboards, the field definition position on the status line indicates whether the current input field is in alpha or numeric shift. When the current input field is in alpha shift, the bottom character on the key is entered when you press the key. When the current input field is in numeric shift, the top character on the key is entered when you press the key. For example:

This character is entered when the current input field is in numeric shift

This character is entered when the current input field is in alpha shift

You can use the Num key or the Alpha key to change the shift and the character entered when you press a key. For example, if the current input field is in numeric shift, you can press and hold the Alpha key and then press C to enter the character C.
Typewriter Keyboard

The typewriter keyboard supports the entry of both uppercase (A through Z) and lowercase (a through z) alphabetic characters.

KINDS OF KEYS

Each keyboard has three basic kinds of keys: data keys, function keys, and command keys.

Data Keys Overview

The following illustrations show the data keys on the 5280 keyboard. All data keys are typamatic. This means that when the key is held down, it repeats its character until the key is released.
Function Keys Overview

The following illustrations show the function keys on the 5280 keyboards.

Data Entry Keyboard

Typewriter Keyboard

Some function keys are typamatic. For information on how to operate the function keys, see Function Keys.

The purpose of the following two charts is to help you locate and identify the function keys.
### Where To Find A Function Key On A Data Entry Type Keyboard

<table>
<thead>
<tr>
<th>Name of Key</th>
<th>Meaning</th>
<th>Location on the Keyboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS REQ</td>
<td>System Request</td>
<td>1</td>
</tr>
<tr>
<td>ATTN</td>
<td>Attention</td>
<td>2</td>
</tr>
<tr>
<td>CMD</td>
<td>Command</td>
<td>3</td>
</tr>
<tr>
<td>DUP/SKIP</td>
<td>Automatic Duplicate/Skip Switch</td>
<td>4</td>
</tr>
<tr>
<td>AUTO ENTER</td>
<td>Automatic Record Advance Switch</td>
<td>5</td>
</tr>
<tr>
<td>CORR</td>
<td>Record Correct (when the Num key is held down)</td>
<td>6</td>
</tr>
<tr>
<td>CORR</td>
<td>Field Correct</td>
<td>6</td>
</tr>
<tr>
<td>DUP</td>
<td>Duplicate</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Dash or Field Minus</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Character Advance</td>
<td>9, 24</td>
</tr>
<tr>
<td>REC ADV</td>
<td>Record Advance</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Field Advance</td>
<td>11</td>
</tr>
<tr>
<td>SEL FMT</td>
<td>Select Format</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>New Line</td>
<td>13</td>
</tr>
<tr>
<td>FIELD</td>
<td>Field Minus</td>
<td>14</td>
</tr>
<tr>
<td>FIELD EXIT</td>
<td>Field Exit</td>
<td>15</td>
</tr>
<tr>
<td>NEXT FMT</td>
<td>Next Format</td>
<td>16</td>
</tr>
<tr>
<td>SKIP</td>
<td>Skip</td>
<td>17</td>
</tr>
<tr>
<td>ALPHA</td>
<td>Alphabetic Shift</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Character Backspace</td>
<td>19, 25</td>
</tr>
<tr>
<td>ENTER/REC ADV</td>
<td>Enter/Record Advance</td>
<td>20</td>
</tr>
<tr>
<td>PAGE FWD</td>
<td>Page Forward</td>
<td>21</td>
</tr>
<tr>
<td>NUM</td>
<td>Numeric Shift</td>
<td>22</td>
</tr>
<tr>
<td>RESET</td>
<td>Reset</td>
<td>23</td>
</tr>
</tbody>
</table>

Keyboards 129
<table>
<thead>
<tr>
<th>Name of Key</th>
<th>Meaning</th>
<th>Location on the Keyboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{↓} )</td>
<td>Cursor Down</td>
<td>26</td>
</tr>
<tr>
<td>( \text{↑} )</td>
<td>Cursor Up</td>
<td>27</td>
</tr>
<tr>
<td>HELP</td>
<td>Help</td>
<td>28</td>
</tr>
<tr>
<td>PRINT</td>
<td>Print</td>
<td>29</td>
</tr>
<tr>
<td>CNCL</td>
<td>Cancel</td>
<td>30</td>
</tr>
<tr>
<td>( \text{←} )</td>
<td>Field Backspace</td>
<td>31</td>
</tr>
<tr>
<td>HOME</td>
<td>Home (Record Backspace)</td>
<td>31</td>
</tr>
<tr>
<td>ERASE INPT</td>
<td>Erase Input</td>
<td>33</td>
</tr>
<tr>
<td>INS</td>
<td>Character Insert</td>
<td>34</td>
</tr>
<tr>
<td>DEL</td>
<td>Character Delete</td>
<td>35</td>
</tr>
</tbody>
</table>

Data Entry Type Keyboard
## Where To Find A Function Key On A Typewriter Keyboard

<table>
<thead>
<tr>
<th>Name of Key</th>
<th>Meaning</th>
<th>Location on the Keyboard</th>
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</thead>
<tbody>
<tr>
<td>SYS REQ</td>
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<td>1</td>
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<tr>
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<td>Attention</td>
<td>2</td>
</tr>
<tr>
<td>CMD</td>
<td>Command</td>
<td>3</td>
</tr>
<tr>
<td>ERASE INPT</td>
<td>Erase Input</td>
<td>4</td>
</tr>
<tr>
<td>HOME</td>
<td>Home (Record Backspace)</td>
<td>5</td>
</tr>
<tr>
<td>Field Advance</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Character Backspace</td>
<td></td>
<td>7, 27</td>
</tr>
<tr>
<td>SKIP</td>
<td>Skip</td>
<td>8</td>
</tr>
<tr>
<td>Field Backspace</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>REC CORR</td>
<td>Record Correct</td>
<td>10*</td>
</tr>
<tr>
<td>SEL FMT</td>
<td>Select Format</td>
<td>11*</td>
</tr>
<tr>
<td>DUP</td>
<td>Duplicate</td>
<td>12</td>
</tr>
<tr>
<td>FIELD -</td>
<td>Field Minus</td>
<td>13</td>
</tr>
<tr>
<td>FIELD CORR</td>
<td>Field Correct</td>
<td>14*</td>
</tr>
<tr>
<td>NEXT FMT</td>
<td>Next Format</td>
<td>15*</td>
</tr>
<tr>
<td>FIELD +</td>
<td>Field Plus</td>
<td>16</td>
</tr>
<tr>
<td>AUTO ENTER</td>
<td>Automatic Record Advance Switch</td>
<td>17*</td>
</tr>
<tr>
<td>DUP/SKIP</td>
<td>Automatic Duplicate/Skip Switch</td>
<td>18*</td>
</tr>
<tr>
<td>PAGE FWD</td>
<td>Page Forward</td>
<td>19*</td>
</tr>
<tr>
<td>New Line</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Shift Key</td>
<td></td>
<td>21, 24</td>
</tr>
<tr>
<td>ENTER/REC ADV</td>
<td>Enter/Record Advance</td>
<td>22</td>
</tr>
<tr>
<td>Name of Key</td>
<td>Meaning</td>
<td>Location on the Keyboard</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>ERROR</td>
<td>Error Reset</td>
<td>23</td>
</tr>
<tr>
<td>RESET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shift Lock</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Character Advance</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>Cursor Down</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Cursor Up</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>HELP</td>
<td>Help</td>
<td>30</td>
</tr>
<tr>
<td>PRINT</td>
<td>Print</td>
<td>31</td>
</tr>
<tr>
<td>CNCL</td>
<td>Cancel</td>
<td>32</td>
</tr>
<tr>
<td>INS</td>
<td>Character Insert</td>
<td>33</td>
</tr>
<tr>
<td>DEL</td>
<td>Character Delete</td>
<td>34</td>
</tr>
</tbody>
</table>

*These functions are activated by first pressing the Cmd key and then pressing the function key.*
Command Keys Overview

The Cmd key makes it possible to use the functions named on the template located above the top row of keyboard keys.

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review</td>
<td>Second Data Set</td>
<td>Transfer Record</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Seq Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
</tr>
</tbody>
</table>

To use the functions listed on the bottom row of the template, press the Cmd key and then press the key located below the function shown on the template.

To use the functions listed on the top row of the template, press the Cmd key, press and hold the Num key or the (Shift) key and then press the key located below the function shown on the template.

To cancel a pending function selection after only the Cmd key has been pressed, press the Reset key or the Error Reset key.

Note: When attached to a partition executing COBOL programs, the functions of the command keys may be different. See your supervisor or programmer for more information.
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Command Keys

AUTO MARK

Valid Programs: DE/RPG only

Valid Modes: Enter, update, verify, copy, execute, and rerun.

Operation:

To turn the auto mark function on:

1. Press the Cmd key.
2. Press and hold the Num key or the \( \text{Shift} \) (Shift) key, and then press the key below the Auto Mark label.

The record verify position of the status line is displayed in reverse image.

To turn the auto mark function off:

Repeat the same keying sequence that was used to turn the function on.

Use this function when you want the system to automatically mark fields in a record which contain editing checks (such as a range check, a table lookup, etc.) and an error occurs. In this case, the error is not displayed and the field is automatically marked in the leftmost position of the field replacing the data in that position with a solid rectangular block.

The auto mark function remains active until the job that is running is ended or until the function is turned off.
CHANGE FORMAT

Valid Programs: KEU only

Valid Modes: Enter and update

Operation:

Template

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review Second Data Set</td>
<td>Transfer Record</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key below the Change Format label.

Use the change format function to display the current format (1 through 9) for modification. After this function is selected, the system automatically selects format 0. The displayed format can be modified and then loaded back into the system (see the Load Format command key). After it is loaded into the system, it can be selected to control data entry (see KEU Job).
CLEAR SCREEN

Valid Programs: DE/RPG, KEU

Valid Modes

DE/RPG: Enter, update, and copy

KEU: Enter, and update

Operation:

Template

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trans File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review Second Data Set</td>
<td>Transfer Record</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Seq Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Delete Record</td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key under the Clear Screen label.

When entering data, use the clear screen function to clear the screen of data and user prompts. The system automatically selects format 0.
COMM ATTENTION

Valid Programs: Communication utilities SYMRJE and SYSSRJE

Operation:

Template

<table>
<thead>
<tr>
<th>Hex</th>
<th>View</th>
<th>Second Data</th>
<th>Comm</th>
<th>End of</th>
<th>Search</th>
<th>Load</th>
<th>Change</th>
<th>Display</th>
<th>Display</th>
<th>Dump</th>
<th>Auto</th>
<th>Clear</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Input</td>
<td>Status</td>
<td>Format</td>
<td>Format</td>
<td>Data</td>
<td>Data</td>
<td>Trace</td>
<td>Mark</td>
<td>Screen</td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key under the Comm Attention label.

Use the comm attention function to use the keyboard for input. This key must be used each time you want to enter input from the keyboard. To make multiple successive entries, you must use this key after each time you press the Enter key.
**COMM STATUS**

**Valid Programs:** Communication utilities SYSBDCU, SYSBTU, SYSMRJE, SYSSDCU, and SYSSRJE

**Operation:**

Template

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace</th>
<th>File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review</td>
<td>Second</td>
<td>Return to Transaction</td>
<td>Search Content</td>
<td>Search Record</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Delete Record</td>
<td>Insert Record</td>
</tr>
<tr>
<td></td>
<td>Record</td>
<td>Data Set</td>
<td>Data Set</td>
<td>Content</td>
<td>Number</td>
<td></td>
<td></td>
<td>Field</td>
<td>Record</td>
<td>Record</td>
</tr>
<tr>
<td>CMD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key under the Comm Status label.

Use the comm status function to display job or function statistics. (The utility continues processing while the statistics are displayed.)

SYSBDCU, SYSSDCU, SYSMRJE, and SYSSRJE display this information as scrolled data. To stop the scrolling, press the (Cursor Down) key. When the utility has additional output for the display, error code 9113 occurs. Press the Reset key to recover from the error and resume scrolling.

If this function is selected during an error recovery prompt, while using SYSBTU, you must press the Enter key to return to the error recovery prompt.
DELETE RECORD

Valid Programs: DE/RPG and KEU

Valid Modes: Enter, update, and verify

Operation:

Template

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Form</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex Review</td>
<td>Second</td>
<td>Transfer</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Seq Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Template</td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press the key under the Delete Record label.

Use the delete record function to delete the displayed record from the data set (see the Record Insert/Record Delete section).

DISPLAY DATA

Valid Programs: KEU only

Valid Modes: Enter, update, and verify

Operation:

Template

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Form</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex Review</td>
<td>Second</td>
<td>Transfer</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Seq Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Template</td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key under the Display Data label.

Use the display data function to return to the current record after a format has been displayed or loaded.
DISPLAY FORMAT

Valid Programs: KEU only

Valid Modes: Enter, update, and verify

Operation:

Template

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Data</th>
<th>Dump Data</th>
<th>File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review</td>
<td>Transfer</td>
<td>Return to</td>
<td>Search</td>
<td>Search</td>
<td>Screen</td>
<td>Open</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Second</td>
<td>Record</td>
<td>Transaction Data</td>
<td>Content</td>
<td>Seq Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data Set</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key under the Display Format label.

Use the display format function to display the current format (1 through 9). The format is displayed but cannot be changed. To redisplay the current record, you must use the display data function.
DISPLAY VERIFY RECORD

Valid Programs: DE/RPG and KEU

Valid Mode: Verify

Operation:

1. Press the Cmd key.

2. Press the key under the Display Verify Record label.

Use the display verify record function to display the entire record, currently being verified. The record is displayed (but cannot be changed) and the mode indicator on the status line changes to V-D. To resume verification, press the same command key sequence again. The mode changes to V, and the cursor is positioned to the first manual position of the record.
### DUMP/TRACE FILE OPEN

**Valid Programs:** DE/RPG (if enabled), KEU, COBOL, and some utilities  
**Valid Modes:** All modes

**Operation:**

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review</td>
<td>Transfer</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Seq Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Delete Record</td>
</tr>
<tr>
<td></td>
<td>Second</td>
<td>Record</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key under the Dump Trace File Open label.

The dump/trace file open function is used to open a data set for use with the dump trace function.

---

### EDIT RELEASE

**Valid Programs:** DE/RPG only

**Valid Mode:** Enter, update, verify, copy, and execute

**Operation:**

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review</td>
<td>Transfer</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Seq Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Delete Record</td>
</tr>
<tr>
<td></td>
<td>Second</td>
<td>Record</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press the key under the Edit Release label.

Use the edit release function only in response to an edit error that cannot be corrected. When an error occurs, press the Reset Key and use edit release function to continue entering data. This allows you to continue data entry on the remainder of the field, unless another edit error occurs.
**Valid Programs:** Communication utilities SYSCCU, SYSBDCU, and SYSSDCU

**Operation:**

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key under the End Input label.

**SYSCCU only:**

Use the end input function to indicate that all updates to the communications configuration record have been completed.

**SYSBDCU and SYSSDCU:**

This key is valid during an inquiry function or when the utility executing is transmitting data from the keyboard. The key indicates that no more data will be entered from the keyboard.
**END OF JOB (EOJ)**

**Valid Programs:** DE/RPG, KEU, COBOL, and utilities

**Valid Modes:** All modes

**Operation:**

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review</td>
<td>Transfer</td>
<td>Return to</td>
<td>Search</td>
<td>Search Seq</td>
<td>Search Record Number</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Delete Record</td>
<td>Insert Record</td>
</tr>
<tr>
<td></td>
<td>Second</td>
<td>Record</td>
<td>Transaction Dataset</td>
<td>Content</td>
<td>Content</td>
<td>Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Press the **Cmd** key.
2. Press the key under the **End of Job** label.

Use the end-of-job function to stop program processing. All data sets associated with the job are closed and you must respond to the prompts that are displayed.
HEX

Valid Programs: DE/RPG, KEU and utilities

Valid Modes: All modes

Operation:

1. Press the Cmd key and then press the key under the Hex label.

2. Key in two hex digits. For the data entry type keyboards, using the Num key or the Alpha key is not required.

3. Repeat steps 1 and 2 for each hex character.

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

Use the hex function to enter the EBCDIC code for a character that cannot be entered from the keyboard. The next two keystrokes (from 0 through 9 and A through F) are combined to make one of the 256 EBCDIC codes.

To cancel the hex function, press the Reset key before entering the second hex digit.
**INSERT RECORD**

**Valid Programs:** DE/RPG and KEU

**Valid Modes:** Update and verify

**Operation:**

1. Press the **Cmd** key.
2. Press the key under the **Insert Record** label.

Use the insert record function to create one or more spaces within a data set so that data records can be added. To cancel the insert function at the insert record prompt, press the **Cncl** key.

For more information, see the **Record Insert/Record Delete** section.
LOAD FORMAT

Valid Programs: KEU only

Valid Modes: Enter and update

Operation:

| Comm | Attention | End | Input | Comm | Status | Search | End | of | Data | Load | Format | Change | Format | Display | Format | Display | Data | Dump | Trace | File | Open | Auto | Mark | Clear | Screen |
|------|-----------|-----|-------|------|-------|--------|-----|----|------|------|--------|--------|--------|--------|--------|--------|------|------|-------|-------|-------|------|-------|--------|
| Hex  | Review    | Second | Data | Set | Transfer | Record | Return | to | Transaction | Data | Set | Search | Content | Search | Content | Search | Record | Number | End | Job | Edit | Release | Mark | Field | Delete | Record | Insert | Record | Display | Verify | Record |

1. Press the Cmd key.

2. Press and hold the Num key or the (Shift) key, then press the key under the Load Format label.

3. Enter the format number (1 through 9). For data entry type keyboards, the Num key is not required when entering the format number.

Use the load format function to load formats or prompting records into the system. After the format is loaded, the screen is blanked.
MARK FIELD

Valid Programs: DE/RPG only

Valid Modes: Enter, update, verify, copy, rerun, and execute

Operation:

1. Press the Cmd key.

2. Press the key under the Mark Field label.

3. Press the → (Field Advance) key to exit the field that is marked.

Use the mark field function to mark an incorrect data field. All remaining edits (such as range check, sequence check, table lookup and so on) are ignored.

The mark field function can be used while the cursor is in any position in the field to be marked. When you use this function, a solid rectangular block is placed in the leftmost position of the field.
RETURN TO TRANSACTION DATA SET

Valid Programs: DE/RPG only

Valid Mode: Copy

Operation:

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Attention</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review Second Data Set</td>
<td>Transfer Record</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Seq.</td>
<td>Search Record</td>
<td>Number</td>
<td>End of Job</td>
<td>Edit</td>
<td>Release</td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press the key under the Return to Transaction Data Set label.

Use the return to transaction data set function to change from copy mode to normal operation. This function is used in conjunction with the review second data set function and the transfer record function. See DE/RPG Jobs for more information on copying data sets.
REVIEW SECOND DATA SET

Valid Programs: DE/RPG only

Valid Mode: Enter

Operation:

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td>Transfer Record</td>
<td>Return to Transaction Data Set</td>
<td>Search Content</td>
<td>Search Seq Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Record</td>
<td>Mark Field</td>
<td>Delete Record</td>
<td>Insert Record</td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press the key under the Review Second Data Set label.

Use the review second data set function to display or copy the record or records from an existing data set. Changes made to the displayed records can only be written to the transaction data set. This function is used in conjunction with the return to transaction data set function and the transfer record function. See DE/RPG Jobs for more information on copying data sets.
SEARCH CONTENT

Valid Programs: DE/RPG and KEU

Valid Modes

DE/RPG: Update, verify, and copy

KEU: Update and verify

Operation:

1. Press the Cmd key.

2. Press the key under the Search Content label.

Use the search content function to initiate a search for a record using one or more masks. The mask(s) specify the data you want to search on within a data record.

You can cancel the search content function by pressing the Cmd key only when the search prompt is displayed.

For more information, see Search.
SEARCH END OF DATA

Valid Programs: DE/RPG and KEU

Valid Modes

DE/RPG: Update, verify, and copy

KEU: Update and verify

Operation:

<table>
<thead>
<tr>
<th>Command</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Save</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trac File Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review</td>
<td>Transfer</td>
<td>Search Record</td>
<td>Search Content</td>
<td>Search Record Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Delete Record</td>
</tr>
<tr>
<td></td>
<td>Second</td>
<td>Transaction</td>
<td>Data Set</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Press the Cmd key.

2. Press and hold the Num key or the (shift) key, then press the key under the Search End of Data label.

Use the search end of data function to find the last record in the data set. For more information, see Search.
SEARCH RECORD NUMBER

Valid Programs: DE/RPG and KEU

Valid Modes

DE/RPG: Update, verify, and copy
KEU: Update and verify

Operation:

1. Press the Cmd key.
2. Press the key under the Search Record Number label.

Use the search record number function key to find the record in the data set that has the specified record number.

You can cancel the search record number function by pressing the Cncl key only when the search prompt is displayed.

For more information, see Search.
SEARCH SEQUENTIAL CONTENT

Valid Programs: DE/RPG and KEU

Valid Modes

DE/RPG: Update, verify, and copy

KEU: Update and verify

Operation:

1. Press the **Cmd** key.

2. Press the key under the Search Seq Content label.

Use the search sequential content function to search for a record containing specific data in the current data set. The records must be 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 cancel the search sequential content function by pressing the Cncl key only when the prompt is displayed.

For more information, see Search.
TRANSFER RECORD

Valid Programs: DE/RPG only

Valid Modes: Copy

Operation:

<table>
<thead>
<tr>
<th>Comm Attention</th>
<th>End Input</th>
<th>Comm Status</th>
<th>Search End of Data</th>
<th>Load Format</th>
<th>Change Format</th>
<th>Display Format</th>
<th>Display Data</th>
<th>Dump Trace File</th>
<th>Open</th>
<th>Auto Mark</th>
<th>Clear Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex</td>
<td>Review</td>
<td>Second</td>
<td>Return to Transaction</td>
<td>Data Set</td>
<td>Search Content</td>
<td>Search Record Number</td>
<td>End of Job</td>
<td>Edit Release</td>
<td>Mark Field</td>
<td>Delete Record</td>
<td>Insert Record</td>
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1. Press the Cmd key.

2. Press the key under the Transfer Record label.

Use the transfer record function to transfer the displayed record or records to the transaction data set. After the records are transferred, the next sequential record is displayed. This function is used in conjunction with the return to transaction data set function and the review second data set function. See DE/RPG Jobs for more information on copying records from one data set to another.
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Function Keys

ALPHA (ALPHABETIC SHIFT) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Keyboard: Data entry type only

Operation:

1. Press and hold the Alpha key.
2. Key the character you want to enter.

Data Entry Type Keyboards

Use this key if the cursor is in a field programmed for numeric shift and you want to enter alphabetic characters.
ATTN (ATTENTION) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Operation: Press the Attn key.

Use this key when you want to:

• Respond to a program operating in a background partition when a program request appears.

• Return to the foreground partition from a background partition.

Note: If there are multiple background partitions executing programs, you might have to press the Attn key more than once to return to the foreground partition.

For more information, see Partitions.
AUTO ENTER KEY

Valid Programs: DE/RPG, COBOL, and KEU

Valid Modes: All modes

Operation:

For the data entry type keyboards, press the Auto Enter key. For the typewriter keyboard, press the Cmd key and the Auto Enter key.

This key acts as a switch to turn the auto record advance function on and off. When the auto record advance function is on, you automatically advance to the next record when the current record is completed. Therefore, it saves you the time of pressing the Enter/Rec Adv key.

To turn the auto record advance function on, press the key once. A reverse image R appears on the status line when the auto record advance function is active. To turn auto record advance function off, press the key again. When the auto record advance function is off and the current record is completed, the cursor blinks beneath the last character in the record and the input record character position counter on the status line is 0.

Note: When the auto record advance function is active, you do not need to press the Enter key after you have supplied the information requested by a prompt.
CNCL (CANCEL) KEY

Valid Programs: DE/RPG, KEU, and utilities

Valid Modes

DE/RPG: Update, verify, and copy
KEU: Update and verify

Operation: Press and hold the Num key or the (Shift) key and then press the Cncl key.

Use this function to:

1. Cancel search mode when you are at the search prompts.
2. Cancel the load prompt after you press the Sys Req key.
3. Cancel the record insert function.
4. Stop printing if printing was started by the Print key and the auto record advance function is on. (DE/RPG only)
5. Cancel the open prompt for the printer if the printer data set does not open. (DE/RPG only)
6. Cancel the dump/trace open prompt.
(CHARACTER ADVANCE) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Operation: Press one of the (Character Advance) keys.

Use a character advance key to advance the cursor (in all modes except verify) one position without changing the character stored in that position.

Pressing a character advance key moves the cursor to the next character position within a field.

If a character advance key is pressed while the cursor is in the last field position, the cursor advances to the next field.

In verify mode, a character advance key is valid only when awaiting field exit.
(CHARACTER BACKSPACE) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes.

Operation: Press one of the • (Character Backspace) keys.

When the cursor is within a field, a character backspace key moves the cursor back one position.

When the cursor is in the first position of a field, a character backspace key moves the cursor back to the last position of the previous manual field.

If the cursor is blinking and is in the last field position or in the last record position, pressing the character backspace key stops the cursor from blinking; the cursor remains in the same position.

When you press a character backspace key in verify mode, the character position(s) passed over on the display screen are blanked and must be reverified.
CORR KEY

See the Field Corr and Corr (Field Correct) Key or the Rec Corr and Corr (Record Correct) Key in this section.

(CURSOR DOWN) KEY

Valid Programs: DE/RPG and KEU

Valid Modes

DE/RPG: Enter, update, copy, and record correct
KEU: Enter, update, and record correct

Operation: Press the (Cursor Down) key

Use the (Cursor Down) key to move the cursor down to the next line on the display. An attempt to move the cursor outside the data record causes an error code 1112.

Note: The (Cursor Down) key is valid only in format 0. See the Glossary for information about format 0.
(CURSOR UP) KEY

Valid Programs: DE/RPG and KEU

Valid Modes: Enter, update, and verify (except field correct)

Operation: Press the (Cursor Up) key.

Use the (Cursor Up) key to move the cursor up one line on the display. Attempting to move the cursor outside the data record causes an error code 1112.

In verify mode, the characters passed over are blanked on the screen and must be reverified.

Note: The (Cursor Up) key is valid only in format 0. See the Glossary for information about format 0.
DEL (CHARACTER DELETE) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes

DE/RPG: Enter, update, execute, copy, record correct, and field correct.

KEU: Enter, update, record correct, and field correct.

Operation: Press and hold the Num key or the (Shift) key and then press the Del key.

All Keyboards

Use the Del key to delete one character at a time from the display screen. To delete a character, position the cursor below the character you want to delete. All characters to the right of the cursor (in the same field) are shifted to the left one position. A blank is inserted into the empty position at the end of the field.

If the field is picture check, character delete works within the current subfield only. That is, the character above the cursor is deleted and all data to the right of the cursor within the current subfield is shifted one position to the left. A blank is inserted into the empty position at the end of the subfield.
**DUP/SKIP KEY**

**Valid Programs:** DE/RPG, COBOL, and KEU

**Valid Modes:** All modes (except record insert)

**Operation:**

For data entry type keyboards, press the Dup/Skip key. For the typewriter keyboard, press the **Cmd** key and then press the Dup/Skip key.

This key acts as a switch to turn the auto duplicate/skip function on or off. To turn auto duplicate/skip function on, press the Dup/Skip key once. A reverse image D appears on the status line when this function is active; the system automatically duplicates or skips fields defined as auto duplicate or auto skip. In addition, if the field is specified as Aux Store in a DE/RPG program, the system automatically stores the data from the field into storage.

To turn the auto duplicate/skip function off, press the Dup/Skip key again. When this function is not active, the auto duplicate and auto skip fields are processed as manual fields.
DUP (DUPLICATE) KEY

Valid Programs: DE/RPG, COBOL, and KEU

Valid Modes: All modes

Operation: Press the Dup key

Use this key to transfer data from the previous record or storage to the current record.

Enter and Update Modes

When you press the Dup key, data is duplicated from the corresponding field in the previous data record into the current field, from the cursor position to the rightmost position of the field. If the Dup key is used in the first record, blanks are placed in the fields for which the Dup key was used. For DE/RPG, the data can be duplicated either from the previous record or from storage.

Verify Mode

When you press the Dup key, the data is automatically verified from the cursor position to the rightmost position of the field. The data in the current record is compared with the data in the corresponding positions of the previous record. For DE/RPG, the data in the current record can be compared either with the data in the previous record or with data in storage.

If a mismatch error occurs while duplicated data is being verified, the cursor stops at the position in error and the entire field is displayed. If you press the Dup key after you press the Reset key, the character from the previous record or storage replaces that character in the current record. Automatic verification then continues to the end of the field.

Record Insert Mode

When you press the Dup key, unpredictable results can occur.
ENTER/REC ADV (ENTER/RECORD ADVANCE) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Operation: Press the Enter/Rec Adv key.

Data Entry Keyboard

Typewriter Keyboard

Use this key to indicate that the information entered on the display screen is ready for processing.

Enter Mode

Pressing the Enter/Rec Adv key in this mode causes the system to:

1. Process all remaining fields in the record.
2. Write the record to the data set.
3. Position the cursor at the first manual position of the next record.

Update Mode

Pressing the Enter/Rec Adv key in this mode causes the system to:

1. Process all remaining fields in the record.
2. Write the current record to the data set if changes were made.
3. Position the cursor at the first manual position of the next record.
Verify Mode

Pressing the Enter/Rec Adv key in this mode causes the system to:

1. Process all remaining fields in the record.
2. Verify all remaining manual fields for blanks.
3. Write the current record to the data set, if it was changed.
4. Position the cursor at the first manual position of the next record (not displayed).
5. End the job if end of data (EOD) is encountered.

If a verify mismatch error occurs in a manual field, the cursor stops at the position in error and the entire field is displayed. If you press the Enter/Rec Adv key after pressing the Reset key, a blank replaces the character in the current record and automatic verification continues to the end of the record.

Pressing the Enter/Rec Adv key in record correct mode positions the cursor at the first manual position of the current record for verification.

Copy and Execute Mode

Using the Enter/Rec Adv key in copy mode displays the next record.

Using this key in the execute mode writes the current record to the data set.
ERASE INPT (ERASE INPUT) KEY

Valid Programs: DE/RPG and KEU

Valid Modes: All modes

Operations:

Press and hold the Num key or the Shift (Shift) key and then press the Erase Inpt key.

All Keyboards

Enter and Update Mode

Use this key to erase the data on the screen. The cursor returns to the first manual position of the current record. Now data can be rekeyed into the current record.

Verify Mode

Use this key when the entire record needs to be corrected.

Pressing this key changes the program on the status line from verify to verify correct (V-C) mode and blanks the current record. The cursor is positioned to the first manual position of the record.

After the record has been entered, the Enter/Rec Adv key changes the program mode on the status line to verify, clears the data on the display, and positions the cursor to the first manual position of the same record. The new data is ready for you to verify.
ERROR RESET AND RESET KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Operation:

For the data entry type keyboards, press the Reset key. For the typewriter keyboard, press the Error Reset key.

Use the Error Reset key or the Reset key to reset an error condition. This key also cancels the character insert function, the hex function, and command function.

Command functions are canceled if the Error Reset key or the Reset key is pressed before the keying sequence is completed.
(FIELD ADVANCE) KEY

Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Operation: Press the \( \rightarrow \) (Field Advance) key.

Use this key to move the cursor to the first position of the next manual field (in all modes except verify).

In verify mode, the \( \rightarrow \) (Field Advance) key is valid only when awaiting field exit.
**FIELD BACKSPACE** KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Operation: Press the **←** (Field Backspace) key.

Data Entry Type Keyboards

Use this key to move the cursor back to the first position of the field.

If the cursor is in the first position of the field, it moves to the first position of the preceding manual field.

When the **←** (Field Backspace) key is pressed in verify mode, the character positions passed over on the display screen are blanked and must be reverified.
FIELD CORR AND CORR (FIELD CORRECT) KEYS

Valid Programs: DE/RPG and KEU

Valid Mode: Verify

Operation:

For the data entry type keyboards, press the Corr key. For the typewriter keyboard, press the Cmd key and then the Field Corr key.

Use this key to correct an entire field while in verify mode. The cursor moves to the first position of the current field and the field is filled with blanks. You can reenter the field as if in enter mode.

When the field is exited, the cursor moves back to the first position of the field for reverification.

The field correct function is invalid when format 0 is active. See the Glossary for information about format 0.
FIELD EXIT AND FIELD + KEYS

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Operation:

For the data entry type keyboards, press the Field Exit key. For the typewriter keyboard, press the Field + key.

Data Entry Type Keyboard

For the data entry type keyboards, press the Field Exit key. For the typewriter keyboard, press the Field + key.

Typewriter Keyboard

Enter, Update, Field Correct, and Record Correct Modes

Use this key to exit the current field.

If the key is pressed while awaiting field exit, the field is exited and the data is left unchanged.

If not awaiting field exit, operations are performed on the data in the field depending on the current field definition.

Non-Right-Adjust Field

If the key is pressed when the cursor is within a non-right-adjust field, blanks are inserted from the cursor to the end of the field.

Signed Numeric Field

The data to the left of the cursor is shifted right to the position next to the rightmost position of the field on the screen. The vacated positions to the left of the data are filled with zeros. The rightmost field position, which is reserved for the sign, is blanked to indicate a positive sign.
If the key is pressed when the cursor is in the leftmost position of a signed numeric field, all positions except the rightmost position are filled with zeros, and the rightmost position is set to blank.

**Right-Adjust Field**

In a right-adjust field that is not signed numeric, the data to the left of the cursor is shifted to the right. The vacated positions to the left of the data are filled with the appropriate fill character (zeros or blanks as specified by the field definition).

If the key is pressed when the cursor is in the leftmost position of the field, the entire field is filled with the appropriate fill character.

**Verify**

**Non-Right-Adjust Field**

If awaiting field exit in a non-right-adjust field, the field is exited.

If not awaiting field exit in a non-right-adjust field, all positions above and to the right of the cursor are verified for blanks.

If a verify mismatch error occurs, the entire field is displayed with the cursor positioned under the character that caused the error. If the Field Exit key is pressed after the Reset key is pressed, the nonblank character in the record is replaced with a blank and automatic verification continues to the end of the field.

**Right-Adjust Field**

In a right-adjust field, the Field Exit key is valid only when the cursor is in the leftmost position of a field or while awaiting field exit.

If the key is pressed when the cursor is in the leftmost position of a field, the entire field is verified for the appropriate fill character (zeros or blanks as specified by the field definition). If a verify mismatch error occurs, the entire field is displayed with the cursor positioned under the character that caused the error. If the Field Exit key is pressed after the Reset key is pressed, the character in the record is replaced with the fill character and automatic verification continues to the end of the field.

If the key is pressed while awaiting field exit, the sign of the data (if numeric) is verified for a positive value. If a verify sign mismatch error occurs and if the Field Exit key is pressed after the Reset key is pressed, the sign of the data is changed to positive and the field is exited.
**FIELD - KEY**

**Valid Programs:** DE/RPG, KEU, COBOL, and utilities

**Valid Modes:** All modes

**Operation:** Press the Field - (Field Minus) key.

The Field - key is valid only when the cursor is positioned within one of the following types of input fields:

- Numeric shift
- Numeric only (DE/RPG and COBOL)
- Digits only (DE/RPG and COBOL)
- Signed numeric (DE/RPG and COBOL)

**Enter, Update, Field Correct, and Record Correct Modes**

Pressing the Field - key assigns a negative value to the field, and exits the field.

*If the key is pressed while awaiting field exit,* the last character in the field is checked for a digit (0-9). If it is not a digit, an error occurs. If it is a digit, a negative value is assigned to the field in the record. If the field is signed numeric, a minus sign is displayed to the right of the field. If the field is not signed numeric, the negative graphic for the digit replaces the rightmost digit in the field on the screen. The negative graphic that is displayed depends on the field type and the rightmost digit, as follows.
Field type | Rightmost Digit 0 1 2 3 4 5 6 7 8 9  
---|---
Numeric shift: | \{ J K L M N O P Q R \}
Numeric only and digits only: | 0 1 2 3 4 5 6 7 8 9

*If the key is pressed while not awaiting field exit, operations are performed on the data in the field, depending on the current definition, as follows.*

**Non-Right-Adjust Field**

The positions from the cursor to the next-to-the-last position in the field are set to blanks. The last position in the field is set to negative zero in the record. The negative zero graphic is displayed in the last field position. (Negative zero is displayed as `\{` for a numeric shift field, and `0` for a numeric only or digits only field.)

**Signed Numeric Field**

The data to the left of the cursor is shifted right. The positions to the left of the data are filled with zeros. The rightmost character is checked for a digit (0-9). If it is not a digit, an error occurs. If it is a digit, a minus sign is displayed in the sign position.

If the key is pressed when the cursor is in the leftmost position of the field, the field positions are filled with zeros, and a minus sign is displayed in the sign position.

**Right-Adjust Field**

If the field is a right-adjust field that is not signed numeric, the data to the left of the cursor is shifted right. The positions to the left of the data are filled with the appropriate fill character (zeros or blanks as specified by the field definition). The rightmost character is checked for a digit (0-9). If it is not a digit, an error occurs. If it is a digit, it is replaced on the screen with the negative graphic for the digit (as described above).

If the key is pressed when the cursor is in the leftmost position of the field, the field positions, except the rightmost position, are filled with the appropriate fill character. The rightmost position is set to a negative zero, and displayed as a negative zero (`\{`) for numeric shift, `0` for digits only or numeric only).
The following chart shows the operations performed on the data in the different types of fields if the Field - key is pressed: A when the cursor is in the leftmost position of the field, B while not awaiting field exit, and C while awaiting field exit.

<table>
<thead>
<tr>
<th>Non-Right Adjust Fields</th>
<th>A: Cursor in First Position</th>
<th>B: Cursor within Field</th>
<th>C: Awaiting Field Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numeric Shift:</strong></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td></td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td><strong>Numeric Only or Digits Only:</strong></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td></td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td><strong>Right-Adjust, Zero-Fill Fields</strong></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td><strong>Numeric Shift:</strong></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td></td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td><strong>Numeric Only or Digits Only:</strong></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td></td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
<tr>
<td><strong>Signed Numeric:</strong></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td></td>
<td>[]</td>
<td>[]</td>
<td>[]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Right-Adjust, Blank-Fill Fields</th>
<th>Before</th>
<th>After</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numeric Shift:</strong></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>Invalid because the rightmost position is not a digit (0 through 9); an error occurs.</td>
<td>[1</td>
<td>2</td>
<td>][</td>
<td>]</td>
</tr>
<tr>
<td><strong>Numeric Only or Digits Only:</strong></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td></td>
<td>[1</td>
<td>2</td>
<td>][</td>
<td>]</td>
</tr>
</tbody>
</table>
Verify

Verification depends upon the current field definition.

Non-Right-Adjust-Adjust Field

If the key is pressed while awaiting field exit, the rightmost character in the field is checked for a negative value. If the character is negative 0 through 9, the digit is replaced on the screen with the corresponding negative graphic, and the field is exited. If the character does not have a negative value, a verify sign mismatch error occurs. If the Field - key is pressed after the Reset key is pressed, the value is changed to negative, and the field is exited.

If not awaiting field exit, the positions above and to the right of the cursor, except the last field position, are verified for blanks. If a nonblank character is encountered, a verify mismatch error occurs and the entire field is displayed with the cursor positioned under the character that caused the error. If the Field - key is pressed after the Reset key is pressed, the nonblank character in the record is replaced with a blank, and the verification continues. The last field position is verified for a negative zero. If it is a negative zero, the graphic for negative zero is displayed, and the field is exited. If it is not a negative zero, a verify mismatch error occurs and the entire field is displayed. If the Field - key is pressed after the Reset key is pressed, the character in the record is replaced with a negative zero and the field is exited.

Signed Numeric

The key is valid only while awaiting field exit or when the cursor is in the leftmost position of the field.

If the key is pressed while awaiting field exit, the rightmost character in the field is verified for a negative value. If the character is negative, a minus sign is displayed in the sign position and the field is exited. If the character does not have a negative value, a verify sign mismatch error occurs. If the Field - key is pressed after the Reset key is pressed, the sign of the data is made negative and the field is exited.

If the key is pressed when the cursor is in the leftmost position of the field, all positions are verified for zeros. If a character other than a zero is encountered, a verify mismatch error occurs, and the entire field is displayed with the cursor under the character that caused the error. If the Field - key is pressed again after the Reset key is pressed, the character in the record is replaced with a zero and the verification continues. The rightmost character in the field is verified for a negative zero. If it is a negative zero, a minus sign is displayed in the sign position and the field is exited. If it is a positive zero, a verify sign mismatch error occurs. If the Field - key is pressed after the Reset key is pressed, the rightmost field position in the record is replaced with a negative zero and the field is exited.

Right-Adjust Field

In a right-adjust field that is not signed numeric, the key is valid only while awaiting field exit or when the cursor is in the leftmost position of the field.
While awaiting field exit, the character in the rightmost position is verified for a negative value. If the character is negative 0 through 9, the character on the screen is replaced with the corresponding negative graphic, and the field is exited. If the character does not have a negative value, a verify sign mismatch error occurs. If the Field - key is pressed after the Reset key is pressed, the character in the record is replaced with the corresponding negative value and the field is exited.

If the key is pressed when the cursor is in the leftmost position of the field, all positions of the field are verified for the appropriate fill character (zeros or blanks, depending on the field definition). If a character other than the fill character is encountered, a verify mismatch error occurs, and the entire field is displayed with the cursor under the character that caused the error. If the Field - key is pressed after the Reset key is pressed, the character is replaced with the fill character, and verification continues. The rightmost position of the field is verified for a negative value. If it is a negative value, the negative graphic is displayed in the rightmost position of the field on the screen, and the field is exited. If it is not a negative value, a verify sign mismatch error occurs. If the Field - key is pressed after the Reset key is pressed, a negative value replaces the character in the record and the field is exited.
(FIELD MINUS/DASH) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Keyboards: Data Entry type only

Operation:

To select a dash character, hold down the Num or shift key while pressing the (Field Minus/Dash) key. A dash will also be selected if the field definition is not numeric only, digits only, signed numeric, or numeric shift, even though the Num or shift key is not held down.

To select a field minus character, the field definition must be numeric, numeric only, digits only, signed numeric, or numeric shift, with the Num or shift key not held down.

For more information, see Field - (Field Minus) key.

Data Entry Type Keyboard
HELP KEY

Reserved

All Keyboards
HOME (RECORD BACKSPACE) KEY

Valid Programs: DE/RPG, COBOL, and KEU

Valid Modes: All modes

Operation: Press the Home (Record Backspace) key.

Pressing the Home (Record Backspace) key returns the cursor to the first manual position of the record or performs a record backspace if the cursor is in the first manual position of the record.

Enter or Update Mode

Pressing the Home (Record Backspace) key when the cursor is in the first manual position of the record causes the previous record to be displayed. If in enter mode, the mode changes from enter to update when the previous record is displayed. If this is the first record of the data set, the key is ignored.

Verify Mode

The operation of the Home key in this mode is the same as the operation in the enter and update modes, with one exception. When you press the Home key in verify mode, the data on the display is blanked and the record must be reverified.

Record Insert Mode

Pressing the Home key in the first manual position of the record cancels record insert mode.
Execute Mode (DE/RPG Only)

Pressing the Home key in the first manual position of the record is ignored.
INS (CHARACTER INSERT) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes

DE/RPG: Enter, update, copy, execute, field correct and record correct

KEU: Enter, update, field correct, and record correct

Operation: Press the Ins key.

Use the Ins key to activate the character insert mode. This allows you to insert one or more characters into a field. To insert characters in a field, there must be blanks at the end of the field. For picture check, the character insert function works in the current subfield only.

To insert one or more characters:

1. Press the Ins key. The insert (») symbol appears in the character insert mode position on the status line.
2. Position the cursor at the location where the data is to be inserted.
3. Enter the character to be inserted. The character is entered above the cursor, then the cursor and original data are shifted to the right one position.
4. Repeat steps 2 and 3 until all the data has been inserted into this field.
5. To cancel the character insert function, press the Reset or Error Reset Key.

Note: Attempting to exit a field while character insert mode is active causes an error.
(NEW LINE) KEY

Valid Programs: DE/RPG, KEU, and Utilities

Valid Modes

DE/RPG: Enter, update, copy, and record correct
KEU: Enter, update, and record correct

Operation: Press the (NEW LINE) key.

Data Entry Type Keyboards

Typewriter Keyboard

Use the (NEW LINE) key to position the cursor at the beginning of the next line on the display screen. An attempt to move the cursor outside the data record causes an error code 1112. This key is valid only in format 0. See the Glossary for information about format 0.
NEXT FMT (NEXT FORMAT) KEY

Valid Programs: DE/RPG

Valid Modes

DE/RPG: Enter, update, verify, and copy

Operation:

For the data entry type keyboards, press the Next Fmt key. For the typewriter keyboard, press the Cmd key and then press the Next Fmt key.

Data Entry Type Keyboards

Typewriter Keyboard

Use the Next Fmt key to select the next format. The current record is redisplayed using the new format. Any changes made to the current record using the previous format are ignored.

Depending on the DE/RPG program, pressing this key can cause the end of job sequence to be processed.
NUM (NUMERIC SHIFT) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Keyboards: Data Entry type only

Operation: Press and hold the NUM key and then press the character you want to enter.

Use this key to:

- Select a data character or function from the top half of the key.

- Enter numeric characters in a field programmed for alpha shift.

- Select a function on the top half of the keyboard template, after the CMD key has been pressed.
PAGE FWD (PAGE FORWARD) KEY

Valid Program: DE/RPG and KEU

Valid Modes:

DE/RPG: Update, verify, and copy

KEU: Update and verify

Operation:

For the data entry type keyboards, press the Page Fwd key. For typamatic operation, press and hold the Page Fwd key.

For the typewriter keyboard, press the Cmd key and then press the Page Fwd key. For typamatic operation, press and hold both the (Shift) key and the Page Fwd key.

When you want to bypass the remaining fields of the record, and you do not want the record updated on the data set, use the Page Fwd key to advance to the next record. This key allows you to advance quickly through a data set.
PRINT KEY

Valid Programs: DE/RPG, if specified in the program

Valid Modes: Enter, update, verify, and copy

Operation: Press the Print key.

Use the Print key to print a data record or a group of records, starting at the current record.

The first time the Print key is pressed, a prompt is displayed that requests print information.

If the auto record advance function is active, printing continues record by record until end of data (EOD). To stop printing, turn the auto record advance function off, or press the Cncl key.

RECORD ADVANCE KEY: See Enter/Rec Adv (Enter/Record Advance) Key in this section.

RECORD BACKSPACE KEY: See Home (Record Backspace) Key in this section.
REC CORR AND CORR (RECORD CORRECT) KEYS

Valid Programs: DE/RPG and KEU

Valid Mode: Verify mode

Operation:

For data entry type keyboards, press and hold the Num key while pressing the Corr key. For the typewriter keyboard, press the Cmd key and the Rec Corr key.

Use this key (in verify mode only) when the entire record needs to be corrected.

Pressing this key changes the program mode on the status line from the verify to verify correct (V-C) mode and displays the current record. The cursor is positioned to the first manual position of the record.

After the record has been reentered, the Enter/Rec Adv key changes the mode to verify, clears the data on the display, and positions the cursor to the first manual position of the same record. The new data is now ready to be verified.

RESET: See Error Reset And Reset Keys In This Section
SEL FMT (SELECT FORMAT) KEY

Valid Programs: DE/RPG and KEU

Valid Modes:

DE/RPG: Enter, update, verify, and copy
KEU: Enter, update, and verify

Operation:

For data entry type keyboards, press the Sel Fmt key, followed by the format number or identifier. For the typewriter keyboard, press the Cmd key and the Sel Fmt key, followed by the format number or identifier.

Data Entry Type Keyboards

Typewriter Keyboard

Use the Sel Fmt key to activate the format you want to use. On data entry type keyboards, the keyboard shift is numeric when you are entering the format number or identifier; you must press the Alpha key to enter a letter. As you enter the format number or identifier, it is displayed on the status line. After you have selected a format, the current record is redisplayed according to the new format. Any changes made to the current record using the previous format are ignored.
(SHIFT) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Keyboards: Typewriter only

Operation:

Press and hold one of the (Shift) keys and then press a second key. This allows you to:

- Enter uppercase alphabetic characters (A through Z).
  
  Note: In KEU, alphabetic characters are always uppercase.

- Select a data character or function from the top half of a key.

- Select a command function from the top half of the keyboard template, after pressing the Cmd key.

Typewriter Keyboard
**(SHIFT LOCK) KEY**

**Valid Programs:** DE/RPG, KEU, COBOL, and utilities

**Valid Modes:** All modes

**Keyboards:** Typewriter only

**Operation:**

Press the **(Shift Lock)** key to lock the keyboard in upper shift. To unlock it, press the **(Shift)** key.

![Typewriter Keyboard]

Use the **(Shift Lock)** key to lock the keyboard in upper shift when entering data. When the keyboard is locked in upper shift, the upper character of a data key is automatically selected. However, the shift lock does not automatically select the upper function on a function key. You must use the **(Shift)** key to select the upper function on a function key.
**SKIP KEY**

**Valid Programs:** DE/RPG, KEU, COBOL, and utilities

**Valid Modes:** All modes

**Operation:** Press the Skip key

Use the Skip key to enter blanks from the cursor position to the end of the field, and to exit that field.

In verify mode, pressing the Skip key causes the characters from the cursor position to the end of the field to be verified for blanks. If a nonblank character is found, the cursor stops at that character and an error is displayed. If the Skip key is pressed again following the reset, a blank replaces the character in the current record, and automatic verification continues to the end of the field.
SYS REQ (SYSTEM REQUEST) KEY

Valid Programs: DE/RPG, KEU, COBOL, and utilities

Valid Modes: All modes

Operation:

Press and hold the Num or Shift key and then press the Sys Req key.

All Keyboards

Use the Sys Req key to temporarily discontinue the execution of a program in a partition in order to load a program into a background partition. For more information, see Partitions.

To cancel the system request function, press the Cncl key.
COMMUNICATIONS ........................................... 205
LOADING THE COMMUNICATIONS EXECUTION UTILITIES .......... 205
ESTABLISHING A COMMUNICATIONS CONNECTION ............... 206
REMOVING THE COMMUNICATIONS ACCESS METHOD PROGRAM FROM A PARTITION ........................................... 210
This page intentionally left blank.
This section contains general information on how to:

- Load the communications execution utilities
- Establish the communications connection
- Remove the communications access method program from a partition

For specific information on operating procedures for these utilities, see your operation instructions (run book) provided by your communications programmer. For more detailed information on how to perform more complex operations, refer to the Communications Reference Manual.

The communications execution utilities are:

<table>
<thead>
<tr>
<th>Program Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSBBTU</td>
<td>BSC Batch Transfer</td>
</tr>
<tr>
<td>SYSBDCU</td>
<td>BSC Data Communications</td>
</tr>
<tr>
<td>SYSMRJE</td>
<td>MULTI-LEAVING Remote Job Entry</td>
</tr>
<tr>
<td>SYSSDCU</td>
<td>SNA Data Communications</td>
</tr>
<tr>
<td>SYSSRJE</td>
<td>SNA Remote Job Entry</td>
</tr>
</tbody>
</table>

LOADING THE COMMUNICATIONS EXECUTION UTILITIES

1. Begin with the load prompt on your display.

   O 0001   A 16 40
   Program name:  
   Device address: 
   Partition number: 

   Press ENTER

2. Insert the diskette containing the communications utility program.
3. If the keylock feature is installed on your 5280 system, insert the proper key and turn it to the left.

Note: See Keylock Feature for information about the keylock settings.

4. Enter the required information for the load prompt.

Program name: Enter the program name for the communications utility and press the Field Exit key or the Field + key.

Device address: Enter the device address of the diskette drive containing the communications utility.

Partition number: Enter the number of the partition where you want to load the communications utility. The utility can execute in either a foreground or background partition. The run book should provide the correct partition number.

5. Press the Enter key.

6. Respond to the prompts that are displayed.

ESTABLISHING A COMMUNICATIONS CONNECTION

The following message is displayed by the communications utility when the communications connection should be established.

ESTABLISH CONNECTION IF NECESSARY.

If the communications line is switched and the connection type is manual call, dial the system with which the 5280 is to communicate. Place the modem in the data mode when the answer tone is received. The run book should provide the correct telephorie number to dial and the appropriate procedures required to place the modem in data mode.

If the line is switched and the connection type is manual answer, answer the telephone when it rings and place the modem in data mode; if the connection is auto answer, it is necessary only to ensure that the modem is in answer mode.

If the line is nonswitched, no action is required and the previous message appears only briefly.
The following diagrams show the procedures for establishing a communications connection.

Integrated Manual Answer Modem
or
External Manual Answer Modem With Exclusion Key

Answer or Dial?

Answer

Answer call

When remote goes to data, raise exclusion key and set handset aside.

Procedure complete.

Dial

Raise handset and dial.

When remote is ready, raise exclusion key and set handset aside.

Procedure complete.

If you have an external modem, it should have a Talk/Data switch. This switch must be in the talk position until just prior to raising the exclusion key.

Note: When you wish to break the connection, you must hang up the handset. If a Talk/Data switch is provided by the modem, return the Talk/Data switch to the talk position.
External Auto Answer Modem Without Exclusion Key

Answer or dial?

Answer

Auto answer.
Push auto answer button on modem.
Procedure complete.

Manual answer.
Push talk button on modem and wait for call.
Answer phone when it rings.
When remote is ready, push data button on modem.
Procedure complete.

Dial

Push talk button on modem, then dial.
When remote is ready, the answer tone will end.
Push data button on modem.
Procedure complete.
Integrated Auto Answer Modem

or

External Auto Answer Modem With Exclusion Key

Answer or dial?

Answer

Dial

Manual

Auto

Procedure complete.

Raise handset. *

Raise exclusion key.

Answer the call.

Display the establish connection prompt.

Wait 20 seconds after the establish connection prompt appears, then inform the caller that you are ready.

Hang up handset.

Procedure complete.

* This must be done before you display the establish connection prompt.
REMOTING THE COMMUNICATIONS ACCESS METHOD PROGRAM FROM A PARTITION

After you have run all your communications jobs, using either a user-written application program or one of the IBM-supplied DB/DC utilities (SYSBBTU, SYSBDCU or SYSSDCU), you should remove the CAM from its partition.

Use the keyboard/display that was used to load the CAM. The CAM was either loaded automatically by one of the communications execution utilities or by you using SYSCLU. Determine from the run book if the program was loaded into a background partition or a foreground partition.

If the communications access method program is in a foreground partition:

1. Press the Cmd key.
2. Press the End of Job command key.

If the communications access method program is in a background partition:

1. Press the following keys in sequence.
   - Cmd
   - C
   - B
2. Enter the partition number where the CAM is loaded.
3. Press the Cmd key.
4. Press the End of Job command key.

If a communications job, using either a user-written application program or any of the IBM-supplied communications execution utilities, does not terminate normally, it may be necessary to cancel the CAM. This will also remove the CAM from its partition. To cancel the CAM, follow the same procedure as described above, but instead of using the End of Job command key in step 2 and step 4, do the following:

Press and hold the Num key or the (Shift) key, then press the Cncl key.
ACCENTED DATA CHARACTERS

There are three methods of keying characters that are accented.

The first method is to press a key that has the accented character on the keytop. This method is identical to keying any data character. The following keyboard shows an example of a key with an accented character on the keytop.

The second method is to press a combination of keys to obtain the desired accented character. The keyboard shows an example of a key with an accent mark on the keytop. To use this method, the following conditions must exist:

- The accent mark must be on a keytop.
- The IPL diskette used must have been configured to select the multinational character set for this keyboard.
- The combination of the accent mark and the data character must be valid (the chart at the end of this appendix shows the valid characters).
To use this method:

1. Key the accent mark. The accent is displayed but the cursor does not advance to the next position. If the cursor advances, or if the cursor blinks, this keyboard was not configured for the multinational character set.

2. Key the data character. The combined data character is displayed and the cursor advances to the next position.

To enter an accent character only, press the key containing the Accent character and then press the spacebar.

If an error occurs because an invalid data character is keyed, press the Reset key or the Error Reset key and then rekey the accent character followed by a valid data character.

The third method is to use the hex key function to enter an accented character that cannot be entered by using one of the previous methods.

To use the hex key function do the following:

1) Press the Cmd key and then press the key below the Hex label on the keyboard template.

2) Key the two hex characters that represent the desired accented character (see the following chart for accented characters and corresponding Hex values).

If an error occurs because an invalid hex character is keyed, press the Reset key or the Error Reset key and then repeat steps 1 and 2.
<table>
<thead>
<tr>
<th>Hex</th>
<th>Graphic</th>
<th>Name</th>
<th>Hex</th>
<th>Graphic</th>
<th>Name</th>
<th>Hex</th>
<th>Graphic</th>
<th>Name</th>
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<tbody>
<tr>
<td>42</td>
<td>à</td>
<td>a Circumflex, Small</td>
<td>74</td>
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<td>FB</td>
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<td>FC</td>
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<td>46</td>
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<td>47</td>
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<td>79</td>
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<td>Grave Accent</td>
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</table>

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alpha only field: A field in which only the following characters are valid: the characters of the alphabet (both uppercase and lowercase), comma, period, dash, and blank. If any other character is entered into this type of field, an error results. The keyboard shift is positioned to automatically select the lower symbol on each keytop.

alphabetic shift field: A field type in which all characters are valid. The keyboard shift is positioned to automatically select the lower symbol on each keytop.

application program: A program that processes user data to perform a particular data processing task; for example, inventory control or payroll.

auto dup: Automatic duplication. 1. In enter and update modes, the process of automatically copying the contents of a field in a previous record or in storage into the corresponding positions of the current record. 2. In verify mode, the process of automatically comparing the contents of a field in the current record with the contents of the corresponding positions of a previous record or in storage.

auto record advance: Automatic record advance. The process of automatically advancing to the next sequential record when the current record is complete.

auto skip: Automatic skip. 1. In enter mode and update mode, the process of automatically filling a field with blanks and advancing to the next field. 2. In verify mode, the process of verifying that all the positions in the field are blank.

awaiting field exit: A condition indicated by a blinking cursor and by the positions remaining in the field counter on the status line being equal to 1. This means that the input field (which has been specified as a field exit required field) has been filled with data. You must press a field exit key to continue.

awaiting record advance: A condition indicated by a blinking cursor and by the input record character position counter on the status line being equal to 0. This means that the record or prompt has been filled with data. You must press the Enter/Rec Adv key to continue.

backup diskette: A diskette that contains information that was copied from another diskette and is used in case the original information is unintentionally altered or destroyed.

background job: A job that is run in a partition which does not have immediate access to a keyboard/display unit.

blank fill: In a right-adjust field, the process of filling the positions to the left of the data with blanks.

compiler: A program that translates (compiles) a series of instructions, written in a programming language, into a program the system can execute.

copy: To duplicate data from one place to another, leaving the original data unchanged.

data set: A collection of data records treated as a unit and existing on a diskette.

data set label: An area on the diskette that describes a data set.

data set name: The name associated with a data set. Blanks cannot appear between characters in a name.

default value: A value automatically chosen by the system when a value is not specified by the user.

device address: The characters used to identify a device such as a diskette drive or printer.

digits only field: A field in which only the characters 0 through 9 are valid. If any other character is entered into this type of field, an error results. For data entry type keyboards, the keyboard shift is positioned to automatically select the upper symbol on each data key. For typewriter keyboards, the keyboard shift is positioned to automatically select the lower symbol on each data key.

EBCDIC: Extended binary-coded decimal interchange code.

edit: To check or modify the form or format of data.
**execute mode**: The process of carrying out the instructions of a computer program.

**field**: One or more characters of related information in a record.

**field length**: The number of positions in a field.

**field correct mode**: A sub-mode of verify mode, which allows the operator to correct an entire field with a minimum of keystrokes.

**file**: The collection of related records.

**foreground job**: A job that is run in a partition that has immediate access to a keyboard/display unit.

**format**: DE/RPG: A specific arrangement of information used to display a record. KEU: A specific arrangement of field definition characters and field continuation characters that define the fields in a data record.

**format chaining**: Defined sequence of formats to be used in entering, verifying, or updating data records.

**format 0 (zero)**: A format that is simple character alpha shift fields. The length of the format is the record length of the opened data set.

**hex**: Hexadecimal.

**hexadecimal field**: A field in which only the following characters are valid: 0 through 9, and A through F. If any other character is entered into this type of field, an error results. Each pair of hex digits entered into the field is combined to form one position within the field. For data entry type keyboards, the keyboard shift is positioned to automatically select the upper symbol on each data key. For typewriter keyboards, the keyboard shift is positioned to automatically select the lower symbol on each data key.

**host ID**: The identification of the system that the 5280 is connected to for the purpose of data communication.

**initial program load (IPL)**: A sequence of events that loads the system programs and prepares the system for execution of jobs.

**job**: A program and associated data that can be processed in a partition.

**mark**: To place an indicator in a field or record.

**marked record**: A record that contains a mark that indicates that one or more data fields in the record are incomplete or incorrect.

**menu**: A displayed list of items from which the operator makes a selection.

**numeric only field**: A field in which only the following characters are valid: 0 through 9, comma, period, dash, plus sign, and blank. If any other character is entered into this type of field, an error results. For data entry type keyboards, the keyboard shift is positioned to automatically select the upper symbol on each data key. For typewriter keyboards, the keyboard shift is positioned to automatically select the lower symbol on each data key.

**numeric shift field**: A field type in which all characters are valid. For data entry type keyboards, the keyboard shift is positioned to automatically select the upper symbol on each data key. For typewriter keyboards, the keyboard shift is positioned to automatically select the lower symbol on each data key.

**partition**: An area of storage in which a program can be stored and processed.

**print file**: The organization of data for formatted printing and for printer forms control.

**production statistics**: Statistics related to keyboard activities occurring during data entry operations.

**program**: A set of sequential instructions that tells the system where to get input, how to process it, and where to put the results.

**program listing**: A computer printout that gives information about a program.

**prompt**: A displayed message usually requesting the operator to enter information.

**record correct mode**: A sub-mode of verify, which allows the operator to correct an entire record with a minimum of keystrokes.

**record length**: The number of characters positions in a record.

**right adjust**: To shift the contents of a field so that the last character keyed is in the rightmost position of the field.
right-adjust field: A field in which data is automatically right-adjusted if the Field Exit key or the Field + key, or the Field - key is used to exit the field.

search: To find a record or data set using search arguments provided by the user.

search mask: A pattern of characters used to find data records.

signed numeric field: A right-adjust, zero fill, digits only field in which the rightmost position of the field on the screen is reserved for the sign of the data in the field.

storage: The area in the system where programs and data are loaded and processed.

transaction data set: A data set that contains records associated with a specific job.

unattended operation: The processing of data by a data station at which an operator is not present.

verify mark: An indication on a record or a data set that it has been verified.

work file: An area on diskette that is reserved for temporary storage of data being processed.

zero fill: In a right-adjust field, the process of filling the positions to the left of the data with zeros.
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