Systems

**Operating Procedures Guide:
IBM 3776 Communication
Terminal**

IBM

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Preface

This operating procedures guide is directed to personnel writing detailed operator procedures for IBM 3776 Communication Terminal job applications, and for operators of the terminals. Included are:

- Operating procedures for the basic configuration (the printer, the keyboard, the operator's console, and the controller).
- Operating procedures for the input and output devices.
- Job definition and job start procedures for the terminal.
- Error recovery and problem identification procedures for the terminal.

Because the IBM 3776 can be used in many applications, detailed procedures for processing each job cannot be presented here. Rather, this guide describes the purpose and use of the terminal's controls as they apply to all jobs. You can use this manual in preparing a detailed operator procedure for a specific job in your application.

Users of this manual who need more information on the functions and features of the terminal should refer to the *3770 System Components* manual, GA27-3097. Other publications that may be useful to you are listed under "Related Publications" in the front of this manual.

The information in this manual is organized into the following categories:

- Chapter 1 provides a general introduction.
- Chapter 2 provides procedures for defining and running jobs.
- Chapter 3 provides procedures for resuming operation following an error interruption, and gives guidelines for determining when to request service.
- Chapters 4 through 9 provide procedures for making the input and output devices ready for operation, loading forms and other media, and correcting problems such as card jams.
- Appendix sections A and B provide reference information for emulating IBM 2770 or 3780 workstation functions, and for running communications online tests.

Related Publications

- *IBM 3770 Data Communication System, System Components, GA27-3097*
- *IBM 3776 Communication Terminal Reference Summary, GA27-3108*
- *General Information, Binary Synchronous Communications, GA27-3004*
- *Synchronous Data Link Control General Information, GA27-3093*
- *IBM Remote Multiplexers and Communications Terminals Installation Manual–Physical Planning, GA27-3006*
- *150/10/6 Print Chart (Pad), GX20-1816*
- *150/10/8 Print Chart (Pad), GX20-1818*
- *Forms Design Reference Guide for Printers, GA24-3488*
- *IBM System/370 Bibliography, GC20-0001*
- *Planning and Installation of a Data Communication System Using IBM Line Adapters, GA24-3435*
- *IBM Data Processing Glossary, GC20-1699*
- *IBM 3872 Modem User's Guide, GA27-3058*
- *IBM 3874 Modem User's Guide, GA33-0002*
- *IBM 4872 Modem Model 1, GA36-0001*
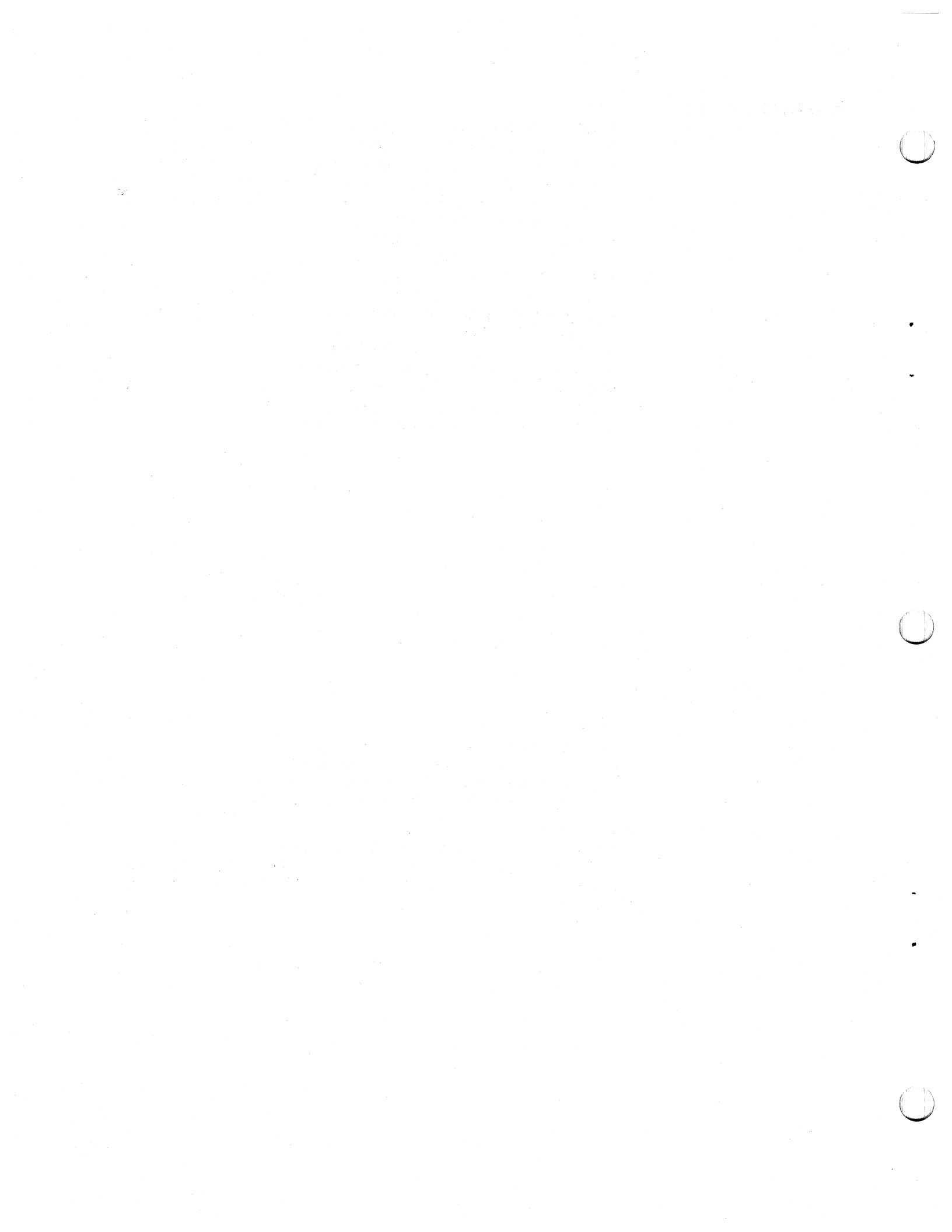- *IBM 4872 Modem Models 2 and 3, GA36-0004*

Summary of Changes

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Chapter 1. Introduction

The basic IBM 3776 Communication Terminal is a desk-style terminal with a keyboard and a printer. A controller controls the transfer of information between the terminal's input and output devices (such as a card reader or card punch). Information can be stored on a small operator-changeable storage device called a diskette. Figure 1-1 shows a typical 3776 Communication Terminal with two Diskette Storage Devices (special features) installed.

The terminal components are briefly described in this introduction. For a more detailed description of the terminal and its functions and capabilities, and of the other special features and devices that can be attached, you should refer to the *System Components* manual listed under "Related Publications" at the front of this manual.

Keyboard and Operator Panel

Auxiliary Operator Panel
(Includes KEYLOCK Switch,
and ID Badge Reader

Printer

POWER Switch

Controller
(back of machine)

Diskette Storage Device No. 1

Diskette Storage Device No. 2
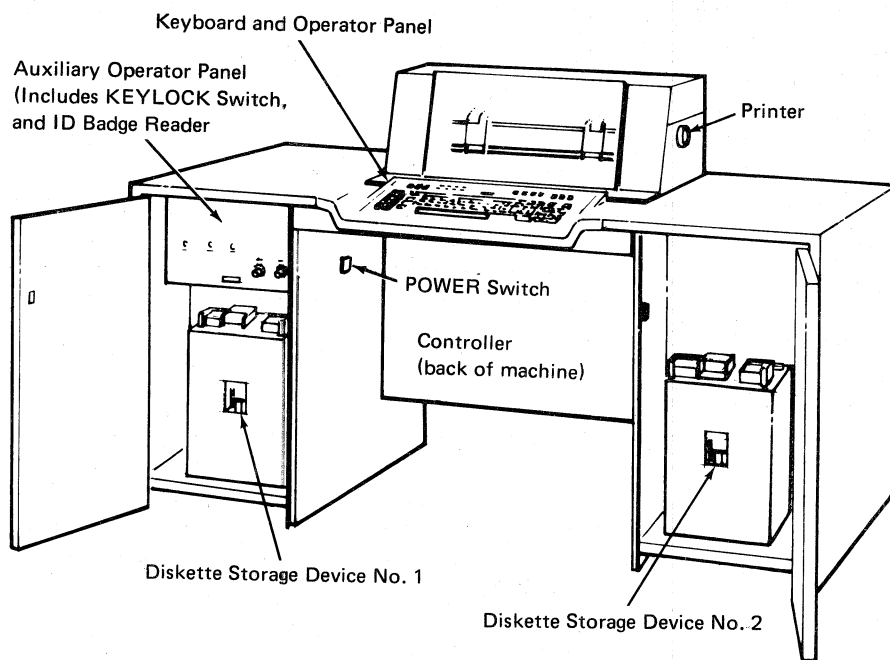
Figure 1-1. IBM 3776 Communication Terminal

Keyboard

The keyboard (Figure 1-2) has character keys, a space bar, and other typewriter-like control keys, with a key arrangement similar to that on a typewriter. Keys for controlling system operation are located on either side of the keyboard, and switches for controlling some functions are located above the keyboard. Lights for indicating system status conditions are also located above the keyboard. These switches, keys, and lights are described in Chapter 2 under "Operating Controls".

The numeric position readout (NPR) indicators centrally located above the character keys display a three-digit number that indicates the Diskette record numbers when using the Diskette device, or provide system status indications whenever the SYSTEM CHECK or OPRN CHECK light is on. When either of these lights is on, this code number identifies a status and recovery procedure as described in Chapter 3 under "Numeric Position Readout (NPR) Codes".
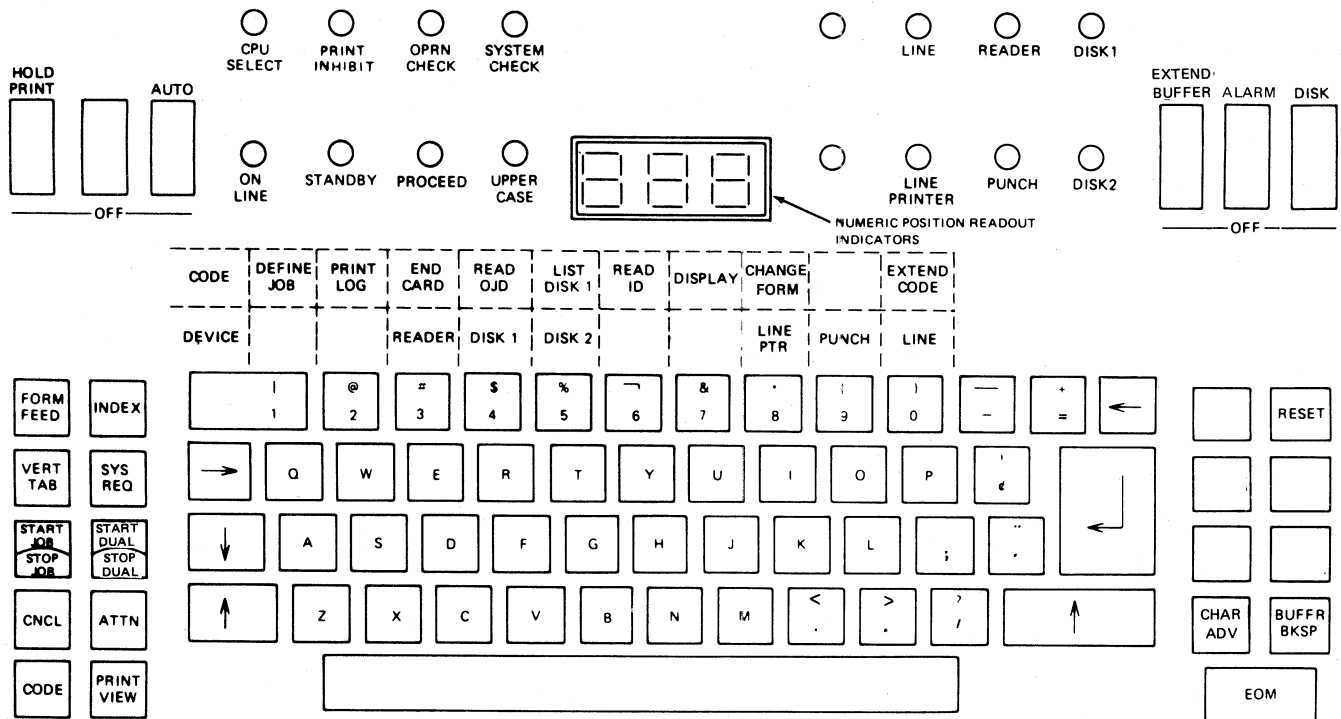
Figure 1-2. Keyboard

This figure shows the EBCDIC keyboard arrangement for use in the U.S. and Canada.

Printer

The printer prints a line at a time when printing information from the controller. The character set is contained on a continuously rotating metal belt that you can change if you want to use a different size character set for different jobs or if you want faster printing speed. There are three different size character sets available for the printer; a 48-, 64-, or 94-character set, and cause printing to occur at the maximum rate of 300, 230, or 160 lines per minute respectively on the 3776 Model 1, or 400, 300, or 230 lines per minute respectively on the 3776 Model 2.

Because you cannot use this terminal for keyboard to printer jobs, the printer does not have indicators showing the next character to be printed, nor does the platen move down to permit viewing of the printed line. These functions are found on the IBM 3775 Communication Terminal, with which you may be familiar.

The printer forms format is electronically controlled. When you are defining a job for the terminal, you will enter certain information into the machine that defines the format of the forms to be used. During printing, the terminal uses this information to properly position the forms, and to print the information in the proper location on the print lines. The forms definition procedure is described in Chapter 2.

Printer forms loading, make-ready procedure, and ribbon and print belt removal and replacement procedures are described in Chapter 4.

Auxiliary Operator Panel

The auxiliary operator panel (Figure 1-3), located behind the left controller door, has the following controls:

- A SYSTEM RESET siwtch to reset all controller functions.
- A key operated lock (Keylock special feature) to prevent unauthorized use of the terminal.

- Controls for adjusting the terminal's modem for best performance with the communication facility (if a 2400 bps integrated modem is installed).
- Other controls used in conjunction with communications.

The auxiliary operator panel controls are described in more detail in Chapter 2 under "Operating Controls".
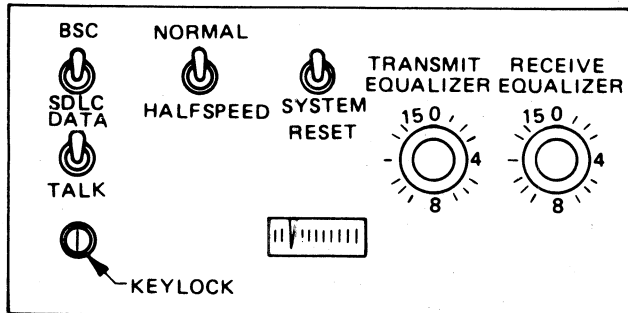
Figure 1-3. Auxiliary Operator Panel

Diskette Storage Device

The Diskette Storage Device is a special feature for the 3776, and your terminal may have none, one, or two of these devices installed. This device records information on small operator-changeable diskettes. It can record information from attached input devices (such as a card reader), or information received from the CPU (central processing unit) over the communication line. Information stored on the diskette can be transmitted to the CPU, or can be read from the diskette to an attached output device, such as a card punch, or to the printer.

Up to five operator defined jobs can be stored on a diskette, and read into the controller when needed. These jobs are described in Chapter 2 under "Entering Operator Defined Jobs".

Chapter 5, "Diskette Storage Device", provides more information on using the Diskette Storage Devices, and provides information on diskette handling.
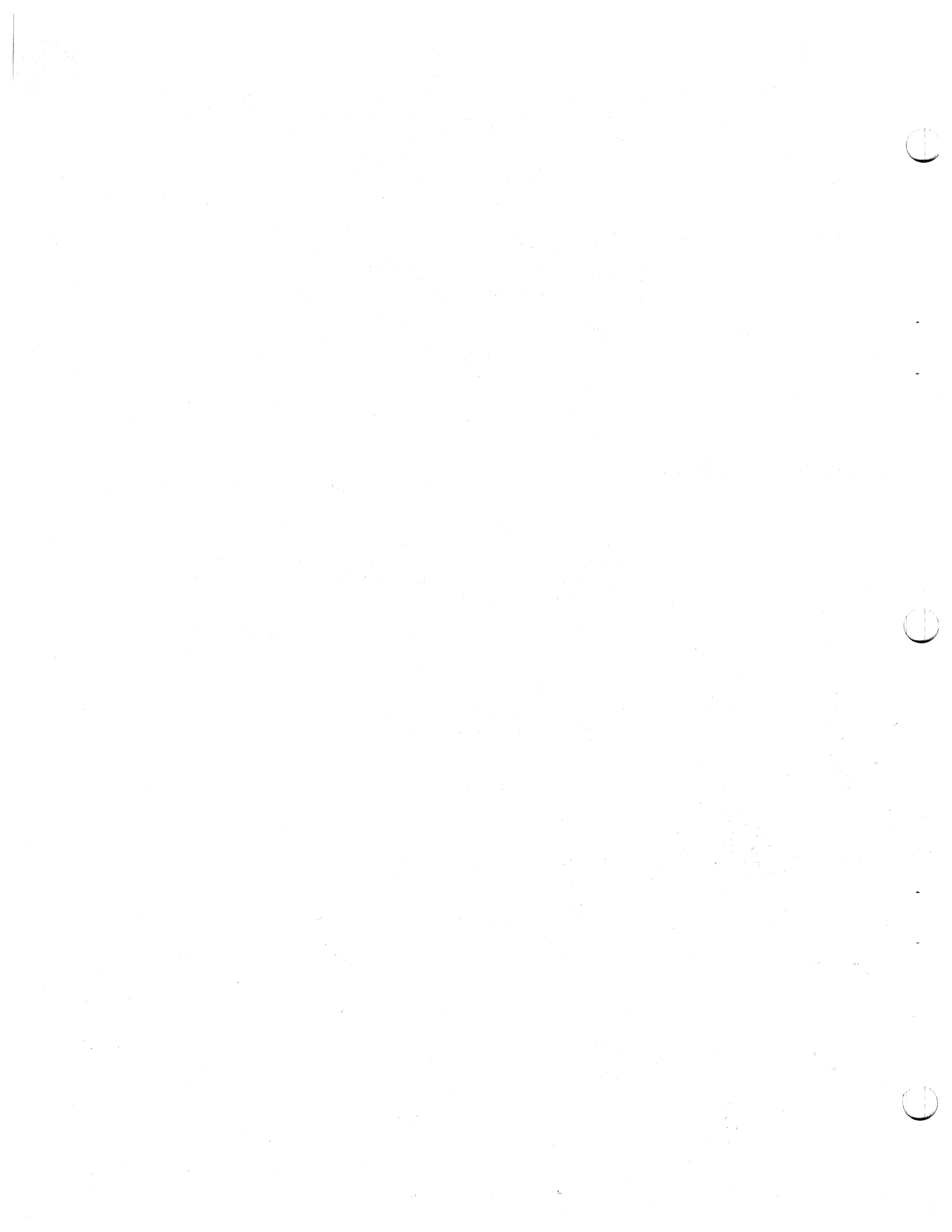
Chapter 2. Operating Procedures

This chapter describes the general operating procedures for the IBM 3776 Communication Terminal. 3776 operation is similar to that of the IBM 3775, with which you may already be familiar. However, certain jobs that can be done on the 3775, such as keyboard entry jobs, cannot be done on the 3776. Also, you will notice differences in operation, nomenclature, and functions in this and following chapters. Exercises in this chapter can be used to help acquaint you with the 3776 operation. The following summarizes general operation of the 3776.

1   *Turn Power On:* The controller performs self-tests (functional tests) that check basic terminal operation. After the tests run, the terminal is left in local mode.

2   *Define a Job:* You can define a job from the keyboard using the job definition procedures described later. During this procedure, you will specify the input and output devices, the printer forms format, and other parameters used by the job. Up to five jobs can be defined and stored in the terminal using this procedure.

3   *Start a Job:* You can start the job that:

- You just defined,
- Was previously defined and written on the diskette,
- Was previously defined and punched into cards,
- Is defined by the system.

You use the operator panel switches and CODE key functions to select certain terminal functions and operations not included in the job definition. Concurrently with a communication line-to-printer job defined as above, a card reader-to-diskette, a diskette-to-card punch, or a diskette-to-diskette job can be run. This is called *dual data path* operation.

4   *End a Job:* If the job terminates normally, the terminal returns to local mode, and is ready for starting the next job. If the job does not end normally, you will be asked to refer to Chapter 3 for error recovery or problem identification procedures to be followed.

Power On/Off Procedures

Power On

1 Turn the operator panel HOLD PRINT switch off.

2 If your terminal has a Keylock feature and it is not already unlocked, set the security keylock to the UNLOCKED position. The switch is located on the auxiliary operator panel.

3 Set the EXTEND BUFFER switch off for 256-character buffer operation, or on for 512-character buffer operation.

4 Set the BSC/SDLC switch to the proper position.

5 If a 2502 and/or 3521 are (is) attached, turn the 3782 power switch(es) off.

6 Turn the 3776 POWER switch on.

- The terminal runs the functional tests. Numbers that indicate the status of the tests display in the readout indicators. Do not press any keyboard keys (or operator panel switches) during this time.
- The readout indicators (NPR) are blank when the tests end successfully.
- Printer tab stops automatically set at each print position (horizontal), and at each print line (vertical).
- The printer left margin automatically sets to print position 1, and the maximum print position sets to 132.
- Printer line spacing is set to 6 lines per inch.
- The terminal is in local mode when the numeric position readout (NPR) indicators are blank and the operator panel PROCEED indicator turns on.

Note: The numeric position readout (NPR) displays "888" when the diagnostic tests end, if you did not turn the HOLD PRINT switch off (or set the security keylock to UNLOCKED) before turning power on. If this happens, turn the operator panel HOLD PRINT switch off, and set the security keylock to UNLOCKED; the readout indicators should then be blank. No operations involving the keyboard can be done if the security keylock is locked.

7 Turn the 3782 power switch(es) on.

Power Off

1 Print the error log:

A. Hold the CODE key down, and enter a numeric "2" from the keyboard.

B. The error log prints. If the error log does not print, press the SYSTEM RESET switch and repeat step A.

C. Save the error log printout. Service personnel use this log in determining the cause of machine failures, the time and date should be written on the printout.

2 Turn the 3782 power switch(es) off.

3 Turn the 3776 POWER switch to the off position.

Remote Power Off

When transmission to the terminal ends, the central processor can send a message to the terminal that causes the terminal's power to turn off; the terminal's POWER switch goes to the off position. To turn power on again following a remote-power-off sequence, follow the power-on procedure previously described.

Entering an Operator Defined Job From the Keyboard

Before starting a job, you must define the job to the terminal. That is, you must:

- Assign an identification number to the job
- Identify the input and output devices needed for the job
- Identify the options to be used for the job
- Assign a data set name for diskette jobs
- Define the printer forms format for printer jobs

Before you start defining a job, check that the printer has an adequate supply of forms; and check that the forms are spaced beyond the last line that was printed on the form. After starting do not open the printer cover, turn the HOLD PRINT switch on, or do any other action that interrupts defining the job. Once started you should finish defining the job before performing some other operating procedure, to avoid having to re-define the entire job or a part of the job.

When in define mode, instructions (prompts) print on the console printer that identify the job parameter you will enter next in response to the prompt. The prompt repeats and the operator attention speaker sounds when the terminal detects an invalid response. When this happens, enter the valid response and continue the job definition. The PRINT VIEW key may be used whenever it is desired to view the keyed-in definition.

If you notice an error when entering a job parameter (before you press the EOM key), you can use the BUFFR BKSP key to backspace and correct the error; this key is described under "Operating Controls" in this chapter.

To define a job from the keyboard, the terminal must be in local mode. The left tractor should be in the left-most position since printing will occur beginning at print position one. You can terminate the job definition procedure at any time by pressing CODE and START JOB/STOP JOB, but a job that is not completely defined may be invalid if you try to start it.

Use the operator job procedure shown in Figure 2-1 to define and store up to five jobs.

**Terminal
Prints***   **Operator Job Definition Procedure**

	1 Press CODE/START JOB. This places the terminal in Local mode.
	2 Press CODE/1. This selects Define Job mode.
ID=	**3** Enter a digit 1 through 5. This is the job ID that will be used later to start the job.
	4 Press EOM.
DEV=	**5** Enter one of the following two-digit combinations to select the input and output devices used by the job:

04=Communication Line to Diskette 1   40=Diskette 1 to Communication Line
08=Communication Line to Printer   45=Diskette 1 to Diskette 2
09=Communication Line to Card Punch   48=Diskette 1 to Printer
30=Card Reader to Communication Line   49=Diskette 1 to Card Punch
34=Card Reader to Diskette 1   50=Diskette 2 to Communication Line
35=Card Reader to Diskette 2   58=Diskette 2 to Printer
38=Card Reader to Printer   59=Diskette 2 to Card Punch
39=Card Reader to Card Punch

6 Enter the character(s) shown below if the option is required; otherwise, go to step 7:

T=Transparent Mode*   D=Delete Data Sets after Read [deletes all data sets after
C=Compress Option*   reading, except for operator-defined-jobs data set -- similar to
I=Inhibit Interpret (If I is specified, the   Clear Diskette (CODE/01) function].
   3521 will print during reading, but not   Z=3521 Card Punch Readback Checking Not used (inhibited)
   during punching. If I is not specified,
   the 3521 will not print during reading,
   but will print during punching).

*Transparent or Compress can be specified. If both are specified, Transparent will override Compress. For a diskette-to-diskette or a diskette-to-line job, Compress specified causes records read from a non-3770 exchange mode diskette to be compressed as they are written onto the output diskette or before transmission (see "Diskette Storage Device Jobs--Record Compression" in this chapter). Record compression cannot be done on ASCII machines using SDLC.

BSC transparent diskette-to-printer jobs will print full-length lines. If the diskette data originally came from cards (transparent data), set the maximum print position to 80 (Step 9) in order to print one card per line.

7 Press EOM.

| DSN= | If the job uses the diskette as the output device, you *must* do Step 8A (enter a data set name). If the job uses the diskette as the input device, you can do either Step 8A or 8B. For a diskette-to-diskette job, any data set name entered applies to both the input and output diskettes (see Note 5). |

8A (a) Enter a data set (file) name. The first two characters must be alphabetic and the second two numeric. When you define a data set name, the terminal:

- Copies only the defined data set when doing a diskette-to-diskette job
- Transmits only the defined data set when the diskette is the job's input device, or
- Uses the defined data set name when the diskette is the job's output device.

(b) Press EOM.

8B Press EOM to bypass entering a data set name. When you do this, the terminal transmits all active data sets when the diskette is the job's input device or copies all active data sets if you are doing a diskette-to-diskette job. If your machine has two diskette devices, the second one will be automatically selected after the first diskette is read (unless it is a diskette-to-diskette job). If the diskette is the job's output device, and you do this step, the DSN=prompt will repeat; you must do step 8A.

| SHF= | You can do either Step 9A, 9B, or 9C. (See Note 1.) |

9A Press EOM and the following are selected:

- The printer spaces one space when a horizontal tab is received.
- The left margin is set at print position 1.
- The maximum print position is set at print position 132.

*Some 48-character set print belts print @ instead of =.

Note: PRINT VIEW can be pressed at any time to print out what was entered.

Figure 2-1. Defining a Job From the Keyboard (Part 1 of 2)

PROC'D

Terminal Prints*	Operator Job Definition Procedure
SHF= (cont)	**9B** Define the horizontal forms control as follows: (a) Use the space bar to advance the print position (indicated in the NPR) to the position of the left margin, and enter an X. (b) Use the space bar to advance the NPR to the position where a horizontal tab stop is to be set, and enter an X. Repeat for each horizontal tab stop desired. If you attempt to enter a tab stop beyond position 132, the SHF= prompt repeats. (c) Use the space bar to advance the NPR to the maximum print position desired, and enter an M, or ignore this step if position 132 is the maximum print position desired. The maximum print position must be set to 2 or greater. (d) Press EOM. **9C** (a) Press the = key and the horizontal tab stops will remain as previously defined for this job. If they were not previously defined, the prompt SHF= will repeat, and Step 9A or 9B must be done. (b) Press EOM.
SVF=	You can do either Step 10A, 10B, or 10C. (See Note 1) **10A** Press EOM and the vertical forms control will be defined by the system, as follows: ● The printer will space one line each time a vertical tab is received. ● The print lines per form is defined as 61 lines (6 lpi mode) or 81 lines (8 lpi mode). See Note 4. ● The forms length is defined as 66 lines (6 lpi mode) or 88 lines (8 lpi mode). See Note 4. **10B** Define the vertical forms control as follows: (See Note 2 and 3.) (a) NPR = [ ][0][1] . (The tab stop number to be set is displayed in the NPR, and the number will increment after each tab stop is set). Key in the line number for tab stop 1. The digits entered will replace the tab stop number in the NPR, and the NPR will shift as each digit is entered. For example, if tab stop 1 is to be set at line 14, keying in 1 will cause the NPR to display [0][0][1] , and keying in 4 will cause it to display [0][1][4] . If you make a mistake, merely rekey the 3-digit number desired. After the entry is properly done, press the RETURN key to terminate the entry. If it is not desired that a tab stop be used, press RETURN prior to entering a line number for that tab stop. After the entry is terminated by the RETURN key, the NPR will display the next tab stop number to be set. (b) NPR = [ ][0][2] through [ ][1][2] . Repeat step a for tab stops 2 through 12. After the entry for tab stop 12 is terminated, the NPR will indicate [ ][3][9] . (c) NPR = [ ][3][9] . You must now enter the 3-digit line number of the last print line of the form. The number entered must be equal to or greater than the largest number entered in steps a and b. Press the RETURN key to terminate the entry. The NPR will indicate [ ][4][0] after this entry is complete. (d) NPR = [ ][4][0] . You must now enter the 3-digit line number for the forms length. This number must be equal to or greater than the number entered in step c. Maximum length is 127 lines. (e) Press EOM to terminate the SVF entry. **Note:** Keying EOM before entering the forms length will cause the SVF= prompt to repeat. The terminal then prints out the forms length, last print line, and line numbers for each of the vertical tab stops. **10C** (a) Press the = key and the vertical forms control remains as previously defined for this job. If the vertical forms control was not previously defined for this job, the operator attention speaker sounds, and you must do Step 10A or 10B. (b) Press EOM.
ID=	You can now start defining another job (return to Step 3), or end the Define Job mode by pressing CODE/START JOB. The job definitions that you entered can then be written onto the diskette as described under "Writing Operator Defined Jobs to the Diskette Storage Device" in this chapter.

*Some 48-character set print belts print @ instead of =.

Note 1: If you stop defining a job after the horizontal and/or vertical tab stops are defined (or stop before defining them and they were previously defined) the terminal retains the tab stop definitions. When you define the job again, you need not reenter the tab stops.

Note 2: The tab stop numbers are equivalent to the channel numbers used by the IBM 2770 or 3780 Data Communication System's Vertical Format Control feature. The IBM 2770/3780 uses a 12-channel carriage tape with holes punched in the tape to define the print line and channel number of an IBM 2770/3780 tab stop.

Note 3: The PRINT VIEW key is inoperative while the vertical forms control information is being entered.

Note 4: 6 lpi (lines per inch) is automatically selected after power on or when the SYSTEM RESET switch is operated. Press CODE/K to select 8 lpi (before the job or job definition is started). 8 lpi remains in effect until CODE/L is pressed.

Note 5: When a diskette-to-diskette job is defined with compress selected, the data set name applies only to the input diskette (see "Record Compression").

Figure 2-1. Defining a Job From the Keyboard (Part 2 of 2)

Entering an Operator Defined Job From the Card Reader

1   Turn the operator panel DISK switch off.

2   Place the card reader in a ready condition (see Chapter 6, 7, or 8), and load the job definition card(s).

> **Note:** When using the IBM 2502 Card Reader, turn the reader's EOF (end-of-file) switch on. When using the IBM 3501 Card Reader (or the IBM 3521 Card Punch as a reader), place an end-of-file (/*EOF) card after the last job definition card in the hopper.

3   Hold the CODE key down and press the numeric "4" key.

- The job definition card(s) read.
- The numeric position readout is blank, and the PROCEED indicator turns on when the job definition reads successfully.
- The numeric position readout displays "232" if the terminal detects an invalid job identification number. When this happens, re-enter the job definition (using a corrected card). Only the job ID is checked when the cards are read. If any of the other fields in the card contain any invalid job definition data, errors can occur when the job is executed even if the cards read in without an error indication. Invalid job definition data in the card may cause the resulting forms definition, data set name, or job options to be other than that desired.
- If more than one card with the same ID is read, only the last card is stored.
- Figure 2-2 illustrates the card format required for a job definition.
- Figure 2-3 provides an example of the card format.
- You can define from one to five jobs from the card reader at one time; once defined, they are available for selection when you start a job.

> **Note:** Read a maximum of six cards (five job definition cards plus one IBM 3501 or 3521 end-of-file card); do not add additional cards in the hopper until the job definition cards are read.

Some invalid entries may cause the system to hang, and require operation of the SYSTEM RESET switch to recover.

CARD COLUMN		JOB DEFINITION INFORMATION PUNCHED

CARD COLUMN   **JOB DEFINITION INFORMATION PUNCHED**

01   Punch the job's identification number (1 through 5). You will use this number to start this job. This entry must be punched.

02   03   Punch one of these numbers in columns 2 and 3 to define the job's input device and output device. This entry must be punched.

     04 = Communication Line to Diskette No. 1
     08 = Communication Line to Printer
     09 = Communication Line to Card Punch
     30 = Card Reader to Communication Line
     34 = Card Reader to Diskette No. 1
     35 = Card Reader to Diskette No. 2
     38 = Card Reader to Printer
     39 = Card Reader to Card Punch
     40 = Diskette No. 1 to Communication Line
     45 = Diskette No. 1 to Diskette No. 2
     48 = Diskette No. 1 to Printer
     49 = Diskette No. 1 to Card Punch
     50 = Diskette No. 2 to Communication Line
     58 = Diskette No. 2 to Printer
     59 = Diskette No. 2 to Card Punch

04   Punch the character listed here to select the feature(s) listed. Punch a numeric "0" in this column if none of the features are required.

CHAR. PUNCHED	INTERPRET* IBM 3521 CD READER	NO INTERPRET* IBM 3521 CD PUNCH	COMPRESS	TRANSPARENT MODE
2	X	X		
4			X	
6	X	X	X	
8				X
A	X	X		X

*Will interpret print when used as a reader.
 Will not interpret print when used as a punch.

05   Punch a numeric "0" in this column to allow 3521 readback checking. Punch a "4" to inhibit readback checking.

06   Punch a numeric "4" in this column to select the Transmit All Active Disk Data Sets function. Punch a numeric "0" in this column if the function is not required.

07   Punch a numeric "4" in this column to select the Delete all Data Sets after Transmission function. Punch a numeric "0" in this column if the function is not required.

Figure 2-2. Card Format for an Operator Defined Job (Part 1 of 5)

CARD COLUMN		JOB DEFINITION INFORMATION PUNCHED
08	11	Punch a four-character diskette data set (file) name; punch a numeric "0" in this column if the function is not required.
		• The data set name has four characters.
		• The first two characters must be alphabetic characters.
		• The last two characters must be numeric characters.
12	13	Punch the printer's maximum print position, in hexadecimal*. This entry must be punched.
14	15	These columns are ignored. On the 3771, 3773, 3774, and 3775, these columns contain the right margin definition. These columns may be punched, however, so that jobs written on the 3776 diskette may be transferred to another terminal.
16	49	Punch the print position of the left margin stop and the horizontal tab stops as shown in the "Horizontal Tab Definitions in Card Columns 16 through 49" chart that follows; these card columns must be punched. Note that you punch the binary value of the tab stop print position in the card column indicated on the chart. The first print position defined is the left margin stop, the remaining positions defined are the tab stops.
		Punch the character "F" in card columns 16 through 49 if you are not using horizontal tab stops in the job application.
		If tab stops are used, punch a numeric "0" in the card columns that do not contain a tab stop.
50	51	Punch the printer's form length, in hexadecimal*; the maximum form length is 127 lines. This entry must be punched.
52	53	Punch the printer forms last print line, in hexadecimal*. The last print line must be no greater in value than the form length. This entry must be punched.
54	77	Punch the line number of the printer's vertical tab stops (up to twelve), in hexadecimal*
		Punch a numeric "0" in card columns 54 through 77 if you are not using vertical tab stops in the job application.
78	80	Leave these columns blank.

*Use the "Decimal to Hexadecimal Conversion Chart" that follows.

Figure 2-2. Card Format for an Operator Defined Job (Part 2 of 5)

FIRST HEXADECIMAL DIGIT	SECOND HEXADECIMAL DIGIT															
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0 __	0000	0001	0002	0003	0004	0005	0006	0007	0008	0009	0010	0011	0012	0013	0014	0015
1 __	0016	0017	0018	0019	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	0030	0031
2 __	0032	0033	0034	0035	0036	0037	0038	0039	0040	0041	0042	0043	0044	0045	0046	0047
3 __	0048	0049	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	0060	0061	0062	0063
4 __	0064	0065	0066	0067	0068	0069	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079
5 __	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	0090	0091	0092	0093	0094	0095
6 __	0096	0097	0098	0099	0100	0101	0102	0103	0104	0105	0106	0107	0108	0109	0110	0111
7 __	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0124	0125	0126	0127
8 __	0128	0129	0130	0131	0132	0133	0134	0135	0136	0137	0138	0139	0140	0141	0142	0143
9 __	0144	0145	0146	0147	0148	0149	0150	0151	0152	0153	0154	0155	0156	0157	0158	0159
A __	0160	0161	0162	0163	0164	0165	0166	0167	0168	0169	0170	0171	0172	0173	0174	0175
B __	0176	0177	0178	0179	0180	0181	0182	0183	0184	0185	0186	0187	0188	0189	0190	0191
C __	0192	0193	0194	0195	0196	0197	0198	0199	0200	0201	0202	0203	0204	0205	0206	0207
D __	0208	0209	0210	0211	0212	0213	0214	0215	0216	0217	0218	0219	0220	0221	0222	0223
E __	0224	0225	0226	0227	0228	0229	0230	0231	0232	0233	0234	0235	0236	0237	0238	0239
F __	0240	0241	0242	0243	0244	0245	0246	0247	0248	0249	0250	0251	0252	0253	0254	0255

Example: Card Columns 12 and 13 (Maximum Print Position)

To define the printer's maximum print position 120:

1. Find the decimal number "0120" in the body of the chart.
2. Read across the chart to the left to find the first hexadecimal digit (7). You would punch a number "7" in card column 12.
3. Read up from the "0120" to find the second hexadecimal digit (8). You would punch a number "8" in card column 13.

Figure 2-2. Card Format for an Operator Defined Job (Part 3 of 5)

HORIZONTAL TAB DEFINITIONS IN CARD COLUMNS 16 THROUGH 49

PRINT POSITION	0000 1234	0000 5678	0111 9012	1111 3456	1112 7890	2222 1234	2222 5678	2333 9012	3333 3456
BINARY VALUE	8421	8421	8421	8421	8421	8421	8421	8421	8421
CARD COLUMN	16	17	18	19	20	21	22	23	24
PRINT POSITION	3334 7890	4444 1234	4444 5678	4555 9012	5555 3456	5556 7890	6666 1234	6666 5678	6777 9012
BINARY VALUE	8421	8421	8421	8421	8421	8421	8421	8421	8421
CARD COLUMN	25	26	27	28	29	30	31	32	33
PRINT POSITION	0000 7777 3456	0000 7778 7890	0000 8888 1234	0000 8888 5678	0000 8999 9012	0000 9999 3456	0001 9990 7890	1111 0000 1234	1111 0000 5678
BINARY VALUE	8421	8421	8421	8421	8421	8421	8421	8421	8421
CARD COLUMN	34	35	36	37	38	39	40	41	42

PRINT POSITION	1111 0111 9012	1111 1111 3456	1111 1112 7890	1111 2222 1234	1111 2222 5678	1111 2333 9012	1111 3333 3456
BINARY VALUE	8421	8421	8421	8421	8421	8421	8421
CARD COLUMN	43	44	45	46	47	48	49

Figure 2-2. Card Format for an Operator Defined Job (Part 4 of 5)

HORIZONTAL TAB DEFINITIONS IN CARD COLUMNS 16 THROUGH 49 (CONT.)

Note: When more than one tab setting is required for print positions assigned to one of the card columns, add the binary values as follows, and punch the character indicated here in the card:

BINARY VALUES	CHARACTER PUNCHED
1	1
2	2
1+2	3
4	4
4+1	5
4+2	6
4+2+1	7
8	8
8+1	9
8+2	A
8+2+1	B
8+4	C
8+4+1	D
8+4+2	E
8+4+2+1	F

FOR EXAMPLE:
To define horizontal tab stops in print positions 8, 16, 78, and 80:

Position 8 is the only tab stop for card column 17, you would punch a 1 in column 17.
Position 16 is the only tab stop for card column 19, you would punch a 1 in column 19.
Positions 78 and 80 are both in card column 35, you would punch a 5 in column 35; the binary values of 4 (for print position 78) and 1 (for print position 80) are equal to 5.

Figure 2-2. Card Format for an Operator Defined Job (Part 5 of 5)

JOB IDENTIFICATION NUMBER= 3

INPUT & OUTPUT DEVICES= CARD READER TO DISKETTE 1

FEATURE SELECTION= NONE

PRT. FORM LENGTH= 60

DISK DATA SET (FILE) NAME = PH01

PRT. LAST PRINT LINE= 58

PRT. MAX. PRINT POS.= 80

THESE COLUMNS ARE IGNORED

NOTE: THESE COLUMNS MAY BE PUNCHED TO DEFINE THE RIGHT MARGIN FOR THE 3771, 3773, 3774, OR 3775.

VERTICAL TAB STOP 1= LINE11

LEFT MARGIN= 5, TAB STOP= 7

VERTICAL TAB STOP 3= 23

TAB STOPS= 12,13,& 16

VERTICAL TAB STOP 4= 47

TAB STOPS= 19,20,& 23

VERTICAL TAB STOP 8= 58

PRT. HORIZ. TAB STOPS

PRT. VERT. TAB STOPS

Figure 2-3. Example of Card Format for Operator Defined Jobs

Writing Operator Defined Jobs to the Diskette Storage Device

Once the operator defined jobs are entered in the controller, you can use this procedure to store the job definitions on a diskette.

1 Place the diskette in the Diskette Storage Device # 1, close the diskette door, and wait about 10 seconds for the diskette to come to a ready condition.

2 Hold the CODE key down and press the numeric "0" key; then, release the CODE key.

3 Enter the number "3" from the keyboard.
   The number "3" displays in the numeric position readout.

4 Press the EOM key.
   The operator job definitions (up to 5) write from the controller to the diskette.

Entering Operator Defined Jobs From the Diskette Storage Device

Once the operator defined jobs are written on a diskette, you can use this procedure to enter the job definitions in the controller.

1 Turn the operator panel DISK switch on.

2 Place the diskette in the Diskette Storage Device # 1, close the diskette door, and wait about 10 seconds for the diskette to come to a ready condition.

3 Hold the CODE key down, and press the numeric "4" key.

   • The job definitions read from the Diskette Storage Device to the controller.
   • You can select any one of these five operator job definitions when you perform the job start procedure.

Starting a Job

There are two keyboard START keys. The START JOB/STOP JOB key is used for starting and stopping any operator or system defined job, as described in Figure 2-4. The START DUAL/STOP DUAL key is used to start and stop a second job running concurrently with a communication line-to-printer job, as described under "Dual Data Path".

Jobs may be operator defined (see page 2-3), or system defined. Operator defined jobs allow use of more options than system defined jobs (refer to the examples following the Job Start Procedure).

Refer to "Ending a Job" in this chapter for a description of how a job ends. Refer to "Communication Line Jobs" in this chapter for additional considerations about these types of jobs.

---

1 If a job is running, allow it to end, or stop it as described under "Ending a Job".

---

2 If not already in local mode, enter local mode by holding the CODE key down and pressing START JOB.

Note: When in local mode, the PROCEED indicator is on, and the CPU SELECT indicator may be on. All other operator panel indicators are off.

---

3 Place the input and output devices used by this job in a ready condition. Refer to Chapters 4, 5, 6, 7, and 8 for the make-ready procedures for the devices.

Note: If starting a job that uses the printer, you may want to reset the line counter to the first print line by using the Change Forms (CODE/8) function (or press FORM FEED if using the same forms), and manually position the forms to the first print line.

---

4 Set the following operator panel switches:

HOLD PRINT	ON:	After a job starts, turn the switch on to temporarily stop the printer to adjust forms, or to perform some other action. Turn off to allow the job to continue. Also, must be on to use the Change Forms (CODE/8) function.	ALARM	ON:	The audible alarm sounds for conditions that require operator attention; can be turned on after the job starts.
	OFF:	To continue printing.		OFF:	For jobs not requiring that the audible alarm sound.
AUTO	ON:	For diskette-to-printer jobs, to temporarily stop the job after the first or current record prints. Turn off to continue the job.	DISK	ON:	All data from the CPU (Communication line) transfers to the diskette device, with the following exceptions:
	OFF:	For all other jobs.			• SDLC Data received without an FM Header, or with a header specifying 'Console' transfers to the printer.
EXTEND BUFFER	ON:	This selects the dual 512-character buffers.			• BSC data containing a 'DC1' character transfers to the printer.
	OFF:	This selects the dual 256-character buffers.		OFF:	Data from the CPU (communication line) transfers to the output device defined by the job, to the device selected by the CPU, or to the printer if device selection is not sent by the CPU.

Note: Changing the setting of the EXTEND BUFFER switch has an effect only if set before power on, or if the SYSTEM RESET switch is operated. The switch also selects the 256- or 512-character single buffer used by the second (dual) job (see "Dual Data Path").

			NORMAL/ HALF SPEED	NORMAL: The terminals modem operates at its rated speed.
BSC/SDLC	Select the desired mode prior to power on or SYSTEM RESET			HALF SPEED: The terminal's modem operates at half its rated speed.

Note: After changing the setting of this switch, hold the CODE key down and press the CNCL key.

Figure 2-4. Job Start Procedure (Part 1 of 3)

5 Select any of the following options by holding the CODE key down and entering the character shown. See "Using the CODE Key" for additional information about these functions.

I	Selects Inquiry mode. (BSC Only)	S	Selects SNBU (Switched Network Backup) operation; terminates nonswitched operation.
X	Selects Ignore ETX/EOT		
U	Selects Monocase.	R	Terminates SNBU, and selects nonswitched operation.
D	Deselects the above functions I, X, and U.	K	Sets line spacing of 8 lines per inch.
A	Selects automatic disconnect.*	L	Sets line spacing of 6 lines per inch.
M	Selects manual disconnect.	Z	Sets unattended mode for SDLC operation.**

Note: The terminal must be in local mode to select or deselect these functions. The terminal is in local mode at this point in the job start procedure, with the PROCEED indicator on and other indicators off. Once these functions are selected, they need not be re-selected at each job start time unless power was turned off or SYSTEM RESET was operated. At power on time, the terminal automatically selects the functions D, A, R, and L listed above. Refer to "Switched Communication (Dial) Network Procedures" for information about the A, M, S, and R options.

6 For communication line jobs, if you want to enter a logon message, press the SYS REQ key and enter the message (refer to "Logon Message"). The message is transmitted when a job is started using the communication line.

Proceed to Step 7 of either the System-Defined or Operator-Defined job procedure.

---

* CODE/Q for Belgian Keyboard.
** CODE/W for Beligan Keyboard; CODE/Y for Austrian/German Keyboard.

SYSTEM-DEFINED JOB OPERATOR-DEFINED JOB

7 If you want to use the same forms format used by the previous job (system-or operator-defined), bypass this step and go to Step 8. If you want to use a different forms format for this job:

A. Turn on the HOLD PRINT switch.
B. Hold the CODE key down and enter an "8"; release the CODE key and either;
   (1) Enter a digit from 1 through 5 to select the forms format from one of the operator-defined jobs 1 through 5.
   (2) Enter a numeric "0" to select the following:

- Forms length is 66 lines (6 lpi) or 88 lines (8 lpi)
- 61 lines (6 lpi) or 81 lines (8 lpi) are printed on the form
- Left margin is set at print position 1
- Maximum print position is set at 132
- Horizontal and vertical tab stops are set at all positions

   (3) Turn the HOLD PRINT switch off.

8 Press the START JOB key and enter the three-character combination shown below to select the desired input and output devices:

S04	Communication Line-to-Diskette 1
S08	Communication Line-to-Printer
S09	Communication Line-to-Card Punch
S30	Card Reader-to-Communication Line*
S34	Card Reader-to-Diskette 1
S38	Card Reader-to-Printer
S39	Card Reader-to-Card Punch

7 Press the START JOB key and enter the job number (1 through 5).

8 If you want to use the data set name already defined in the job definition, bypass this step and go to Step 9. If you want to override the data set name specified, enter a new data set name as follows:

- A 3770 data set name has four characters; the first two characters must be alphabetic, and the second two numeric (for example, AA00).
- For jobs using the diskette as input, a non-3770 data set name of up to eight characters can be used; the first character must be alphabetic and the remaining characters can be alphabetic or numeric. When entering a data set name of this type, it must be preceded by a comma. For example it would be entered as, A1234567

Note: When data sets are received during communication line jobs, and the Ignore ETX/EOT function is not defined, the last two characters increment as each new data set is received (SL00, SL01, SL02, etc.).

9 For diskette jobs, enter the record number of the first diskette record to be read (3770 non-exchange diskette only), or omit this entry and reading begins with the first record of the data set. For SDLC "T-type" data sets, record 1 is automatically skipped when doing a diskette-to-printer or diskette-to-punch job.

10 If you want the forms format to remain as set up by this operator job definition, bypass this step and go to Step 11. If you want to change the forms format from that defined:

A. Turn on the HOLD PRINT switch.
B. Press the EOM key.

---

*Under certain conditions, a compressed, non-transparent 2502 Card Reader-to-line job may be started automatically (see "Automatic Reader-to-Line Function").

Figure 2-4. Job Start Procedure (Part 2 of 3)

8 (continued)

S40   Diskette 1-to-Communication Line

S45   Diskette 1-to-Diskette 2

S48   Diskette 1-to-Printer

S49   Diskette 1-to-Card Punch

S50   Diskette 2-to-Communication Line

9 If the job defined in Step 8 does not use the diskette, go to Step 11. For diskette jobs, you can enter a data set name, or the system will assign a data set name as follows if you do not enter one:

SC00 —   For any job using the card reader as the input device, or

SL00 —   For any job using the communication line as input.

If the diskette is the input device and no data set name is specified, all active data sets will be read. If a second diskette device is present, it will be automatically selected after the first diskette is read.

The following parameters are defined by the system:

- Transparent mode is not selected
- Compress is not selected
- Interpret print is selected when the 3521 is used as a card reader
- Delete data sets after transmit is not selected
- 3521 readback checking is active when punching

10 For diskette jobs, enter the record number of the first diskette record (3770 non-exchange diskette only) to be read, or omit this entry and reading begins with the first record of the data set. For SDLC "T-type" data sets, record 1 is automatically skipped when doing a diskette-to-printer or diskette-to-punch job.

11 If you want to change the job entry, press RESET and return to Step 7.

12 If you are doing an off-line job, or an on-line job and the terminal is connected to a non-switched network, press EOM and the job starts *(if you are doing an on-line job and the terminal is connected to a switched network, do not press EOM: go to Step 13).*

13 If you are doing an on-line job and the terminal is connected to a switched network:

A. Establish a communication link with the central processor as described under "Switched Communication Network Procedures" in this chapter.
Do not replace the handset on the cradle.

B. Press the EOM key.

C. Place the handset on the cradle, and the job starts.

---

10 (continued)

C. Hold the CODE key down and press the "8" key; release the CODE key and enter one of the following:

(1) Enter a digit from 1 through 5 to select the forms control from one of the other operator-defined jobs 1 through 5, or

(2) Enter a numeric "0" to select the following:

- Forms length is 66 lines (6 lpi) or 88 lines (8 lpi)
- 61 lines (6 lpi) or 81 lines (8 lpi) are printed on a form
- Left margin is set at print position 1
- Maximum print position is set at position 132
- Horizontal and vertical tab stops are set at all positions.

Note: When an operator-defined job using the printer as the output device is selected, the forms definition is changed to that stored in the job definition, and the line counter is set to 1 (first print line). You must then manually position the forms to the first print line.

11 If you want to change the job entry, press RESET and return to Step 7.

12 If you are doing an off-line job, or an on-line job and the terminal is connected to a non-switched network, press EOM (if you did not do Step 10), or turn off HOLD PRINT (if you did Step 10). *If you are doing an on-line job and the terminal is connected to a switched network, do not press EOM or turn off HOLD PRINT; go to Step 13.*

13 If you are doing an on-line job and the terminal is connected to a switched network:

A. Establish a communication link with the central processor as described under "Switched Communication Network Procedures" in this chapter.
Do not replace the handset on the cradle.

B. Press EOM if you did not do Step 10, or turn off HOLD PRINT if you did Step 10.

C. Place the handset on the cradle, and the job starts.

PROC'D

Figure 2-4. Job Start Procedure (Part 3 of 3)

Example No. 1: Starting a System Defined Diskette to Line Job

This example is for starting a system defined Diskette Storage Device to communication line job with these parameters: (1) The switched communications manual disconnect function is required; (2) The diskette data set name "AA00" must be assigned; and (3) The diskette must start reading at record number 12.

1   Hold the CODE key down and enter the character "M" from the keyboard to select the switched communications network manual disconnect function.

2   Press the START JOB key.

3   Enter these characters from the keyboard:

    S40AA0012

    where:

    S = A system defined job.

     40 = Selects a diskette number 1 to communication line job.

      AA00 = The data set (file) name.

       12 = The first diskette record read.

    Note: If the record number is less than 3 digits, it is not necessary to enter leading zeroes. That is, for record number 8, you would enter only "8"; not "008".

4   Press the EOM key to start the job.

Example No. 2: Starting an Operator Defined Diskette to Line Job

This example is for starting an operator-defined Diskette Storage Device to communication line job with these parameters: (1) The switched communications manual disconnect function is required; (2) The diskette data set name "AA00" must be assigned; and (3) The diskette must start reading at record number 12.

Assume that operator-defined job number 1 defined a Diskette Storage Device to communication line job. The data set name defined was "AA00".

1   Hold the CODE key down and enter the character "M" from the keyboard to select the switched communications network manual disconnect function.

2   Press the START JOB key.

3   Enter these characters from the keyboard:

    112

    where:

    1 = Operator defined job number 1.

    12 = The first diskette record read.

    Note that since a data set (file) name was not entered prior to the "12", the data set name will be as defined in job number 1 ("AA00").

4   Press the EOM key to start the job.

Example No. 3: Starting a System-Defined Diskette-to-Printer Job

This example is for starting a system-defined diskette-to-printer job with the following parameters: (1) Data set name AA00 must be defined, and (2) Reading begins with data set record #12.

1   Make the printer and diskette 1 ready.

2   Set the desired line spacing (CODE/K for 8 lines per inch, or CODE/L for 6 lines per inch)

3   Turn on HOLD PRINT and use the CODE/8 Change Forms function to set the desired forms control (see "Using the Code Key"). Turn off HOLD PRINT.

4   Press START JOB.

5   Enter these characters from the keyboard:
     S48AA0012
     where:
     S = a system-defined job
     48 = selects a diskette 1-to-printer job
     AA00 = the data set name
     12 = the first data set record to be read

6   Press EOM to start the job.

Example No. 4: Starting an Operator-Defined Diskette-to-Printer Job

This example is for starting an operator-defined diskette-to-printer job, with reading to begin with data set record number 12.

1   Make the printer and diskette ready.

2   Set the desired line spacing (CODE/K for 8 lines per inch, or CODE/L for 6 lines per inch).

3   Press START JOB.

4   Enter the following characters from the keyboard:
     112
     where:
     1 = operator-defined job #1
     12 = the first data set record to be read

5   Press EOM to start the job.

Ending a Job

All jobs end automatically as described in the following sections. When a job using the printer ends, the printer will automatically line space after printing the last line if the print data did not end with a new line (NL) character. When the next job starts, printing will resume at this point if you do not reposition the forms. If the next job is a system defined job, the same forms format used by the previous job will be used unless you change it by use of the Change Forms CODE key function.

Ending Card Reader to Output Device Jobs

Card reader jobs end automatically when the terminal's controller detects an end-of-file condition.

End-of-file occurs:

- For IBM 2502 Card Reader jobs, when the last card in the hopper reads, and the reader's EOF (End-of-File) switch is on;
- For IBM 3501 Card Reader jobs (or jobs using the IBM 3521 as a reader), when the end-of-file card reads. The end-of-file card is the job's last card, with /*EOF (five characters) punched in the first five columns of the card (the remainder of the card is blank).

If the other job is not active, the terminal automatically goes to local or standby mode when the job ends. The PROCEED indicator is on, and the CPU SELECT indicator may be on. All other operator panel indicators are off.

Data may be lost if you stop a job (hold the CODE key down and press the START JOB/STOP JOB key) before it ends as described above. The "Stopping a Job Before Normal Job End" section describes some ways (by job type) to avoid losing data when stopping a job before it ends normally.

Ending Diskette Device to Output Device Jobs

Diskette Storage Device jobs end automatically when the last record in a diskette's data set (or from all active data sets or files) reads to the controller buffer and transfers to the job's output device. One data set reads when a data set name is defined (either when defining or starting a job), or all active data sets read when a data set name is not defined.

If the other job is not active, the terminal automatically goes to local or standby mode when the job ends; the PROCEED indicator is on, and the CPU SELECT indicator may be on. All other operator panel indicators are off.

Data may be lost if you stop a job (hold the CODE key down and press the START JOB/STOP JOB key) before it ends as described above. The "Stopping a Job Before Normal Job End" section describes some ways (by job type) to avoid losing data when stopping a job before it ends.

Stopping a Job Before Normal Job End

If you stop a job (hold the CODE key down and press the START JOB or START DUAL key) before normal job end (described in the above sections) or if a device SYSTEM CHECK occurs, these output devices terminate as follows:

Card Punch:	Finishes punching the card it was punching; additional card punch data may be in the controller buffer, but it is not punched.
Printer:	Additional printer data may be in the controller buffer, but it is not printed.
Diskette:	Finishes writing the record it was receiving from the controller buffer; performing a List Diskette Status function (see "Using the CODE key") will indicate the number of records written on the diskette.

PROC'D

Using SDLC, transmission (T-type) data sets are closed at the last End-of-Chain (EOC). If EOC is not received from the controller, no data set label is written for the data received.

On machines using SDLC, a communication line job can be stopped by pressing the CNCL key. The current data set will be closed at the last End of Chain (EOC) received. If no EOC was received, data received during the job is incomplete and should be discarded.

Following are procedures (by job input device) for avoiding the loss of data.

Card Reader Jobs (SDLC Only): For SDLC card reader-to-diskette jobs, inserting an end-of-chain (/*EOC) card in the deck causes the machine to "remember" this End of Data point. If the data set ends abnormally, it is closed at this point.

Card Reader Jobs: (BSC or SDLC)

1   Press the reader's STOP key.
2   Remove all cards from the hopper.
3   Press the reader's NPRO (Non Process Runout) key, and place the cards that feed on the bottom of the card deck.
4A For IBM 2502 Card Reader jobs, place a temporary last card in the hopper (it can be the bottom card of the deck you removed in step 3), and turn the reader's EOF (end-of-file) switch on.
4B For IBM 3501 Card Reader jobs (or 3521 used as a reader), place an end-of-file (/*EOF) or end-of-chain (/*EOC) card in the hopper.
5   Press the reader's START key. The end-of-file or end-of-chain card reads and the job ends normally. To continue later, place the cards you removed from the hopper in step 3 back in the hopper, and start the job again.

Diskette to Printer Jobs:

1   Note the number in the operator panel readout indicators; this is the diskette record number that is now printing, or the record number that will print next.
2   Turn the AUTO switch on. Printing stops when the diskette record finishes printing.
3   Stop the job (hold the CODE key down and press the START JOB or START DUAL key). To continue later, start the job and specify a starting diskette record number that is one less than the number you noted in step 1 (see the "Starting a Job" section). One record of data may be repeated.

Diskette to Card Punch Jobs:

1   Note the number in the operator panel readout indicators; this is the diskette record number that is now being punched.
2   Stop the job (hold the CODE key down and press the START JOB or START DUAL key); the terminal goes to local mode (PROCEED is on, all other indicators are off).
3   To continue later, start the job and specify the starting diskette record number that is one less than the number you noted in step 1. When you start, the first card(s) punched may be repeats of the last card(s) punched when you stopped the job (step 2); discard any duplicate cards.

Diskette 1 to Diskette 2 Jobs:

1 Stop the job (hold the CODE key down and press the START JOB/STOP JOB key).

2 Perform a List Diskette Status as described in the "Using the CODE Key" section. The status of the diskette installed in Diskette Storage Device 1 prints. Save this printout for comparison to a List Diskette Status you will do later.

3 Remove the diskette from Diskette Storage Device 1, and save it as you will re-install it later.

4 Remove the diskette from Diskette Storage Device 2, and install it in Diskette Storage Device 1.

5 Perform a List Diskette Status (again). The status of the diskette that was installed in the Diskette Storage Device 2 prints. Compare this printout to the first diskette status printout you got in step 2:

   A. The "HDR1" lines of both printouts will be the same until you come to the HDR1 line for the data set name that was transmitting when you stopped the job.

   B. The number of records in the first printout (status of the diskette that was in Diskette Storage Device 1) will be greater than the number of records in the second printout (status of the diskette that was installed in Diskette Storage Device 2).

   For example, if you stopped the job when data set name CC00 was transmitting and CC00 contained 50 records, the first printout would list the data set record count as 50 records. The second printout would list the data set as having some number less than 50 (if 25 records transferred when you stopped the job, the printout would list 25 records).

6 When starting the job again, specify the data set name that was transmitting when you stopped the job, and specify a starting record number that is one greater than the number of records listed in the status printout for the diskette that was installed in Diskette Storage Device 2.

Note: If the last data set record does not contain any significant characters (a "nul" record), it will not be copied to diskette 2.

Communication Line Jobs

Using BSC

1 Start an input device to communication line job as described in the "Starting a Job" **PROC'D**
section.

- If using a switched communication network modem select either the manual or
  the automatic disconnect functions that are part of the "Starting a Job"
  procedure.
- When the job starts, the operator panel **STANDBY** indicator turns on; the
  STANDBY indicator remains on until transmission to the central processor
  begins.
- If the job application calls for entry of a log-on message from the keyboard,
  enter the message as described under "Logon Message" in this chapter.

2 If using a switched communication network modem, establish a communication
link with the central processor as described in the "Switched Communications
Network Procedures" section.

3 For either switched or nonswitched communication networks, the operator panel
ON LINE indicator turns on, when a communication link with the central pro-
cessor is established; it is normal for the ON LINE indicator to blink (turn on and
off) during transmission to the central processor.

4 The input device starts automatically when the communication link is established.
When the transmission ends, the central processor can transmit to the terminal.

5 When a communication line job ends, and the CPU starts a communication line-to-
printer job, it may send new horizontal and vertical forms definition to the terminal
(EBCDIC machines only). If the CPU does not send new forms definition, the
format remains as it was defined for the previous system- or operator-defined job,
provided that the job used the printer. If that job was an operator-defined job, and
it did not use the printer, the forms control (if any) contained in the job definition
will only be effective if the Change Forms (CODE/8X) function is used (see "Using
the CODE Key"). See "Starting a Job" for the system-defined job parameters. For
other types of jobs, the following are selected:

- Transparent mode not selected.
- Compress option not selected.
- Interpret print (IBM 3521 Card Punch) is selected.
- Delete data sets after transmission is reset if the CPU selects the diskette device.
- IBM 3521 Card Punch Readback checking is active.
- Disk data set name = SL00

If a receive job is interrupted by an operator-recoverable error (printer out of paper,
etc.), data remains buffered for the output device until the error is cleared. The job
in process will not continue nor can a new job be started until the error is cleared.

6 To stop the communication line job, hold the CODE key down, and press the
START JOB/STOP JOB key; the STANDBY indicator turns off when the job stops,
and the terminal goes to local mode. When in local mode the PROCEED indicator
is on, and the CPU SELECT indicator may be on. All other operator panel
indicators are off.

Notes: If using a nonswitched or a switched communication line (and the manual disconnect
function is specified), the ON LINE indicator remains on; another communication line job can
be started without re-establishing a data link with the central processor.

7 To terminate a switched communication network data link, hold the CODE key
down and press the CNCL key after you stop the job (step 6) and the STANDBY
and ON LINE indicators turn off.

Using SDLC

1   If using a switched communication network, establish a communication link with the CPU, as described under "Switched Communication (Dial) Network Procedures" in this chapter.

If you started a job using the START JOB key, the job starts when the communication link is established and the EOM key is pressed. For either switched or nonswitched networks, the ON LINE light may or may not turn on (the light is turned on by a command from the CPU to place the terminal in a session with the CPU).

2   A. If a SYS REQ (System Request) key operation is required or allowed by the CPU, press SYS REQ and follow the procedure as outlined under "Logon Message".

B. Press the EOM key to transmit the message. The message is routed to the SSCP (System Services Control Point) in the host CPU.

3   Further operation of the terminal is dependent upon the CPU application program. At this point the terminal may still be in local mode, or may now have the ON LINE light on indicating that the terminal is now in session with the CPU. The CPU can also request that some other device be made ready, or that some other job be set up by the operator.

- Several exchanges of data can occur between the terminal and the CPU, but unless the CPU places the terminal in session, the ON LINE light will not turn on.
- If the CPU places the terminal in session, the ON LINE light turns on, and the CPU can start transmitting to the terminal, or may require that the terminal transmit. Several different jobs can execute during the session.
- If the CPU suspends a job to send a printed message to the operator, the ON LINE, PROCEED, and LINE lights remain on. The light for the output device in use by the suspended job turns off. When the suspended job is resumed, the ON LINE, PROCEED, LINE, and output device lights return to the condition they were in before the job was suspended.
- When the CPU has no more jobs for the terminal, it may leave the terminal in session with the ON LINE, PROCEED, and STANDBY lights on. When the terminal is in this state, there are three ways that a communication line job can be started (an off-line job cannot be started):

  1. You can start a job using the job start procedure or an automatic reader-to-line job can start,
  2. You can start a job using the SYS REQ key,
  3. The CPU can start the job.

- After the CPU turns the ON LINE light off, the STANDBY and PROCEED lights are on. You can press CODE and START JOB/STOP JOB to turn the STANDBY light off, and then start an off-line or on-line job using the job start procedure or using a SYS REQ key operation.

4   When a communication line job ends, and the CPU starts a communication line-to-printer job, it may send new horizontal and vertical forms definition to the terminal (EBCDIC machines only). If the CPU does not send new forms definition, the format remains as it was defined for the previous system- or operator-defined job, provided that the job used the printer. If that job was an operator-defined job, and it did not use the printer, the forms control (if any) contained in the job definition will only be effective if the Change Forms (CODE/8X) function is used (see "Using the CODE Key"). See "Starting a Job" for the system-defined job parameters. For other types of jobs, the following are selected:

- Transparent mode is not selected.
- Compress is not selected.
- Delete data sets after transmit is not selected.
- Interpret print (3521) is selected.
- 3521 readback checking is active.

5   If using a switched network and automatic disconnect is specified, the line is disconnected about 20 seconds after the ON LINE light turns off.

PROC'D
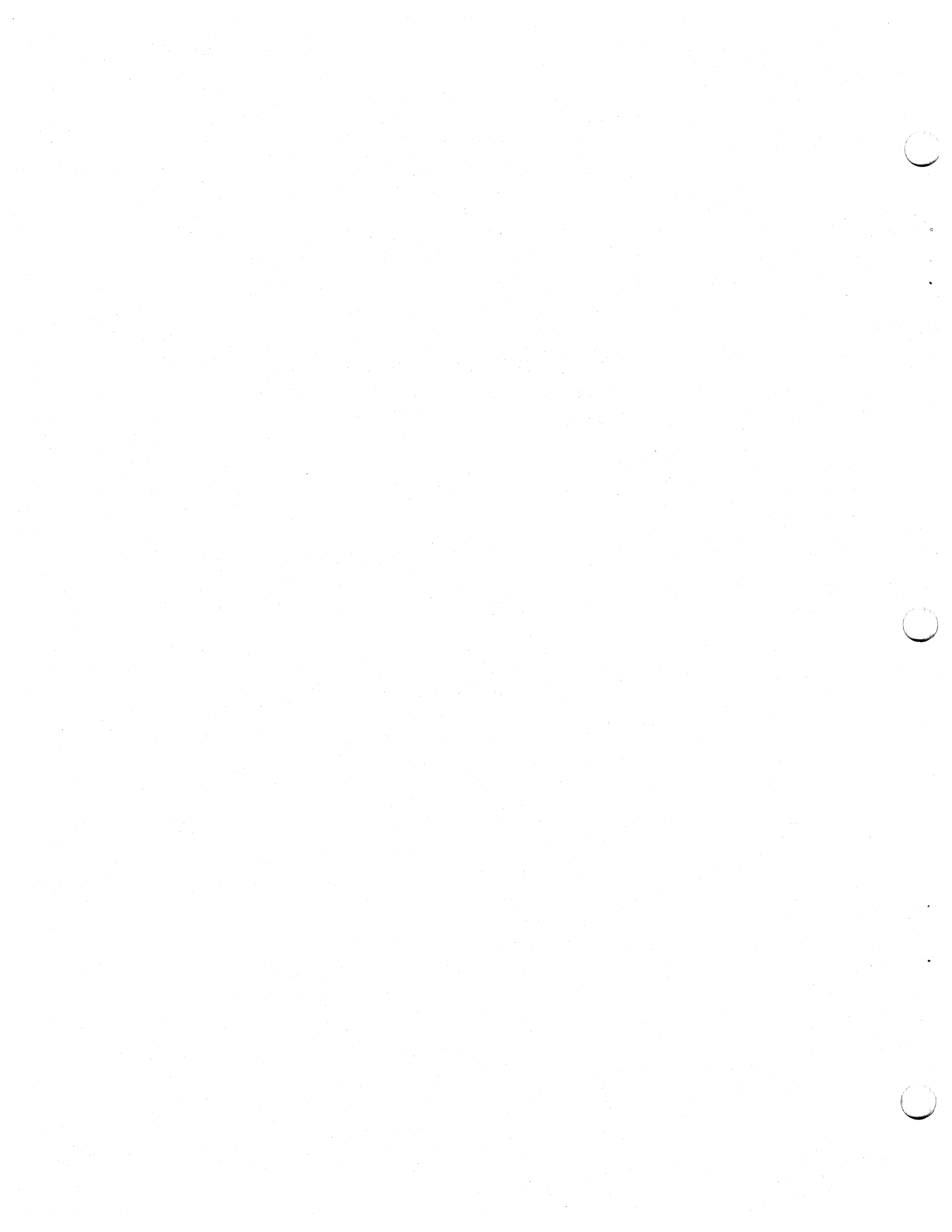
Terminating a Communication Line Job

You can terminate a communication line job at any time during a session by pressing the CNCL (Cancel) key. When you do, any data received or transmitted should be discarded, since it is incomplete. This is not a normal job end and should not normally be done.

You can request that the CPU terminate a session by pressing CODE and START JOB/STOP JOB. The CPU may or may not honor this request immediately. When the CPU honors the request, it sends a command to turn the terminal's ON LINE light off and terminates the session.

Transmit Request to the CPU

When the terminal is receiving data from the CPU, you can press the ATTN (Attention) key to request that the CPU stop transmitting, and allow the terminal to transmit to the CPU. The action taken by the CPU on receiving this request, however, is dependent upon the CPU program. It may allow the request, or may ignore it completely.

Automatic Card Reader-to-Line Function

Whenever the terminal is in Standby mode (an online job has completed), a 2502 Card Reader-to-line job starts automatically if the 2502 is ready, or is made ready (cards placed in the hopper and the 2502 START key is pressed). Transparency is not selected, and Compress is selected for this job.

If the 2502 is in use by a dual job at the time the terminal enters Standby mode, the ready status of the 2502 is ignored. The dual job must be stopped before the reader-to-line job can be automatically started.

If the operator desires to set up a reader-to-line job using transparency or non-compression, this must be done using the normal job definition and job start procedures. The 2502 must be made not-ready (2502 STOP key pressed) or the terminal must be in local mode at the time the job is started to prevent the job from being automatically started.

Logon Message

Before starting a job using the communication line, you may enter a logon message into the controller's buffer via the keyboard. A logon message consists of information used by the CPU, as required by the host central processor application program.

The logon message may be entered when the terminal is in local mode, or when the STANDBY light is on following a previous job. Use the following procedure to enter the message.

1. Press the SYS REQ key. The keyboard is unlocked and the message can be entered.
2. Enter the message. The procedures written for the specific job application will instruct you as to what information must be entered at this time. Up to 256 characters can be entered.

   Note: If an operator ID card is to be read (CODE/6), 41 buffer positions must be left to contain the ID card data. Thus, a maximum of 215 characters can be keyboard-entered. If less than 41 positions remain, the operator attention speaker sounds if the CODE/6 function is attempted.

   - The NPR will indicate the number of characters entered.
   - 999 will display in the NPR when the buffer becomes full.
   - Data can be printed out by pressing the PRINT VIEW key, and can be edited by using the BUFFER BKSP and CHAR ADV keys. Once these keys have been used, the NPR indicates the buffer position into which the next character will be entered.

     Note: Once the message is terminated, or an operator ID card is read, the PRINT VIEW and edit keys are inoperative.

3. Press the EOM key to terminate the message, or press the CNCL (Cancel) key to delete the entire message.

When the job starts using the communication line, the data entered as above is transmitted to the CPU. After the message is transmitted, the 3776 can then transmit data from the defined input device, or receive data onto the defined output device. If the 3776 was in STANDBY mode, a line-to-printer job starts automatically after the message is transmitted.

Switched Communication (Dial) Network Procedures

Initiating a Switched (Dialed) Call (Without SNBU)

Use this procedure to initiate a call on a switched network. If you are using Switched Network Backup (SNBU), use the procedure "Initiating a Call using SNBU".

For more efficient use of the communications link, the job should be defined prior to call set-up, and all input and output devices should be in a ready condition. The EOM key should not have been pressed to start the job, however.

If difficulty is experienced in placing the call to the central processor (no dial tone, busy signal, wrong number, etc.), place the handset back on the cradle (hang up) and return to Step 2 of this procedure.

1. Perform the job start procedure (Figure 2-4), but do not press EOM to start the job.
2. Lift the telephone handset off the cradle.

   A. If your terminal has an integrated modem, pull up the telephone exclusion key to place the telephone in talk mode.
   B. If your terminal does not have an integrated modem, refer to the literature which describes that particular modem operation--in particular the procedures for placing the modem in talk mode.

3. Dial the number of the central processor.
4. If you hear the central processor answer tone (about 3 seconds in duration), go to Step 5 (the central processor has automatically answered the call). If the central processor operator answers the call, verify that the network is operational, and the central processor operator should then place the central processor modem in data mode. You should then hear the answer tone. When the 3-second tone stops, the CPU is ready to receive.
5. Press the EOM key. The STANDBY, LINE, and PROCEED lights and the selected device lights should then turn on.
6. A. If your machine has an integrated modem, place the telephone handset back on the cradle to place the telephone in data mode.
   B. If your terminal does not have an integrated modem, refer to the modem literature for placing the modem in data mode.

   Note: If your machine has a 4800 bps Integrated Modem, or a 3874 Modem, the modem disconnects if you do not press EOM and replace the handset within 30 seconds after the answer tone stops. Should this happen, you must hang up and redial (return to Step 2).

7. When the terminal's ON LINE light turns on, the job starts executing.

   Note: If your terminal has a 4800 bps Integrated Modem, there is an 18-second delay after placing the handset on the cradle before the ON LINE light turns on. Return to Step 2 if the light does not turn on after 18 seconds.

8. The call may be terminated as follows:

   A. The CPU can disconnect the communication link.
   B. If the CPU does not disconnect the communication link and Manual Disconnect is specified, press the CODE and START JOB/STOP JOB keys, then press CODE/CNCL to disconnect

C. If automatic disconnect is specified, the communication link disconnects after 45 seconds.

The ON LINE light turns off when the communication link is disconnected.

Initiating a Call using SNBU (Switched Network Backup)

Use this procedure to establish a call on a switched network if your machine has the Switched Network Backup (SNBU) feature. If the host central processor has automatic answering, the terminal must initiate the call.

1. With the terminal in Local mode, lift the handset off the cradle and dial the telephone number of the central processor. If difficulty is experienced in placing the call, hang up and redial.
2. If you hear the central processor's answer tone (about 3 seconds duration), go to Step 3. If the central processor operator answers the phone, verify that the network is operational, give him the terminal's multipoint address, if necessary, verify that the modem speeds are compatible, and supply any other information that he needs. The central processor operator should then place the central processor modem in data mode. You may then hear the central processor's answer tone.
3. When the 3-second tone stops, place the modem in data mode and press CODE/S.
4. If your terminal has a 4800 bps Integrated Modem, there is an 18-second delay while the modem equalizes on the switched line. If the ON LINE light does not turn on after 18 seconds, or if NPR code 338 displays, return to Step 1 and retry.
5. The ON LINE light should turn on, indicating that data exchange can take place. If it does not, return to Step 1 and retry.
6. Start the job using the job start procedure (Figure 2-4).
7. When the job is finished and the terminal has returned to Local mode, you can disconnect the communication link by pressing CODE/R. The switched connection is broken and the modem reverts to non-switched line operation.

Answering a Call Manually

Use this procedure to respond to an incoming telephone call and establish a switched communication link with a central processor if the modem does not have automatic answer capability, or if it has this capability but you want to talk to the central processor operator. Refer to "Automatic Answer" for a description of the functions provided by this special feature.

For the most efficient use of the communication link, the job should be started prior to answering the telephone call, and all input and output devices should be in a ready condition. Do not press final EOM to start the job until voice communication is completed. The party that initiates the call transmits first.

1. The telephone ring will be heard.
2. Set the modem's TALK/DATA switch (or the equivalent) to the TALK position, and lift the telephone handset off-hook.
3. Verify, through voice communication with the central processor operator, that the system is ready for the data transaction.
4. Set the modem's TALK/DATA switch (or the equivalent) to the DATA position.
5. The terminal's modem transmits an answer tone to the modem at the central processor.
6. Place the telephone handset back on-hook. The central processor operator establishes the communication link by setting the modem to data mode.
7. If voice communication is required between jobs and CODE/m (manual disconnect) is specified, lift the handset off-hook when the STANDBY light turns on. If NPR code 388 displays, press CODE/RESET to turn it off. Set up the new job, and return to Step 4 when ready to reestablish data communication.

8   To terminate the call:

   A. Stop the job after all data transfer completes: hold the CODE key down and
   press the START JOB/STOP JOB key.
   B. Disconnect the communication link by holding the CODE key down and
   pressing the CNCL key.

Automatic Answer

Automatic answer is a feature that enables the system to respond to incoming switched
communication network calls automatically.

1. When a call occurs, the modem presents a ring indication to the controller.
2. The controller presents a data terminal ready indication to the modem if the call is to
   be automatically answered.
3. The modem transmits an answer tone to the central processor for approximately
   three seconds. The communication link is established when the central processor
   goes to data mode.
4. When the automatic disconnect function is operative (see "Using the CODE Key"),
   the communication link automatically disconnects after 45 seconds.
5. If manual disconnect is selected (CODE/m), you can press CODE/CNCL to disconnect
   the communication link. If voice communication is required between jobs, go to
   Step 7 under "Answering a Call Manually".

Note: The terminal will not automatically answer a call until a communication line job is started,
or the terminal is in communication test mode.

Diskette Storage Device Jobs

This section provides operating procedures and considerations for jobs that define the Diskette Storage Device as the job's input or output device. A more technical description of the features and functions of the device is included in the *System Components* manual.

PROC'D

Diskette Labels

Labels recorded on the diskette identify the diskette's data sets (files). Labels contain a data set name, extent of the data set (the diskette space and data set uses), data set status, multivolume indicator, and other fields used by the terminal.

The data set name is either:

A. Defined by the operator by entering an operator defined job;
B. Entered by the operator when the job starts;
C. Defined by the terminal when the job starts.

A maximum of 18 labels (data set names) can be written on one diskette. On SDLC exchange diskettes, 19 labels can be written since no OJDR (operator job definition) data set label is defined when these diskettes are Created [see "Extended Code Key Functions", Create Diskette (CODE/02I) in this chapter]. If a data set closes by a job ending, and another data set writes on the diskette, another label is used when a job starts that uses the data set that was closed; for example:

1. Insert a diskette in Diskette Device 1, and do a Create Diskette function as shown in Figure 2-8. Make the diskette and the card reader ready (see Chapters 5-8).
2. Start a card reader-to-diskette job that uses data set name AA01:

   A. Press the START JOB key.
   B. Enter these characters from the keyboard:

      S34AA01

   C. Press the EOM key.

   The terminal starts the job; the data set name is AA01.

3. Stop the job (hold the CODE key down and press the START JOB/STOP JOB key), or allow the card reader to go to end-of-file. The job ends, and data set name AA01 closes.
4. Start a card reader-to-diskette job that uses data set name BB01:

   A. Press the START JOB key.
   B. Enter these characters from the keyboard:

      S34BB01

   C. Press the EOM key.

   The terminal starts the job; the data set name is BB01.

5. Stop the job (hold the CODE key down and press the START JOB/STOP JOB key), or allow the card reader to go to end-of-file.

   The job ends and data set name BB01 closes.

6. Start the card reader-to-diskette job (step 1) again; and again, use data set name AA01:

   A. Press the START JOB key.
   B. Enter these characters from the keyboard:

      S34AA01

   C. Press the EOM key.

   The terminal starts the job and data set name AA01 opens. This data set name (that closed when you stopped the job in step 2) now occupies two data set labels; that is, the data set is on two segments on the diskette. When a job starts that

transmits this data set, the terminal collects all the data set segments and transmits them as if they were one continuous data set.

The terminal identifies these segments by using a two digit segment (label) number immediately after the four character data set name, and adds another character to indicate that the data set is continued. Thus, the two labels for data set AA01, used in this example, are:

AA0101C and AA0102

Note: The diskette's data set labels and other status information prints when you initiate a "List Disk Status" function (hold the CODE key down and enter the number 5 from the keyboard); this list function is described in more detail in the "Using the CODE key" section in this chapter.

When a diskette has several data sets with several labels (segments), the maximum number of labels may be used. When this happens, new data sets cannot be added to the diskette. New data cannot be added to any data set, with the exception of the last data set on the diskette. Code 305 (diskette 1) or 317 (diskette 2) displays in the operator panel readout indicators when the maximum number of labels is written on a diskette. If a second diskette storage device is present, the procedure described for alternating from drive to drive under "Multivolume Data Sets" is followed.

When a diskette is full (even though all labels are not used), no data may be added. Either code 299 (diskette 1) or 311 (diskette 3) displays in the operator panel readout indicators when a diskette becomes full.

When Ignore ETX is not set (see Figure 2-6), and a line data set is closed after receiving ETX from the line (using BSC), or after an End Data Set command (using SDLC), a new data set is opened under an incremented data set name (SL00, SL01, ...). If a diskette fills, the same data set name will be added to the second diskette. If this name already exists on the second diskette, the name is incremented.

For each new communication line-to-diskette job, the data set name reverts to SL00 if an operator-defined data set name is not specified. If this name does not exist on the diskette in device 1, and there is space on the diskette, the name SL00 or the name specified by the operator is used. If the name SL00 already exists on the diskette, it is incremented as described above, from SL00 through SL99, until a new name is generated. After the name SL99 is generated, the name reverts back to SL00. If there is no space on the diskette in diskette device 1, the data set is written on the diskette in diskette device 2 with a name that did not previously exist on either of the two diskettes.

Note: If data is received for the diskette after you start a line-to-diskette job with an operator-defined data set name, the data will be written into the operator-defined data set. Once data has been received for the printer or the punch, subsequent data received for the diskette will be written into a system-defined data set (SL00, etc.), unless you start another line-to-diskette job with an operator-defined data set name.

Active and Inactive Data Set Status

The terminal tests the active or inactive (bypass) status of a diskette data set to determine if it can be transmitted to the job's output device. The intent of this status test is to prevent (at your option) a data set from being copied or sent over the communication line. Data sets are automatically marked active (and can be copied or transmitted), with the exception of jobs where the central processor interrupts (receive request or reverse

interrupt) a job and transmits to the diskette device. These are marked inactive (cannot be copied or transmitted) to prevent them from inadvertently being sent back to the central processor or copied.

Use extended CODE key function 4 (CODE/04) to change the status of a data set; this function is described in the "Using the CODE Key" section in this chapter.

PROC'D

Multivolume Data Sets (Files)

A diskette can become full before a data set is completely written to it. When this happens, the data set is closed and the status is marked with a "c" to indicate that the data set continues on another diskette. If the terminal has two Diskette Storage Devices, the terminal automatically begins writing on the second diskette, or displays code 285 in the readout indicators if the second diskette is not ready. If diskette data is continued onto three or more volumes, place the third volume on diskette device 1 and when NPR code 311 displays indicating that diskette 2 is full, press CODE/RESET to continue using device 1. Alternating use of devices 1 and 2 continues in this manner until the last volume is written. For best system performance, the full volume should be replaced while the opposite diskette is being written. When a second diskette is not installed on the terminal, code 299 (end-of-volume) displays in the readout indicators. When code 299 displays:

A. Remove the full diskette, and install a new diskette.
B. Hold the CODE key down, press the RESET key, and the job continues.

> Note: When a data set continues from a previous volume, the data set's status is marked with a character "L" at stop job time to indicate the diskette's data set is the last of a multivolume data set.

When the data set to be read is continued, NPR code 301 (diskette 1), or code 313 (diskette 2) displays at job start time to alert the operator that the data set is continued. If the data set is to be processed (either this volume or another in this sequence of volumes), press CODE/RESET when the desired volume is installed. If none of the volumes is to be processed, stop the job by pressing CODE and START JOB/STOP JOB.

When reading a data set that is continued on another diskette and the end of volume is reached, the terminal automatically tries to read the next volume from diskette device 2 if it is installed and is ready, or displays NPR code 285 if device 2 is not ready. If data is continued onto 3 or more volumes, the third volume must be placed on device 1, and when NPR code 312 displays indicating end of volume, press CODE/RESET to continue reading from device 1. The process repeats for additional volumes. If the volume on diskette device 2 is not replaced after it is read, the same volume will be read again when device 2 is reselected. For best system performance, the volumes should be replaced after they are read, while the opposite diskette is being read.

If the second device is not installed, NPR code 300 (end of volume, read) displays and you must:

A. Install the next Diskette in the volume.
B. Hold the CODE key down and press the RESET key.

If the continued data set is not found on a subsequent volume, NPR code 297 (diskette 1), or 309 (diskette 2) displays and the job aborts. If the data set is found but not marked as a multiple volume, NPR code 301 (diskette 1), or 313 (diskette 2) displays, and may be handled as described above.

> Note: You can stop the job (hold the CODE key down and press the START JOB key) instead of reading the next diskette in the volume. Further, the multivolume status indicator can be changed by using the extended CODE key function 4 as described in the "Using the CODE Key" section in this chapter.

If you do not specify a data set name in the job definition or when starting a job (read all active data sets), the multivolume indicator is ignored. In this case, the terminal will read the active data sets on diskettes 1 and 2, and then end the job. NPR codes 297, 301, 309, 312, or 313 will not occur.

Diskette Records

Diskette records, when not full, are always padded to the right with NULs. Records are written in the following manner:

- 3770 mode diskettes, using either BSC or SDLC, have a record size of 256 bytes and are written in two nonsequential sectors (every third physical sector). A BSC 3770 mode diskette can contain up to 948 data records. An SDLC 3770 mode diskette can contain a maximum of 947 data records, due to the 'FM Header' which is always the first record written on the diskette. The FM Header contains information used by the terminal when the data set is transmitted to the central processor.
- 3770 basic exchange diskettes written using BSC have a record size of 128 bytes, and records are written two at a time in sequential sectors. These diskettes can accommodate up to 948 data records.
- 3770 basic exchange diskettes written using SDLC may have data sets with record sizes from 1 to 128 bytes, and are written sequentially one sector at a time. These diskettes can contain up to 1898 records. If the number of records exceeds 1000, the NPR indicator returns to 000, and the job continues.

Defective Diskette Sectors

A sector is a section on the diskette where information is stored. Occasionally, defective sectors are found when trying to write information to the diskette. When this happens, the terminal automatically skips two or four (512-byte buffer operation) sectors (to bypass the defective sector), and writes the information in the next (good) sector. As a record number is associated with the sectors that were skipped, the record number for the data written after skipping sectors is one greater than the previously written record.

When a diskette with defective sectors is copied to another diskette, the receiving diskette does not skip sectors unless a defective sector on the receiving diskette is detected; therefore, the number of records may change when copying from one diskette to another. If you perform a list diskette status function as described in the "Using the CODE Key" section, before and after you copy a diskette, you can determine if defective sectors were detected because the number of records in the data set changes.

Diskette 1 to Diskette 2 Jobs

Listed here are some of the diskette 1 to diskette 2 jobs that can be performed on terminals with two Diskette Storage Devices.

- All active data sets (files) can be copied from diskette to diskette; inactive (bypass) data sets are not copied. Data sets can be deleted by copying active data sets on diskette 2, and then clearing diskette 1.

  Note: The OJDR (operator job definition record) is a non-active data set, and cannot be copied directly from the diskette. To copy the record onto another diskette, the diskette containing the data set must be placed in diskette device 1, the operator job definition loaded into the machine, and another diskette placed on device 1. The operator job definition can then be written onto diskette 1 using the procedure described under "Writing Operator Defined Jobs to the Diskette Storage Device" in this chapter.

- Data sets of the same name can be "pooled". If a data set of the same name exists on both diskette 1 and diskette 2, data from the data set on diskette 1 is added to the same data set on diskette 2.
- All segments of a data set can be collected and written as a data set with just one label. When a data set with more than one label is copied to another diskette, the result is a single continuous data set with one label.

- An IBM 3770 diskette can be converted to a BSC exchange diskette or vice versa.
- The second Diskette can be used as an extension of the first; this is described under "Multivolume Data Sets" in this ("Diskette Storage Device Jobs") section.
- A non-3770 diskette can be transmitted from diskette 2 to the central processor; response data from the central processor can be written on diskette 1, and the original (non-3770) diskette's data is not altered.

PROC'D

Record Compression

For improved communication line efficiency when operating with non-3770 exchange mode diskettes, you can either convert (compress) these onto 3770 mode diskettes before transmission to the CPU, or compress them during a diskette-to-line job. This function cannot be done on ASCII machines using SDLC.

The general procedure for compressing a non-3770 exchange mode diskette onto a 3770 mode diskette is as follows:

1   Create a diskette as a non-exchange diskette using the CODE/02 Create Diskette function (Figure 2-8). Place this diskette in diskette device 2.
2   Define a diskette 1-to-diskette 2 (operator-defined) job, and specify the data set name of the diskette 1 data set to be compressed. Select the Compress option. Diskette 1 must have been written in non-3770 exchange mode, with a record length of from 1 to 128 characters.
3   Place the non-3770 exchange diskette to be read on diskette device 1. Start the job as described in the job start procedure (Figure 2-4), or start a dual data path job as described under "Dual Data Path".

Record compression is also active when doing a diskette-to-line job with Compress specified in the job definition, and using a non-3770 exchange mode diskette. Records are compressed and combined in the same manner as for a diskette-to-diskette job.

- The setting of the EXTEND BUFFER switch determines the buffer size that will be used. If the switch is off, the 256-character buffer length is used. If the EXTEND BUFFER switch is on, the 512-character buffer length is used. Changing the switch setting has an effect only if set before power on, or if the SYSTEM RESET switch is operated.
- As many 1 to 128 byte records as possible are compressed into a single 256- or 512-byte buffer, with IRS characters inserted between the input records (refer to the *System Components* manual for 3780 compatibility restrictions).
- Blank (space) compression is active for the job.
- If no data set name is specified either in the job definition or at job start time, all active data sets on the non-3770 exchange diskette will be compressed and combined into a single output data set SD00 (diskette-to-diskette operation), or all active data sets will be compressed and transmitted to the CPU (diskette-to-line operation).
- A specified data set on the non-3770 exchange diskette may be selected for compression by keying a comma after the job number during the job start procedure, and entering the one to eight character data set name. The first character of the name must be alphabetic and the remaining characters alphabetic or numeric (A through Z, and 0 through 9). All lowercase characters entered are converted to uppercase.
- For diskette-to-diskette operation, the data set name for the output data set is SD00, and is assigned by the 3776. If this name already exists on the output diskette, another data set label is written as shown in Figure 2-7 (List Diskette function) and data is appended to that data set.
- A non-3770 diskette can be read from diskette 1 and written to diskette 2 if all the data set names on the non-3770 diskette are valid 3770 names, or if the Compress option is used. NPR code 777 appears if a non-3770 data set name is used without the Compress option.

Diskette Interchangeablility

See the publication *IBM 3770 Data Communication System — System Components,* GA27-3097 for additional details on diskette interchangeability. As a guideline, the following must be observed:

- Non-3770 diskettes cannot be written on by the 3770 in BSC mode.

  In SDLC mode, data received from the communication line that is defined as exchange data can be written on an SDLC exchange diskette (refer to the *System Components* manual--some non-3770 diskettes can accept this data).
- Non-3770 diskettes can be read by the 3776 if they adhere to the rules for basic exchange format, and the record length does not exceed 128 characters.
- ASCII or EBCDIC compatibility must be maintained.
- A diskette written in 256-byte mode should be read in 256-byte mode (EXTEND BUFFER switch off), or if written in 512-byte mode must be read in 512-byte mode (EXTEND BUFFER switch on).
- A data set written in BSC mode can be read later in SDLC mode, but any BSC space compression sequences will be ignored.
- A data set written in SDLC mode (non-exchange) cannot be read later in BSC mode.

Dual Data Path

A second job can be run concurrently with an operator or system defined line-to-printer job. This job can be started and stopped independently of the line-to-printer job.

The second job can be either a card reader-to-diskette job, a diskette-to-card punch job, or a diskette 1-to-diskette 2 job. Card reading can be done on a 2502, 3501, or 3521 with the Card Read feature. Continuation of the job onto diskette device 2 is possible in the event that multivolume data sets (see "Multivolume Data Sets") are read from or written onto the diskette.

When the dual job is started, you may notice some hesitation in printer, card reader, or card punch operation; this is normal.

The following examples show how the second job is started.

Example 1: Starting a System Defined Diskette-to-Card Punch Dual Job

1 Turn the DISK switch off, if it is on.
2 Press the START DUAL key.
3 Enter these characters from the keyboard:

S49AA0012

where:

S = A system defined job
49 = Select a diskette-to-card punch job.
AA00 = The data set (file) name. If omitted, all active data sets are punched.
12 = The first diskette record to be read and punched. If omitted, reading and punching begins with record # 1, except for SDLC "T-type" data sets where record # 1 contains an FM Header which is skipped.

Note: If the record number is less than 3 digits, it is not necessary to enter loading zeros.

Other parameters selected for this system defined job are:

- Interpret print (3521) is selected.
- Readback checking (3521) is active.
- Either the 256-character or the 512-character single buffer is selected, depending on the setting of the EXTEND BUFFER switch when power was turned on or when the SYSTEM RESET switch was operated last.

4 Make the diskette and card punch ready, and press EOM to start the job.

Example 2: Starting an Operator Defined Diskette-to-Card Punch Dual Job

1 Turn the DISK switch off, if it is on.
2 Press the START DUAL key.
3 Enter these characters from the keyboard:

112

where:

1 = Operator defined job # 1.
12 = The first diskette record to be read and punched. If omitted, reading and punching begins with record 1, except for SDLC "T-type" data sets where record # 1 contains an FM Header which is skipped.

Note: If the record number is less than 3 digits, it is not necessary to enter leading zeros.

The devices and data set (file) name used are those specified in the operator-defined job #1. Other parameters listed below are as defined or selected previously:

- Interpret or Inhibit Interpret is as defined in the job definition.
- Readback check is active or inactive, as specified in the job definition.
- Either the 256-character or the 512-character single buffer is selected, depending upon the setting of the EXTEND BUFFER switch when power was turned on or when the SYSTEM RESET switch was last operated.

4 Make the diskette and card punch ready, and press EOM to start the job.

Example 3: Starting a System Defined Card Reader-to-Diskette Dual Job

1 Turn the DISK switch off, if it is on.
2 Press the START DUAL key.
3 Enter these characters from the keyboard:

S34AA00
where:
S = A system defined job.
34 = Select a card reader-to-diskette job.
AA00 = The data set name. If omitted, the system assigns the name SC00.

Other parameters selected for this system defined job are:

- Compress is not selected.
- Interpret Print (3521) is not selected.
- Either the 256-character or the 512-character single buffer is selected, depending upon the setting of the EXTEND BUFFER switch when power was turned on or when the SYSTEM RESET switch was operated last.

4 Make the diskette and card reader ready, and press EOM to start the job.

Example 4: Starting an Operator Defined Card Reader-to-Diskette Dual Job

1 Turn off the DISK switch, if it is on.
2 Press the START DUAL key.
3 Enter a "1" from the keyboard. This selects operator defined job #1. The job definition specifies the devices and a data set name to be used for the job. Other parameters selected are:

- The Compress option selected is as specified in the job definition.
- Interpret or Inhibit Interpret (3521 used as a card reader) is as specified in the job definition.
- Either the 256-character or the 512-character single buffer is selected, depending upon the setting of the EXTEND BUFFER switch when power was turned on or when the SYSTEM RESET switch was last operated.

4 Make the card reader and diskette ready, and press EOM to start the job.

Example 5: Starting a System Defined Diskette 1-to-Diskette 2 Dual Job

1   Turn off the DISK switch, if it is on.

2   Press the START DUAL key.

3   Enter these characters from the keyboard:

S45AA0012

where:

S = a system defined job

45 = select a diskette 1-to-diskette 2 job

AA00 = the data set name on diskette 1*

12 = The first diskette record to be read. If omitted, reading begins with record #1.

Note: If the record number is less than 3 digits, it is not necessary to enter leading zeros.

4   Make diskette 1 and diskette 2 ready, and press EOM to start the job. Data set AA00 is copied onto diskette 2*.

Parameters selected for this system defined job are:

- Compress is not selected.
- Diskette 2 is written as an exchange diskette if it was previously created as a 3770 exchange diskette, or is written as a 3770 mode diskette if it was created as a non-exchange diskette.
- Either the 256-character or the 512-character single buffer is selected, depending on the setting of the EXTEND BUFFER switch when power was turned on or when the SYSTEM RESET switch was last operated.

* If you do not specify a data set name, all active data sets are copied.

Example: Example 6: Starting an Operator Defined Diskette 1-to-Diskette 2 Dual Job

1   Turn off the DISK switch, if it is on.

2   Press the START DUAL key.

3   Enter a "1" from the keyboard. This selects operator-defined job number 1. The job definition specifies a diskette 1-to-diskette 2 job, and specifies the diskette 1 data set name. Other parameters for the job are:

- The Compress option selected is as specified in the job definition.
- Either the 256-character or the 512 character single buffer is selected, depending on the setting of the EXTEND BUFFER switch when power was turned on or when the SYSTEM RESET switch was last operated.

4   Enter the record number (1-3 digits) of the first diskette record to be read; otherwise, reading begins with record 1.

5   Make both diskette devices ready and press EOM to start the job.

- Diskette 2 is written as an exchange diskette if it was previously created as an exchange diskette, or is written as a 3770 mode diskette if it was created as a non-exchange diskette.
- If diskette 1 is a non-3770 exchange diskette and the Compress option is specified, records from diskette 1 are compressed onto diskette 2 (if diskette 2 was created as a non-exchange mode diskette--see "Diskette Storage Device Jobs--Record Compress"). The output data set name used on diskette 2 in this case is SD00.

Operating Controls

Auxiliary Operator Panel Controls

Power On/Off Switch

This switch controls ac power to the terminal. When power is turned on, the functional tests run and the terminal is left in local mode with the PROCEED indicator on. Any other indicator being on signals either a failure in the terminal's electronic components, that one of the mode switches is on, or that the Keylock is off. The "Power On" procedure in this chapter describes how to determine the terminal's status when turning power on.

BSC/SDLC Switch

This switch is present on machines using the SDLC/BSC Switch Control Communication feature. The switch must be placed in the BSC position to communicate using BSC procedures, or in the SDLC position to communicate using SDLC procedures. Changing the setting of the switch has an effect only if set before power on, or after operating SYSTEM RESET.

NORMAL/HALF-SPEED Switch

This switch is present on machines using the 2400 or 4800 BPS Integrated Modem, and is present on all World Trade machines. Using the 2400 (or 4800) BPS Integrated Modem, transmission is at 2400 BPS (or 4800 BPS) with the switch in the NORMAL position, or at 1200 BPS (or 2400 BPS) with the switch in the HALF-SPEED position. On World Trade machines using either an Integrated Modem or an external DCE (data communication equipment), line speed with the switch in the NORMAL position is at the modem's maximum rated speed. With the switch in the HALF-SPEED position, line speed is half of the modem's maximum rated speed, if the modem used has this capability.

To change the switch's setting:

A. If a job is running, enter local mode by ending the job as described in the "Ending a Job" section in this chapter;
B. Set the switch to the desired position;
C. Hold the CODE key down and press the CNCL (Cancel) key; then, release the CODE key.

TALK/DATA Switch

This switch is present on machines using the 2400 BPS Integrated Modem, on the switched Caducee Network. It can be set to TALK for voice communication if no job is set up and an incoming call is expected. A call can also be placed if the switch is set to DATA.

SYSTEM RESET Switch

This switch causes the terminal to interrupt any operation in progress and leaves the terminal in the same power-on state as described under "POWER ON/OFF Switch". The operator job definition and error log are not affected by SYSTEM RESET.

Keylock

This is the key-operated switch for the Keylock feature. The switch must be in the UNLOCKED position to perform keyboard operations.

Signal Quality Meter

This meter is present on machines using the 2400 BPS Integrated Modem, Point-to-Point or Multipoint Tributary. The meter is used to check the quality of the received signal.
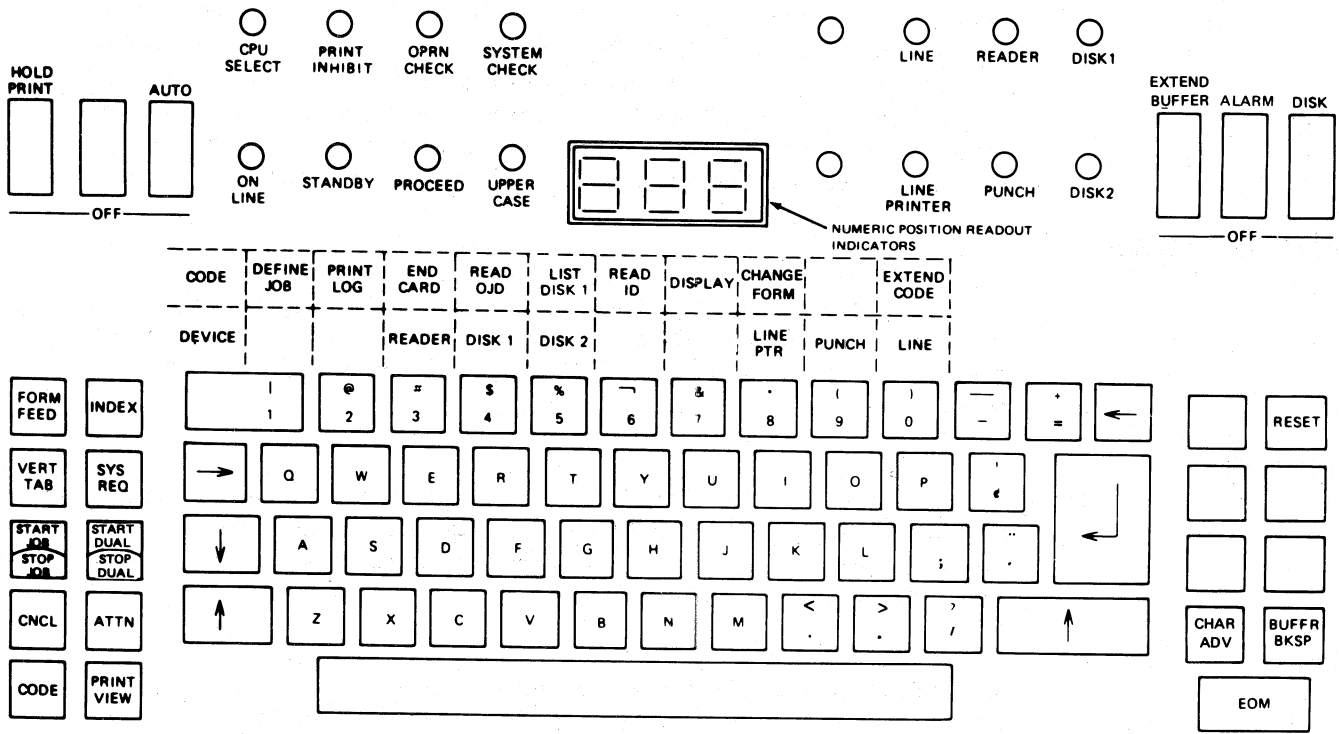
Figure 2-5. 3776 Keyboard Controls

This figure shows the EBCDIC keyboard arrangement for use in the U.S. and Canada.

Transmit and Receive Equalizer Controls

These rotary controls are present on machines using the 2400 BPS Integrated Modem, Multipoint Tributary. The Receive Equalizer control alone is present on machines using the IBM 2400 BPS Integrated Modem, Point-to-Point.

Keyboard Switches, Keys, and Indicators

HOLD PRINT Switch

Turn this switch on to load or adjust printer forms. When the switch is turned on, the printer stops printing, and releases the forms clamp after a 5 second delay to allow forms adjustment or loading.

Turning the HOLD PRINT switch on during a job using the printer holds up the entire job and causes a communication line time-out to occur after 3 minutes. Using BSC, when HOLD PRINT is turned on during a line-to-printer job, RESET must be pressed once every 3 minutes to keep the terminal from ending the job prematurely.

Using SDLC, if the switch is on, 'Intervention Required' is never sent to the host CPU, regardless of the output device being used.

Do not turn the switch on when you are defining a job. If you do, you may have to repeat all or part of the job parameter you were entering when you turned the switch on.

The switch must also be turned on when using the Change Forms (CODE/8) function, as described under "Using the CODE key".

AUTO Switch

This switch is active only during a diskette-to-printer job. When the switch is on at the beginning of a job, the first diskette record is processed, the job pauses, and code 260 displays in the readout indicators. Only complete lines are printed. If the first diskette record contains only a partial line or ends with a partial line, the incomplete line prints after the switch is turned off and the job resumes. When the switch is turned on during the job, the current record finishes printing and the job pauses with code 260 displayed in the readout indicators. The job resumes when the switch is turned off.

EXTEND BUFFER Switch

This switch is used to select either the dual 256-character buffers, or the dual 512-character buffers. The switch must be set as prescribed by the job application procedures written for the specific job you are doing. To have any effect, this switch must be set before power is turned on, or SYSTEM RESET must be operated after the setting is changed.

ALARM Switch

This switch is used to select the terminal's audible alarm feature. The switch can be turned on or off at anytime during the job. With the switch on, the alarm sounds for conditions that require operator attention, such as printer out of forms, or system error conditions. Press the RESET key to turn the alarm off.

DISK Switch

When this switch is on, all data from the central processor [with the exception of data that contains a device selection character (DC1 for BSC, or Console Media = '00' for SDLC) that selects the printer] is written to the Diskette Storage Device. Data set names start with "SL00", or with the data set name defined at job start time, and the number increments for each additional data set.

Using SDLC, all data not preceded by an FM Header is sent to the printer regardless of the DISK switch setting. On ASCII machines, the switch setting may be ignored (refer to the *System Components* manual).

If the central processor transmits data with a selection character for a device that is not on the terminal and the DISK switch is on, the data is written onto the diskette. This allows application programs written for the IBM 2770 or IBM 3780 to write on the 3776.

The DISK switch can also be used when reading operator defined jobs from the Diskette Storage Device to the controller, as described under "Operator Defined Jobs".

The switch must be turned off before a dual data path job is started. Refer to "Dual Data Path" in this chapter.

FORM FEED Key

This key causes the forms to advance to the first printing line on the next form, as defined by the job definition in effect, if the job is not running.

INDEX Key

This key causes the forms to feed one line. The key is inoperative on ASCII machines.

VERT TAB (Vertical Tab) Key

This key causes the printer forms to advance to the next predefined vertical tab stop, if the job is not running. If no vertical tab stops are defined, the key causes the printer to feed one line.

SYS REQ (System Request) Key

PROC'D

This key can be used to enable entry of a logon message if the terminal is in local mode, or the STANDBY light is on after a previous on-line job. The message is transmitted after the online job is started, before any other data exchange takes place (refer to "Logon Message").

CNCL (Cancel) Key

After a message is entered as described under SYS REQ key, and before the job is started, pressing the CNCL key clears the buffer of the entered data.

After an online job is started using SDLC, pressing this key causes the communication line job to be terminated. Any data received during the job is incomplete, and should be discarded.

ATTN (Attention) Key

For BSC operation, pressing the ATTN (Attention) key while the 3776 is receiving data over the communication line causes the job to be terminated. When the PROCEED light turns on, you may initiate a transmit job to send card or disk data, or to enter a request (logon) message. This function is analogous to pressing the CARRIAGE STOP key on a 3780 while receiving data. Refer to the 3770 System Components manual for additional information. Refer to the publication listed in Appendix A in the "Operator Notes" section for the action taken by the central processor following this job interruption.

Using SDLC, this key is active only when receiving from the CPU, or when the terminal is in STANDBY mode. The key is inoperative at any other time. When the key is pressed, a signal is sent to the CPU requesting that the CPU allow the terminal to transmit. The action taken by the CPU is dependent upon the CPU program, and it may allow the terminal to transmit, or it may ignore the signal.

CODE Key

This key is used in conjunction with certain graphic and control keys to select certain terminal functions and options.

Keys used in conjunction with the CODE key and the Extended CODE key functions, and a detailed description of the functions they perform are described in detail at the end of this chapter under "Using the CODE Key".

PRINT VIEW Key

After a message is entered as described under "SYS REQ (System Request) Key", and before the message is complete or before an Operator ID Card is read, pressing PRINT VIEW causes entered data to print. The key can also be used during operator job definition to print out the defined job conditions. The PRINT VIEW key is inoperative once the message is complete, after an Operator ID Card has been read, or during entry of vertical forms control information.

RESET Key

Pressing this key resets the audible alarm. After a buffer edit operation, pressing this key restores the buffer pointer to the first buffer position past the end of data in the buffer. Pressing CODE and RESET resets the SYSTEM CHECK or OPRN CHECK indicator, resets the Numeric Position Readout, and turns off the device indicator.

When an operator-recoverable error occurs during a line-to-printer job (NPR code 253, 322, 323), the terminal automatically ends the job after 3 minutes if the error condition is not cleared. This time period is restarted each time RESET is pressed with HOLD PRINT on.

When starting a job or entering an extended CODE key function, pressing RESET before the EOM key is pressed cancels the entry.

CHAR ADV (Character Advance) Key

This key is active after the BUFFR BKSP key is pressed following entry of a message (see "Logon Message"), or during entry of the job definition.

If you detect an error during entry of a message or job definition, the BUFFR BKSP key can be used to back up character-by-character to correct the data. When the desired position is reached, you can re-enter the character or characters. CHAR ADV can then be used to advance character-by-character up to the point where BUFFR BKSP was pressed. Character-by-character advance repeats as long as the key is held down (typamatic operation).

BUFFR BKSP (Buffer Backspace) Key

This key is active during keyboard entry of a message (see "Logon Message"), or job definition. It can be used to back up character-by-character for error correction of an operator-detected error [see also "CHAR ADV (Character-Advance Key)"]. The use of this key does not change the contents of the buffer. After backspacing, the buffer contents can be changed using a character key or the space bar.

EOM Key

This key is used to:

● Terminate a start job procedure,
● End a job definition entry,
● End an extended CODE key function,
● End a logon message entry.

Return (↵) Key

The Return key is used to:

● Terminate vertical forms control entries during the operator job definition procedure.
● Cause a printer line space and return the print position to the left margin during local mode operation, or during entry of a logon message.

Input and Output Device Indicators

There is a device indicator for each input or output device that can be attached to the terminal:

LINE (Communication Line)
READER (Card Reader)
DISK 1 (Diskette Storage Device Number 1)
LINE PRINTER
PUNCH (Card Punch)
DISK 2 (Diskette Storage Device Number 2)

The device indicator turns on when:

1. A job is running and the device is defined as the job's input or output device.
2. A CODE key function is selected that uses the device.
3. A device error occurs. When an error occurs:

   A. The indicator for the device associated with the error remains on, and the other input or output device indicators turn off.
   B. The OPRN (Operation) CHECK or SYSTEM CHECK indicator turns on.
   C. An error code displays in the numeric position readout (NPR) indicators. The error codes and recovery procedures are listed in the "Numeric Position Readout (NPR) Codes" section.

Numeric Position Readout (NPR)

This three-digit numeric display provides different indications depending on the operation being performed. If the Diskette Storage feature is installed, record numbers associated with the diskette records are indicated here. Message code numbers providing operator guidance and indicating system status and error conditions are displayed in the NPR. These code numbers, in conjunction with other operator panel indicators being on, are related to operating procedures described in Chapter 3 under "Numeric Position Readout (NPR) Codes".

During entry of a message, the NPR indicates the number of characters that have been entered.

CPU SELECT Indicator

This indicator turns on when the central processor selects an input or output device that is not available for operation with the communication line because the communication line job has not been started. Also, this indicator turns on if the central processor selects a device that is not installed on the terminal, or is in use by another job (see "Dual Data Path").

Using SDLC, this indicator also turns on if a 'SIGNAL' command is received from the host CPU and the communication line is specified as the output device.

PRINT INHIBIT

This indicator is not used when operating with BSC. When using SDLC, the indicator is controlled by signals from the CPU. When the light is on, keyboard-entered data (using the SYS REQ function) will not be printed (PRINT VIEW is inoperative).

OPRN CHECK (Operation Check) Indicator

This indicator turns on when an input or output device needs operator attention (such as a printer out-of-forms, card reader hopper empty, or diskette full condition), or when trying to re-establish the communication line link after an error. An error code displays in the numeric position readout (NPR) indicators. The error codes and recovery procedures are listed in the "Numeric Position Readout (NPR) Codes" section.

The operator panel speaker sounds when an operation check occurs; if installed, the audible alarm sounds when the ALARM switch is on. In most cases, error indicators clear and the job's input and output device combination indicators restore when the error condition is corrected. For a diskette full or an all diskette labels used condition, you must hold the CODE key down and press the RESET key to restart after another diskette is installed.

SYSTEM CHECK Indicator

This indicator turns on when a controller error or an input or output device error occurs. An error code displays in the numeric position readout (NPR) indicators. The error codes and recovery procedures are listed in the "Numeric Position Readout (NPR) Codes" section in Chapter 3.

The operator attention speaker sounds when a system check occurs; if installed, the audible alarm sounds when the ALARM switch is on. When SYSTEM CHECK turns on, the job has been stopped; the indicator turns off, and if the other job is not active, the terminal goes to local or standby mode, when you hold the CODE key down and press the RESET key. When a SYSTEM CHECK occurs, the only keys which will be allowed are RESET and CODE/RESET.

PROC'D

ON LINE Indicator

Using BSC: This indicator turns on when the communications line is defined as a job's input or output device, and a communications link is established with the central processor. The ON LINE indicator remains on until the communications link with the processor is disconnected if using a switched line, or until the job ends if using a non-switched line. It is normal for the indicator to blink during data transmission.

Using SDLC: This indicator is turned on and off by signals from the CPU. When the light is on, the terminal is in a session with the CPU, as described under "Communication Line Jobs -- Using SDLC".

STANDBY Indicator

Using BSC: This indicator turns on when a job starts that defines the communication line as the job's input or output device. The STANDBY indicator turns off when data transmission with the central processor begins; it remains off until the job's transmission ends; you can start another job that defines the communication line as the job's input or output device when the STANDBY indicator turns on again.

Using SDLC: This indicator is on when the terminal is in communicate mode and there is no line job active. When the STANDBY indicator is on, you can start another job that defines the communication line as the jobs input or output device.

PROCEED Indicator

This indicator turns on when an entry from the keyboard can be accepted. It turns off during processing of ID Reader information, or when the key lock is turned off.

UPPER CASE Indicator

This indicator turns on when keyboard data is being entered in upper case (the upper shift key was pressed). When the indicator is off, keyboard data enters in lower case (downshift). On Katakana machines, this light is on when the keyboard is in "Kana" shift.

Operator Attention Speaker

The operator attention speaker sounds whenever a System Check, Operation Check, or an invalid key entry occurs. If the SYSTEM CHECK or OPRN CHECK light is on, the number displayed on the NPR indicates the cause of the check condition. If neither light is on, an invalid key was pressed, and was rejected. To continue, you can press another key, or press RESET to cancel the entry. The speakers tone may vary, depending on the operation being performed.

Using the CODE Key

Figure 2-6 illustrates the use cf the key in selecting functions. Figure 2-7 describes the CODE key functions.

1 Hold the CODE key down, and press one of the following keyboard keys listed in Figure 2-7 to select one of the functions listed; release the CODE key after pressing the keyboard key listed in the chart.

2 These labels indicate the function selected when the keyboard key below the label is pressed. Additional functions are listed in Figure 2-7.

Notes: *CODE Key Functions* (functions that do not begin with the number "0") execute immediately.

Extended CODE Key Functions (functions that begin with the number "0") shown in Figure 2-8 do not execute immediately; the function number displays in the readout indicators to allow the operator to verify that the correct function was selected. The function executes when you press the EOM key; the function cancels if you press the RESET key instead of the EOM key.
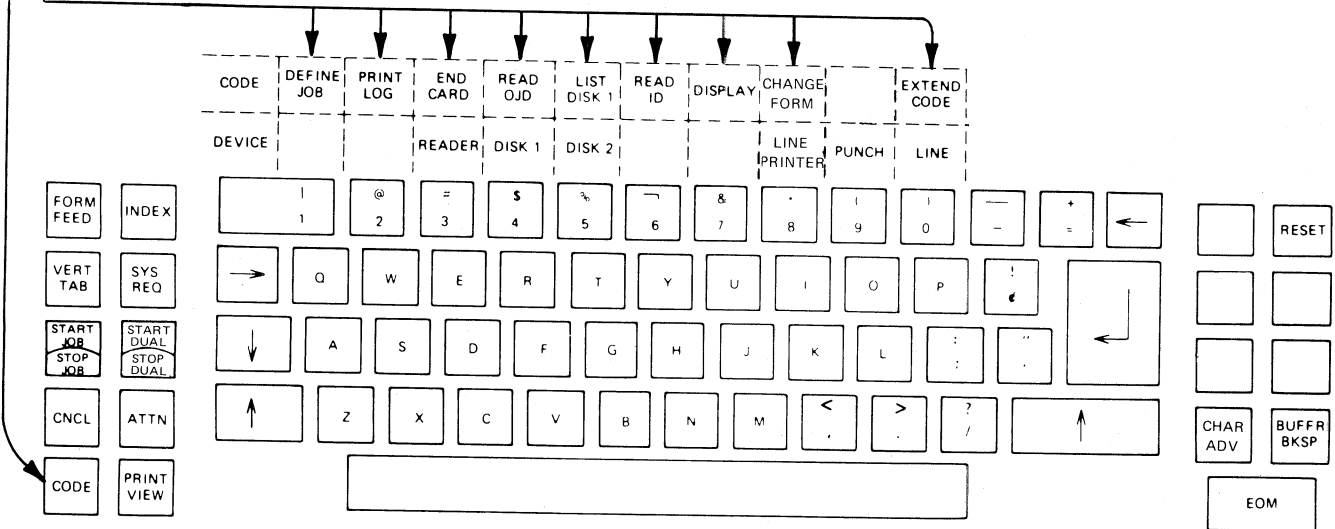
This figure shows the EBCDIC keyboard arrangement for use in the U.S. and Canada.

Figure 2-6. Using the Code Key

FUNCTION	SELECTION*	DESCRIPTION
Define Job	CODE/1	Selects define job mode for operator defined job setups. Refer to "Entering an Operator Defined Job from the Keyboard" in this chapter.
Print Error Log	CODE/2	Prints the terminal's error log that is used by service personnel to determine the cause of the error. Before printing the error log, use the CODE/80 Change Forms function to set the forms control, if necessary.
End Card	CODE/3	Using the keyboard as the input device, inserts an IRS character (end-of-card character) into the buffer.
Read OJD (Operator Job Definition) Diskette 1	CODE/4	Reads the operator defined job definitions from diskette #1 (if the DISK switch is on), or from cards (if the DISK switch is off) into the controller. On an SDLC exchange diskette, no OJDR data set is defined.
List Diskette 1	CODE/5	Prints out information about data sets (files) contained on the diskette. The entire volume label is printed, followed by the HDR1 record for each label sector used. After each HDR1 label is printed, the count of the number of buffers described by the data set and the number of sectors per buffer is printed. A maximum of 19 labels can be written on a diskette. Unused label sectors are identified by an asterisk. Before listing, use the CODE/80 Change Forms function to set the forms control, if necessary.

*Refer to the *3770 System Components* manual, GA27-3097 for a description of these fields.
**Not printed for an SDLC exchange diskette.

Note: A data set (file) name must be specified for each job started. Each new name is added to the list. If a name has been used previously, a sequence number is added to that name in the list. For example, if a job with data set name AA01 ends, and a job with a different name starts and ends, the next job started with data set name AA01 would be listed twice, as follows:

```
AA0101C
   .
   .
AA0102
```
C = Data set (file) continued on this diskette
Sequentially numbered labels for same data set (file) entered in two parts under name AA01

*Hold the CODE key down and press the character key shown.

Figure 2-7. Code Key Functions (Part 1 of 4)

FUNCTION	SELECTION*	DESCRIPTION
Read ID	CODE/6	Activates the operator ID card reader. Badge data reads into the buffer following the keyboard entered data during a SYS REQ message operation. Data may be keyed into the buffer before reading the badge; when you do this, leave 41 positions available for reading the badge. If less than 41 positions remain, the operator attention speaker sounds when this function (CODE/6) is attempted.
Display Devices and Modes	CODE/7	• Display Devices After entering CODE/7, release the CODE key and enter a numeric character 1 through 5 to display the input and output device combination (used by the operator defined job 1 through 5) in the Numeric Position Readout. The input device number displays in the left NPR indicator, and the output device displays in the right indicator (refer to the decal above the numeric keyboard keys for the device and corresponding number). • Display Modes After entering CODE/7, release the CODE key and enter a numeric 0. The numbers displayed in the left and right NPR indicate the modes defined for the current job, as follows (the center NPR is blank):

<center>

Left NPR	Monocase Selected	Ignore ETX/EOT Selected	Inquiry Mode Selected
0	NO	NO	NO
1	NO	NO	YES
2	NO	YES	NO
3	NO	YES	YES
4	YES	NO	NO
5	YES	NO	YES
6	YES	YES	NO
7	YES	YES	YES

Right NPR	Unattended Mode Selected	Manual Disconnect Selected	SNBU Selected
0	NO	NO	NO
1	NO	NO	YES
2	NO	YES	NO
3	NO	YES	YES
4	YES	NO	NO
5	YES	NO	YES
6	YES	YES	NO
7	YES	YES	YES

</center>

• Press RESET; or hold the CODE key down and press START JOB to end the display.

FUNCTION	SELECTION*	DESCRIPTION
Change Forms	CODE/8	The HOLD PRINT switch must be turned on before using the CODE/8 function. Turn the HOLD PRINT switch off after the function is used. Turn on the HOLD PRINT switch, hold the CODE key down and press the 8 key. Release the CODE key and enter one of the following characters to select the desired forms definition:

1 Selects the forms definition from operator defined job # 1.
2 Selects the forms definition from operator defined job # 2.
3 Selects the forms definition from operator defined job # 3.
4 Selects the forms definition from operator defined job # 4.
5 Selects the forms definition from operator defined job # 5.
= Resets the controller line counter to print line 1 of the form.
0 Sets the following:

   • Forms length = 66 lines (6 lpi) or 88 lines (8 lpi)
   • Printed lines = 61 (6 lpi) or 81 lines (8 lpi)
   • Left margin = print position 1
   • Maximum print position = 132
   • Vertical tab stops set at each print line
   • Horizontal tab stops set at each print position

Note: The functions 1 through 5 and 0 also reset the controller line counter to line 1.
The Change Form function cannot be used during a SYS REQ operation.

*Hold the CODE key down and press the character key shown to select the function.

Figure 2-7. Code Key Functions (Part 2 of 4)

FUNCTION	SELECTION*	DESCRIPTION
Inquiry Mode** (BSC Only)	CODE/I	Selects the Inquiry mode function.
Select Ignore ETX (BSC)** or EDS (SDLC)	CODE/X	Selects the Ignore ETX/EDS function. This function is used when communication line data is written to the diskette. When the function is selected, data is written into one continuous data set. When the function is not selected, the data set name changes each time the message control characters ETX is received (using BSC), or when an End Data Set command is received (using SDLC). For example, if the job's starting data set name were SL00, the name would change to SL01 after receiving an ETX (using BSC), or after receiving an End Data Set command (using SDLC). *Caution:* If a data set with the same name already exists on the diskette, the communication line data will be linked to the existing data.
Select Monocase	CODE/U	Causes the keyboard-entered 26 alphabetic characters a through z to enter the controller buffer as uppercase characters A through Z.
Deselect I, X, U, and Z**	CODE/D	Deselects the functions inquiry mode, Ignore ETX/EDS, monocase and SDLC unattended mode. Since the above functions are deselected at power on, this function need only be used if the above functions are selected after power on.
Select Automatic Disconnect***	CODE/A (CODE/Q for Belgian keyboard)	Selects the switched communication network automatic disconnect function. Automatic disconnect is selected at power on time.
Select Manual Disconnect***	CODE/M	Selects the switched communication network manual disconnect function. When selected, manual disconnect overrides the automatic disconnect at job end; CODE/CNCL can be pressed to disconnect the line.
Select SNBU***	CODE/S	Selects Switched Network Backup (SNBU) operation, and terminates nonswitched line operation (if the feature is installed. There may be a delay of about 20 seconds while the 3776 terminates nonswitched line operation and becomes operational on the switched line (refer to "Initiating a Call using SNBU" in this chapter).
Terminate SNBU***	CODE/R	Terminates Switched Network Backup (SNBU) operation, and selects nonswitched communication network operation (if the SNBU feature is installed). There may be a delay of about 10 seconds until the terminal terminates switched line operation and becomes operational on the leased line. If the SNBU feature is installed, nonswitched line operation is selected at power on. This function need only be used after the CODE/S function has been selected.
Select 8 Lines Per Inch Line Spacing**	CODE/K	Selects 8 lines per inch line spacing. Use this function to select 8 lpi before the job definition procedure is started. 8 lpi remains in effect until CODE/L or SYSTEM RESET is pressed.
Select 6 Lines Per Inch Line Spacing**	CODE/L	Selects 6 lines per inch line spacing. Line spacing of 6 lines per inch is selected at power on, or when the SYSTEM RESET switch is operated; forms length is set at 66 lines, with 61 lines printed.
Set Unattended Mode (SDLC Only)	CODE/Z (CODE/W for Belgian; CODE/V for Austrian/ German keyboard)	This sequence can be used when unattended terminal operation is desired. In this mode, an error response is sent to the CPU immediately if a recoverable output device error occurs (for example, card punch out of cards). (This error response would normally be sent after a three-minute timeout).
Disconnect or Equalize Line	CODE/CNCL	The 3776 transmits DLE EOT, and disconnects the switched communication link. If a 4800 BPS Integrated Modem (non-switched) is installed, CODE/CNCL initiates an automatic modem equalization process.

*Hold the CODE key down and press the character key shown to select the function.

**These CODE key functions can be selected only when the terminal is in local mode (the PROCEED indicator is on and all other indicators are off, except for the CPU SELECT indicator which may be on). The terminal enters local mode after power on, and after you end an active job.

***These CODE key functions can be selected when the terminal is in Local mode, or when a dual data path job is running.

Figure 2-7. Code Key Functions (Part 3 of 4)

FUNCTION	SELECTION*	DESCRIPTION
Reset Indicators	CODE/RESET	Resets the OPRN (Operation) CHECK, SYSTEM CHECK, CPU SELECT, Numeric Position Readout indicators, and any input or output device indicators that are on after an error. Refer to "Operating Controls" for a description of these indicators. Refer to Chapter 3 for NPR codes and recovery from an error. The following summarizes the CODE/RESET function when the OPRN CHECK, SYSTEM CHECK, or CPU SELECT indicators are on: SYSTEM CHECK on: The job has stopped. The CODE/RESET function returns the terminal to Local mode, if the other job is not active. OPRN CHECK on: A. The job stopped due to an input or output device not ready condition, or transmission retries when using the communications line. The CODE/RESET function turns off the indicators, but does not clear the error condition. Use the error recovery procedures in Chapter 3 to correct the error and continue the job. B. The job stopped due to an end-of-diskette when writing to or reading from the diskette, or due to all labels being used. After you have replaced the diskette, the CODE/RESET function indicates to the terminal that another diskette has been installed, and the job continues. CPU SELECT on: The CODE/RESET function resets the indicator.
Stop Job	CODE and START JOB/ STOP JOB	Stops the current operator or system defined job. If operating on line in SDLC mode, the terminal does not enter local mode until 'UNBIND' is received from the host CPU. In BSC mode, the terminal returns to local mode.
Stop Dual	CODE and START DUAL/ STOP DUAL	Stops the dual data path job. (see "Dual Data Path").

*Hold the CODE key down and press the character key shown to select the function.

Figure 2-7. Code Key Functions (Part 4 of 4)

Extended CODE Key Functions

| The terminal must be in local mode to execute an extended CODE key function.

1 Hold the CODE key down and press the numeric "0" key to select extended CODE key functions; release the CODE key after entering the "0".

2 The character(s) you enter after the "0" selects the extended CODE key function. These functions, and the characters entered to select them are listed in Figure 2-8.

3 The characters entered to select the function display in the readout indicators (02i, Create Exchange Diskette, displays 021). Check these indicators to verify that the correct function was selected.

Note: The function cancels (does not execute) if you press the RESET key instead of the EOM key.

4 The function executes when you press the EOM key.

For example, to select the Clear Diskette 1 function:

1. Hold the CODE key down, and press the numeric "0" key; then, release the CODE key.
2. Enter a numeric "1" character from the keyboard.
3. The number "1" displays in the numeric position readout indicators.
4. Press the EOM key, and the Clear Diskette 1 function executes.

Figure 2-8 describes the extended CODE key functions.

FUNCTION	SELECTION*	DESCRIPTION
Clear Diskette #1	CODE/01	Deletes all data sets on diskette #1, with the exception of the operator job definition data set.
Create Diskette #1 (3770)	CODE/02	Deletes all data sets on diskette #1, including the operator job definition data set, and creates the diskette as a 3770 diskette (owner ID in VOL1 label is '3770'). If you want to specify a Volume ID field other than '3770' in the VOL1 label, key in the desired identification (up to 6 alphabetic or numeric characters preceded by a comma). For example, the sequence would be: CODE/02, XXXXXX (where X is any character A through Z or 0 through 9).
Create Diskette #1 (Exchange)	CODE/02I	Deletes all data sets on diskette #1, including the operator job definition data set, and creates the diskette as a 3770 exchange diskette (owner ID in VOL1 label is '377X' if BSC, or blanks if SDLC). The number 21 displays in the NPR before the EOM key is pressed. If you want to specify a Volume ID field other than '3770' in the VOL1 label, key in the desired identification (up to 6 alphabetic or numeric characters preceded by a comma). For example, the sequence would be: CODE/02i, XXXXXX (where X is any character A through Z or 0 through 9). Using SDLC, no OJDR data set is defined.
Write Operator Defined Jobs to Diskette 1	CODE/03	Writes a data set of the 5 operator defined jobs onto diskette #1. The data set name is OJDR. For SDLC exchange mode diskettes, an OJDR data set is not defined.

Change Data Set Name or Status on Diskette 1	CODE/04	CHANGE NAME:
		
		After entering the 04 and pressing EOM:
		
		A. Type in two data set names separated by a / character. The first name is the name now on the diskette, and the second name is the new name. For example, to change the data set name, AA00 to BB00, you would enter AA00/BB00.
		B. Press the EOM key and the data set name changes.
		
		CHANGE STATUS:
		
		After entering the 04 and pressing EOM, wait for the PROCEED indicator to turn on, and:
		
		A. Enter the data set file name.
		B. Enter the character shown below to select the status:
		
		    A Change status to active
		    I Change status to inactive (bypass)
		    C Change status to multivolume (continued on another diskette)
		    L Change status to last diskette of a multivolume data set
		    S Change status to single (not multivolume) data set
		
		    For example, to change data set BB00 to inactive, you would enter BB00I.
		
		C. Press the EOM key and the data set status changes.
		
		Note: PRINT VIEW can be used to print out what has been entered. An error cannot be corrected with the edit keys; if you make a mistake, press RESET and start over.

Select BSC Online Test Mode	CODE/05	The terminal enters Binary Synchronous Communications Online Test Mode. These tests are described in Appendix B.
SDLC Print Link Test	CODE/05	Prints out contents of SDLC Print Link Test counter, the last link level address received, and the last command received.
Select Communications Test Mode	CODE/06	The terminal enters communication test mode. Use the procedures described in Chapter 3, "Problem Identification Procedures" to run these tests.
Print Test	CODE/07	The printer can be tested to ensure that it is operating properly by use of the Print test. This test prints a predetermined pattern of all characters. Once started, printing continues until you stop the job (hold the CODE key down and press START JOB), then press the Return key.

*With the terminal in local mode, hold the CODE key down, enter a numeric 0, release the CODE key, and enter the second digit to select the desired function.

Figure 2-8. Extended Code Key Functions

Chapter 3. Error Recovery and Problem Identification

Error recovery and problem identification procedures assist in recovering from an error condition that interruptec system operation, or assist in determining when system maintenance is required.

The objectives of the error recovery and problem identification procedures are:

- To identify the cause cf the error status
- To correct the error condition and restart system operation
- To keep a log (record) of error interrupts to assist maintenance personnel in trouble diagnosis.

Restarting a Job Following an Error

Use this procedure to restart system operation following an error stop:

1 Observe the operator panel indicators that are on.

- Either the SYSTEM CHECK or the OPRN (Operational) CHECK indicator will be on. SYSTEM CHECK indicates that the job is ended.
- If an input or output device error occurred, the operator panel indicator for the device in error remains on, the other input and output indicators turn off.
- The number displayed in the readout indicators (NPR) identifies the error type. These numbers and the recovery procedure for the error are listed in the "Numeric Position Readout (NPR) Codes" section.

2 Scan the list of codes in the "Numeric Position Readout (NPR) Codes" section, and perform the recovery procedure listed with the code number.

Note: Return to step 3 of this procedure if the recovery procedure is unsuccessful.

3 If errors continue after performing the procedure listed for the NPR number, and the procedure does not state that the problem identification tests are to be run, request maintenance on the terminal as described in the "Requesting Maintenance on the Terminal" section that follows.

Requesting Maintenance on the Terminal

When you request maintenance on the terminal, always:

1 Record the error conditions on the Trouble Report Form.

Note: Extra copies of the Trouble Report Form are included at the back of this publication.

2 Print the Error Log as described in the "Printing the Error Log" procedure that follows.

3 Save the copies of the Trouble Report Form and the error log printout; maintenance personnel need this information to analyze and repair the cause of the error condition.

Also save any input or output device media, such as cards or printer forms, that will provide an example of the error condition.

Printing the Error Log

To print and use the error log:

1 Hold the CODE key down, and press the numeric "2" key.
2 The error log prints. If the error log does not print, operate the SYSTEM RESET switch and repeat Step 1.
3 Save the error log printout; maintenance personnel use this log in determining the cause of machine failures. the time and date should be written on the printout.
4 This part of the error log printout is for the operator's information:

The last five (three-digit) numbers of the printout is a list of the readout indicator numbers for the last five errors that occurred on the terminal. The first number in the list identifies the last error that occurred on the terminal; the last number in the list identifies the fifth-to-last error that occurred on the terminal.

The "Numeric Position Readout (NPR) Codes" section in this chapter lists the readout indicator numbers and describes the condition that each of the numbers identifies.

Using the Trouble Report Form

Use the report form (shown in Figure 3-1) to record information on the status of the system when an error interruption occurs. Maintenance personnel need this system status information to analyze and repair the cause of system failures. Several copies of the trouble report form are included at the back of this manual.

1 Circle the operator panel indicators and switches that are on before performing any error recovery procedures:
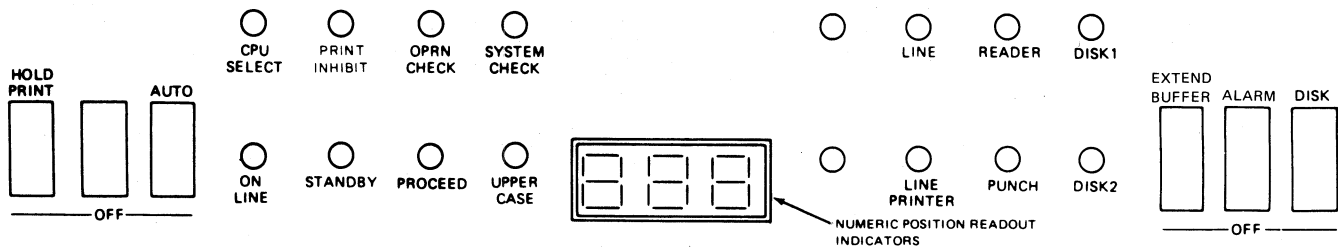
2 ———— ———— ———— Enter the number that is displayed in the readout (NPR) indicators.
3 Circle the position of these auxiliary operator panel switches:

    TALK–DATA   BSC–SDLC   NORMAL–HALF SPEED

4 Circle the input and output devices selected in this job setup:

    LINE   CARD READER   DISK 1   DISK 2
    LINE PRINTER   CARD PUNCH

5 Circle the features selected in this job setup:

    TRANSPARENT MODE   COMPRESS   DELETE DATA SETS
    MONOCASE   MANUAL DISCONNECT   INQUIRY MODE
    IGNORE ETX/EOT   SNBU

6 Print the error log: (A) Hold the CODE key down, and press the numeric "2" key, and (B) the error log prints.
  If the error log does not print, operate the SYSTEM RESET switch and repeat step A.
7 Comments (additional information or results of "Problem Identification Tests"):

Figure 3-1. Trouble Report Form

Numeric Position Readout (NPR) Codes

When an error occurs and the OPRN CHECK (Operational Check) or SYSTEM CHECK indicator is on:

1. If the Audible Alarm sounds, press the RESET key to turn it off.
2. Scan this list of NPR codes to locate the code number displayed in the NPR.
3. Perform the recovery procedure described by the code.
4. Press CODE and RESET to reset the NPR and clear the error.

Note: Some of the NPR codes are listed more than once. In these cases, use the recovery procedure that applies to the job you are running. For example, code 244 applies to both the 2502 and 3501 card readers. When this code occurs, you would use the procedure that applies to the specific card reader in use by the job.

If an NPR code number that is not listed here appears, a machine malfunction probably occurred and you should request machine maintenance, as described under "Requesting Maintenance on the Terminal".

More than one error may occur at a time, but only one displays in the NPR. The displayed error, and any other errors will appear in the error log printout (see "Printing the Error Log").

For communication line jobs where the error causes the job to end, the error code remains in the NPR until CODE and RESET is pressed, or until the terminal accepts another device selection from the central processor.

If a printer system check condition occurs (SYSTEM CHECK and LINE PRINTER lights on), the printer forms may be out of sync with the vertical forms definition. You should realign the forms, manually moving the paper and using the Change Forms (CODE/8) before restarting the job.

CAUTION
When you hold the CODE key down and press the RESET key, the code displayed in the NPR clears, but the error condition remains. When this happens, the terminal appears to be in an undetermined state when attempting an operation without first correcting the cause of the error. For example, on 3776 terminals, code 260 displays when the HOLD PRINT switch is on. If CODE and RESET were pressed without turning the HOLD PRINT switch off, the code 260 display would clear, but with the HOLD PRINT switch still on, the terminal's speaker sounds when operation from the terminal's keyboard is attempted.

If the terminal appears to be in an undetermined state, check that:

- The operator panel switches are in the correct position
- The printer has not reached its maximum print position; if it has, press the RETURN key to return to the left margin.
- The input and output devices are in a ready condition; check for out of card or end of forms conditions.

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NPR CODE	DESCRIPTION	RECOVERY
– – 2	Timer failure (The first two readout positions are blank). This error may occur when running communication line tests.	If the error occurred while running test 0, request machine maintenance. If the error occurred while running test 2, refer to "Problem Identification Procedures" for operator action to be taken.
000	An error has occurred during running of the functional tests after power is turned on.	Turn power off, and back on; request machine maintenance if the error continues.
001 002 003	These numbers normally do not display long enough to be seen, but may display for an extended time during power on. If so, perform the recovery procedure.	If the code displays for an extended time, turn power off and back on. Request machine maintenance if the error continues.
004	This display normally remains for a few seconds during power on. If the display remains on, perform the error recovery procedure.	If the display remains for an extended time, turn power off and back on. Request machine maintenance if the error continues.
005	Power On Test Display. This number normally does not display long enough to be seen. If the display remains for an extended time, perform the error recovery procedure.	If the displays remains for an extended time, turn power off and back on. Request machine maintenance if the error continues.
006	Power On Test Display. This number displays for a few seconds during power on. If the display remains for an extended time, perform the error recovery procedure.	If the display remains for an extended time, turn power off and back on. Request machine maintenance if the error continues.
1 – – 2 – – 3 – – 4 – – 5 – – 6 – – 7 – –	**Power On Test Error Display (the last two readout positions are blank). These numbers appear momentarily during power on checking. If the display remains on, perform the recovery procedure.**	Turn power off and back on. If the error continues, request machine maintenance.
206	Diskette 1, the data set name to be written already exists on the diskette, and this is a basic exchange diskette. To write this data set, it would have to be segmented, and this is not possible on a basic exchange diskette.	Use another (unique) data set name, recreate the diskette, or replace the diskette, and restart the job.
207	Diskette 1, FM header incompatibility. An attempt was made either to write an exchange data set on a 3770 mode diskette or to write a non-exchange data set on an exchange mode diskette from the line using SDLC, or an attempt was made to mix compressed and non-compressed data in the same data set.	Replace the diskette, or create this diskette as an exchange or non-exchange diskette, and restart the job, or don't attempt to mix compressed and non-compressed data.
208	Diskette 1 incompatibility error. Using BSC: An attempt was made to read or write a data set having a "T" in the Exchange Type Indicator (refer to List Diskette CODE key function in Chapter 2). This code can also occur if the data set block size read from the diskette does not agree with the EXTEND BUFFER switch setting. *Using SDLC:* An attempt was made to read from or write into a data set having an "E" or "Blank" in the Exchange Type Indicator (refer to List Diskette CODE Key function in Chapter 2), or you attempted to clear a diskette (CODE/01) that does not have 3770 or blank in the volume label Owner ID field.	Replace the diskette, or do a Create Diskette CODE key function (if data on the diskette is no longer needed), and restart the job.
211	Diskette No. 1, invalid record number specified at job start time. The record number specified is greater than the data set size (file).	Hold the CODE key down and press the RESET key to return to local mode. Use the List Diskette Status CODE key function (see "Using the Code Key" in Chapter 2) to determine the number of records in the data set.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 1 of 13)

NPR CODE	DESCRIPTION	RECOVERY
212	Diskette No. 1, physical record length is not equal to 128 characters per sector. This diskette cannot be processed by a 3770.	Replace the diskette.
213	Diskette No. 1, wrong record length. The diskette record length is not 256, and the EXTEND BUFFER switch is off.	Turn the EXTEND BUFFER switch on, do a System Reset, and restart the job. If the error reoccurs, the diskette record length is such that it cannot be processed on the 3776.
214	Diskette No. 1, wrong record length. The diskette record length is not 512 and the EXTEND BUFFER switch is on.	Turn the EXTEND BUFFER switch off, do a System Reset, and restart the job. If the error reoccurs, the diskette record length is such that it cannot be processed on the 3776.
215	Diskette 1, incompatibility error. *Using SDLC:* Data can be written onto this diskette only from the line.	Replace the diskette, and restart the job.
216	Diskette No. 1, relocated diskette sector detected while reading a non-3770 data set (file).	The sector can be skipped and reading continued with the next sequential sector by pressing CODE and RESET, or the job can be discontinued.
217	Incorrect Change Forms Procedure. The HOLD PRINT switch was not on, or a previously undefined operator job was selected.	Press CODE/RESET to reset the NPR, and retry the CODE/8 (Change Forms) procedure (HOLD PRINT switch on).
218	Diskette 2, the data set name to be written already exists on the diskette, and this is a basic exchange diskette. To write this data set, it would have to be segmented, and this is not possible on a basic exchange diskette.	Use another (unique) data set name, recreate the diskette, or replace the diskette, and restart the job.
219	Diskette 2, FM header incompatibility. An attempt was made either to write an exchange data set on a 3770 mode diskette or to write a non-exchange data set on an exchange mode diskette from the line using SDLC, or an attempt was made to mix compressed and non-compressed data in the same data set.	Replace the diskette, or create this diskette as an exchange or non-exchange diskette, and restart the job; or don't attempt to mix compressed and non-compressed data.
220	Diskette 2, incompatibility error. See code 208 for description.	Same as code 208.
222	Checking operation during power on. This number may display for a short time.	Request machine maintenance if the number displays longer than approximately one minute during power on.
223	Diskette No. 2, invalid record number specified at job start time. The record number specified is greater than the data set (file) size.	Same as code 211.
224	Diskette No. 2, the diskette physical record length is not equal to 128 characters per sector. This diskette cannot be processed by a 3770.	Replace the Diskette.
225	Diskette No. 2, wrong record length. The diskette record length is not 256, and the EXTEND BUFFER switch is off.	Turn the EXTEND BUFFER switch on, do a System Reset, and restart the job. If the error reoccurs, the diskette record length is such that the diskette cannot be processed on the 3776.
226	Diskette No. 2, wrong record length. The diskette record length is not 512 and the EXTEND BUFFER switch is on.	Turn the EXTEND BUFFER switch off, do a System Reset, and restart the job. If the error reoccurs, the diskette record length is such that the diskette cannot be processed on the 3776.
227	Diskette 2, incompatibility error. See code 215 for description.	Replace the diskette and restart the job.
228	Diskette No. 2, relocated diskette sector detected while reading a non-3770 data set (file).	The sector can be skipped and reading continued with the next sequential sector by pressing CODE and RESET, or the job can be discontinued.

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Figure 3-2. Numeric Position Readout (NPR) Codes (Part 2 of 13)

NPR CODE	DESCRIPTION	RECOVERY
232	Invalid job definition read from card reader.	Check the job definition card. The job identification number must be a number from 1 to 5. Correct the card and reenter the job definition. No verification of other information punched as described in Chapter 2 under "Entering an Operator Defined Job from the Card Reader" is done by the terminal.
233	Enter an ID (Identification) card.	Insert an ID card into the ID Reader, as described in Chapter 9, "Operating ID Reader."
234	Defective control Diskette sector read.	Request machine maintenance.
235	ID Reader, read error	1. Hold the CODE key down and press RESET to reset the error. 2. Read the ID card again, using the CODE key function as described in Chapter 2 "Using the CODE Key".
236	Keyboard parity error. The controller inserts a hyphen (–) into the controller buffer in place of the character in error.	Backspace (using the BUFFER BKSP key) to the error character, and enter the correct character. Press the RESET key to resume keying after the last character entered in the buffer, or continue keying from the corrected character.
242	3501 Card Reader emitter pulse error.	1. Locate the card read when the error occurred. If a card is under the read head, it is the failing card; otherwise, the top card in the stacker is the failing card. 2. Place the card located in Step 1 in the hopper at the bottom of the card deck. 3. Press the START key.
243	3501 Card Reader overrun.	Same as code 242.
243	2502 Card Reader overrun.	1. Remove cards from the hopper. 2. Open the reader cover and check for a card jam. Normally there is one card at the preread station. 3. Remove the top card from the stacker and check it for torn webbing, out of specification punching, or other damage. Replace if necessary. 4. Press the 2502 NPRO key. 5. Place any cards found in Step 2, the card from Step 3, and any card ejected in Step 4 in proper sequence at the bottom of the deck taken from the hopper. 6. Place card deck in hopper and press the START key.
244	3501 Card Reader invalid punch.	1. Locate the card read when the error occurred. If a card is under the read head, it is the failing card; otherwise, the top card in the stacker is the failing card. 2. Correct the card if any column has more than one punch in card rows 1 through 7. 3. Place the card located in Step 1 (or the corrected card) at the bottom of the card deck and replace the card deck in the hopper. 4. Press the START key.
244	2502 Card Reader validity check.	1. Remove the cards from the hopper. 2. Press the NPRO key. 3. Remove the two top cards from the stacker, and place them on the bottom of the deck removed from the hopper. 4. Check the bottom card of the deck for an invalid card code (more than one punch in rows 1 through 7 in any column), and correct any errors. 5. Place the card deck back in the hopper. 6. Press the START key.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 3 of 13)

NPR CODE	DESCRIPTION	RECOVERY
245	2502 Card Reader read check.	Same as code 243 for the 2502.
246	3501 Card Reader feed check.	Same as code 243 for the 3501.
246	2502 Card Reader feed check.	1. Remove the cards from the hopper, check for a damaged card, and replace if necessary. 2. Open the reader cover, check for and remove any card jam, and replace any damaged cards. 3. Press the NPRO key. 4. Place cards from steps 1, 2, and 3 in proper sequence at bottom of card deck, and place card deck back in the hopper. 5. Press the START key.
247	2502 Card Reader misregistration. This error occurs if trying to read punched cards in OMR mode, or if punched cards being read are punched between columns.	Check the position of the OMR switch, and perform the error recovery procedure described for code 243 for the 2502.
248	2502 Card Reader card late.	Same as code 243 for the 2502.
249	3501 Card Reader all holes punched, or trailing edge error.	1. Locate the card read when the error occurred. If a card is under the read head, it is the failing card; otherwise the top card in the stacker is the failing card. 2. Correct the card if one or more of the card columns has all holes punched. 3. Place the card back in the hopper and press the START key.
249	2502 Card Reader trailing edge error.	Same as code 243 for the 2502.
250	Printer sync check.	Hold the CODE key down and press RESET to clear the error, and restart the job. Request machine maintenance if the error continues.
251	Printer carrier motion error.	The terminal will retry indefinitely. Check the position of the type belt release lever (refer to Chapter 4). If the printer fails to start after 3 or 4 successive starts, request machine maintenance.
252	Printer thermal check. This disables the printer.	Request machine maintenance.
253	Printer paper jam.	Same as code 322.
254	Printer hammer fire error. The printer is disabled.	Request machine maintenance.
255 256 257 258 259	Machine check.	Hold the CODE key down and press RESET; restart the job. If the error continues, request machine maintenance.
260	Either the HOLD PRINT or the AUTO switch is on.	Set the HOLD PRINT and AUTO switches as required for the job (see Chapter 2 - -"Starting a Job"). When the switches are set correctly, the error clears and printing continues.
285	Diskette No. 2 not ready.	Same as code 347 with OPRN CHECK or SYSTEM CHECK.
286	Diskette No. 2 CRC error. This is either a diskette or a machine failure.	Refer to "Diskette Data Recovery Procedures" to recover data on the diskette.

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Figure 3-2. Numeric Position Readout (NPR) Codes (Part 4 of 13)

NPR CODE	DESCRIPTION	RECOVERY
287	Diskette No. 2 AM (address mark)/overrun error. This is either a diskette or a machine failure.	Refer to "Diskette Data Recovery Procedures" to recover data on the diskette.
288	Diskette No. 2 no record found. See error code 350 for description and recovery.	Refer to "Diskette Data Recovery Procedures".
289	Diskette No. 2 diskette buffer error. See error code 351 for description and recovery.	Refer to "Diskette Data Recovery Procedures".
290	Diskette No. 2 diskette buffer parity error. This is a machine error during a read or a write operation.	Refer to "Diskette Data Recovery Procedures" for information about possible continuation of the job using a different diskette, or request machine maintenance.
291	Diskette No. 2 diskette buffer timeout. This is a machine error during a read or a write operation.	Same as code 290.
292	*BSC:* Online transmission incomplete. The job was ended prematurely by the central processor, and the terminal has returned to Standby mode. *SDLC:* The central processor has ended the session abnormally and the terminal is no longer online (no longer bound), and is in Standby mode.	Restart the job, or the central processor may restart the job. This is not a normal job end and any data received by the terminal may be incomplete, but can be recovered.
293	Online buffer overrun (the controller buffer capacity was exceeded).	Ensure that the EXTEND BUFFER switch is in the proper position. Notify the operator at the central processor. Data received by the terminal is incomplete, and it is recommended that the operator discard the data received on this job.
294	Online. A mixture of transparent and non-transparent data blocks were received in the same job.	Discard the data received on this job, and notify the central processor operator.
295	Online transparency check. The terminal is transmitting, and a data link control character is included in the message text and the terminal is not in transparent mode.	Notify the operator at the central processor to discard the data received on this job. The terminal operator should correct the data and restart the job.
296	Diskette No. 1. The diskette cannot be processed by the 3776. (It does not have a VOL1 or HDR1 label.)	If the diskette no longer contains valid data from another system, it can be made usable on the 3776 via the Create Diskette CODE key function. Stop the job, and do the Create Diskette procedure as described in Chapter 2 under "Using the CODE Key", and restart the job.
297	Diskette No. 1 data set not present.	1. Determine that the correct diskette for the job is installed. 2. Perform a List Diskette Status operation to list the data sets on the diskette. 3. Place the proper diskette in diskette device 1 and restart the job.
298	Diskette No. 1 inactive data set. This data set was purposely tagged inactive.	If you wish, the status can be changed to active by using the Change Status CODE key function, if this is a 3770 diskette.
299	Diskette No. 1, diskette full/write. The end of the data set has been reached and is marked continued. Note: If it is not desired to keep this data set marked continued (for unattended considerations) use the Change Status CODE key function to change the status.	Either: A. Insert another diskette.* Hold the CODE key down and press RESET to continue the job. B. End the job (hold the CODE key down and press the appropriate START JOB key). *Caution: Replacement diskettes must not be full. Also, if the data set name is already present, data integrity will be lost due to the data set being reopened. For online receive jobs, the data set name may be incremented.
300	Diskette No. 1 end of volume/read. This condition occurs when the end of a continued data set is reached.	1. Insert the diskette containing the next sequential volume and press CODE and RESET to continue the job, or 2. End the job by pressing CODE and START JOB/STOP JOB.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 5 of 13)

NPR CODE	DESCRIPTION	RECOVERY
301	Diskette No. 1 multivolume data set (file). The data set is contained on more than one diskette. This indication occurs at Start Job time to alert the operator to install the diskettes in the proper sequence. This code can also occur if the machine is expecting a multivolume, but the present volume is not marked multivolume.	When ready to continue, hold the CODE key down and press RESET. The job continues, or end the job by holding the CODE key down and pressing START JOB/STOP JOB.
302	Diskette 1 is either a non-3770 diskette, or one created as an exchange diskette using SDLC. The 3776 cannot write BSC data sets on this diskette. This code can also occur if the diskette was processed on a 3770 programmable terminal.	Install a 3770-created diskette, or if data on this diskette is no longer needed, create this diskette as described in Chapter 2 under "Using the CODE Key".
303	Diskette No. 1, ASCII/EBCDIC compatibility error. An ASCII diskette is installed on an EBCDIC machine, or an EBCDIC diskette is installed on an ASCII machine.	Install the correct diskette, or create this diskette as described in Chapter 2 under "Using the CODE Key".
304	Diskette 1; during Change Name CODE key function, the new data set name is already present on the diskette. During a Read or Write OJDR CODE key function, a non-3770 or SDLC exchange diskette is installed.	Use a unique **data set name.** Install a valid 3770 diskette containing an OJDR data set label.
305	Diskette No. 1 all data set labels full. Once all data set labels are used, no more data set (files) can be added to the diskette. This is described in more detail in Chapter 2 under "Diskette Storage Device Jobs".	Same as code 299.
306	Diskette No. 1 has tracks with no Address Marks.	No more attempts should be made to write on the diskette. If this was a write operation, data written up to this point can be read. If it was a read operation, additional data on this data set may be retrieved as described in this chapter under **"Diskette Data Recovery Procedures"**. Further diskette data in a different data set can also be retrieved. This can also occur if the diskette door is opened while the diskette is accessing. If so, retry the operation.
308	Diskette No. 2 cannot be processed by a 3770. (It does not have a VOL1 or HDR1 label).	Same as code 296.
309	Diskette No. 2 data set (file) not present.	1. Remove the diskette from device 2 and place it on device 1. 2. Perform a List Diskette Status operation to determine if this is the correct diskette for the job. 3. When the correct diskette is found, place it in diskette device 2. 4. Restart the job.
310	Diskette No. 2 inactive data set. This data set (file) was purposely tagged inactive.	Same as code 298.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 6 of 13)

NPR CODE	DESCRIPTION	RECOVERY
311	Diskette No. 2, diskette full/write. The end of the data set (file) has been reached, and the data set is marked continued.	Either: A. Insert another diskette* in drive 1, if not already done (except for diskette-to-diskette jobs) and press CODE/RESET to continue writing on diskette 1. Place another diskette* on drive 2 so that it will be ready if diskette 1 fills again. For diskette-to-diskette jobs, place another diskette on drive 2 and press CODE/RESET, or, B. End the job by pressing CODE/START JOB or CODE/START DUAL. *Caution: Replacement diskettes must not be full. Also, if the data set name is already present, data integrity will be lost due to the data set being reopened; for online receive jobs, the data set name may be incremented.
312	Diskette No. 2 end of volume/read. This condition occurs when the end of a continued data set (file) is reached.	1. Install the next volume in device 1 if not already done, and press CODE/RESET, or 2. End the job by pressing CODE/START JOB.
313	Diskette No. 2 multivolume data set (file). See NPR code 301 for description.	Same as code 301.
314	**Diskette 2 is either a non-3770 diskette, or one created as an exchange diskette using SDLC. The 3776 cannot write BSC data sets on this diskette. This code can also occur if the diskette was processed on a 3770 programmable terminal.**	**Same as code 302.**
315	Diskette No. 2, ASCII/EBCDIC compatibility error. An ASCII diskette is installed on an EBCDIC machine, or an EBCDIC diskette is installed on an ASCII machine.	Install the correct diskette, or create this diskette as described in Chapter 2 under "Using the CODE Key".
316	Diskette No. 1 or 2, non-3770 diskette exchange data set. The diskette data set (file) does not conform to 3770 diskette exchange format.	Check the diskette label using the List Disk Status CODE key function to be sure that the correct diskette is installed.
317	Diskette No. 2 all data set labels full. See NPR code 305 for description.	Same as code 299.
318	Diskette No. 2 has tracks with no Address Marks.	Same as code 306.
319	Diskette No. 1 or 2, data set is write protected. A 3770 Diskette is installed, but the requested data set cannot be reopened because the write protect indicator was set by another system. The 3770 cannot set nor clear the write protect indicator.	Check that the correct Diskette is installed.
320	2502 Card Reader Attention Condition (not ready).	1. Empty the stacker, if full. 2. Reload the hopper, if empty. 3. Open the top cover and check that the post read station cover is closed. Close the top cover. 4. Press the START key. If the error occurs after the 2502 has started feeding cards: 1. Press the STOP key. 2. Remove cards from the hopper. 3. Press the NPRO key. 4. Place the cards that fed into the stacker in Step 3 on the bottom of the card deck and reload the hopper. 5. Press the START key.
320	3501 Card Reader hopper check.	1. Determine that cards were loaded in the hopper. 2. Check for and repair damaged cards. 3. Reload the hopper. 4. Press the START key to continue.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 7 of 13)

NPR CODE	DESCRIPTION	RECOVERY
321	2502 Card Reader OMR (Optical Mark Read) check. A card with an OMR error is offset from the other cards in the stacker.	1. Remove any offset cards from the stacker and inspect for marks that are too light and for smudged or incomplete erasures of OMR marks. 2. Correct any errors. 3. Open the top cover and determine if the OMR lamp is on when the Mode switch is in the MARK or MARK-PUNCH position. Request machine maintenance if the lamp is not on. 4. Place corrected cards in the hopper. 5. Restart the job.
322	Printer cover open, or throat open.	1. Visually check for and correct: a printer cover open, a paper jam, the throat open, or the printer being out of forms. The HOLD PRINT switch should be turned on before the printer cover is opened. Turn the HOLD PRINT switch off to continue printing. For online jobs, the job will terminate after the HOLD PRINT is on for 3 minutes. Press RESET before the 3-minute timeout, and every 3 minutes thereafter to prevent the job from ending. 2. A possible hardware error condition exists if none of the conditions in Step 1 was found. Notify the central processor operator, discard data received on this job, and restart the job. Request machine maintenance if the problem reoccurs when you restart the job.
323	Printer end of forms.	You can continue printing on the form that remains in the printer (approximately 10 inches) one line at a time by using this procedure (for each line). **Note:** Print quality at the bottom 8 inches of paper may be reduced because the paper is not firmly held. 1. Hold the CODE key down and press RESET. A line prints and the code displays again. 2. Repeat Step 1 for each line desired except the last one. 3. Turn the HOLD PRINT switch on. For online jobs, the job will terminate after the HOLD PRINT is on for 3 minutes. Press RESET before the 3-minute timeout, and every 3 minutes thereafter to prevent the job from ending. 4. Press CODE and RESET (code 260 displays and a line prints. Install forms in the printer. 5. Turn the HOLD PRINT switch off to continue.
324 325	Machine Check.	Restart the job. Request machine maintenance if the error continues.
326	Machine Check.	If this error occurs immediately after power on, turn power off and back on. Request machine maintenance if the error continues. Otherwise, press CODE and RESET to clear the error and restart the job. Request machine maintenance if the error continues.
327	Machine Check, overrun.	Discard data received on this job, and notify the central processor operator. The terminal returns to Standby mode, and the terminal operator or central processor can restart the job. If using a switched communication network, redial the connection before restarting the job. Request machine maintenance if the error continues when the job is restarted.
328	Machine Check, underrun.	Same as code 327.
329	Machine Check, invalid B-status.	Same as code 327.

ERP

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 8 of 13)

NPR CODE	DESCRIPTION	RECOVERY
330	Machine Check, timeout write.	Discard data received on this job and notify the central processor operator. The terminal returns to Standby mode and the terminal operator or the central processor can restart the job. If the error continues, refer to the Problem Identification section and run "Test 0: Terminal Communications Test" only. If test 0 fails, request maintenance on the terminal; if test 0 does not fail, request maintenance on the modem.
331	SDLC read timeout. The machine has been receiving in sync for more than 25 seconds without receiving flag characters.	Notify the central processor operator and restart the job. Request machine maintenance if the error continues.
331	Machine Check, timeout read.	Same as code 327.
332	Online transmit line check. This is possibly a communications line failure. Fifteen negative responses to data block checking were received.	Use the "Problem Identification Procedures" in this chapter.
333	Online receive line check. This is possibly a communications line problem.	Use the "Problem Identification Procedures" in this chapter.
334	SDLC idle timeout. A line job is active and there has been no line activity for about 20 seconds. Using a switched line and auto disconnect, the line is disconnected.	Notify the central processor operator and restart the job.
334	Online (BSC): the communications link was not established after 15 bid attempts. No response or invalid response received.	Use the "Problem Identification Procedures" in this chapter.
335	SDLC primary abort. The central processor has terminated the job.	Notify the central processor operator and restart the job.
335	Online (BSC): No response or invalid response to terminal-transmitted data block, or the terminal failed to receive further data from the central processor.	Use the "Problem Identification Procedures" in this chapter.
336	Online; Record check. This is possibly a communications line problem. A count of 15 wrong acknowledgments to data block checking were received.	Use the "Problem Identification Procedures" in this chapter.
337	Online: Error recovery timeout. About three minutes has elapsed since an attention condition (such as printer out of forms) was detected, and the attention condition was not corrected.	Make the affected device ready and restart the job. Either the terminal operator or the central processor can restart the job.
338	Online: A data communication equipment interruption occurred; possibly a modem or communications line problem.	If the error occurs while dialing, redial the connection. A job restart is not required; the job starts when the connection is established. If the error occurs when a job is running, notify the central processor operator and restart the job. Request maintenance on the modem if the error continues.
338	Offline: Data set (modem) ready not present 10 seconds after power on or System Reset.	Use the "Problem Identification Procedures" in this chapter, or press CODE/RESET to bypass the error.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 9 of 13)

NPR CODE	DESCRIPTION	RECOVERY
339	3521 Card Punch print (sync check) error.	*For Local mode jobs:* The last partially-printed card in the stacker is the card in error; however, if the last card has all 80 columns printed, the error could be in column 80 of the card, or in column 1 of the following card (the top card in the stacker). *When Punching:* 1. Press the NPRO key (a blank card should be ejected). 2. Remove the two top cards from the stacker, discard the punched card, and place the blank card back in the hopper. 3. Press the 3521 START key. *When Reading:* 1. Remove the top card from the stacker. 2. Press the NPRO key. 3. Replace cards from steps 1 and 2 back in the hopper in the proper sequence. 4. Press the START key. *For On-line jobs:* For online jobs, printing stops for the remainder of the card, and punching or reading continues normally. If printing accuracy is not important to the job, the card in error and the remaining unprinted cards can be printed later in Local mode. 1. When the job ends press SYSTEM RESET on the auxiliary operator panel. 2. Make the 3521 ready. 3. Start the next job. 4. If problems still occur, request maintenance on the terminal. 5. To continue productive work, inhibit printing and continue the job.
340	3521 Card Punch transport sync check.	*When Punching:* 1. Remove the top card from the stacker and discard it. 2. Press NPRO and remove the ejected blank card from the stacker. 3. Press the START key. *When Reading:* 1. Remove the top card from the stacker. 2. Press the NPRO key. 3. Replace cards from steps 1 and 2 back in the hopper in the proper sequence. 4. Press the START key.
341	3521 Card Punch eject/increment check.	Same as code 340.
342	3521 Card Punch with Read Feature, read sensor error.	Same as code 340.
342	3521 Card Punch (used as a punch), all holes punched error.	1. Remove and discard top card from the stacker. 2. Press the NPRO key, and discard the card that feeds into the stacker. 3. Press the START key.
343	3521 Card Punch feed check.	1. Remove cards from the hopper. 2. Check for a card jam in the hopper or the transport area. 3. Repair or replace any damaged cards if reading; discard any damaged cards if punching. 4. Press the NPRO key. 5. Press the START key.

ERP

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 10 of 13)

NPR CODE	DESCRIPTION	RECOVERY
344	3521 Card Punch punch error. This error can occur if the 3521 punched a card incorrectly, or if a punched card was erroneously placed in the hopper with blank cards to be punched.	1. Remove the top card from the stacker and discard it. 2. Press the NPRO key and remove the blank card from the stacker. 3. Press the START key to punch a new card to replace the card in error.
345	3521 Card Punch overrun or interrupt check.	Same as code 340.
346	3521 Card Punch invalid character read or punched. This error occurs during a read job if a card containing an invalid character is read. It occurs during a punch job if the 3521 punches a column incorrectly, or if a punched card was erroneously mixed in with blank cards to be punched.	When Reading: 1. Remove the top card from the stacker and inspect for invalid card code (more than one punch in any column in card rows 1 through 7). 2. Press the NPRO key and remove the card ejected into the stacker. 3. Place the corrected card from step 1 and the card from step 2, in sequence, on the bottom of the card deck, and replace in hopper. 4. Press the START key. When Punching: Same as Code 344.
347 * OPRN CHECK Light On	Diskette No. 1 not ready at Job Start.	1. Determine that a diskette is installed and the Diskette Device cover is labeled closed. When correctly installed, the diskette label is at the top facing the front. 2. The DISK 1 light turns off when the diskette is installed, the Diskette Device cover is latched closed, and the diskette is turning at the proper speed. Note: If a diskette operation starts before the diskette is turning at the proper speed, error code 347 automatically clears when the diskette is at the proper speed (about 10 seconds is required).
347 * SYS- TEM CHECK Light On	Diskette No. 1 not ready, job in progress. The job is terminated.	The diskette door must not be opened after the job is started, except to install another volume when so indicated by codes 299/311, 300/312, 301/313, or 305/317. If a diskette write operation was in progress, all data written to this data set (file) is lost because the data set label could not be written. Refer to "Diskette Data Recovery Procedures" for additional information. Check that the Diskette Device door is latched closed; if it is, request machine maintenance.
348 *	Diskette No. 1 CRC error. This is either a diskette or a machine failure.	Refer to "Diskette Data Recovery Procedures".
349 *	Diskette No. 1 AM (Address Mark)/overrun error. This is either a diskette or a machine failure.	Refer to "Diskette Data Recovery Procedures".
350 *	Diskette No. 1 no record found. The required diskette sector cannot be located, due to a diskette or a machine failure. If using a non-3770 diskette, the sequence number in the volume label may be incorrect; if so, the diskette cannot be processed on a 3770 nor can the Diskette Create function be performed.	Refer to "Diskette Data Recovery Procedures".
351 *	Diskette No. 1 buffer compare error. This is either a diskette or a machine failure that occurred on a write operation. Data written onto the diskette and read back does not compare to that contained in the diskette buffer.	Refer to "Diskette Data Recovery Procedures".

*These NPR codes also apply to the control diskette unit if they occur during a power on sequence.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 11 of 13)

NPR CODE	DESCRIPTION	RECOVERY
352 *	Diskette No. 1 buffer parity error. This is a machine error during a read or write operation.	Refer to "Diskette Data Recovery Procedures" for information about possible continuation of the job using a different diskette, or request machine maintenance.
353 *	Diskette No. 1 buffer timeout error. This is a machine error during a read or a write operation.	Same as code 352.
354	3521 Card Punch power off occurred.	1. Stop the job. Hold the CODE key down and press START JOB (or START DUAL if card I/O is being used by the dual job). 2. Turn the power switch on if it is off. 3. Plug in the power cord (at the back) if it is not plugged. 4. If step 2 or 3 corrects the problem, hold the CODE key down and press RESET and restart the job. 5. If step 2 or 3 does not correct the problem, request machine maintenance. **Note: If the 3521 has the Read Feature, allow several seconds after power on to allow the 3521's read head to warm up.**
450	Diskette 1 is a 3770 diskette. The 3776 will not compress data from a diskette with owner ID = 3770 or **377X.**	Install a non-3770 exchange diskette (owner ID other than 3770 or 377X) or run the job without specifying the compress option.
462	Diskette 2 is a 3770 diskette. The 3776 will not compress data from a diskette with owner ID = 3770 or 377X.	Same as code 450.
555	Remote power off sequence failure. This error code indicates that an error occurred when a remote power off sequence was received from the central processor.	A. If your terminal does not have the remote power off feature, operate the SYSTEM RESET switch and continue operation. Notify the central processor operator that the error occurred. B. If your terminal has the remote power off feature, operate the SYSTEM RESET switch and continue operation. Request machine maintenance if the error continues.
700 70-	Power on test display. Power on test display (last position blank).	If either of these numbers displays for an extended time (they will display for a few seconds during power on), turn power off and back on. Request machine maintenance if the error continues.
776	The terminal has been placed in transmit mode by receiving a change direction while in brackets, and the operator has tried to start a receive job (SDLC).	Start a transmit job.
777	Invalid Start Job procedure, or invalid entry during job definition.	Hold the CODE key down, press the RESET key, and restart or redefine the job.
778	A message has been entered into the buffer and a non-communications job has been started (see "Logon Message"); or, for SDLC, only keyboard entry is allowed by the application.	For BSC or SDLC, either: 1. Start a communications line job to send the keyed-in message, or 2. Press CODE/RESET and then press CNCL to delete the message and restart the job. For SDLC Only: 1. Enter keyboard data followed by EOM to send a message to the host CPU application.

*These NPR codes also apply to the control diskette unit if they occur during a power on sequence.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 12 of 13)

NPR CODE	DESCRIPTION	RECOVERY
801	Communication Test Problem, no clear to send.	
802	Communication Test Problem, transmit clock.	
803	Communication Test Problem, failure to recognize any received data.	
806	Communication Test Problem, communication driver card problem.	
807	Communication Test Problem, receiving data before any data is transmitted.	
808	Communication Test Problem, first data compare error.	A. If any of these errors occur while running test 0, request machine maintenance.
809	Communication Test Problem, random data compare error.	B. If any of these occur while running test 2, refer to "Problem Identification Procedures" in this chapter for the operator action to be taken.
810	Communication Test Problem, communication driver card problem.	
811	Communication Test Problem, communication driver card problem.	Note: All terminals can run communication test 0. Not all terminals have modems attached that are capable of running test 2. This is described in more detail in this chapter under "Problem Identification Procedures".
812	Communication Test Problem, SDLC or overrun.	
813	Communication Test Problem, communication driver card problem.	
814	Communication Test Problem, communication driver card problem.	
815	Communication Test Problem, communication driver card problem.	
838	Communication Test Problem, DSR and/or CTS glitching.	
888	Power on or System Reset test error. This number displays if the HOLD PRINT switch or Keylock is on at power on or when SYSTEM RESET is operated.	Turn off the HOLD PRINT switch and/or the Keylock.
999	Buffer full condition. This indicates that 256 characters have been entered (refer to Chapter 2, "Logon Message").	The data is transmitted when an on-line job is started, or you can delete the message by pressing the CNCL key.

Figure 3-2. Numeric Position Readout (NPR) Codes (Part 13 of 13)

Diskette Data Recovery Procedures

General Data Recovery Procedure

A. Verify that the proper diskette is being used and retry the job to see if the failure continues.

B. If problems still occur, try the following:

1. Replace the current diskette with a spare one.
2. Perform a Create Diskette (CODE/02) function.
3. Start a system-defined card reader or line-to-diskette No. 1 job. When this job ends,
4. Start a system-defined diskette 1-to-printer job. End the job and do a List Diskette (CODE/5) function.

If all functions appear satisfactory, you may have a problem with the original diskette on which the error occurred. If errors occur during the above exercise, a machine failure may be causing the error, and you should request machine maintenance.

C. If the failure appears to be caused by the diskette, continue as described under "Diskette Failure During a Read Operation", if reading, or as described under "Diskette Failure During a Write Operation", if writing.

In general, if diskette errors are encountered, you should attempt to copy existing data sets to a new volume, if a second Diskette Device is present, and discontinue use of the failing diskette. If a second Diskette Device is present, the job may also be retried using the other Diskette Device.

Diskette Failure During a Read Operation

A. If the error occurs before the first buffer (record) is read, the problem is probably on track 0. Retry the operation. If this is unsuccessful, all data on the diskette is probably lost because the desired data set (file) label cannot be read. Depending upon which sector is bad, other labels on track 0 can possibly be read and hence the data retrieved.

B. If data has already been read from the diskette before the error occurred, only those records that are not readable need be lost. Determine the last record that is readable by rerunning the job and watching the record number in the NPR.

Note: If NPR code 306 (diskette 1) or 318 (diskette 2) occurs, an entire track (26 sectors) will be lost.

C. Restart the job, and specify that the job start with the next record beyond the failing record (or records) as determined in Step B. The data in the failing record would have to be re-created.

Diskette Failure During a Write Operation

A. If records have been written on the diskette (the NPR indicators increment as each record is written), a data set label was opened or reopened; therefore, track 0 is probably not defective. If no records have been written, restart the job using another diskette.

B. Whenever a diskette error occurs, whether a machine or a diskette failure, the controller attempts to close the data set being written; for example, the label on track 0 of the diskette is updated to show the last record successfully written. A List Diskette (CODE/5) function can be done to determine if the data set (file) was successfully closed.

C. The job may be restarted using another diskette, with input from the point of failure. When all data has been written, the diskettes may be linked together as a multiple volume using the Change Status (CODE/04) function. Be sure that a data set with the same name does not already exist on the second diskette; if so, data will be appended to it.

Note: Following the above procedure may affect later operation when reading these diskettes for transmission by a machine in unattended operation, that does not have a second Diskette Device.

D. If a second Diskette Device is present, the following operations can be done:

1. Multiple volumes generated as described in Step C can be combined on one diskette by reading the multiple diskettes on diskette device 1 and writing on one diskette cn device 2.
2. A single data set with a defective diskette area can be copied to the point of failure. The lost data can be re-entered and added to the new volume, and the copy completed by another copy operation from the failing diskette, with specification that reading begin past the defective diskette area (refer to "Starting a Job" in Chapter 2).

E. When a buffer compare error occurs (NPR code 351 or 289) a diskette surface defect is assumed. The normal procedure is to write control records on the bad sector pair and then write the data on the next available sector pair, all of which happens without operator knowledge. If a control record cannot be successfully read after it is written, the job stops, and NPR code 351 (diskette No. 1) or 289 (diskette No. 2) displays; the buffer of data is not written onto the diskette. When reading, control records are automatically skipped and continuity of data is maintained.

Problem Identification Procedures

The following error recovery and problem identification procedures are designed to assist you in recovering from an online error stop condition, and to assist you in determining which service organization to contact if error recovery is not successful. These procedures are to be performed *only* when one of the following codes is displayed in the NPR: 332, 333, 334, 335, 336, or 338.

Error Recovery Procedure

ERP

1 Hold the CODE key down, and press the RESET key and then the START JOB/ STOP JOB key.

Using SDLC, if the terminal does not go to local mode, press CODE/START JOB again. The terminal cannot go to local mode if it is in session with the host CPU (UNBIND has not been received).

Note: The code number in the console NPR display will go out, and the console display will then be blank.

2 Hold the CODE key down, and press the CNCL key.

Note: On a dialed call, the telephone equipment will be disconnected.

3 Check all exposed telephone equipment connectors, modem connector, and the modem power plug (as shown in Figure 3-3), for loose connections. Tighten any loose connection. Do *not* unplug the terminal power plug.
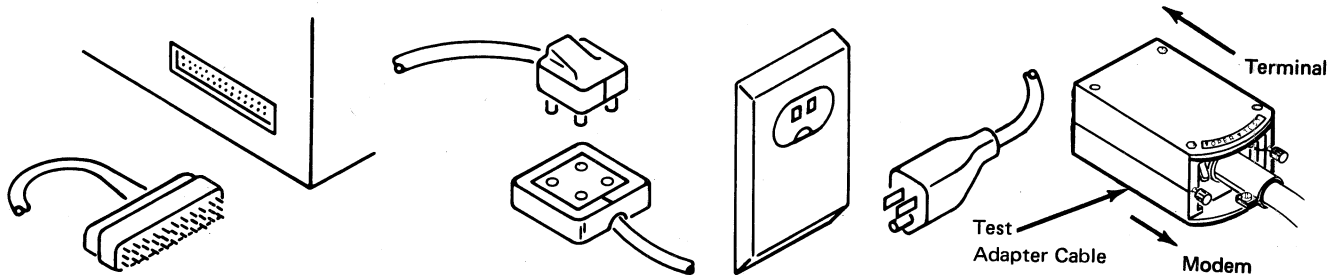
Figure 3-3. Typical Modem Connector, Communications Line Connector, Modem Power Plug, and Test Adapter Cable

4 Restart the job.

Note 1: Notify the host operator that the job is being restarted. Discard any data already received, since it will be repeated. If your machine has a NORMAL/HALF SPEED switch on the auxiliary operator panel or modem, check with the host CPU operator to make sure that the speed switches on both the local and remote modems are set the same.

Note 2: The telephone must be redialed by the originator of the call after the job has been restarted on a dialed line.

If there is no error after restarting the job, further testing is not required. Return to normal operation.

If the online error condition recurs, go to Step 5.

5 Fill out a Trouble Report Form. There are extra copies of the Trouble Report Form at the back of this manual.

6 Hold the CODE key down, and press the RESET key and then the START JOB/ STOP JOB key.

7 Hold the CODE key down, and press the CNCL key.

8 Hold the CODE key down, and enter a numeric 2.

Note: The error log is printed out. When the printing stops, continue with Step 9.

9 Record the time and the date on the error log; attach the log to the Trouble Report Form and save both for service personnel.

Go to the "To Perform Test 0" section that follows:

How to Perform Communications Tests

To Perform Test 0 (Terminal Communication Test)

1 Hold the CODE key down, and enter a numeric ⬚0⬚ .

2 Release the CODE key and then enter a numeric ⬚6⬚ .

⬚ 6 ⬚ appears in the NPR.

3 Press the EOM key.

⬚ 2⬚ displays momentarily, then

⬚ 0 1 appears momentarily (about 2-12 seconds) in the NPR.

If the display then changes to ⬚ 0 0 , skip to Step 7.

If the display changes to any number from 8 0 1 to 8 3 8 continue on to Step 4.

4 Write the number that appears in the display, under the "Comments" section on the Trouble Report Form. Also write "Test 0" in the "Comments" section.

5 Hold the CODE key down, and press the START JOB/STOP JOB key.

6 Call for service on the terminal.

Do not go to Step 7; no further tests are required. The terminal may be used for a job which does not require online operation.

7 Follow the instruction that has been checked.

If the modem is not an IBM modem:

☐ Refer to the modem (data set) manual and make the recommended tests. if any.

If the tests indicate that there is a modem (data set) problem, call the appropriate service organization for modem service.

If no modem tests are available, or if the test indicate that there is no modem problem, inform the host operator that there is an online problem. Tell the operator that local tests indicate no problem with the terminal. You should turn the problem over to the host operator for resolution, then start a job that does not require online operation.

If the modem is an IBM modem or a non-IBM modem with wrap test capability:

☐ Continue on to Test 2.

To Perform Test 2 (Modem Wrap Test)

Note: If you are testing the Switched Network Backup feature, you must first activate the alternate switched network by holding down the CODE key while pressing the ⬚S key. All tests that follow will then be performed on the Switched Network Backup modem or communication line. Holding the CODE key down and pressing the "R" key terminates SNBU testing.

If your terminal has an attached modem with the test adapter cable shown in Figure 3-3, place the test adapter cable switch in the TEST position before selecting test 2.

1 Enter a numeric ⬚2 from the keyboard.

Note: The 4800 bps Integrated Modem, Non-Switched returns to and equalizes on the prime network. Rekeying "2" sooner than 9 seconds after the end of the wrap test will cause a false error indication (801). Wait more than 9 seconds before rekeying "2".

⬚⬚0⬚1 appears momentarily (about 2-12 seconds) in the NPR.

If the display changes to ⬚⬚0⬚0 , skip to Step 5.

If the display changes to any number from ⬚8⬚0⬚1 to ⬚8⬚3⬚8 , go to Step 2.

2 Write the number that appears in the display, under the "Comments" section on the Trouble Report Form. Also write "Test 2" in the "Comments" section.

3 Hold the CODE key down, and press the START JOB/STOP JOB key.

4 Follow the instruction that has been checked.

If the terminal has an integrated modem

⬚ Call for service on the terminal.

   Do not go to Step 5; no further tests are required. The terminal may be used for jobs that do not require online operation.

If the terminal has an external modem

⬚ Call the modem supplier for modem service.

   Do not go to Step 5; no further tests are required. The terminal may be used for jobs that do not require online operation.

5 Follow the instruction that has been checked.

If a 4800 BPS Integrated Modem is installed:

⬚ Go to "4800 BPS Integrated Modem Problem Identification".

If there is no modem transmit and receive test capability at the host:

⬚ Inform the host operator that there is an online problem. Tell him that local tests indicate no problem with the terminal and modem. You should then turn the problem over to the host operator for resolution.

   Do not go to the next test; no further tests are required. The terminal may be used for a job which does not require online operation.

If the host has modem transmit and receive test capability:

⬚ Continue on to Test 3.

To Perform Test 3 (Modem Transmit Test − − Without 4800 BPS Integrated Modem)

1 Inform the host operator that there is an online problem and that local tests indicate no problem with the terminal or modem.

Note: If your terminal communicates with the host over a dial network, it is recommended that a different telephone be used for voice communication with the host operator.

2 Request the host operator to run host local communications tests and inform you of the results.

If these tests fail, the problem must be resolved at the host. Ask the host operator to inform you when maintenance has been completed there, so that you can resume online operation. *Do not* go to Step 3.

If host local communications tests run successfully, go to Step 3.

3 Tell the host operator that you want to run the modem transmit and receive tests. Ask the host operator to run the Modem Receive Test (Test 4) while you run the Modem Transmit Test (Test 3) for a 3-minute test period.

Note 1: If your terminal communicates with the host over a dial network, the connection between the terminal and the host modem must be redialed to run the test.

Note 2: If your terminal is on a multipoint network, all traffic must be stopped before this test is run.

4 Enter a numeric "3" from the keyboard to start the Modem Transmit Test (Test 3).

Note: If you change between TALK and DATA modes on external data sets or modems before this test is completed, you must restart the test by keying a numeric ③ again.

If the test is running properly, the STANDBY indicator will come on shortly (within 15 seconds) after the numeric "3" has been keyed. Go to Step 7 if the STANDBY indicator is on.

If the STANDBY or ONLINE indicators do not come on, or if a number from 8 0 1 to 8 3 8 appears in the NPR, go to Step 5.

5 Write the number that appears in the display, under the "Comments" section on the Trouble Report Form. Also write "Test 3" in the "Comments" section, and go to Step 6.

6 Follow the instruction that has been checked.

If the terminal has an integrated modem

☐ Call for service on the terminal.

Do not go to Step 7; no further tests are required. The terminal may be used for jobs that do not require online operation.

If the terminal has an external modem

☐ Call the modem supplier for modem service.

Do not go to Step 7; no further tests are required. The terminal may be used for jobs that do not require online operation.

7 Ask the host operator if too many errors are being received at the host.

If the host is *not* receiving too many errors, go to Step 11.

If the host is receiving too many errors, look at the modem panel (Figure 3-4) to see if it has a meter and a TRANSMIT EQUALIZER.

If the modem panel does *not* have a meter, go to Step 12.

If the modem panel has a TRANSMIT EQUALIZER, go to Step 8; otherwise, go to Step 9.

8 Request the host operator to perform receive equalization. The host operator should instruct you to try various TRANSMIT EQUALIZER settings until the lowest meter reading is achieved at the *host* meter. Skip to Step 10.

9 Request the host operator to adjust the host receive equalizer to obtain the lowest meter reading *at the host.* Go to Step 10.

10 Determine from the host operator if too many errors are still being received.

If the host operator says the error level is acceptable, go to Step 11.

If the host operator is still receiving too many errors, skip to Step 12.

Integrated Modem

External Modem

— Meter

— Transmit Equalizer Control
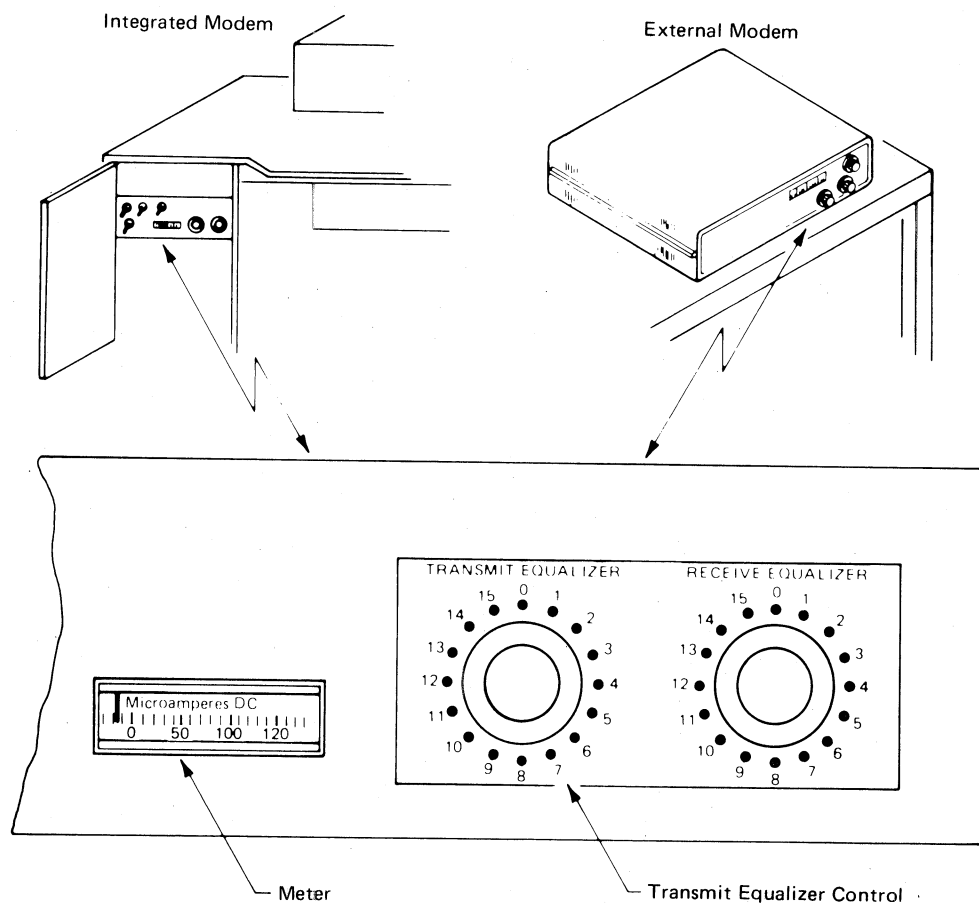
Figure 3-4. Modem Panel, Showing Meter and Transmit Equalizer Control

11 Request the host operator to discontinue the Modem Receive Test (Test 4) and to start the Modem Transmit Test (Test 3). Proceed to "To Perform Test 4 (Modem Receive Test)" to start the Modem Receive Test at the terminal.

12 Ask the host operator to discontinue testing. Have the host operator call the common carrier for service.

13 Hold the CODE key down, and press the START JOB/STOP JOB key.

The terminal may be used for jobs that do not require online operation.

To Perform Test 4 (Modem Receive Test – – Without 4800 BPS Integrated Modem)

1 Enter a numeric $\boxed{4}$ from the keyboard.

If the PROCEED indicator is *on*, the host has started Test 3. Skip to Step 6.

If the PROCEED indicator is not on go to Step 2.

2 Check with the host operator to find out if Test 3 is running.

If the host is running Test 3 and the PROCEED indicator now comes on, skip to Step 6.

If the host is running Test 3 but the PROCEED indicator is not on, go to Step 3.

3 If the terminal communication line is *not* of the dial type, go to Step 5.

If the terminal communication line is of the dial type, pick up the receiver and press the button for talk, and listen for a signal (a high-pitched tone or a hissing sound).

If a signal is heard, go to Step 4.

If a signal is *not* heard, go to Step 5.

4 Follow the instruction that has been checked.

If the terminal has an integrated modem

$\square$ Call for service on the terminal.

Do not go to Step 5; no further tests are required. The terminal may be used for jobs that do not require online operation.

If the terminal has an external modem

$\square$ Call the modem supplier for modem service.

Do not go to Step 5; no further tests are required. The terminal may be used for jobs that do not require online operation.

5 Ask the host operator to call the common carrier for service and state that terminal tests indicate a problem in transmitting from the host to the terminal.

Do not go to Step 6; no further testing is required. The terminal may be used for jobs that do not require online operation.

6 Start a 3-minute receive error test period by entering a numeric $\boxed{4}$. (This resets the error count to zero before starting the 3-minute test.)

7 Three minutes after entering the ☐4 , compare the error count shown in the NPR with the benchmark error count.

```
┌─────────┐
│         │  benchmark error count
└─────────┘
```

If the current error count exceeds the benchmark error count by 10 or more, go to Step 8. If not, skip to Step 10.

8 Look at the modem panel (see Figure 3-5) to see if it has a RECEIVE EQUALIZER.

If your modem panel has a RECEIVE EQUALIZER, go to Step 9; otherwise, skip to Step 12.
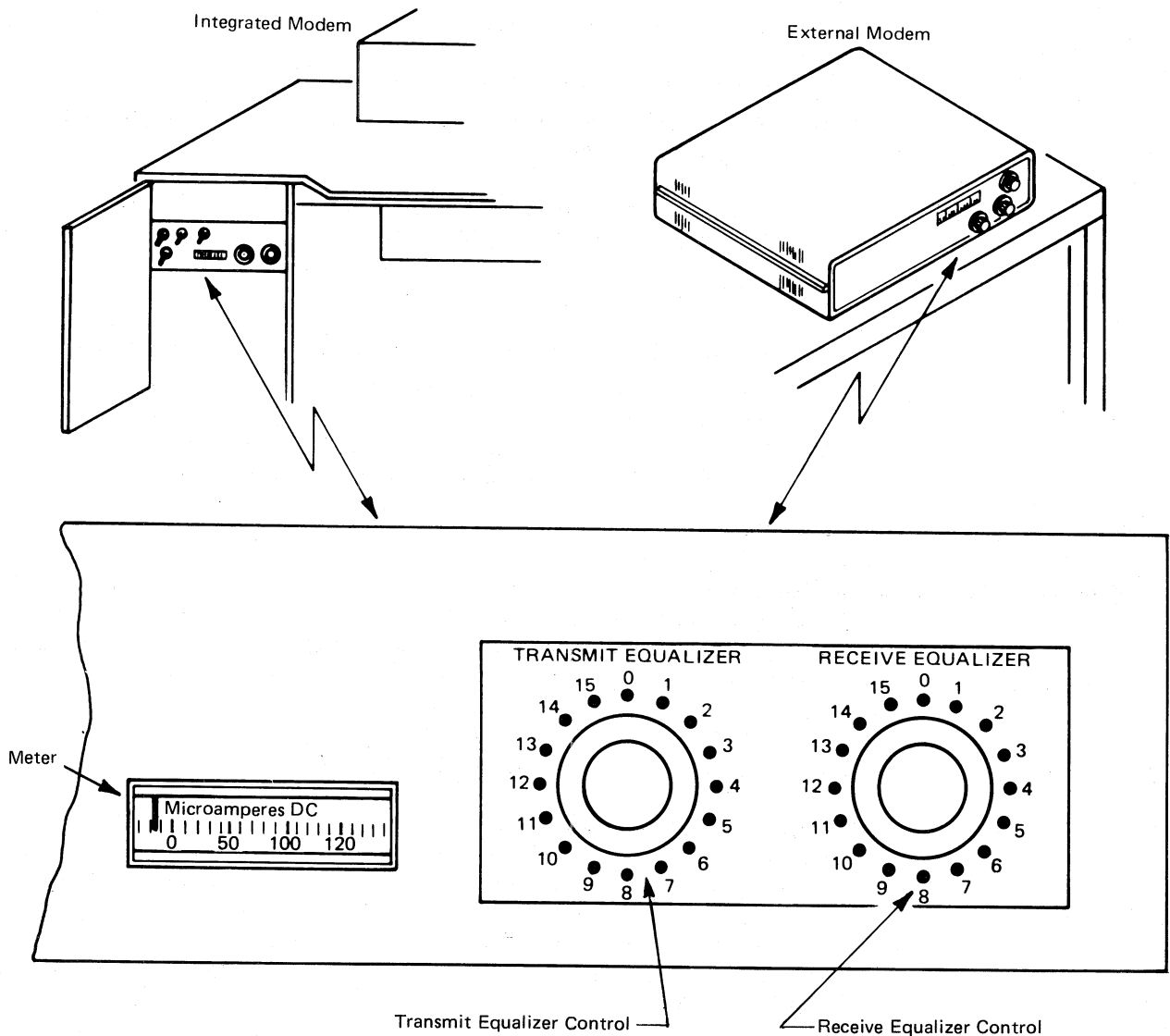
Figure 3-5. Modem Panel

9 As you turn the RECEIVE EQUALIZER knob clockwise to each setting, watch the meter to get the lowest meter reading. (See Figure 3-5.)

After the RECEIVE EQUALIZER knob has been set for the lowest meter reading, enter a numeric $\boxed{4}$ again, to make another 3-minute error count test.

If the new error count no longer exceeds the benchmark error count by 10 or more, skip to Step 11.

If the new error count still exceeds the benchmark error count by 10 or more, skip to Step 12.

10 Discontinue testing, and write under "Comments" on the Trouble Report Form that the communications tests do not show any failures.

Call for service on the terminal.

You may start a job which does not require online operation.

11 Discontinue testing, and restart the online job you were running when the error stop condition occurred.

If the online error recurs, write under "Comments" on the Trouble Report Form that the error recurred during Step 11 of Test 4.

Call for service on the terminal. Do *not* go to Step 12.

The terminal may be used for jobs which do not require online operation.

12 Ask the host operator to discontinue resting. Have the host operator call the common carrier for service.
13 Hold the CODE key down, and press the START JOB/STOP JOB key.
14 Hold the CODE key down, and press the CNCL key.

The terminal may be used for jobs that do not require online operation.

4800 BPS Integrated Modem Problem Identification

If the terminal is equipped with a 4800 BPS Integrated Modem, one of the following procedures (depending on the type of network) should be used to determine which service organization to contact:

- Switched Network Problem Identification
- Non-Switched Network Problem Identification

Each of these checkout procedures assumes that the Modem Wrap Test (Test 2) has run successfully. If the terminal is in Communication Test mode, continue with the following procedures. If not, perform Test 0 as described earlier in this section.

Switched Network Problem Identification: During this procedure, a local conventional telephone station set will be used to determine if a problem exists with the terminal's modem.

Note: The modem will disconnect a switched network connection after running Test 0 or Test 2.

1 From the terminal's telephone set, place a call to a local conventional telephone station and have someone answer the call. Verify that two-way voice communication is possible. If a problem is experienced in placing the call, call the common carrier for service.

2 Place the terminal's handset back on-hook (hang up). At the local telephone station, a high pitch tone or hissing sound should be heard for about 9 seconds.

3 After the tone stops, make a sound into the handset of the local telephone, and verify that the terminal console PROCEED indicator turns on and off with the sound. If it does, hang up the phone and proceed to Step 4. If the tone is not transmitted (Step 2), or if the PROCEED indicator does not turn on and off when the sound is made into the handset, call for maintenance on the terminal.

4 Press the numeric 2 key, and wait about 9 seconds for the NPR to indicate ☐|0|0| .

5 Place a call from the local telephone station to the terminal's telephone set.

6 The terminal's telephone set should ring no more than two times and then automatically answer the call. If the ringing continues, check the coupler and power connections; if no trouble is found, call the common carrier for service.

7 After automatically answering the call, the terminal should transmit a 3-second answer tone to the originating telephone station. If the tone is not heard at the originating telephone, call for maintenance on the terminal. If you want to repeat Steps 5 through 7, cradle both handsets and run test 0 or test 2.

8 If no trouble is found during this procedure, inform the host CPU operator that the terminal is operational. Problem identification procedures at the host CPU site should then be followed.

Private Line (Non-Switched) Service Problem Identification:

1 Inform the host CPU operator that there is an on-line problem and that local tests indicate that there is no problem with the terminal and integrated modem (test 2 ended with ☐|0|0| displayed).

2 Request the host CPU operator to run his local communication tests and inform you of the results. If a problem exists at the host CPU, you can resume on-line operation when the maintenance has been completed at the host. Proceed to Step 3 if requested to proceed with on-line testing with the host CPU, or if tests at the host CPU indicate no problem.

3 Establish voice communication with the host CPU operator. Have the CPU operator put the host modem in T3 mode 4800 BPS Non-Switched. Make sure that the terminal's speed select switch is set to NORMAL, and the NPR is at ☐|0|0| .

4 Have the host CPU operator press RESET on the host modem.

5 After about 9 seconds, the terminal's ON LINE and PROCEED indicators should turn on. At the host CPU modem, the EQUAL indicator should be on. If these indicators do not turn on, proceed to Step 11.

6 Press the terminal's numeric 3 key to transmit to the host (Test 3) and to display errors received from the host modem. The NPR should go to ☐|☐|0| and the STANDBY indicator should turn on. Verify that the OPERATE and SIGNAL indicators on the host CPU modem turn on.

7 If errors or line impairments are detected on the received signal, the NPR will change to display the error count (for example, it will change from ☐|☐|0| to ☐|☐|7|).

8 At the host CPU modem, the OPERATE indicator will blink to indicate errors received.

9 Each time the terminal's numeric 3 key is pressed, an error is transmitted to the host (the OPERATE indicator should blink off), and the terminal's NPR is reset to ☐|☐|0| .

10 With the host modem and terminal transmitting and counting errors, monitor the error count at the terminal and host for a 3-minute period. Several random errors, or bursts of errors, are considered normal. If excessive errors are indicated, proceed to Step 11. If the error rate is normal but problems with on-line operation continue, call for maintenance on the terminal.

11 Inform the host CPU operator that the tests have failed, and call the common carrier for service.

12 To exit from communication test mode, hold the CODE key down and press **START JOB/STOP JOB.**

Chapter 4. Printer

Make Ready Procedure

Use the procedures in this chapter to place the printer in a ready condition for operation with the terminal. The printer is not in a ready condition unless:

- Forms are installed as described in the "Installing and Aligning Printer Forms" section.

  Note: Always turn the terminal's HOLD PRINT switch on before opening the printer cover, or attempting to install or align printer forms. Remember to turn the switch off before starting a job.

- The printer ribbon is installed as described in the "Replacing the Ribbon" section.
- The printer print belt is installed as described in the "Changing the Print Belt" section.

Figure 4-1 illustrates the printer controls used in the operation of the printer.

LN PTR
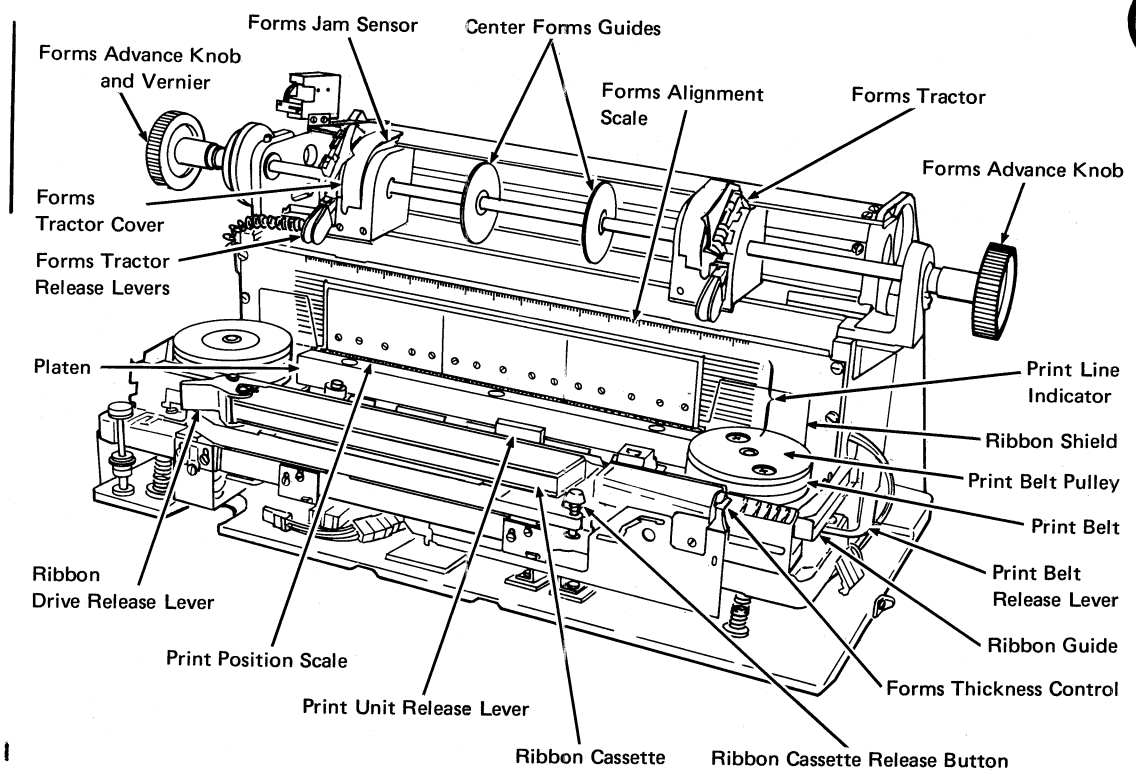
Figure 4-1. Printer Locations

General Forms Handling Information

- On machines with the Front Feed feature, you may load forms from either the front or rear of the machine.
- Paper should not be stored in low-humidity areas. Under low-humidity conditions, a static electrical charge can build up on the paper, causing poor paper feed and stacking.
- Porous soft fibre, highly absorbent paper (such as recycled paper) that has been stored in a high-humidity area will stack better if it is conditioned for a few days in the normal office environment before use.
- Paper should always be removed from the box before use (do not cut off the top of the box, and feed from the box).
- The paper supply should be parallel with the back of the machine (or front of the machine if using the Front Feed feature), and in line with the pins of the forms tractors. Jams can occur if the paper supply is not properly positioned.
- At least three sheets of paper should be on the stacking surface prior to operation.
- Do not allow printing to occur beyond the edges of the paper or in the pin feed holes.
- The tractors should be adjusted so that the tractor pins are centered in the forms feed holes. If the tractors are adjusted too close together, wrinkling of the paper will occur, causing poor print quality, noisy operation, and possible jams. If adjusted too far apart, the holes may tear out or paper may ride off the pins.

Installing and Aligning Printer Forms

Loading Printer Forms Using Front Feeding

Press latch to unlatch the cover; then lift the cover up and to the rear.
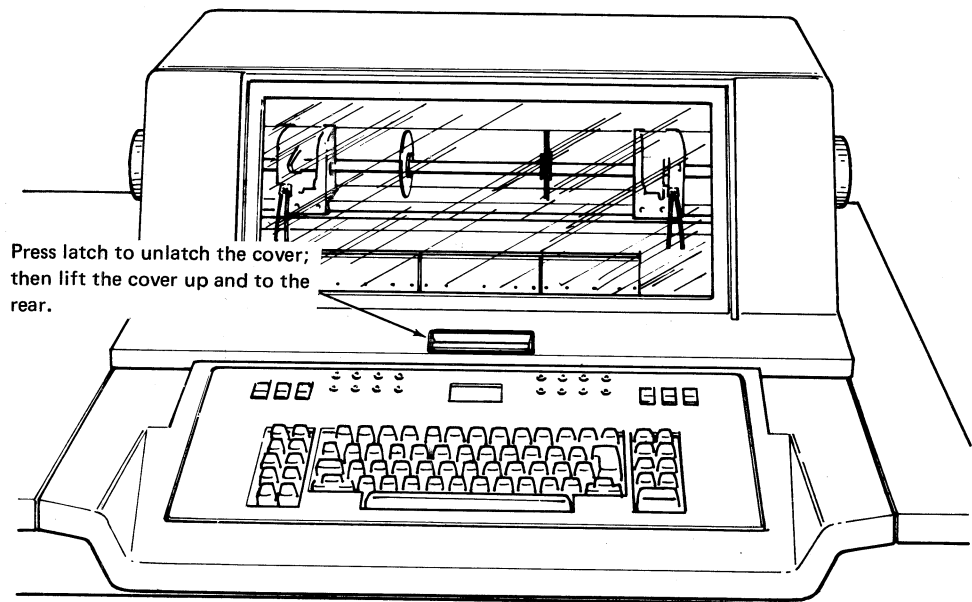
Figure 4-2. Opening the Printer Cover (Part 1 of 2)

Use this procedure to load forms in the printer if your machine has the Front Feed feature (see Figure 4-4).

Note: Always turn the terminal's HOLD PRINT switch on before opening the printer cover, or attempting to install or align printer forms. Remember to turn the switch off before starting a job.

1 Open the printer cover (Figure 4-2).
2 Open the print unit (Figure 4-3).
3 Open the tractor covers (Figure 4-3).
4 Open the printer rear forms exit cover and enclosure door (Figure 4-4).
5 Feed about 15 to 20 inches (280 to 500 mm) of forms squarely into the front forms chute. Ensure that the forms are under the end of forms sensing lever. If forms slide out, feed in more forms until they stay in the printer.

Note: Some forms feed easier if the first and second sheets are doubled, and then fed into the forms chute.

6 From the front of the printer, slide each of the two center forms guides (Figure 4-1) so they are equally spaced between the tractors.
7 Squeeze the tractor release levers together (Figure 4-6) and move the tractors to the approximate position to accommodate the forms.
8 Install the forms on the left tractor pins (Figure 4-6). Move the left tractor to align the forms to the print position scale. Install forms on the right tractor pins, making sure that forms are squarely placed on tractors. Ensure that the forms are not too tight or too loose between the tractors (pins centered in feed holes). Ensure that the paper supply is positioned so that forms feed squarely into the printer. Make minor adjustments of the tractors to align the forms horizontally to the print position scale.
9 Rotate the forms advance knob and feed enough forms to start them into the forms enclosure.

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Keystroke Feedback Adjustment: Turn clockwise to increase the sound of the feedback from the keyboard. Feedback is the sound heard when a keyboard key is pressed.

Keystroke Feedback Adjustment
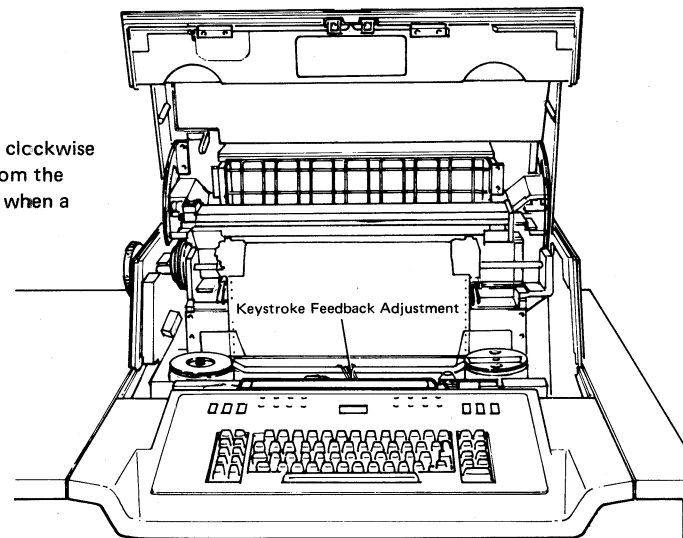
Figure 4-2. Opening the Printer Cover (Part 2 of 2)

10 Before closing the forms enclosure door, the rear forms guide (located in the forms enclosure door) must be positioned to accommodate the forms that you are using, as follows:

a. Set the forms guide (with vertical rods toward the paper) in the holes that most closely agree with the length of the forms to be used. There is a label on both the left and right brackets. The forms guide must be positioned in the same relative hole on each side, so that the guide is parallel with the paper.

b. With two or three forms lying on the stacking surface (Figure 4-5) and positioned squarely against the baffle, close the forms enclosure door.

c. Through the window on top of the door, observe the position of the forms guide with respect to the edge of the paper.

d. Some types of forms may require a variation from the above setting. If difficulty is experienced with forms stacking, move the forms guide one hole toward or away from the paper so that the paper stacks properly.

e. Close the forms enclosure door.

11 Close the forms enclosure baffle, the door, and the top cover.

12 From the front of the printer, turn the forms advance knob to verify that the forms feed correctly.

13 Align the forms to the first print line as described under "Aligning Forms to the First Print Line".

Note: The capacity of the forms enclosure is 500 forms. Jams may occur if the stacker becomes overloaded.
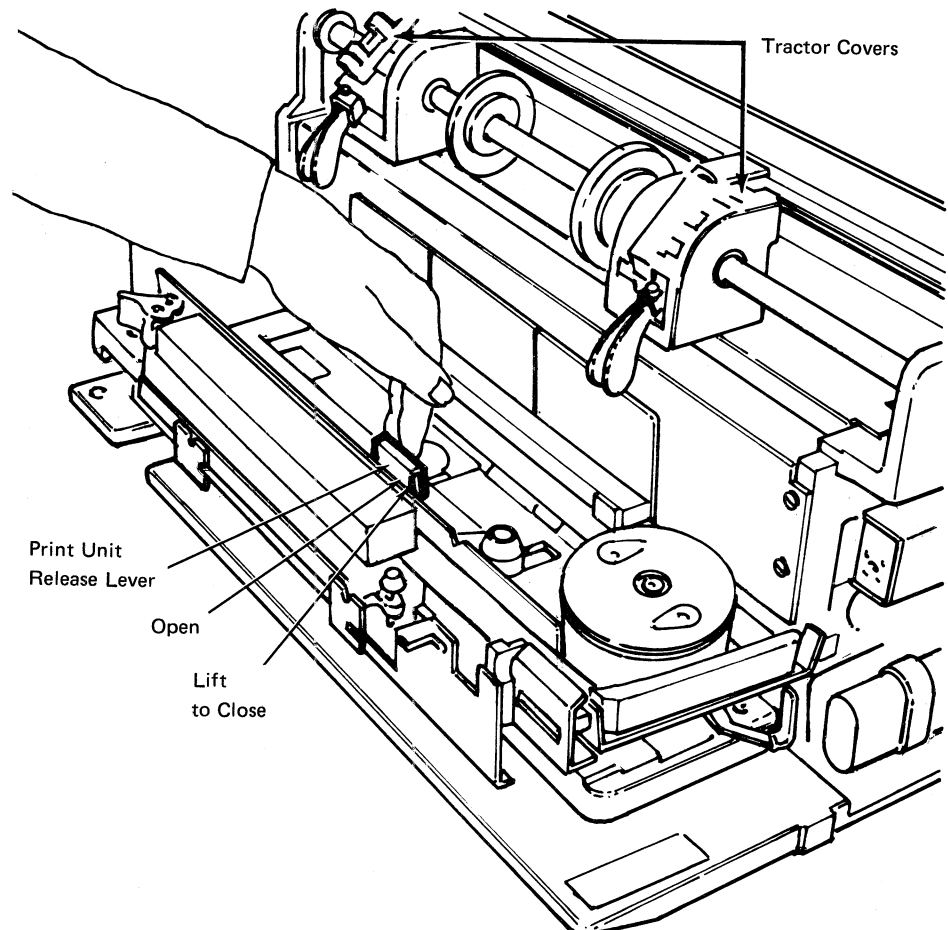
Figure 4-3. Print Unit Open/Close

PAPER PATH

Forms Exit
Cover

Forms
Enclosure
Door

Paper
Stack

Front
Forms
Chute

Paper Supply
for Rear Feeding

Paper Supply
for Front Feeding

FRONT FEED FEATURE

Paper Supply

End of Forms
Sensing
Lever
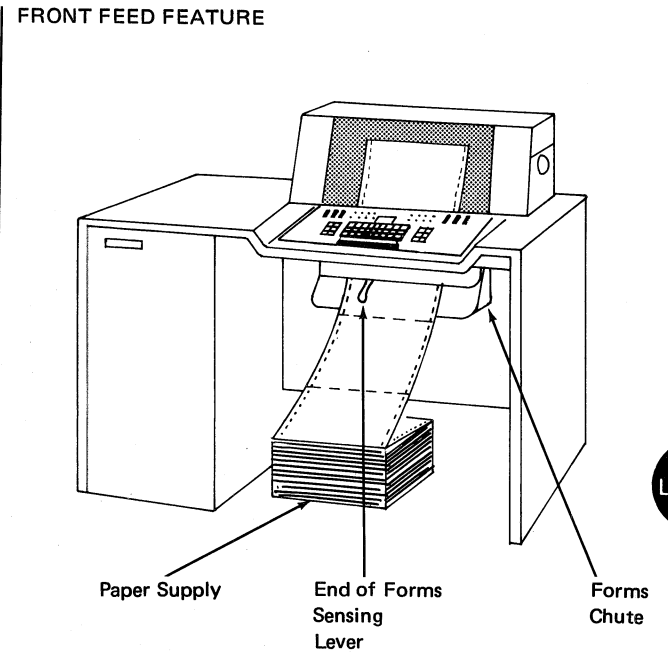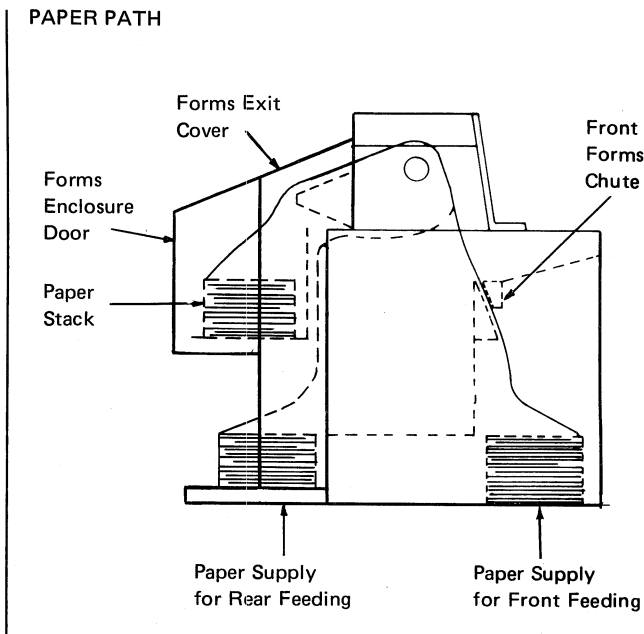
Forms
Chute

LN PTR

Figure 4-4. Inserting Forms Using the Front Feed Feature

A

Forms
Enclosure

Paper
Supply

B

Forms
Guide

Baffle

Stacking
Surface
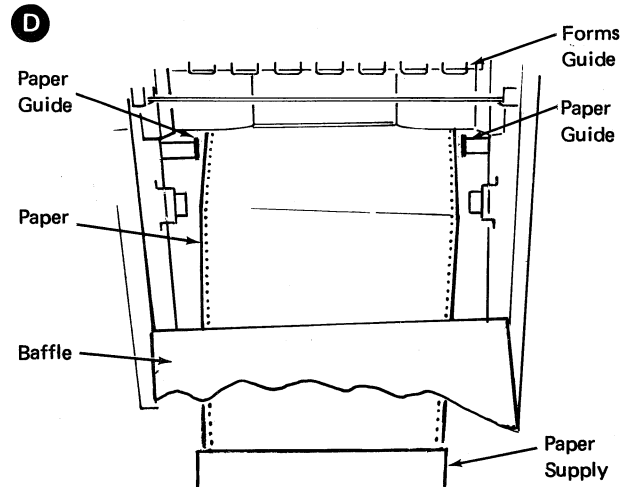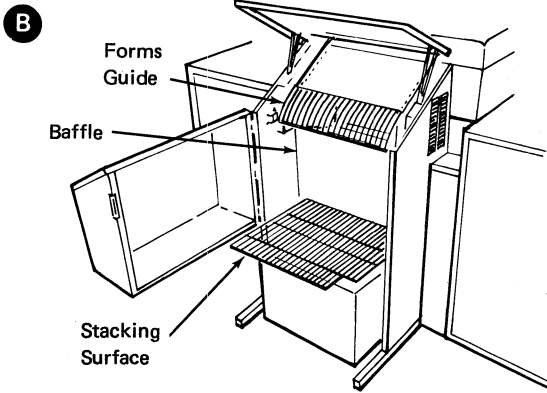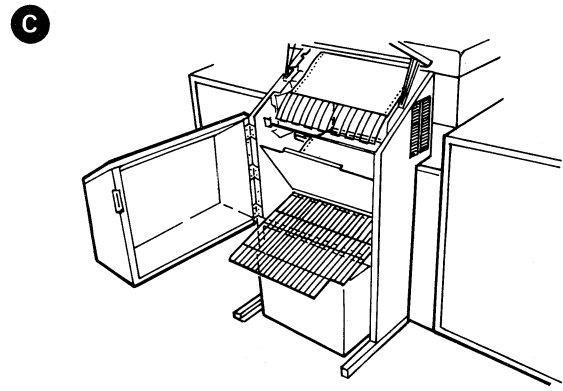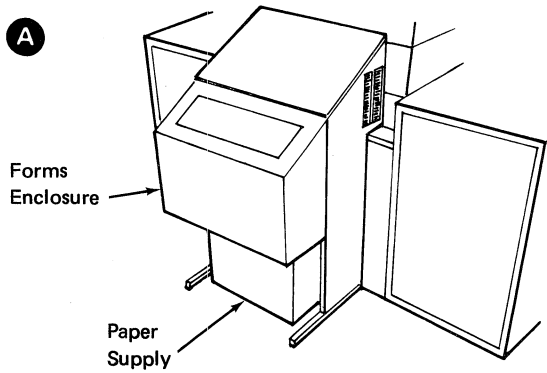
Figure 4-5. Loading Forms Using Rear Feeding

C

D

Paper
Guide

Paper

Baffle

Forms
Guide

Paper
Guide

Paper
Supply

Pinch Levers to
Release and
Move Tractors

Be Sure Forms
are Placed
Squarely on
the Tractors
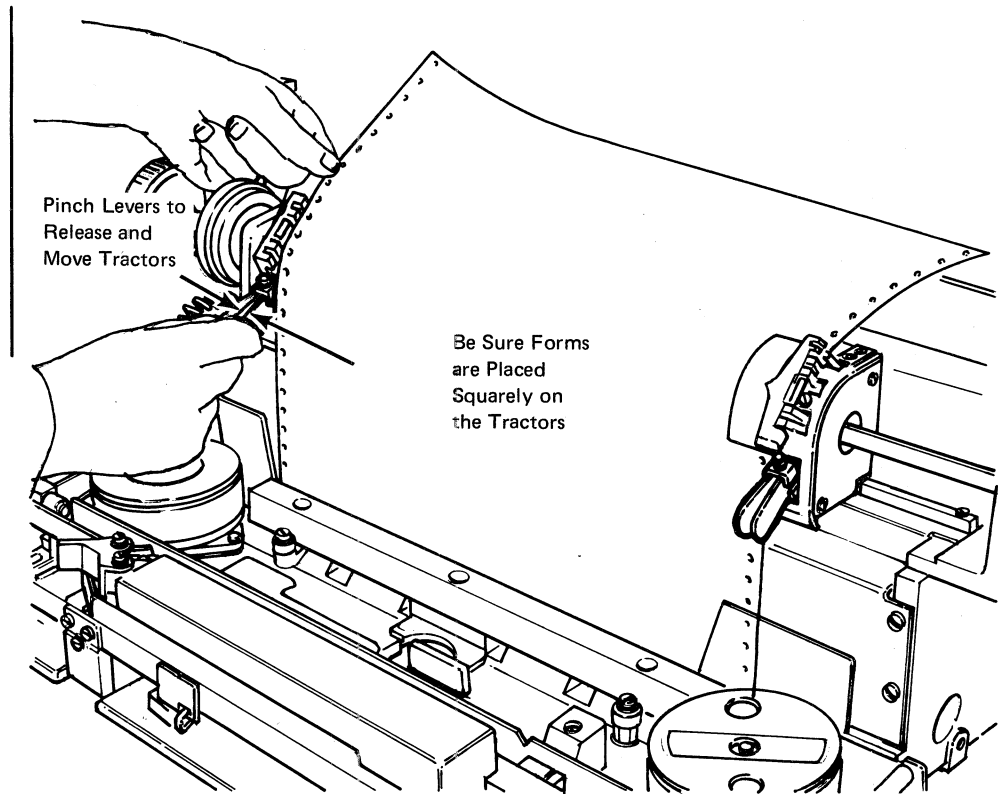
| Figure 4-6. Placing Forms on Tractor Pins

|Loading Printer Forms Using Rear Feeding

Use this procedure to load printer forms if you are feeding forms from the rear (with or without the Front Feed feature—see Figures 4-4 and 4-5).

Note: Turn the terminal's HOLD PRINT switch on before opening the printer cover, or installing or aligning printer forms. Turn the switch off before starting the job.

1   Open the printer cover (Figure 4-2).
2   Open the print unit (Figure 4-3).
3   Open the tractor covers (Figure 4-3).
4   Close the printer cover.
5   Remove forms from the box and place underneath forms enclosure (Figure 4-5, Part A).
6   Open the rear forms enclosure door, and raise the forms enclosure cover (Figure 4-5, Part B).

| 7 | Pull the baffle toward you, and lower the baffle (Figure 4-5, Part C). The baffle is held in place by magnetic latches. The stacking surface moves back and pivots down as the baffle is lowered.

| 8 | Slide the paper guides apart (Figure 4-5, (Part D) to accommodate the forms that you are using.

9 Feed about 15-20 inches of forms squarely into the forms chute. Be sure that forms are over the end-of-forms mark on the rear alignment scale. If the forms do not stay in place, feed in more forms until they stay in place.

Note: Some forms feed easier if the first and second sheets are doubled, and then fed into the forms chute.

10 From the front of the printer, open the printer cover and squeeze the tractor release levers together and move the tractors to the approximate position to accommodate the forms.

11 Slide the two center form guides (Figure 4-1) so that they are equally spaced between the tractors.

12 Install the forms on the left tractor pins. Move the left tractor and align the forms to the print position scale. Install the forms on the right tractor pins, making sure that the forms are squarely placed on the tractors. Make minor adjustments to align the forms to the first print position. Ensure that the forms are not too tight or too loose (pins centered in holes).

13 Note the position of the forms on the front alignment scale and from the rear of the printer, position the rear paper guides to the same position. The guides should just touch the paper. Ensure that the paper supply is positioned so that forms feed squarely into the printer.

14 Before closing the forms enclosure door, the rear forms guide (located in the forms enclosure door) must be positioned to accommodate the forms that you are using, as follows:

a. Set the forms guide (with vertical rods toward the paper) in the holes that most closely agree with the length of the forms to be used. There is a label on both the left and right brackets. The forms guide must be positioned in the same relative hole on each side, so that the guide is parallel with the paper.

b. With two or three forms lying on the stacking surface (Figure 4-5) and positioned squarely against the baffle, close the forms enclosure door.

c. Through the window on top of the door, observe the position of the forms guide with respect to the edge of the paper.

d. Some types of forms may require a variation from the above setting. If difficulty is experienced with forms stacking, move the forms guide one hole toward or away from the paper so that the paper stacks properly.

e. Close the forms enclosure door.

15 Close the forms enclosure baffle, the door, and the top cover.

16 From the front of the printer, turn the forms advance knob to verify that the forms feed correctly.

17 Align the forms to the first print line as described under "Aligning Forms to the First Print Line".

Note: The capacity of the forms enclosure is 500 forms. Jams may occur if the stacker becomes overloaded.

Aligning Forms to the First Print Line

1 Power must be on to properly align the printer forms.

2 Set the forms thickness control (Figure 4-1) to the number of parts in the form being used.

3 Close the print unit (Figure 4-3).

4 Use the CODE/8 Change Forms function to set the printer line counter to the first print line.

5 Press the INDEX key (to advance the line counter) the number of lines minus 1 at which the first vertical tab stop is set (as defined in the job definition).

6 Rotate the forms advance knob to advance the forms, and position them a line or two above the first print line.

   Note: The print line indicator, when aligned with the forms perforation (top edge of the form), shows which line on the form is in position to be printed. For example, if the perforation is aligned at 12 on the print line indicator, line 12 on the form will be in position to print (assuming that you are using 6 lines per inch line spacing).

7 Push the left forms advance knob (vernier) in, and slowly advance the forms until the perforation lines up exactly with the desired line on the print line indicator.

8 If you advance the forms too far, back down the forms as follows:

   a. Open the print unit.

   b. Rotate the forms advance knob backward until the perforation is about three lines below the desired line.

   c. Pull forms out of the forms chute (front or rear) to remove any slack.

   d. Perform Steps 6 and 7 again.

9 Close all machine covers.

Replacing the Ribbon

Removing the Ribbon

Use this procedure to remove the ribbon if your machine does *not* have an upper ribbon shield release as shown on Figure 4-7.

1 Open the printer cover as shown in Figure 4-2.
2 Open the print unit as shown in Figure 4-3.
3 Remove the forms.
4 Raise both ribbon guides as shown in Figure 4-8.
5 Open the ribbon drive release lever as shown in Figure 4-8.
6 Press the ribbon cassette release button down, and slide the ribbon cassette to the right until it is free, as shown in Figure 4-9.
7 Remove the ribbon from the ribbon guides shown in Figure 4-9.
8 Lift the ribbon cassette out of the printer.
9 Install the replacement ribbon cassette as described in the "Installing the Ribbon" section that follows.

LN PTR

Use this procedure to remove the ribbon if your machine has an upper ribbon shield release as shown in Figure 4-7.

1 Open the printer cover as shown in Figure 4-2.
2 Open the print unit as shown in Figure 4-3.
3 Remove the forms.
4 Refer to Figure 4-7. Open the upper ribbon shield (A) by pushing down on the upper ribbon shield release lever (left of print position 1), and pulling forward on the shield lever (in front of print position 66).
5 Raise both ribbon guides as shown in Figure 4-8.
6 Open the ribbon drive release lever as shown in Figure 4-8.
7 Press the ribbon cassette release button down, and slide the ribbon cassette to the right until it is free, as shown in Figure 4-9.
8 Remove the ribbon from the ribbon guides as shown in Figure 4-9.
9 Lift the ribbon cassette out of the printer.
10 Install the replacement ribbon cassette as described in the "Installing the Ribbon" section that follows.
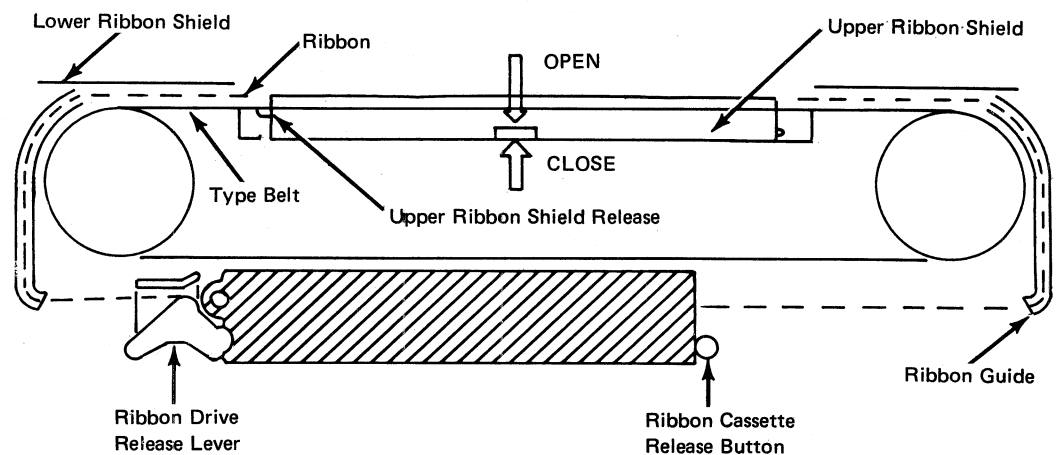
Figure 4-7. Upper Ribbon Shield

Push Lever to
Open Ribbon
Drive Release

Ribbon Guide
(raised)
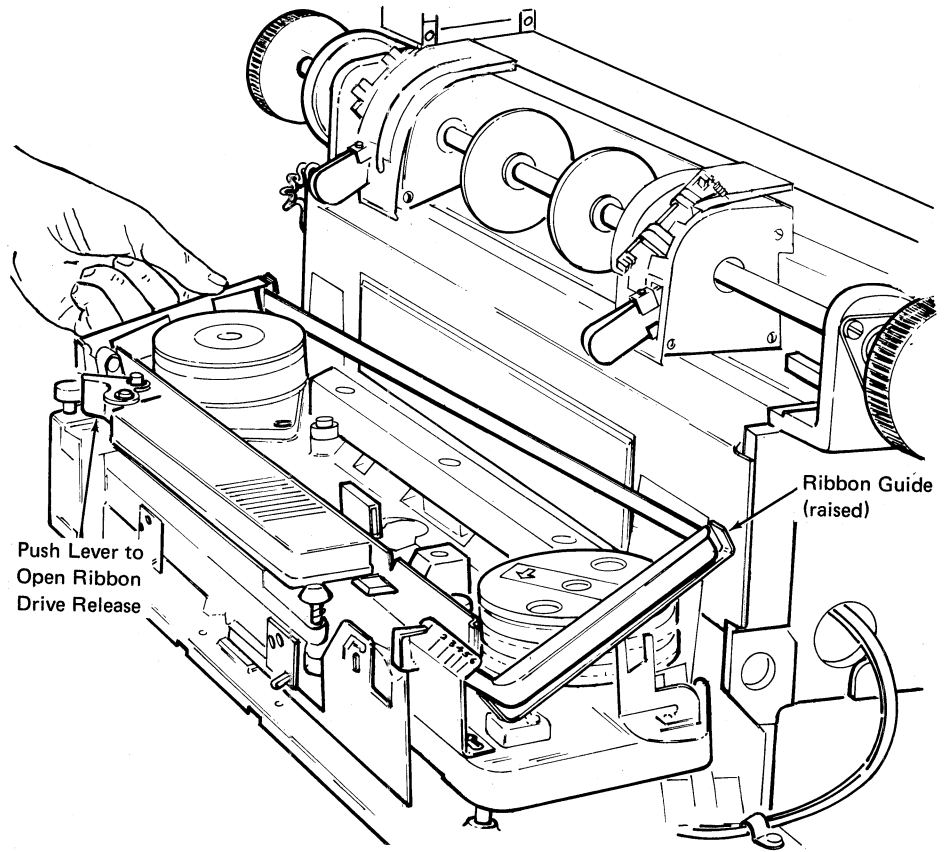
Figure 4-8. Raising Ribbon Guides

Place New
Ribbon As
Shown

Ribbon
Drive
Release
Lever

Close

Install

Remove

Ribbon Cassette

Push Down
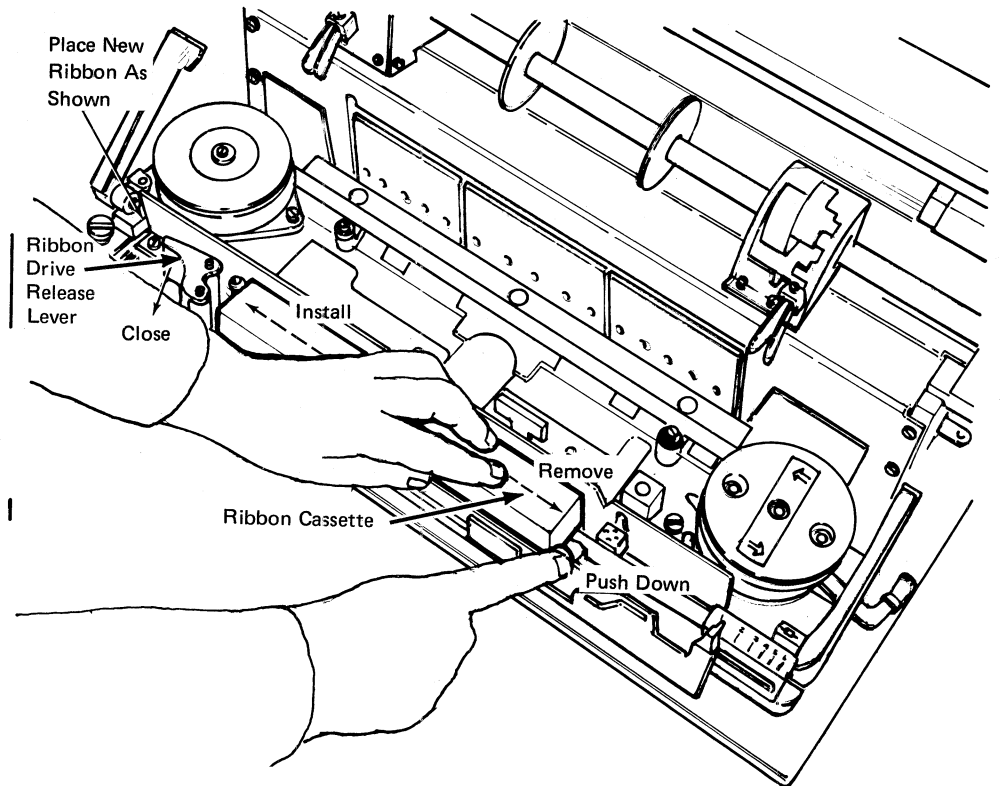
Figure 4-9. Ribbon Cassette Removal/Installation

Installing the Ribbon

Use this procedure to install a printer ribbon.

1 Open the printer cover as shown in Figure 4-2.
2 If you are replacing the printer ribbon, follow the "Removing the Ribbon" procedure to remove the old printer ribbon.
3 Open the ribbon drive release lever shown in Figure 4-8.
4 If your machine *does not* have an upper ribbon shield release (to the left of print position 1 as shown in Figure 4-7), skip to Step 6.
5 If your machine *does* have an upper ribbon shield release as described in Step 4, open the upper ribbon shield by pushing down on the release lever and pull forward on the shield lever (in front of print position 66). Refer to Figure 4-7.
6 Lay the new ribbon cassette on the printer so that the left end (the end that has a curved surface that fits the feed roll) is approximately one inch (25.4 mm) from the ribbon drive rolls. The right end will cover the ribbon cassette release button.
7 Pull approximately 12 inches (300 mm) of ribbon from the left end of the ribbon cassette and place the ribbon between the drive rollers. Press down on the ribbon cassette and slide it to the left until it latches in place as shown in Figure 4-9.
8 Use the ribbon feed diagram on the printer as a guide. Feed the ribbon from the left end of the cassette through the release lever and around the left ribbon guide.
9 Close the ribbon drive release lever as shown in Figure 4-9.
10 Pull ribbon as required from the right end of the cassette and thread the ribbon around the right ribbon guide as shown in Figure 4-10.
11 Turn the right pulley counterclockwise (left pulley if type belt is not installed) to take up ribbon slack.
12 Lower the ribbon guides.
13 Turn the pulley again to feed the ribbon down between the lower ribbon shield and the type belt. Close the upper ribbon shield by pushing forward on the shield lever. Ensure that the ribbon feeds under the upper ribbon shield.
14 Load forms as shown in the section on "Installing and Aligning Printer Forms".

LN PTR
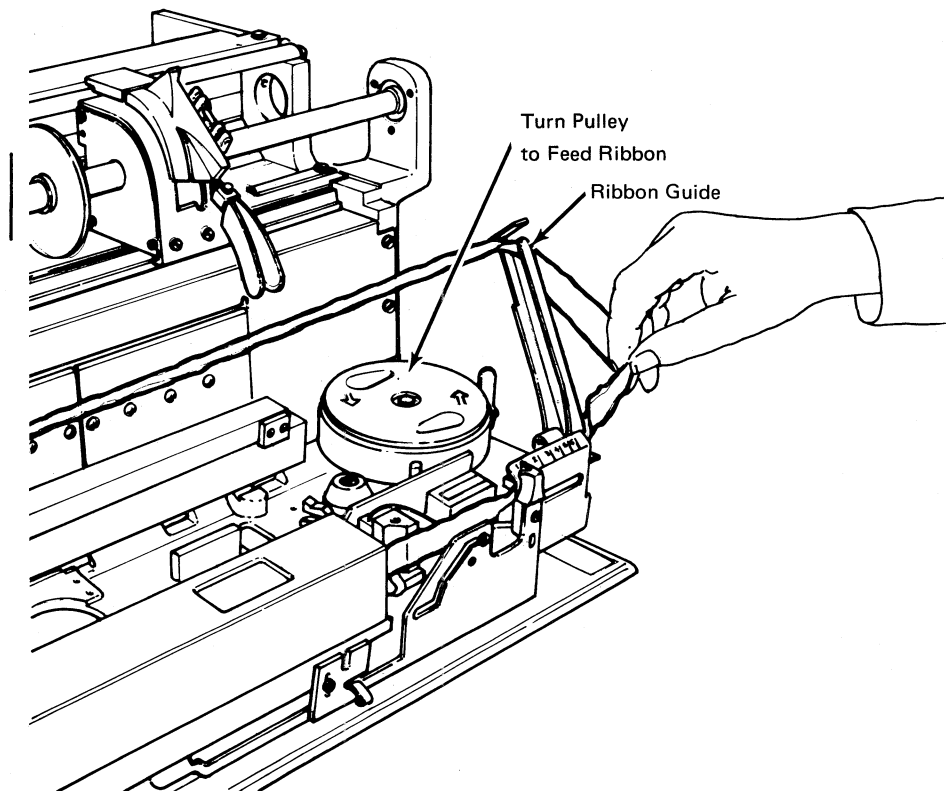
Figure 4-10. Installing the Ribbon

Replacing the Print Belt

Removing the Print Belt

Use this procedure to remove the print belt:

1   Open the printer cover as shown in Figure 4-2.
2   Open the print unit by pulling forward on the print unit release lever as shown in Figure 4-3.
3   If your machine does not have an upper ribbon shield release (to the left of print position 1 as shown on Figure 4-7), skip to Step 5.
4   If your machine does have an upper ribbon shield release, open the upper ribbon shield by pushing down on the release and pulling forward on the shield lever (in front of print position 66 as shown in Figure 4-7).
5   Raise both ribbon guides as shown in Figure 4-8.
6   Pull the print belt release lever forward to loosen belt tension as shown in Figure 4-11.
7   Lift the print belt off the pulleys as shown in Figure 4-12 and store the belt in a safe location.
8   See "Installing the Print Belt" to replace the print belt.

Installing the Print Belt

Use this procedure to install the print belt:

1   Follow the "Removing the Print Belt" procedure to setup the machine to receive the new print belt.
2   Move the print belt release lever (Figure 4-11) to the rear of the machine.
3   Hold the print belt with type up, and carefully place the belt around the top of the pulleys as shown in Figure 4-13.

   Note: Do not place the belt all the way to the bottom of the pulleys.

4   Turn the belt pulleys counterclockwise and observe the print belt as it moves on the pulleys as shown in Figure 4-13. If the belt does not move down on the pulleys, there is interference below the belt or the belt is positioned incorrectly. To correct this, remove the belt, check the belt path for interference, and install the belt again.
5   Lower the ribbon guides as shown in Figure 4-8.
6   Turn the print belt pulleys and check that the print belt and ribbon turn correctly.
7   Close the upper ribbon shield by pushing forward on the shield lever as shown in Figure 4-7.
8   Turn the belt pulleys again to ensure that the belt and ribbon turn correctly.
9   Close the print unit as shown in Figure 4-3.
10   Close the printer cover.
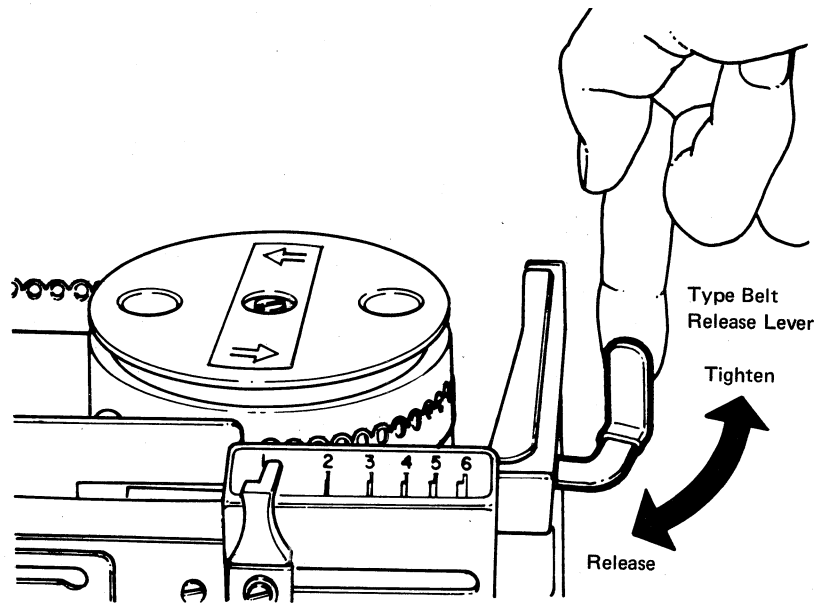
Figure 4-11. Releasing Print Belt Tension
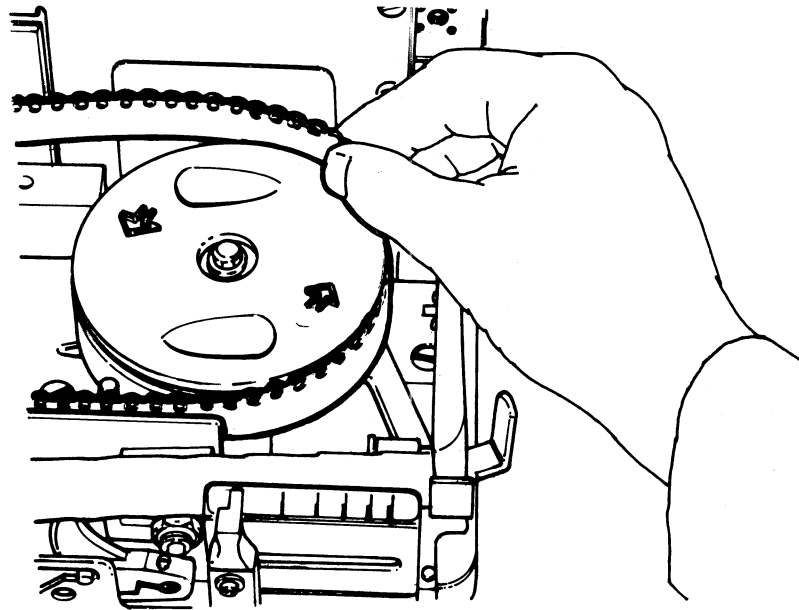
Figure 4-12. Removing Print Belt
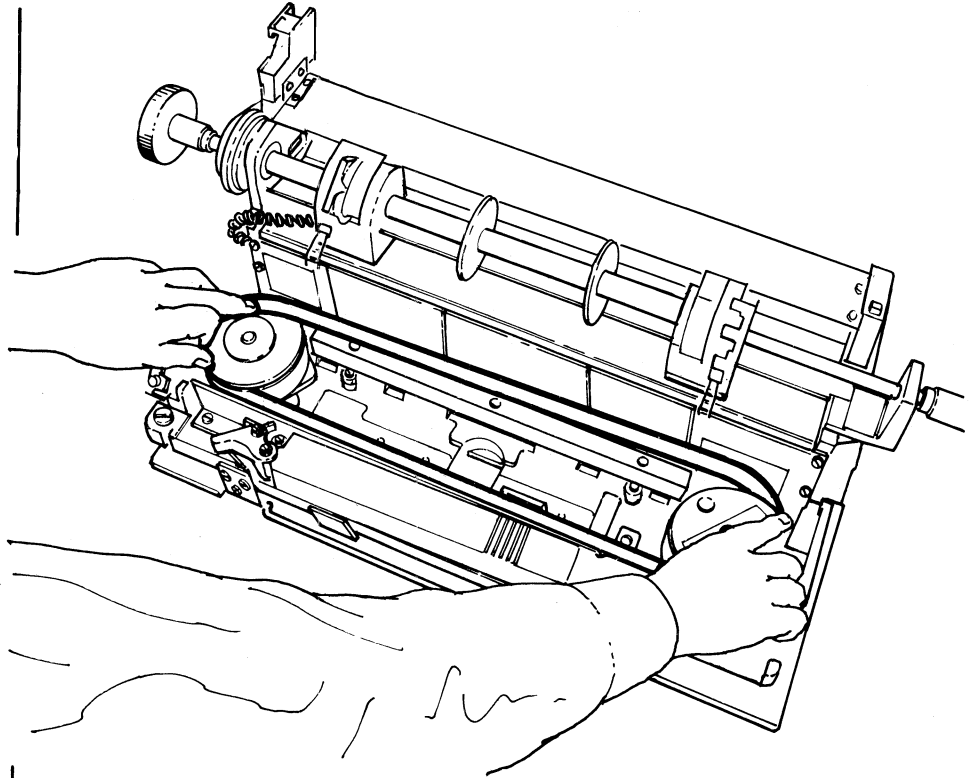
Figure 4-13. Installing the Print Belt

Chapter 5. Diskette Storage Device

Make Ready Procedure

Use this procedure to install a diskette and place the Diskette Storage Device in a ready condition for transmitting data to, or receiving data from, the controller.

1 Open the front cover of the controller.
2 Press down on the latch and pull back on the front of the door to open the Diskette Storage Device (Figure 5-1).
3 Remove the old diskette if one is installed (Figure 5-2).
4 Install the new diskette (Figure 5-2).
5 Close the Diskette Storage Device door (Figure 5-3).

Note: The Diskette Storage Device is ready for system operation in approximately ten seconds.
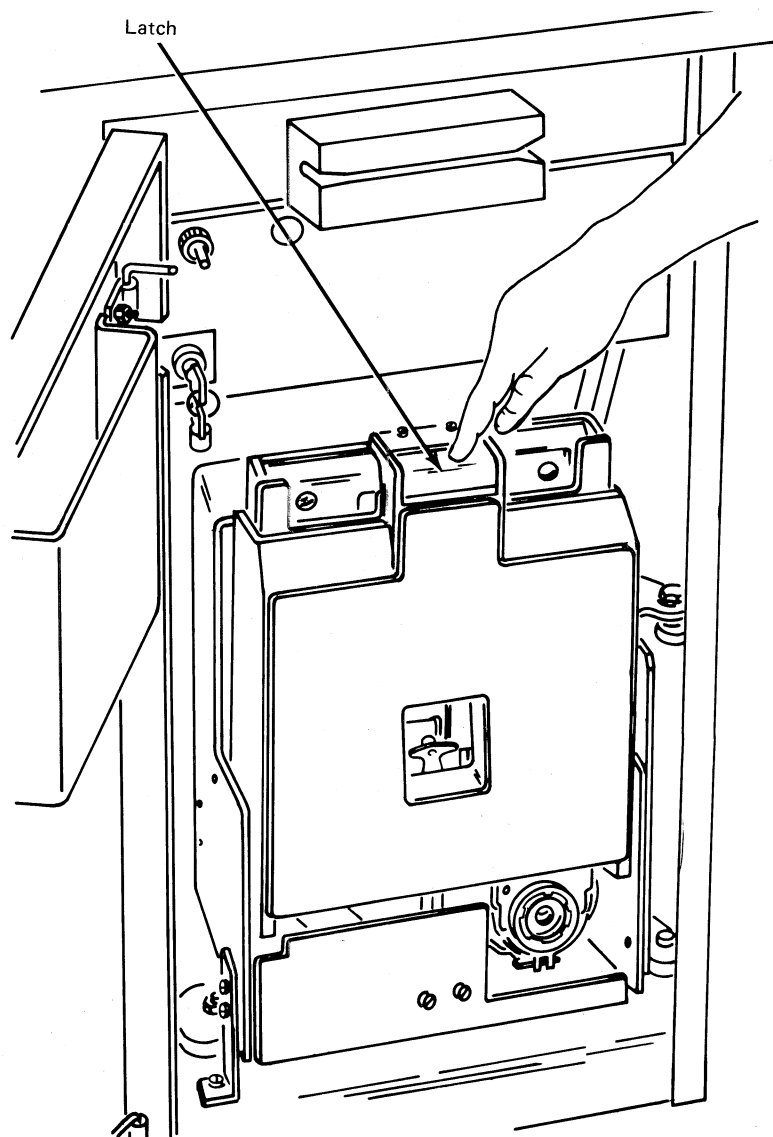
Figure 5-1. Opening the Diskette Device Door
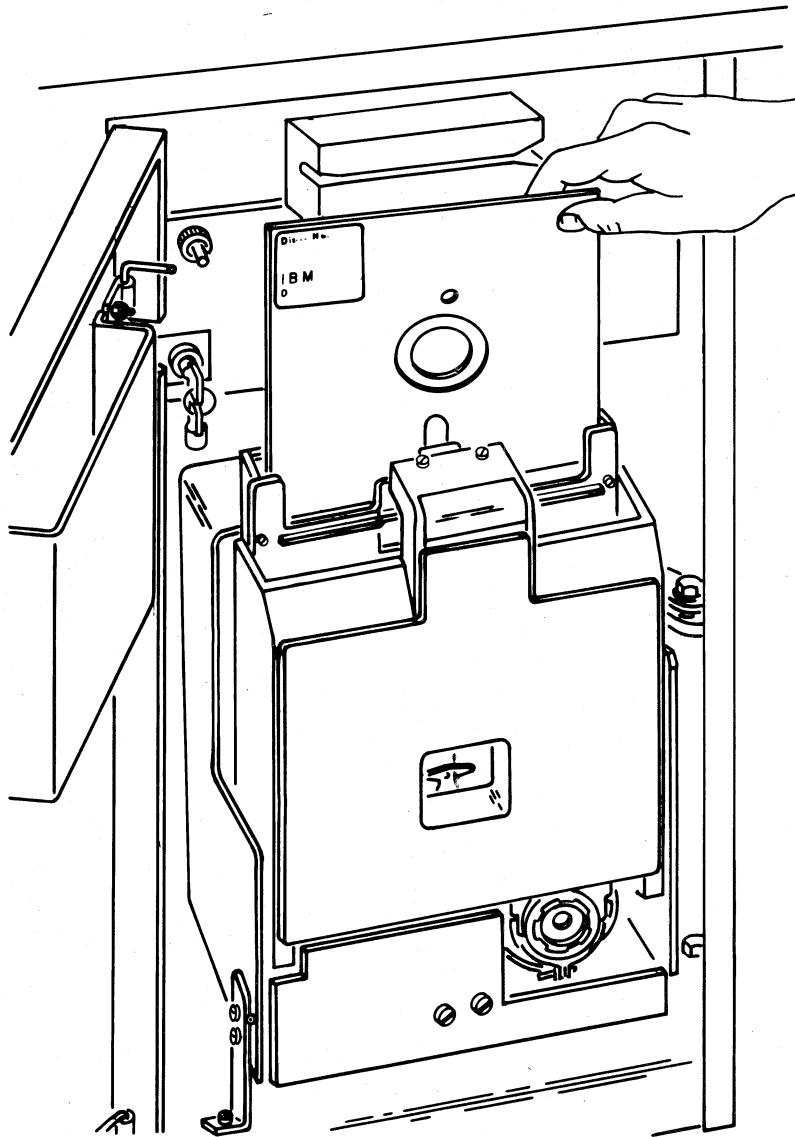
Figure 5-2. Removing/Inserting a Diskette
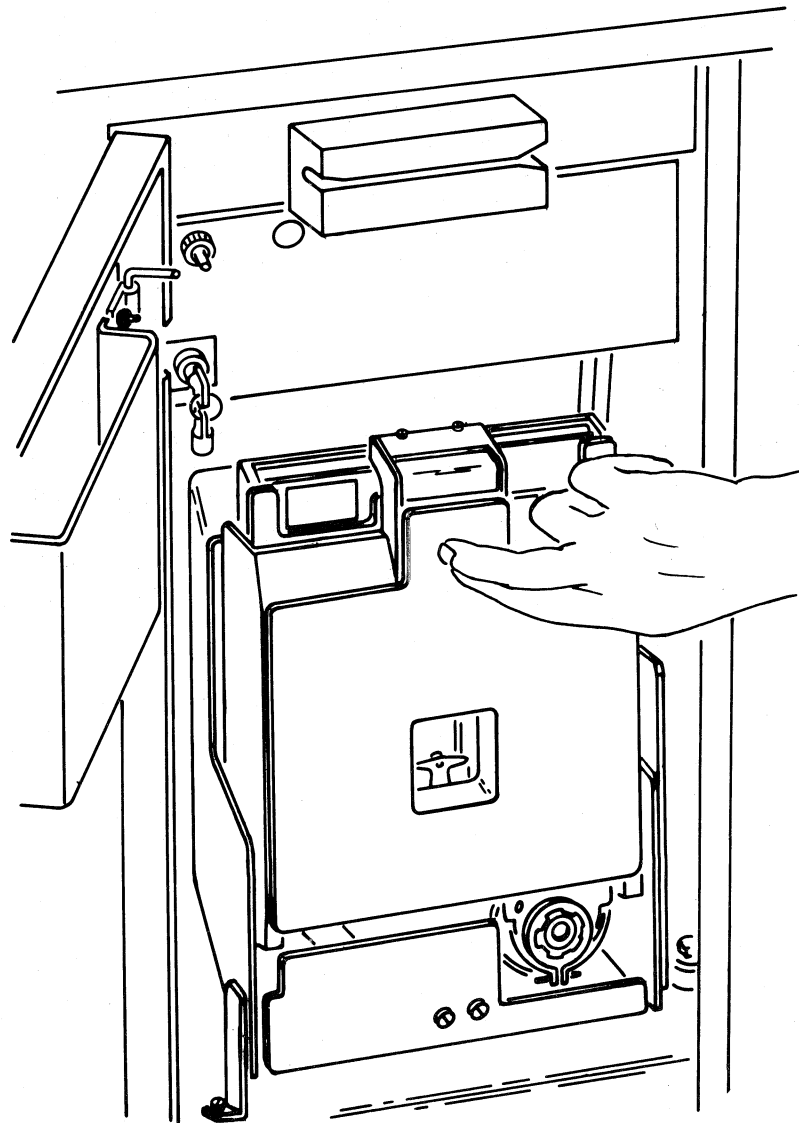
DISK

| Figure 5-3. Closing the Diskette Device Door

Diskette Handling

Diskettes used with the Diskette Storage Device consist of a small flexible disk about 8 inches (203 mm) in diameter enclosed in a holder. The diskette itself is made of material similar to computer magnetic tape, and, like magnetic tape, requires special care in handling. Diskettes that are physically damaged (creased, torn, or warped), or contaminated with foreign material (dust, fingerprints, etc.), will cause read/write errors and possible damage to the Diskette Storage Device.

The following precautions are necessary to prevent damage and contamination of the diskette surface:

- Return the diskette to its envelope after removing it from the Diskette Storage Device.
- Do not write on the diskette, except in the area indicated, or use paper clips on it.
- Do not touch or attempt to clean the diskette surface.
- Keep diskettes away from magnetic fields.
- Do not expose diskettes to excessive heat or sunlight.
- Do not stack objects on top of diskettes.

The *System Components* manual provides information on diskette storage and shipping.

Chapter 6. IBM 2502 Card Reader

Make Ready Procedure

The objective of the make ready procedure is to place the 2502 in a ready condition for reading the job's card input. Refer to Figure 6-1 for the location of the 2502 controls used in this procedure.
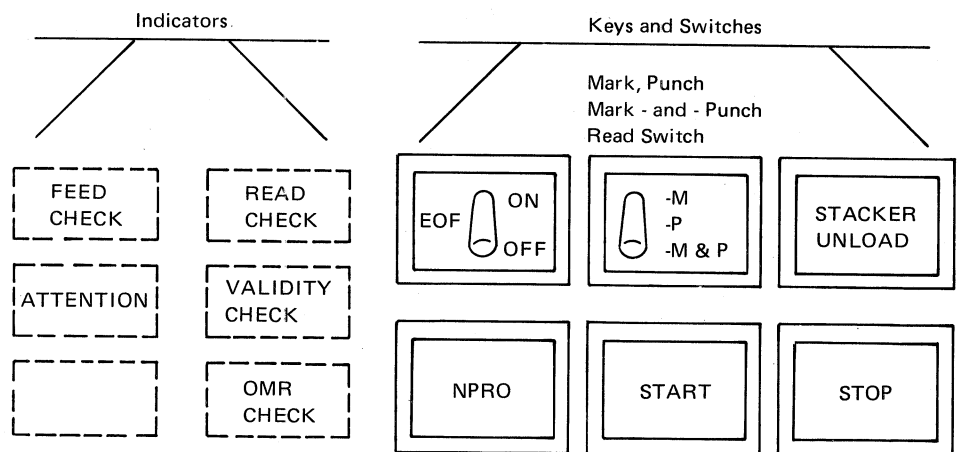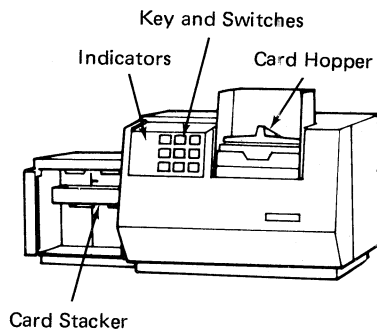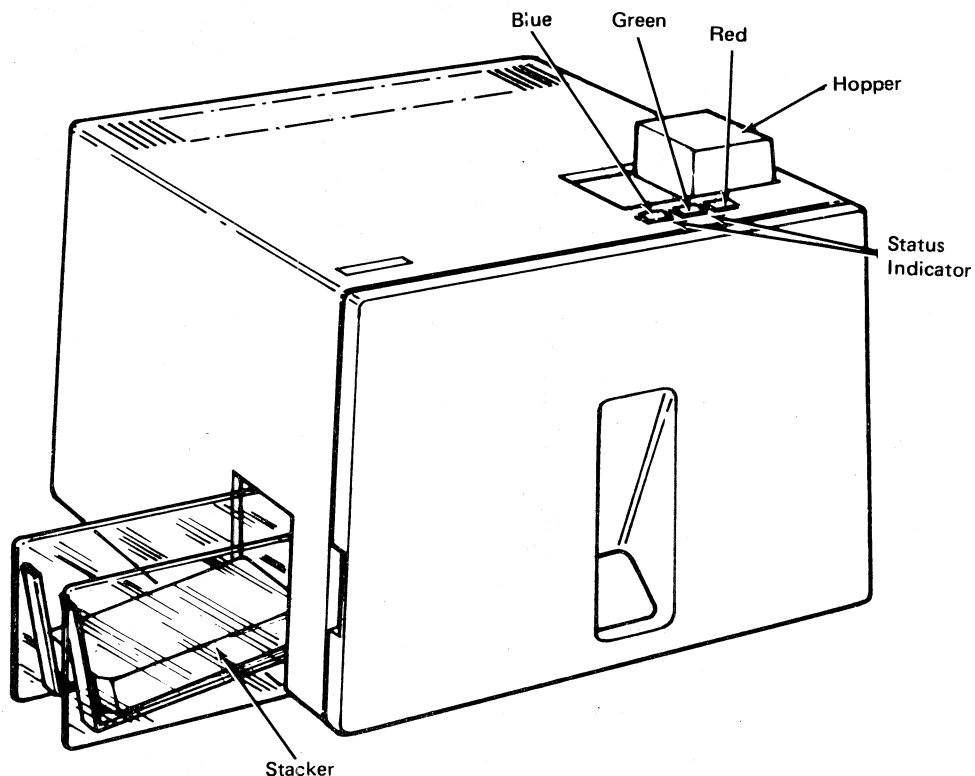

Figure 6-1. 2502 Make Ready Procedure

To place the 2502 in a ready condition:

1 Remove all cards from the hopper.

2 Turn the system power on, if it is not already on. Turn on the 3782 Card Attachment POWER switch (on the front of the 3782). The reader's ATTENTION indicator turns on.

3 To clear out any cards that may be in the reader:

A. Remove all cards from the hopper;
B. Press the NPRO (Non Process Run Out) key.

4 Load the cards to be read in the hopper.

- Place the cards in the hopper face down, and with the bottom (9-hole) edge of the card towards the machine.
- Place the card weight on top of and in the same direction as the cards.

5 If you have placed the last batch of cards for this job in the hopper, set the EOF (end-of-file) switch to the ON position; if not, set the EOF switch to the OFF position.

6 Set the OMR (optical mark read) switch to the desired position:

- Position "M" to read marked data.
- Position "P" to read punched data.
- Position "M-P" to read both marked and punched data.

  Note: The *System Components* manual describes the card format for reading both marked and punched data.

7 If the STANDBY light is on, and a dual job using the 2502 has not been started, pressing the 2502 START key causes a reader-to-line job (non-transparent, compress) to start automatically. If this automatic job start is not desired, wait until a dual job using the 2502 is started, until the terminal returns to local mode, or until a reader-to-line job with some other job parameters is started before pressing the 2502 START key.

8 When the reader's START key is pressed:

- The ATTENTION indicator turns off.
- The reader is in a ready condition, and reads under control of the system controller.

To Unload the Stacker

To Unload the Stacker (Before Full)

Use this procedure when you note that the stacker will become full before all cards in the batch are read. Refer to Figure 6-1 for the location of the 2502 controls used in this procedure. To unload the stacker.

1 Press the STACKER UNLOAD key.

- The card reader stops reading cards to allow time for removing the cards from the stacker.
- The reader automatically starts reading cards in 15 to 30 seconds.

2 Press the START key to continue the read operation.

To Unload a Full Stacker

Use this procedure when you note that the stacker is full, and the reader is stopped with the ATTENTION indicator on. Refer to Figure 6-1 for the location of the 2502 controls used in this procedure. To unload the stacker:

1 Remove the cards from the stacker.

2 Press the START key to continue the read operation.

- The ATTENTION indicator turns off.

To Reload the Hopper

To Reload the Hopper (Before Empty)

Use this procedure when you note that the hopper will become empty before all cards in the batch are read. Refer to Figure 6-1 for the location of the 2502 controls used in this procedure. To reload the hopper:

1 Press the STACKER UNLOAD key.

- The reader stops reading cards to allow time for reloading the hopper.
- The reader automatically starts reading cards in 15 to 30 seconds.

2 Remove the card weight.

3 Load cards to be read in the hopper.

- Place the cards in the hopper face down, and with the bottom (9-hole) edge of the card towards the machine.
- Place the card weight on top of and in the same direction as the cards.

4 If you have placed the last batch of cards for this job in the hopper, set the EOF (end-of-file) switch to the ON position; if not, set the EOF switch to the OFF position.

5 Press the START key to continue the read operation.

To Reload an Empty Hopper

Use this procedure when you note that the hopper is empty, and the reader is stopped with the ATTENTION indicator on. Refer to Figure 6-1 for the location of the 2502 controls used in this procedure. To reload the hopper:

1 Remove the card weight.

2 Load cards to be read in the hopper.

- Place the cards in the hopper face down, and with the bottom (9-hole) edge of the cards towards the machine.
- Place the card weight on top of and in the same direction as the cards.

3 If you have placed the last batch of cards for this job in the hopper, set the EOF (end-of-file) switch to the ON position; if not, set the EOF switch to the OFF position.

4 Press the START key to continue the read operation.

To Set Up for Short Cards—51 or 66 Column

2502

Perform this procedure to set up for reading 51 or 66 column cards. Refer to Figure 6-2 for the location of the parts and controls included in this procedure. To set up for 51 or 66 column cards:

1 Insert spacer(s) in the hopper.

- Insert a spacer on each side of the hopper for 51-column cards.
- Insert a spacer only on the left side (standing in front of machine) for 66-column cards.

2 Raise the top cover.

3 Move the stacker-stop assembly to the short-document position.

- Push down on the left (standing in front of the machine) end of the assembly and slide it to the right until you feel a definite stopping action.

  Note: To restore the stacker to the 80-column card position, push down on the right end of the stacker-stop assembly and slide it to the left.

4 Set the stacker-spring lever at its short (51/66) document setting.

5 Load the hopper with the short column cards.

- Place the cards in the hopper face down, and with the bottom (9-hole) edge of the card towards the machine.
- Place the card weight on top of and in the same direction as the cards.

6 If you have placed the last batch of cards for this job in the hopper, set the EOF (end-of-file) switch to the ON position; if not, set the EOF switch to the OFF position.

7 Press the START key.

- The reader will feed one card.
- The reader is in a ready condition, and reads under control of the system controller.

Spacer

Stacker Spring Lever

Stacker-Spring
Assembly
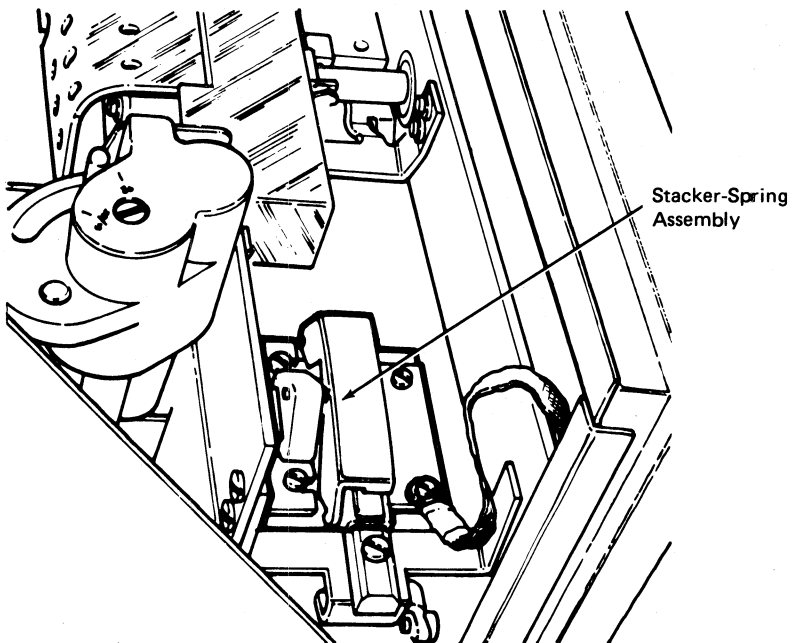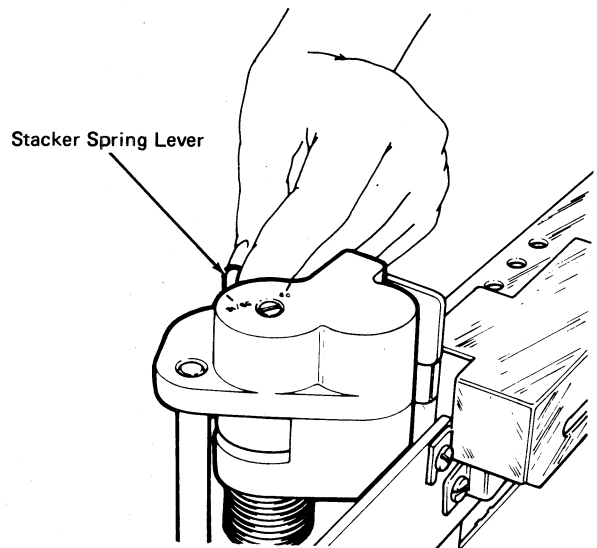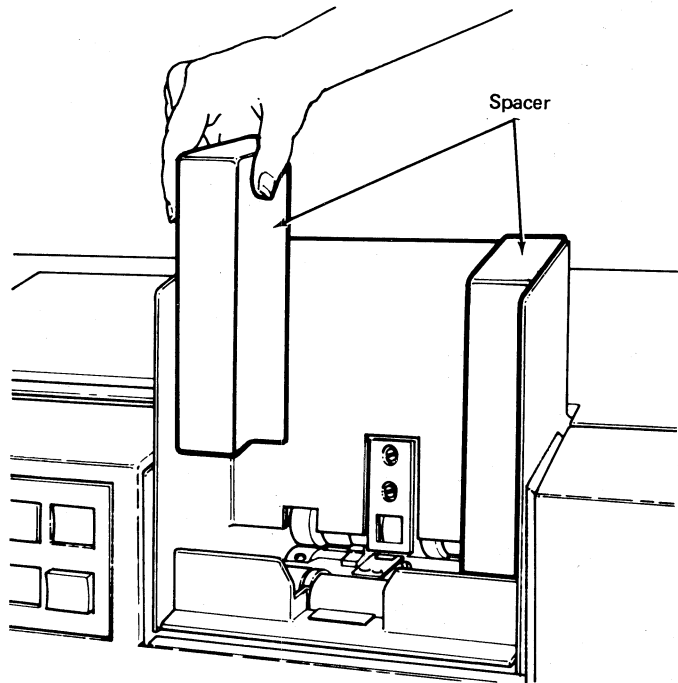
Figure 6-2. 2502 Short Card Setup Procedure

To Remove a Card Jam

Use this procedure to remove a card jam at either the cornering or read stations, or a card jam between the read station and the stacker. Refer to Figure 6-3 for the location of the 2502 controls used in this procedure.

Jam at the Cornering Station or the Read Station

1   Raise the top cover.
2   Push back (towards the front of the machine) on the latch and raise the read head upper card guide.
3   Remove the jammed card(s).
4   Lower the read head upper card guide back to the horizontal position and relatch.

Jam Between the Read Station and the Stacker

1   Raise the top cover.
2   Pull up on the upper card guide assembly.
3   Remove the jammed card(s).
4   Lower the upper card guide to the horizontal position.

2502

Read Head Upper Card Guide

Latch

Upper Card Guide Assembly
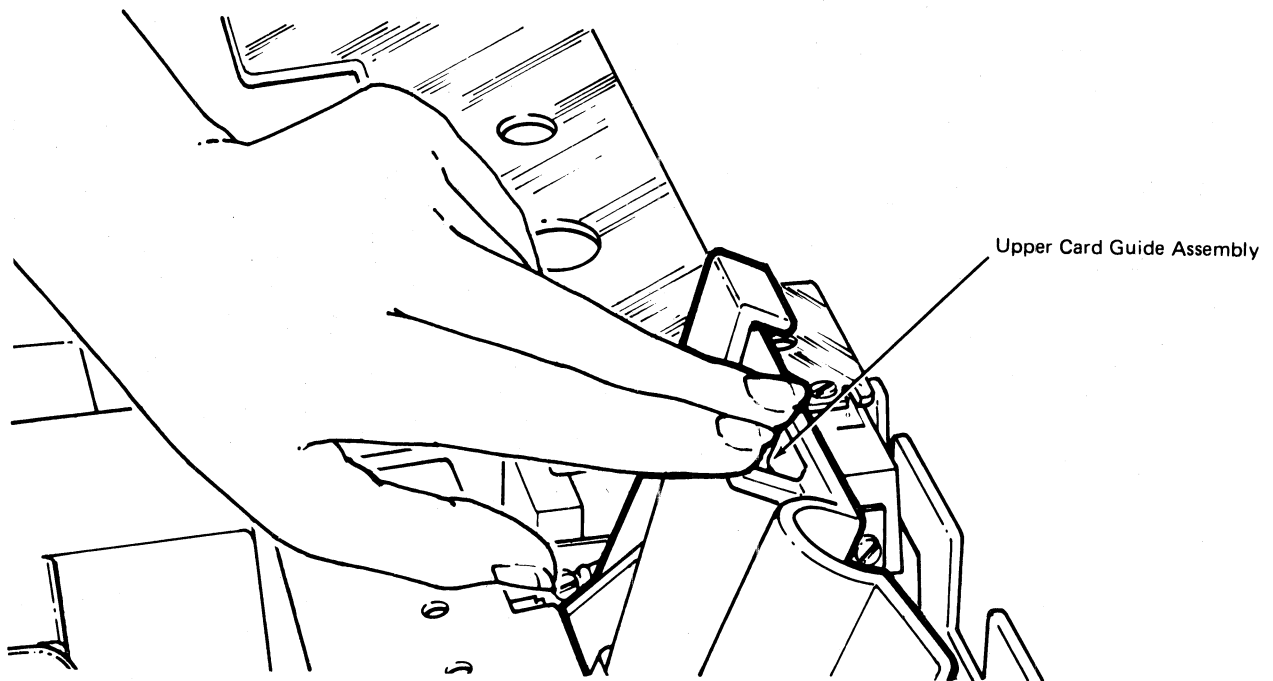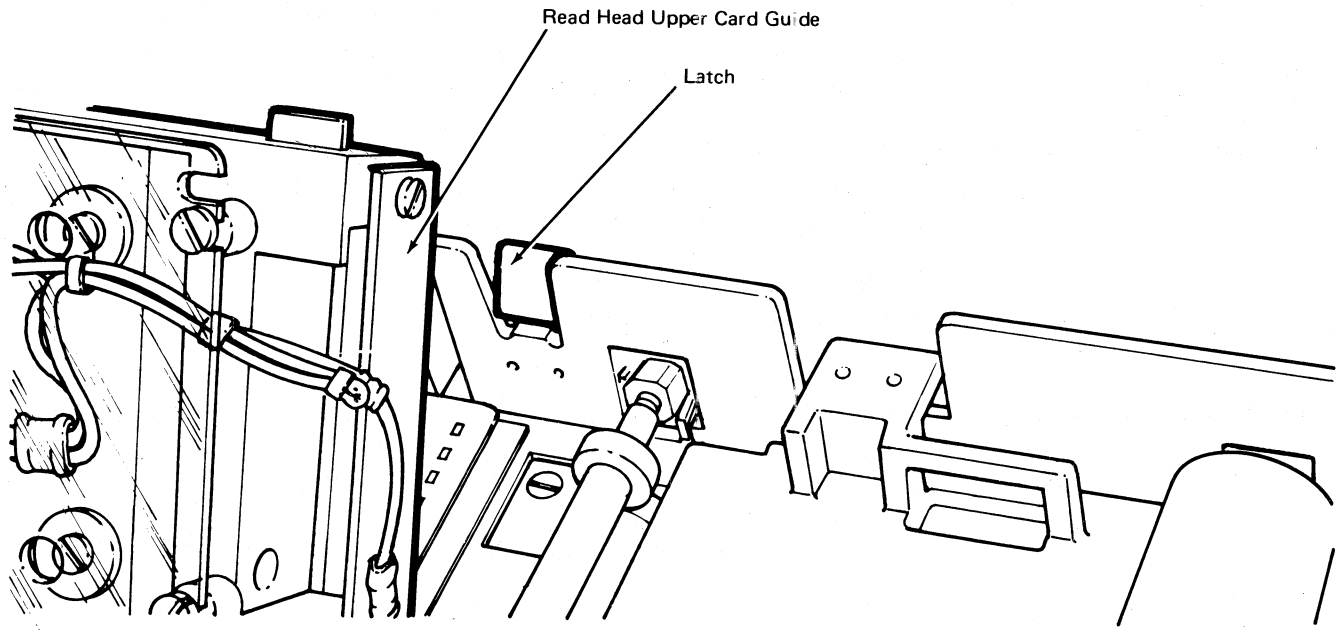
Figure 6-3. 2502 Card Jam Removal

Chapter 7. IBM 3501 Card Reader

Make Ready Procedure

The objective of the make ready procedure is to place the reader in a ready condition for reading the job's card input. Refer to Figure 7-1 for the location of the reader controls used in this procedure.

1 Remove all cards from the hopper.

2 Turn the terminal's POWER switch on, if it is not already on.

3 Load the cards to be read in the hopper.

- Place the cards in the hopper face down, with the 9-edge towards the rear of the reader and column 1 to your left, as is indicated on the reader hopper.
- Place the card weight on top of the cards.

4 Press the GREEN (START) key.

- Both 3501 lights (status indicators) turn on when a job starts that defines the card reader as the job's input device.
- The reader is in a ready condition, and reads under control of the system controller.

Figure 7-1. 3501 Make Ready Procedure (Part 1 of 2)

Power Plug
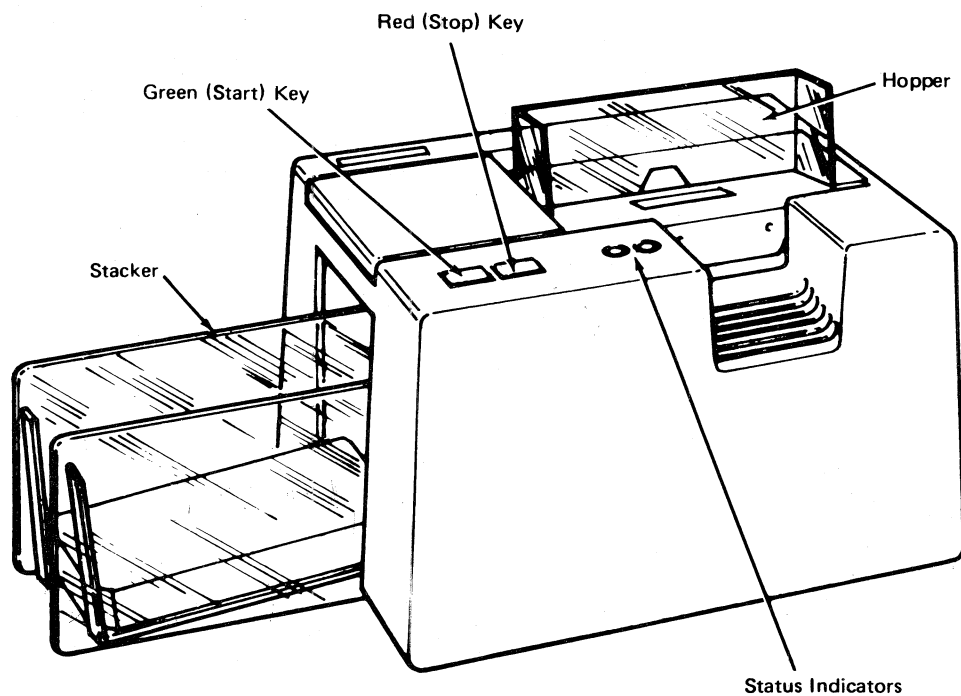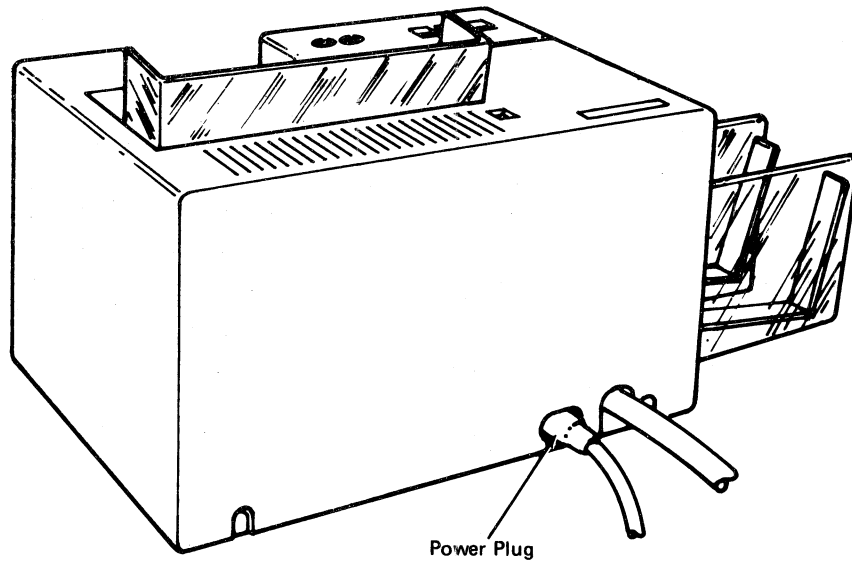
Figure 7-1. 3501 Make Ready Procedure (Part 2 of 2)

Operating Procedures

Reloading the Hopper or Unloading the Stacker

Use this procedure to either add cards to the reader hopper, or remove cards from the stacker. Refer to Figure 7-1 for the location of the reader controls used in this procedure.

1 Press the reader RED (STOP) key.

   - The reader stops after it reads the card in process.

2 Add the cards required to the hopper, and unload the stacker if required.
3 Press the reader GREEN (START) key.

   - Both 3501 lights (status indicators) turn on when a job starts that defines the card reader as the job's input device.
   - The reader is in a ready condition, and reads under control of the system controller.

Removing a Card Jam

Use this procedure to remove a card jam:

CAUTION
Press the RED (STOP) key to avoid unexpected starting.

1 Press the RED (STOP) key.
2 Remove the cards from the hopper
3 Open the top cover as shown in Figure 7-2.
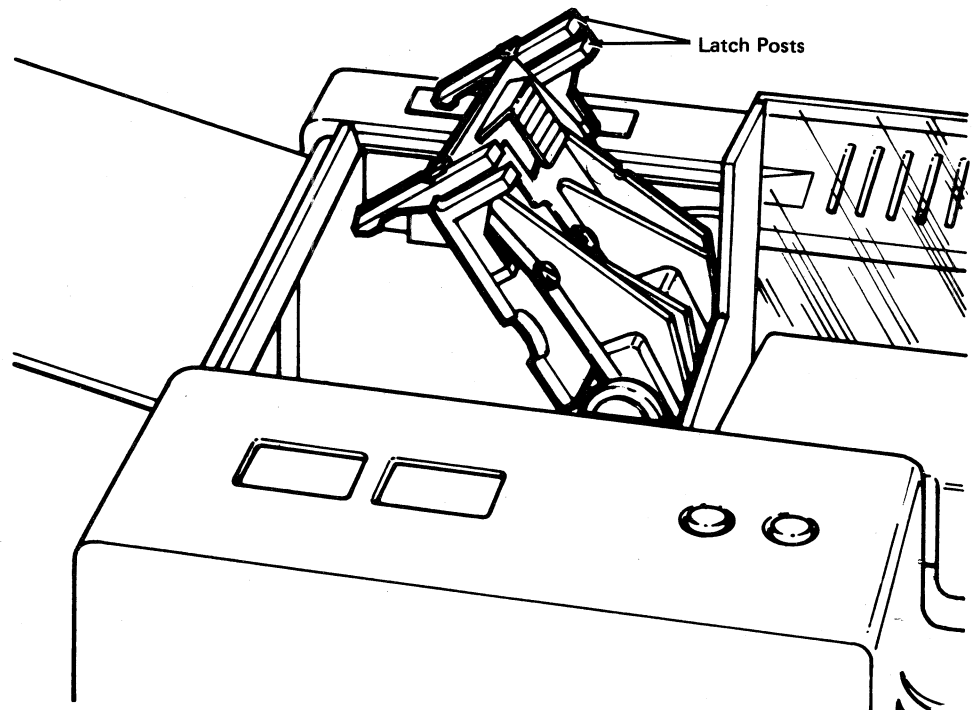
Figure 7-2. Removing a Card Jam
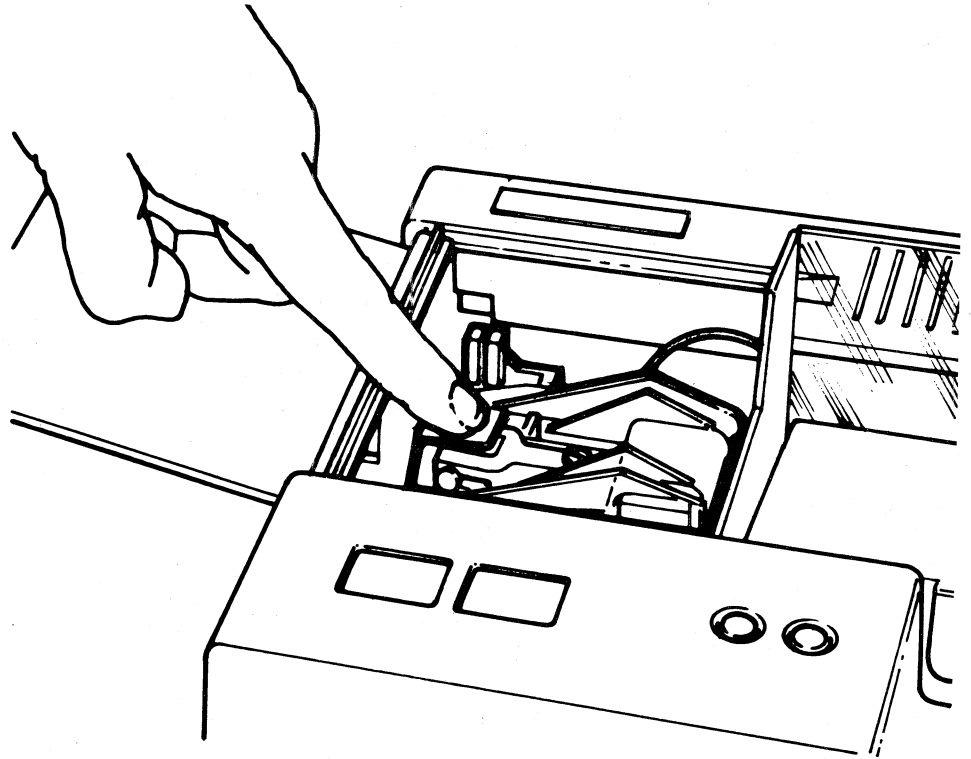
Figure 7-3. Closing the Read Head Cover

4 Rotate the read head card cover open (up and to the right) by squeezing the top of the latch posts together, as shown in Figure 7-2.

- The card transport area is open for removal of the card jam.
- Be careful not to snag the card on the read head star wheels when removing the jam.

5 Close the read head card cover by pressing firmly on the cover as shown in Figure 7-3. Check to be sure that both lock post latches lock in place.

6 Close the top cover.

7 If disconnected, plug in the power plug at the back of the reader.

8 Make the reader ready, as described in the "Make Ready Procedure".

Chapter 8. IBM 3521 Card Punch

Make Ready Procedure

The objective of the make ready procedure is to place the punch in a ready condition for punching the job's card output. Refer to Figure 8-1 for the location of the punch controls used in this procedure.

Figure 8-1. 3521 Make Ready Procedure (Part 1 of 2)

To place the punch in a ready condition:

CAUTION
BE SURE THAT THE FRONT COVER IS CLOSED BEFORE MAKING THE PUNCH READY. THE PUNCH MOTOR WILL RUN WITH THE FRONT COVER OPEN.

1 Remove all cards from the hopper.
2 Turn the terminal's power on, if it is not already on.
3 Turn the 3521's POWER switch on if it is not already on; the switch is located on the front of the IBM 3782 Card Attachment Unit.

Note: When the read feature is installed, there is a time delay of approximately 45 seconds before the 3521 becomes ready after power is turned on. If you attempt to start a job during this time delay period, the job will not start and 354 will display in the NPR after 45 seconds. You must restart the job.

4 If performing an error recovery procedure, press the BLUE (Non Process Run Out) key; if starting a new job, pressing the BLUE key is not necessary.

5 Move the hopper slide to the left, and place cards against the hopper slide and the bottom of the hopper (column 1-end down, 9-edge to the rear). Allow the slide and cards to move to the right into position for feeding. Ensure that the first card does not fall partially through the feed throat.

Note: Cards must be fanned and joggled before loading in the hopper. Bent or warped cards must be straightened.

Multiple card decks for successive card read jobs can be placed in the hopper, with a /*EOF card followed by a blank card at the end of each deck.

Power Plug
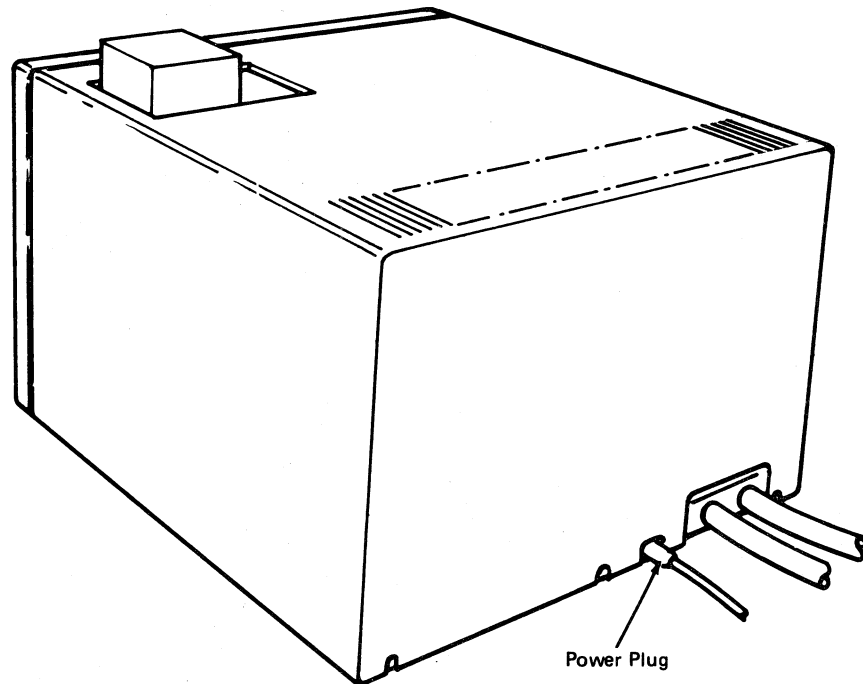
Figure 8-1. 3521 Make Ready Procedure (Part 2 of 2)

6 Press the 3521's GREEN (START) key if the 3521 is not ready.
- Both 3521 lights (status indicators) turn on when a job starts that defines the 3521 as the job's input or output device (reader or punch).
- The 3521 is in a ready condition, and reads or punches under control of the terminal's controller.

POWER NOTE: If the 3521's motor does not start, check that the power switch located on the front of the IBM 3782 Card Attachment Unit is turned on; and check that the power plug at the rear of the 3521 is connected.

Operating Procedures

Reloading the Hopper or Emptying the Stacker

Use this procedure to either add cards to the hopper, or remove cards from the stacker. Refer to Figure 8-1 for the location of the punch controls used in this procedure.

1 Press the RED (STOP) key.

2 Add cards to the hopper. Move the hopper slide to the left, and place cards against the hopper slide and the bottom of the hopper (column 1 end down, 9-edge to the rear). Allow the slide and cards to move to the right into position for feeding. Ensure that the first card does not fall partially through the feed throat.

Note: Cards must be fanned and joggled before loading in the hopper. Bent or warped cards must be straightened.

3 Remove the cards from the stacker.

4 Press the GREEN (START) key.

- Both 3521 lights (status indicators) turn on when a job starts that defines the 3521 as the job's input or output device.
- The 3521 is in a ready condition, and reads or punches under control of the terminal's controller.

Emptying the Chip Box

The chip box window in the front cover of the punch indicates when the chip box (Figure 8-2) is full. As card chad builds up it can be seen through the chip box window. Empty the chip box before it overfills and card chad spills into the base of the punch.

CAUTION
If card chad does spill into the base of the machine, be sure you turn the machine power off before using a vacuum cleaner to remove the chad.
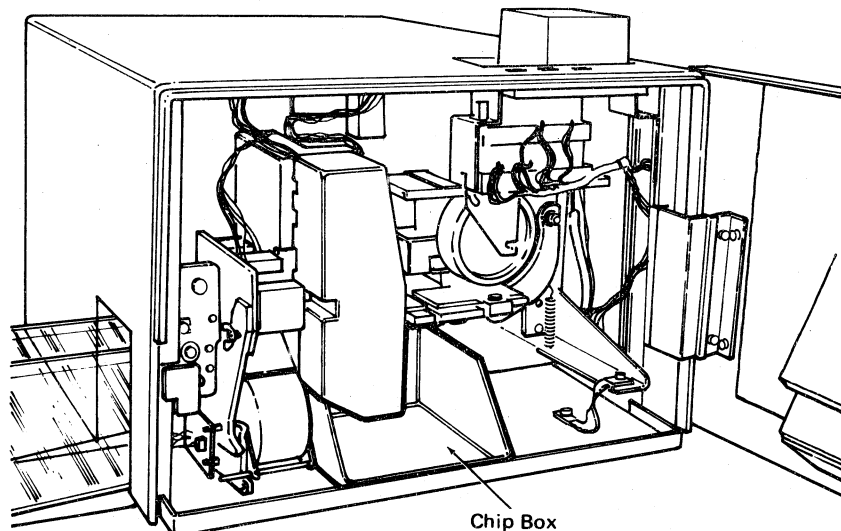
Figure 8-2. Emptying the Chip Box

To Empty the Chip Box:

1 Press the RED (STOP) key.

2 Turn the card punch power off.

3 Open the front cover (door) as indicated in Figure 8-2.

4 Remove the chip box (Figure 8-2).
5 Replace the chip box after it is emptied.
6 Close the front cover.
7 Make the card punch ready as described in the "Make Ready Procedure".

Removing Card Jams

The most probable cause of a card jam is card damage at the column 1 end of the card; the card is bent or nicked and will not pass through the punch. Most card jams can be removed easily; however, trying to use the NPRO (non process run out) key to try to run a damaged card through the punch, or forcing a card out of the punch can complicate the correction of an otherwise simple card jam.
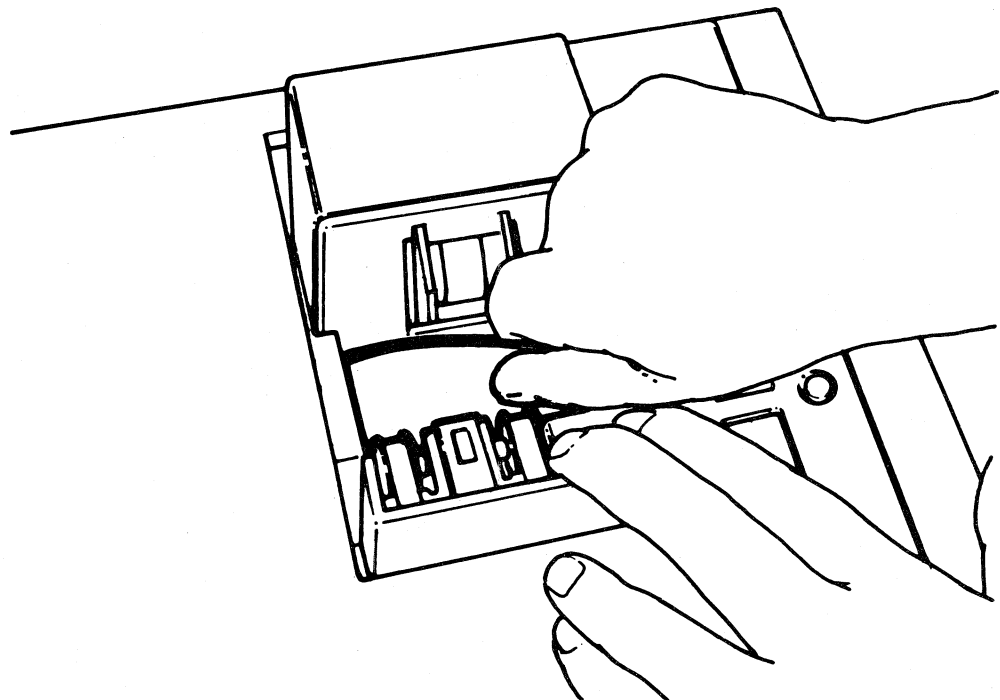
Figure 8-3. Removing a Card Jam at the Hopper

To Remove a Card Jam:

CAUTION
Press the 3521 Stop (red) key to avoid unexpected starting.

1 Press the RED (STOP) key.
2 If the card jam is at the hopper, remove the card as shown in Figure 8-3.
3 Open the front cover as shown in Figure 8-2.
4 To gain access to the card path area, loosen the wingscrew located at the top of the punch's printing unit (see Figure 8-2) and pivot the top half of the printing unit open.
5 Open the registration station cover shown in Figure 8-4 and hold the cover out of the way.

Wing Screw
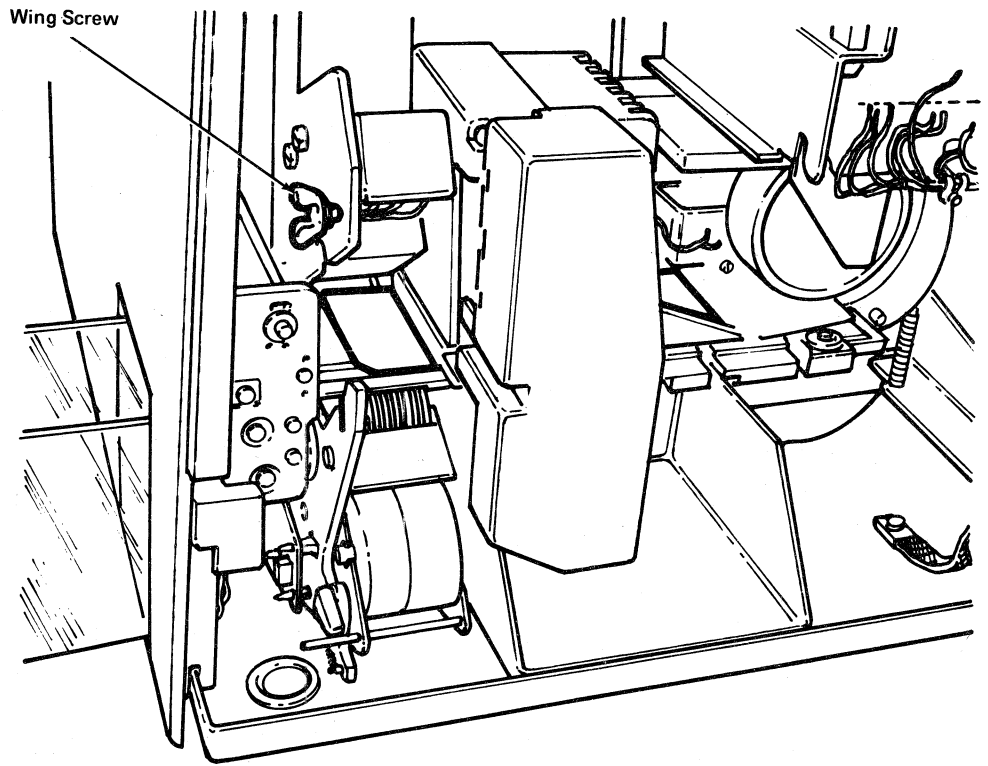
Figure 8-4. Removing a Card Jam in the Card Path Area (Part 1 of 2)
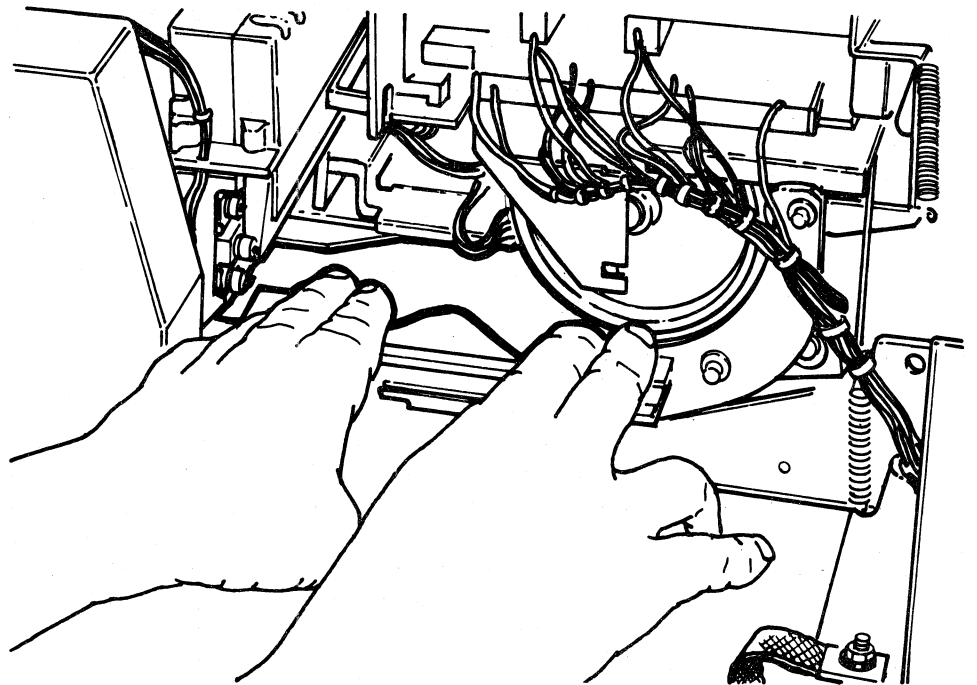
Figure 8-4. Removing a Card Jam in the Card Path Area (Part 2 of 2)

6   Using Figure 8-4 as a reference, carefully pry the card up and buckle it from both ends as shown.

Note: The column 80 end of the card (under the large wheel) will have some drag, due to the spring-loaded pressure roll.

At the column 1 end, pull the card from the punch in a straight line to avoid cutting the card on the card guide. As the card clears the guide, take it out of the punch in the direction shown in Figure 8-4.

7   Close the registration station cover.
8   Pivot the top half of the printing unit closed, hold it down against the stop, and tighten the wingscrew.
9   Close the front cover.
10 If disconnected, plug in the power plug at the back of the punch.
11 Make the punch ready as described in the "Make Ready Procedure".

Replacing the Inkroll

Inkroll Bracket

Inkroll Bracket Latch

Shaft
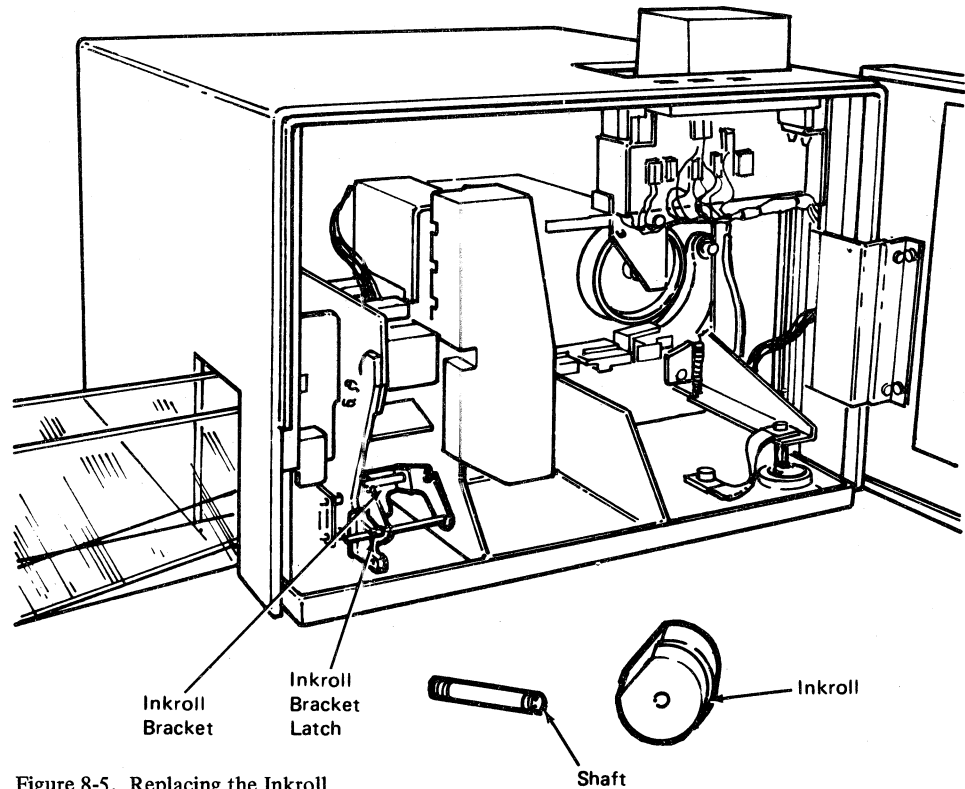
Inkroll

Figure 8-5. Replacing the Inkroll

To Replace the Inkroll:

1   Press the RED (STOP) key.
2   Open the front cover as shown in Figure 8-2.
3   Using Figure 8-5 as a reference, disengage the inkroll from the typedrum by pressing down on the inkroll bracket until the latch snaps into place.
4   Remove the old inkroll cartridge and shaft from the bracket.
5   Remove the shaft from the old inkroll cartridge.
6   Insert the shaft in the new inkroll cartridge.
7   Insert the new inkroll cartridge and shaft into the inkroll bracket so that the shaft ends are in the bracket slots.

8 Engage the inkroll with the typedrum by pushing down on the inkroll bracket latch.

Note: You need not engage the inkroll with the typedrum if the 3521 will be run for long periods without printing (the interpret feature is not used). If you leave the inkroll disengaged, it will increase the life of the inkroll, and will reduce the dust and ink buildup on the typedrum.

Cleaning the Typedrum

As the 3521 runs, ink and card dust accumulate on the typedrum. If not removed, this ink and dust buildup will affect the legibility of the printed characters. Cleaning the typedrum more frequently is better than waiting until the character faces on the drum become clogged and cause a problem. For most applications, cleaning the typedrum monthly is adequate.

To Clean the Typedrum:

1 Remove the inkroll as described in the "Replacing the Inkroll" procedure.
2 Install the brush cartridge exactly as if it were a new inkroll. Use the "Replacing the Inkroll" procedure.
3 A. Close the front cover.
   B. Place the terminal in local mode (hold the CODE key down and press START JOB and START DUAL).
   C. Press the BLUE (Non Process Run Out) key about ten times; about ten non-process-run-out cycles should clean the typedrum; press the BLUE key ten more times if the typedrum is not clean.
4 Use the "Replacing the Inkroll" procedure to install the inkroll that was removed in step 1.

Using the Status Indicators

The 3521's status indicators together with the indicators on the terminal's operator panel provide an indication of the 3521's status at any given point in running a job. When both of the 3521's status indicators are on, the 3521 is in a ready status, and is selected as the terminal's input or output device.

When either of the status indicators is off (indicating a not-ready or error condition), first check the terminal's operator panel indicators to determine the cause of the problem and the procedure for correcting the problem. When an error involving the 3521 occurs:

- The terminal's operator panel PUNCH indicator will be on if the 3521 is used as a punch.
- The terminal's operator panel READER indicator will be on if the 3521 is used as a reader.
- All other input and output device indicators on the operator panel will be off.
- Either the OPRN (Operational) CHECK or the SYSTEM CHECK indicators will be on.
- A number displays in the operator panel's readout indicators that indicates the type of error. Chapter 3, Error Recovery and Problem Identification, lists these numbers together with the procedure for determining the cause of and for correcting the error.

A summary of the error types displayed when either of the indicators is off follows. Use the method described above for correcting error conditions.

LEFT INDICATOR OFF: Generally indicates a problem occurred after the card reached the registration station, such as punch check, read check, sync check, or card jam after registration.

RIGHT INDICATOR OFF: Generally indicates a problem occurred before the card reached the registration station, such as hopper check (hopper empty), or card jam while feeding the card.

Chapter 9. Operator ID (Identification) Card Reader

Reading an Identification Card

If the ID Card Reader feature is installed, the CPU can request user identification by sending a message to the printer. The operator must then initiate a SYS REQ operation. Data may or may not be keyed in, but if it is, at least 41 positions must be left for badge data. After data is keyed in, press CODE/6.

When the NPR displays code 233, insert the identification badge in the reader at the right side, with the magnetic surface down and to the rear, and slide the badge through the reader at a steady rate.

This function may only be used during the logon procedure. When the badge is read using BSC, the buffer is sent to the CPU. Data read from the ID reader is not printed at the terminal.

When the badge is read using SDLC, key entry can take place after the badge is read. If the badge did not contain an OID character (operator ID badge), then the PRINT VIEW and BUFFR BKSP keys can be used after the badge is read. If the badge contains an OID character, PRINT VIEW and BUFFR BKSP are not allowed. The buffer is sent to the CPU when EOM is pressed to terminate the message. The CPU must provide checking and verification of the received data and take whatever action is necessary depending upon the validity of the data.
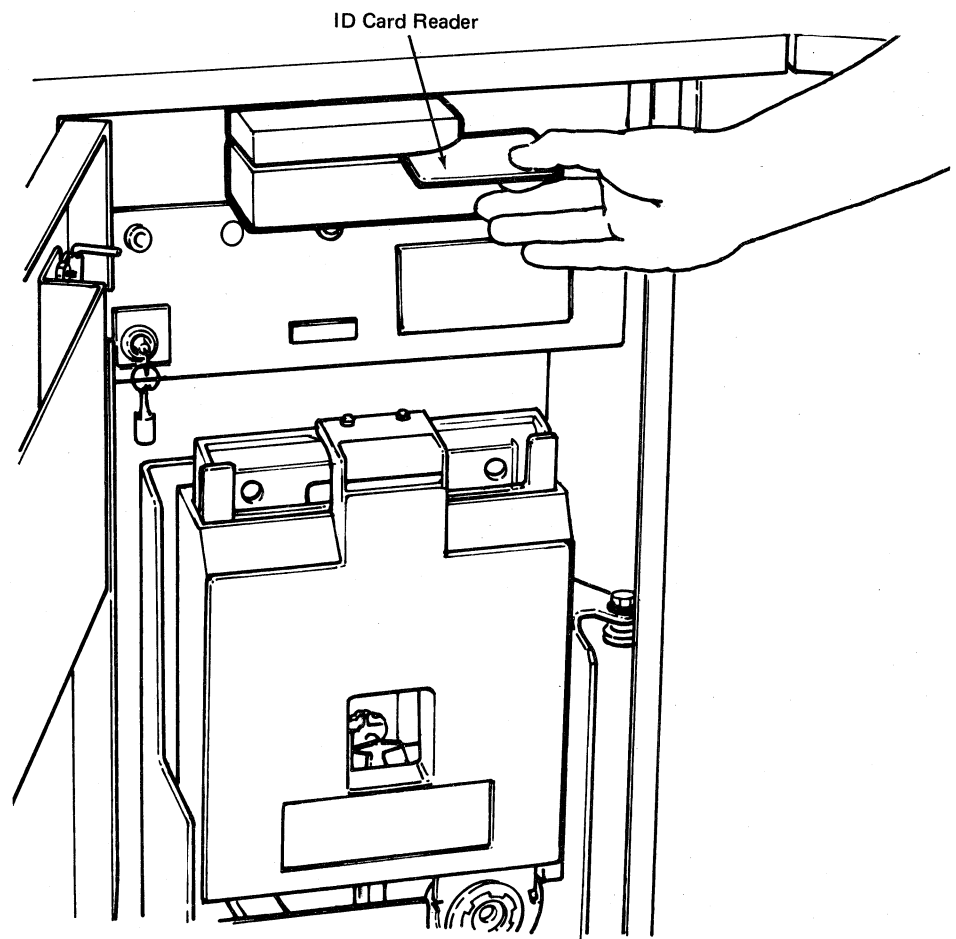
ID Card Reader

Figure 9-1. ID (Identification) Card Reader

Appendix A. Emulating IBM 2770 or IBM 3780 Workstation Jobs

This section provides reference information for IBM 3776 users who are using the terminal to emulate these workstation functions of an IBM 2770 or 3780 Data Communication System:

- OS/VS1 RES Workstation Jobs
- CICS/DOS, CICS/OS Workstation Jobs
- OS/VS2, JES II, HASP II, and ASP Workstation Jobs
- IMS/VS Workstation Jobs
- DOS/VS POWER Workstation Jobs

The "Entering Operator Defined Jobs from the Keyboard" section, and the "Starting a Job" sections (in Chapter 2), describe how to define and start jobs using these devices and features.

The "Operator Notes" sections that follow include reference information on emulating IBM 2770 or 3780 workstation functions when operating with one of the programs that are listed above. If you are not already familiar with this reference information, read it before defining or starting a workstation job.

Defining an IBM 2770 or 3780 Workstation Job

The following input and output device combinations and features are available on the IBM 3776 and on the IBM 2770 and 3780 terminals; define these when entering an operator defined job from the keyboard, and the "DEV =" instruction prints on the console printer (refer to "Entering Operator Defined Jobs from the Keyboard" in Chapter 2):

    08 = Communications Line to Printer
    09 = Communications Line to Card Punch

    30 = Card Reader to Communications Line
    38 = Card Reader to Printer
    39 = Card Reader to Card Punch

    T = Transparent Mode*
    C = Compress Option*
    I = Interpret Print (IBM 3521 Card Punch) not selected
    Z = IBM 3521 Card Punch Read-back Checking not used (inhibited)

    *   You can specify either the Compress option or the Transparent Mode option
        (not both) on any one job definition. The card reader must be the job's input
        device when you specify either of these features.

Starting an IBM 2770 or 3780 Workstation Job

In addition to the operator defined input/output device combinations and features that can be defined as just described, the following system defined jobs can be selected as described in Chapter 2 under "Starting a Job".

    S08 = Communications Line to Printer
    S09 = Communications Line to Card Punch

    S30 = Card Reader to Communications Line
    S38 = Card Reader to Printer
    S39 = Card Reader to Card Punch

2770 EM

OS/VS1 RES Operator Notes

OS/VS1 RES REFERENCE: Refer to the *OS/VS1 RES Workstation User's Guide*, GC28-6879, for a description of the program's operating characteristics and operator commands.

BUFFER SIZE: The IBM 3776 transmits and receives in blocks of 256 characters if the EXTEND BUFFER switch is off, or in blocks of 512 characters if the EXTEND BUFFER switch is on.

DISK SWITCH USE: When the DISK switch is on, WTOR (Write to Operator and Reply) messages write to the Diskette Storage Device, unless the message contains a DC1 character to select the printer.

For messages that do not contain a DC1 character, you can request that the central processor operator issue a display/request command to display all outstanding WTORs for your terminal, and enter the replies through the processor's console.

BSC/SDLC SWITCH: The auxiliary operator panel BSC/SDLC switch must be in the BSC position.

ERROR RECOVERY: Use the error recovery and problem identification procedures in Chapter 3 to restart operation following an error.

CICS Operator Notes

REFERENCE: Refer to *Customer Information Control System (CICS) Terminal Operator's Guide*, SH20-1044.

BUFFER SIZE: The IBM 3776 transmits and receives in blocks of 256 characters if the EXTEND BUFFER switch is off, or in blocks of 512 characters if the EXTEND BUFFER switch is on.

BSC/SDLC SWITCH: The auxiliary operator panel BSC/SDLC switch must be in the BSC position.

STATUS MESSAGES: Refer to the CICS manual referenced above for the status messages.

ERROR RECOVERY: Use the error recovery procedures in Chapter 3 to restart the terminal following an error.

OS/VS2 JES2, HASP II, ASP Operator Notes

JES2 REFERENCE:	Refer to the *Operator's Library: OS/VS Reference (JES2)*, GC38-0210 for a description of the program's operating characteristics and operator commands.
HASP II REFERENCE:	Refer to *OS/VS2 HASP II Version 4 Operator's Guide*, GC27-6993.
ASP REFERENCE:	Refer to *IBM System/360 and System/370 ASP Version 3 Asymmetric Multiprocessing System Operator's Manual*, GH20-1289-1.
BUFFER SIZE:	The IBM 3776 transmits and receives in blocks of 256 characters if the EXTEND BUFFER switch is off, or in blocks of 512 characters if the EXTEND BUFFER switch is on.
DISK SWITCH USE:	When the DISK switch is on, WTOR (Write to Operator and Reply) messages write to the Diskette Storage Device, unless the message contains a DC1 character to select the printer.
	For messages that do not contain a DC1 character, you can request that the central processor operator issue a display/request command to display all outstanding WTORs for your terminal, and enter the replies through the processor's console.
BSC/SDLC SWITCH:	The auxiliary operator panel BSC/SDLC switch must be in the BSC position.
STANDARD JOB CYCLE:	1. Sign on (establishment of communications). 2. Transmit the job to the processor; start a card reader to communications line job. 3. The job executes. 4. The processor transmits the job's printed (or punched) output to the terminal.
TRANSMIT JOB NOTES:	When transmitting card data (if compress is not active), the controller reads and transmits 3 full cards at a time if the EXTEND BUFFER switch is off, or 6 full cards at a time if the EXTEND BUFFER switch is on.
ERROR RECOVERY NOTES:	Use the error recovery and problem identification procedures in Chapter 3 to restart the terminal following an error. Refer to the publication listed above for requesting the central processor to restart the job.

2770 EM

IMS/VS Operator Notes

IMS/VS REFERENCE: Refer to *IMS/VS Telecommunication Device Support Operator's Reference Manual,* SH20-9028, for a description of the program's operating characteristics and operator commands.

BUFFER SIZE: The IBM 3776 transmits and receives in blocks of 256 characters if the EXTEND BUFFER switch is off, or in blocks of 512 characters if the EXTEND BUFFER switch is on.

BSC/SDLC SWITCH: The auxiliary operator panel BSC/SDLC switch must be in the BSC position.

WHEN DEFINING A JOB: Do not select transparent mode.

WHEN STARTING A JOB: Place all input and output devices used in the job in a ready condition, even though only one input and one output device is defined at job start time.

Select the Inquiry Mode function.

STATUS MESSAGES: Two terminal-oriented status messages are transmitted by IMS/VS. One message deals with the amount of information discarded by IMS/VS when a logical input error occurs, and the other message deals with component status when an input/output error occurs.

These messages are generated and sent to the terminal operator if the terminal's printer is in a ready status. If the printer is not ready, the terminal is stopped and marked inoperable without generating the status message to the terminal.

ERROR RECOVERY: Use the error recovery and problem identification procedures in Chapter 3 to restart the terminal's operation following error interruptions.

DOS/VS POWER Operator Notes

REFERENCE: Refer to *Operator's Library: DOS/VS Operating Procedures,* GC33-5378.

BUFFER SIZE: The IBM 3776 transmits and receives in blocks of 256 characters if the EXTEND BUFFER switch is off, or in blocks of 512 characters if the EXTEND BUFFER switch is on.

BSC/SDLC SWITCH: The auxiliary operator panel BSC/SDLC switch must be in the BSC position.

WHEN DEFINING A JOB: Select the transparent or compress option as required.

WHEN STARTING A JOB: Do not select inquiry mode. Select manual disconnect.

ERROR RECOVERY: Use the error recovery procedures in Chapter 3 to restart the terminal following an error.

Appendix B. Communications Test

Binary Synchronous Communications Online Test

Online test provides a means for transmitting test messages to and from the central processor. The online test program that resides in the central processor controls the tests. You initiate tests by entering online test mode and transmitting a request for test to the central processor.

This section includes procedures for entering online test mode, and for requesting either online test "01" or "14". The following chart describes tests "01" and "14". As not all users have the online test capability described in this manual, you should contact the operator at the central processor to determine if you can use these online test procedures, or if procedures for using other tests are available.

Note: RFT = Request for Test.
EBCDIC = Extended Binary Coded Decimal Interchange Code.

TEST NO.	DESCRIPTION
01	The processor transmits the text message received in the RFT the number of times requested in the RFT. The maximum length text message is 256 characters, including the RFT message.
14	EBCDIC Message: The processor transmits a 36 character message (A through Z, and 0 through 9) the number of times requested by the RFT.

To Enter Online Test Mode

1 Hold the CODE key down, and enter a numeric "0" from the keyboard; then, release the CODE key.

2 Enter a numeric "5" from the keyboard; the number "5" displays in the readout (NPR) indicators.

3 Press the EOM key.

- The terminal enters online test mode.
- The terminal is ready for the request for test (RFT) message.

4 If using a switched communication (dial) network, dial the number of the central processor's modem and establish the communication link. The "Switched Communication (Dial) Network Procedures" section in Chapter 2 describes how to do this.

Requesting Online Test 01 On a Switched or Non-Switched Point-to-Point Communication Network

1 Enter online test mode as described in "To Enter Online Test Mode".

2 Enter this request for test (RFT) message from the keyboard:

%01YY0 SPACE DC TEXT

where: YY = the number of times test 01 runs.
SPACE = a space character.
DC = the device control number for the device that receives the test message:

1 = printer
2 = card punch
3 = Diskette Storage Device
4 = printer

TEXT = the test message you enter from the keyboard.
(Used with test 01 only)

TESTS

3 Press the EOM key to start the test.

Note: Error code 295 may display in the readout indicators if the RFT is entered incorrectly; if this happens, hold the CODE key down and press the START JOB key to exit from online test mode. Enter online test and enter the RFT message again.

4 Hold the CODE key down and press the START JOB/STOP JOB key to exit from online test mode.

Requesting Online Test 14 on a Switched or Non-Switched Point-to-Point Communication Line

1 Enter online test mode as described in "To Enter Online Test Mode".

2 Enter this request for test (RFT) message from the keyboard:

%14YY1DC SPACE

where: 14 = the test number.

YY = the number of times the test runs.

DC = the device control number for the device that receives the test message:

        1 = printer
        2 = card punch
        3 = Diskette Storage Device
        4 = printer

SPACE = a space character.

3 Press the EOM key to start the test.

Note: Error code 295 may display in the readout indicators if the RFT is entered incorrectly; if this happens, hold the CODE key down and press the START JOB/STOP JOB key to exit from online test mode. Enter online test and enter the RFT message again.

4 Press the RESET key to exit from online test mode.

Requesting Online Test on a Multipoint Communications Network

1 Enter online test mode as described in "To Enter Online Test Mode".

2 Enter this request for test (RFT) message from the keyboard:

%XXYY3AADC SPACE TEXT

where: XX = the test number (either test 01 or test 14).

YY = the number of times the test runs.

AA = the two-character address of the terminal.

DC = the device control number for the device that receives the test message.

        1 = printer
        2 = card punch
        3 = Diskette Storage Device
        4 = printer

SPACE = a space character.

TEXT = the test message you enter from the keyboard. (Used with test 01 only)

3 Press the EOM key to start the test.

Note: Error code 295 may display in the readout indicators if the RFT is entered incorrectly; if this happens, hold the CODE key down and press the START JOB key to exit from online test mode. Enter online test and enter the RFT message again.

4 Hold the CODE key down and press the START JOB/STOP JOB key to exit from online test mode.

SDLC Communications Online Echo Test

The online echo test is a means of transmitting test messages to and from the central processor. The online test program that resides in the central processor controls the test. You initiate the test by entering a logon message to the central processor to request testing.

The terminal must be in SDLC mode and the central processor must be operational before the Echo Test can be initiated.

To Initiate Echo Test:

Do you wish to start the test from your terminal?

```
Y   N
    Do you wish to start the test from another terminal?
    Y   N
        Have host CE start T3700SNA.
        Go to line (e) of Example 1 - Echo Test.


    Enter logon applid (istoltep).
    Then respond DEV/3700SNA//.
    Where DEV = Symbolic name of the test terminal.
    Go to line (e) of Example 1 - Echo Test.


    Note: If a BIND failure message is received;
    Respond to ENTER DEV/TEST/OPT with
    DEV (X'030321903080')/3700SNA//.
```

Example 1 - Echo Test (Under TOLTEP)	
Press SYS REQ key	
Logon applid (istoltep)	(a)
(Start a communications line-to-printer job)	
F1021 ISTOLTEP REL. 2.0 INITIALIZATION IN PROGRESS	(b)
F1071 OPTIONS ARE NTL, NEL, NPP, FE, NMI, EP, CP, NTR, NAP	(b)
F105D ENTER DEV/TEST/OPT/	(b)
*/T3700sna//	(c)
F1581 S T3700SNA UNIT 00CF RT2LU1	(d)
901 ENTER YYDATA, PROMPT, OR END	(e)
4 test data	(f)
test data	(g)
test data	(g)
test data	(g)
test data	(g)
901 ENTER YYDATA, PROMPT, OR END	(h)
end	(i)
905 END OF ECHO TESTING	(j)
F1581 T3700SNA UNIT 00CF RTS2LU1	(b)
F1071 OPTIONS ARE NTL, NEL, NPP, FE, NMI, EP, CP, PR, NTR, ANP	
F105D ENTER DEV/TEST/OPT/	(b)
CNCL key	(k)

TESTS

Description

The meaning of each line is as follows:

(a) The logon to TOLTEP (Teleprocessing Online Test Executive Program).
   (A receive job must be started; the message will be sent to the SSCP.)

(b) Standard OLT messages.

   Note: Printing will stop after the first line unless the system operator approves the use of the terminal.

(c) An asterisk in the device field **designates** that the test device is the one that is now communicating (logged on). The test field contains the test number for Echo (3700SNA). No options were modified.

(d) Standard OLT message.
   The symbolic name of the test device is given here **(RTS2LU1)**.

(e) Echo is requesting TEST DATA, PROMPT or END.

(f) A response of '4 test data' requests that the data be repeated four times.

(g) The data is being Echoed.

(h) Echo is requesting more ECHO DATA, PROMPT or END.

(i) A request of end of testing has been entered.

(j) Ending message of Echo (no errors).

(k) This will cancel TOLTEP and the terminal can be logged off.

Note: Refer to the publication *DOS/VS and OS/VS TOLTEP for VTAM* (GC28-0663) for additional information and detailed test procedures.

Index

Trouble Report Form

1 Circle the operator panel indicators and switches that are on before performing any error recovery procedures:

O CPU SELECT O PRINT INHIBIT O OPRN CHECK O SYSTEM CHECK   O   O LINE   O READER   O DISK1

HOLD PRINT   AUTO

[switches] ——OFF——

O ON LINE   O STANDBY   O PROCEED   O UPPER CASE   [NPR readout display]   O   O LINE PRINTER   O PUNCH   O DISK2

EXTEND BUFFER ALARM DISK

[switches] ——OFF——

NUMERIC POSITION READOUT INDICATORS
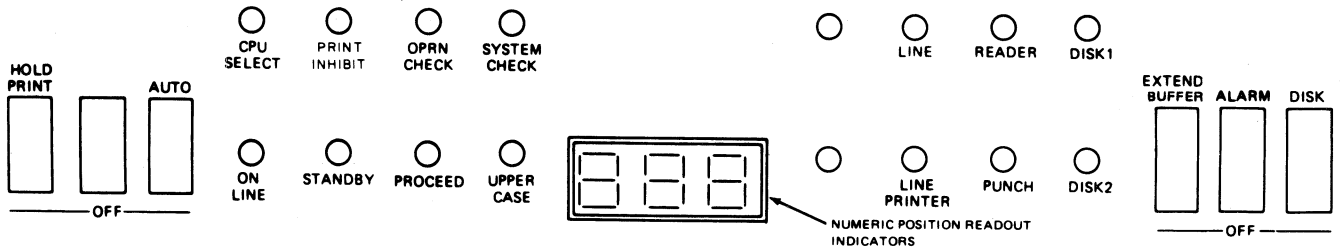
2 ———— ———— ———— Enter the number that is displayed in the readout (NPR) indicators.

3 Circle the position of these auxiliary operator panel switches:

  TALK—DATA   BSC—SDLC   NORMAL—HALF SPEED

4 Circle the input and output devices selected in this job setup:

  LINE   CARD READER   DISK 1

  LINE PRINTER CARD PUNCH   DISK 2

5 Circle the features selected in this job setup:

  TRANSPARENT MODE   COMPRESS   DELETE DATA SETS

  MONOCASE   MANUAL DISCONNECT   INQUIRY MODE

  IGNORE ETX/EOT   SNBU

6 Print the error log: (A) Hold the CODE key down, and press the numeric "2" key, and (B) the error log prints. If the error log does not print, operate the SYSTEM RESET switch and repeat Step A.

7 Comments (additional information or results of "Problem Identification Tests"):
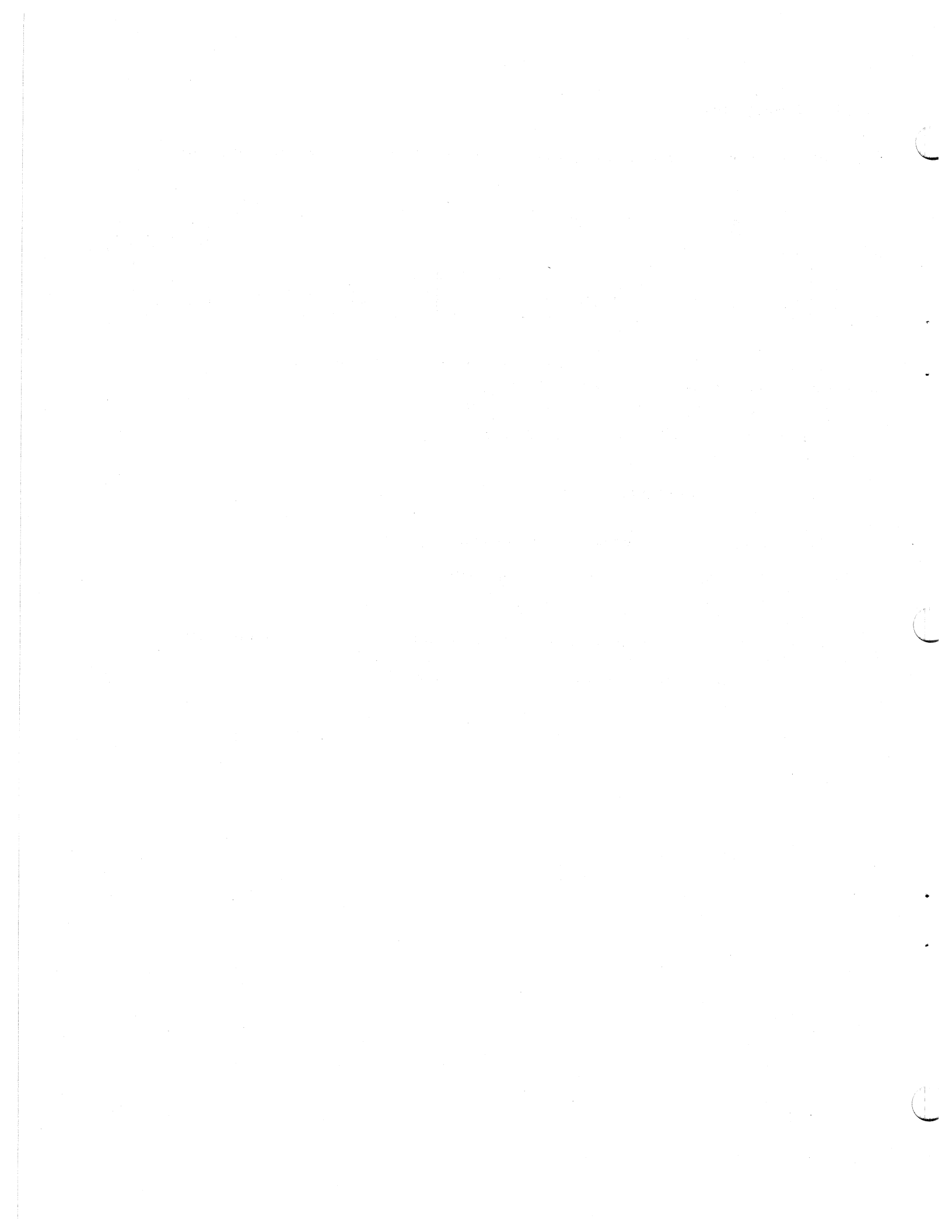
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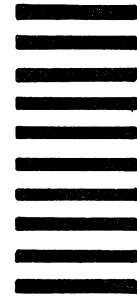
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