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PROCEDURE 1
Paper Tape Devices

CONTENTS

TABLES

HP 2737A PUNCHED TAPE READER

The HP 2737A Punched Tape Reader reads data from conventional 1-inch wide (8-channel) punched tape. The reading speed is 300 characters-per-second synchronous (continuous command) or 100 characters-per-second asynchronous (10 ms step command).

Power On/Power Off

To turn on the tape reader, set the POWER toggle switch to the ON position. To turn off the tape reader, set the POWER switch to the OFF position.

Using the Tape Reader

To load tape into the tape reader, lower the RUN/LOAD slide to the LOAD position, insert the tape into the read mechanism, and then raise the RUN/LOAD slide back to the RUN position. The tape should be inserted so that the feed holes are closer to the front panel of the tape reader. The tape will be read when an appropriate instruction is executed in the computer (as the tape is read, it moves from left to right through the read mechanism).

HP 2737B PUNCHED TAPE READER

The HP 2737B Punched Tape Reader reads data from conventional 1-inch wide (8-channel) punched tape. The reading speed is 300 characters-per-second synchronous (continuous command) or 100 characters-per-second asynchronous (10 ms step command).

Power On/Power Off

To turn on the tape reader, set the POWER toggle switch to either the READ or READ/SPOOL position. To turn off the tape reader, set the POWER toggle switch to the OFF position.

Using the Tape Reader

To load tape into the tape reader, move the RUN/LOAD slide to the LOAD position and fol-
low the instructions provided in the *HP 2737A/B Punched Tape Reader Operating and Service
Manual (02737-9018)*. Then move the RUN/LOAD slide back to the RUN position. The tape
will be read when an appropriate instruction is executed in the computer (as the tape is read,
it moves from left to right through the read mechanism).

The take-up reel works only when the POWER toggle switch is in the READ/SPOOL position.

The REWIND switch causes the tape to wind from the take-up reel back onto the feed reel.
The REWIND switch works only when the POWER toggle switch is in the READ/SPOOL
position.

HP 2748A, 2748B, AND 2758A PUNCHED TAPE READERS

The HP 2748A, 2748B, and 2758A Punched Tape Readers read data from conventional 1-inch
wide (8-channel) punched tape at a speed of 500 characters-per-second. The HP 2758A can
automatically reroll the tape whereas the HP 2748A and HP 2748B cannot.

Power On/Power Off

Pressing the POWER switch alternately turns the tape reader on and off (there is no power on/
power off indicator light).

Using the Tape Reader

Load tape into the tape reader according to the instructions provided in one of the following
manuals (as appropriate):

HP 2748A Tape Reader Operating and Service Manual (02748-90023)

HP 2748B Tape Reader Operating and Service Manual (02748-90032)

HP 2758A Tape Reader-Reroller Operating and Service Manual (02758-90173)

The tape will be read when an appropriate instruction is executed in the computer (as the tape
is read, it moves from left to right through the read mechanism). When reading is finished, use
the MANUAL ADVANCE switch to eject the trailing part of the tape from the tape reader.

HP 2749A TELEPRINTER

The HP 2749A (ASR 33) Teleprinter includes a keyboard, a printer mechanism, a tape reader,
and a tape punch. Printing is done on a roll of 8 1/2-inch wide paper. The tape reader and
punch use conventional 1-inch wide (8-channel) tape and each has its own control panel.

A LINE/OFF/LOCAL switch on the front of the teleprinter is used for turning the teleprinter on and off, and for controlling whether the teleprinter is on-line or off-line.

Power On/Power Off

> *NOTE:* *The power cord must be connected to an appropriate ac electrical outlet (115 or 230 Vac, depending upon the type of power that the particular teleprinter was designed to use).*

To turn on the teleprinter, turn the LINE/OFF/LOCAL switch to either the LINE or LOCAL position.

To turn off the teleprinter, turn the LINE/OFF/LOCAL switch to the OFF position.

On-Line/Off-Line

When the LINE/OFF/LOCAL switch is in the LINE position, the teleprinter is on-line (connected to the computer).

When the LINE/OFF/LOCAL switch is in the LOCAL position, the teleprinter is off-line (operable, but not connected to the computer).

Using the Keyboard

> *NOTE:* *The LINE/OFF/LOCAL switch must be set to either the LINE or LOCAL position.*

If the teleprinter is off-line, characters entered through the keyboard are printed by the teleprinter (if the tape punch is on, the ASCII code for each character is punched on tape as well).

If the teleprinter is on-line, the keyboard works only when an appropriate instruction is being executed in the computer. In such a case, characters entered through the keyboard are printed by the teleprinter and the ASCII code for each character is transmitted to the computer (if the tape punch is on, the ASCII code for each character is punched on tape as well).

The SHIFT and CTRL keys are used in conjunction with the keys which are imprinted with two characters. In general, the CTRL key is used for generating nonprinting characters (discussed in the following paragraph) and the SHIFT key is used for generating all other "shifted" characters.

Some of the keys generate nonprinting characters. If the teleprinter is on-line, the ASCII code for each such character is transmitted to the computer *even though nothing is printed*. A few of the nonprinting characters also cause the teleprinter to perform a discernable action (such characters cause the action when the teleprinter is on-line *or* off-line). If the tape punch is on, then the ASCII code for each nonprinting character is punched on tape as well. The nonprinting characters are summarized in Table 1.

Table 1. Nonprinting Characters: 2749A

Key*	Teleprinter Action	ASCII Code Punched on Tape and/or Transmitted to Computer
ESC	None.	ESC
LINE FEED	The paper is advanced to the next line.	LF
RETURN	The carriage moves to the leftmost print position of the current line.	CR
BELL	A bell in the teleprinter rings.	BEL
VT	None.	VT
EOT	None.	EOT
WRU	None.	ENQ
TAPE	None	DC2
~~TAPE~~	None.	DC4
TAB	None.	HT
X OFF	Turns off the tape reader.	DC3
Q	Turns on the tape reader.	DC1
RU	None.	ACK
FORM	None.	FF

* The CTRL key must be pressed simultaneously with the specified key.

The HERE IS key does not generate an ASCII code and does not cause anything to be printed. When the tape punch is on, the HERE IS key is used to produce leader or trailer on the tape. A leader or trailer is a section of tape containing only feed holes.

The REPT key is used in conjunction with the other keys to repeatedly enter a character. Press and hold the REPT key and then press and hold the desired character key. The character is entered repeatedly until either key is released.

The BREAK key holds the communication line between the teleprinter and the computer "open" for as long as the key is depressed. Though the key is meant to be nonprinting, it will occasionally cause a random character to be printed. Also, if the tape punch is on, the BREAK key causes a random code to be punched.

Using the Tape Punch

> *NOTE:* *The LINE/OFF/LOCAL switch must be set to either the LINE or*
> *LOCAL position.*

Press the ON button on the tape punch control panel.

If the teleprinter is off-line, all characters entered through the keyboard or read through the tape reader are punched on tape (as well as printed).

If the teleprinter is on-line, all characters entered through the keyboard or read through the tape reader are punched on tape (as well as printed and transmitted to the computer) and all characters received from the computer are punched on tape (as well as printed).

Press the HERE IS key on the keyboard to produce leader or trailer on the tape.

To turn off the tape punch, press the OFF button on the tape punch control panel.

The B SP button on the tape punch control panel backspaces the punched tape one character (one tape row).

The REL button on the tape punch control panel releases the tension from the punched tape thus making it possible to pull the tape through the punch mechanism.

Instructions for loading tape into the tape punch are provided in the *HP 2749A Teleprinter Operating and Service Manual (02749-9002).*

Using the Tape Reader

> *NOTE:* *The LINE/OFF/LOCAL switch must be set to either the LINE or*
> *LOCAL position.*

To load tape into the tape reader, open the tape reader cover, mount the tape on the power feed sprockets (as the tape is read, it moves from the back of the teleprinter toward the front), and then snap the tape reader cover down on the tape.

If the teleprinter is off-line, the tape is read as soon as the switch on the tape reader control panel is moved to the MANUAL START position. As the tape is read, the characters on the tape are printed by the teleprinter (if the tape punch is on, the characters are punched on tape as well).

If the teleprinter is on-line, the tape will be read only when the switch on the tape reader control panel is moved to the AUTO position and an appropriate instruction is executed in the computer. As the tape is read, the characters on the tape are printed by the teleprinter and transmitted to the computer (if the tape punch is on, the characters are punched on tape as well).

To stop the reader, move the switch on the tape reader control panel to the MANUAL STOP position.

To remove tape from the tape reader, move the switch on the tape reader control panel to the FREE position. Then pull the remaining tape through the reader mechanism or open the tape reader cover and lift out the tape.

HP 2752A TELEPRINTER

The HP 2752A (ASR 33) Teleprinter includes a keyboard, a printer mechanism, a tape reader, and a tape punch. Printing is done on a roll of 8 1/2-inch wide paper. The tape reader and punch use conventional 1-inch wide (8-channel) tape and each has its own control panel.

A LINE/OFF/LOCAL switch on the front of the teleprinter is used for turning the teleprinter on and off, and for controlling whether the teleprinter is on-line or off-line.

Power On/Power Off

> *NOTE:*   *The power cord must be connected to an appropriate ac electrical*
> *outlet (115 or 230 Vac, depending upon the type of power that the*
> *particular teleprinter was designed to use).*

To turn on the teleprinter, turn the LINE/OFF/LOCAL switch to either the LINE or LOCAL position.

To turn off the teleprinter, turn the LINE/OFF/LOCAL switch to the OFF position.

On-Line/Off-Line

When the LINE/OFF/LOCAL switch is in the LINE position, the teleprinter is on-line (connected to the computer).

When the LINE/OFF/LOCAL switch is in the LOCAL position, the teleprinter is off-line (operable, but not connected to the computer).

Using the Keyboard

> *NOTE:*   *The LINE/OFF/LOCAL switch must be set to either the LINE or LOCAL*
> *position.*

If the teleprinter is off-line, characters entered through the keyboard are printed by the teleprinter (if the tape punch is on, then the ASCII code for each character is punched on tape as well).

If the teleprinter is on-line, the keyboard works only when an appropriate instruction is being executed in the computer. In such a case, characters entered through the keyboard are printed by the teleprinter and the ASCII code for each character is transmitted to the computer (if the tape punch is on, the ASCII code for each character is punched on tape as well).

The SHIFT and CTRL keys are used in conjunction with the keys which are imprinted with two characters. In general, the CTRL key is used for generating nonprinting characters (discussed in the following paragraph) and the SHIFT key is used for generating all other "shifted" characters.

Some of the keys generate nonprinting characters. If the teleprinter is on-line, the ASCII code for each such character is transmitted to the computer *even though nothing is printed.* A few of the nonprinting characters also cause the teleprinter to perform a discernable action (such characters cause the action when the teleprinter is on-line *or* off-line). If the tape punch is on, the ASCII code for each nonprinting character is punched on tape as well. The nonprinting characters are summarized in Table 2.

Table 2. Nonprinting Characters: 2752A

Key*	Teleprinter Action	ASCII Code Punched on Tape and/or Transmitted to Computer
ESC	None.	ESC
LINE FEED	The·paper is advanced to the next line.	LF
RETURN	The carriage moves to the leftmost print position of the current line.	CR
BELL	A bell in the teleprinter rings.	BEL
VT	None.	VT
EOT	None.	EOT
WRU	None.	ENQ
TAPE	None.	DC2
~~TAPE~~	None.	DC4
TAB	None.	HT
X OFF	None.	DC3
Q	None.	DC1
RU	None.	ACK
FORM	None.	FF

*The CTRL key must be pressed simultaneously with the specified key.

The HERE IS key does not generate an ASCII code and does not cause anything to be printed. When the tape punch is on, the HERE IS key is used to produce leader or trailer on the tape. A leader or trailer is a section of tape containing only feed holes.

The REPT key is used in conjunction with the other keys to repeatedly enter a character. Press and hold the REPT key and then press and hold the desired character key. The character is entered repeatedly until either key is released.

The BREAK key holds the communication line between the teleprinter and the computer "open" for as long as the key is depressed. Though the key is meant to be nonprinting, it will occasionally cause a random character to be printed. Also, if the tape punch is on, the BREAK key causes a random code to be punched.

Using the Tape Punch

> *NOTE: The LINE/OFF/LOCAL switch must be set to either the LINE or LOCAL position.*

Press the ON button on the tape punch control panel.

If the teleprinter is off-line, all characters entered through the keyboard or read through the tape reader are punched on tape (as well as printed).

If the teleprinter is on-line, all characters entered through the keyboard or read through the tape reader are punched on tape (as well as printed and transmitted to the computer); all characters received from the computer are punched on tape (as well as printed).

Press the HERE IS key on the keyboard to produce leader or trailer on the tape.

To turn off the tape punch, press the OFF button on the tape punch control panel.

The B SP button on the tape punch control panel backspaces the punched tape one character (one tape row).

The REL button on the tape punch control panel releases the tension from the punched tape thus making it possible to pull the tape through the punch mechanism.

Instructions for loading tape into the tape punch are provided in the *HP 2752A Teleprinter Operating and Service Manual (02752-9004)*.

Using the Tape Reader

> *NOTE: The LINE/OFF/LOCAL switch must be set to either the LINE or LOCAL position.*

To load tape into the tape reader, open the tape reader cover, mount the tape on the power feed sprockets (as the tape is read, it moves from the back of the teleprinter toward the front), and then snap the tape reader cover down on the tape.

If the teleprinter is off-line, the tape is read as soon as the switch on the tape reader control panel is moved to the START position. As the tape is read, the characters on the tape are printed by the teleprinter (if the tape punch is on, the characters are punched on tape as well).

If the teleprinter is on-line, the tape will be read only when the switch on the tape reader control panel is moved to the START position and an appropriate instruction is executed in the computer. As the tape is read, the characters on the tape are printed by the teleprinter and transmitted to the computer (if the tape punch is on, the characters are punched on tape as well).

To stop the reader, move the switch on the tape reader control panel to the STOP position.

To remove tape from the tape reader, move the switch on the tape reader control panel to the FREE position. Then pull the remaining tape through the reader mechanism or open the tape reader cover and lift out the tape.

HP 2753A AND 2753B TAPE PUNCHES

The HP 2753A and 2753B Tape Punches punch data on conventional 1-inch wide (8-channel) tape at a speed of 120 characters per second.

Power On/Power Off

To turn on the tape punch, set the ON/OFF toggle switch to the ON position. To turn off the tape punch, set the ON/OFF switch to the OFF position.

Using the Tape Punch

Make sure that the feed reel contains an adequate supply of tape. If necessary, load a new roll of tape according to the instructions provided in the Tally Instruction Manual which is attached to the appropriate operating and service manual. To produce leader or trailer on the tape, press the small white button located just to the right of the ON/OFF switch until the desired amount of leader or trailer has been produced. Leader or trailer is a section of tape containing only feed holes. Data will be punched on the tape when an appropriate instruction is executed in the computer.

HP 2754A AND 2754B TELEPRINTERS

The HP 2754A and 2754B (ASR 35) Teleprinters include a keyboard, a printer mechanism, a tape reader, and a tape punch. With the HP 2754A, printing is done on a roll of 8 1/2-inch paper; with the 2754B, printing is done on 8 1/2-inch wide, fan-folded, tractor-fed, continuous forms. The tape reader and punch of both the 2754A and 2754B use conventional 1-inch wide (8-channel) tape. The tape reader has its own control panel.

An ON LINE/OFF/LOC. switch on the front of the teleprinter is used for turning the tele-
printer on and off, and for controlling whether the teleprinter is on-line of off-line.

A MODE switch on the front of the teleprinter is used in conjunction with the ON LINE/OFF/
LOC. switch and the switch on the tape reader control panel to determine the operating mode
of the teleprinter. The various operating modes, and the associated switch settings, are ex-
plained in Table 3.

Power On/Power Off

> *NOTE:* *The power cord must be connected to an appropriate electrical outlet*
> *(115 or 230 Vac, depending upon the type of power that the particular*
> *teleprinter was designed to use).*

To turn on the teleprinter, turn the ON LINE/OFF/LOC. switch to either the ON LINE or LOC.
position.

To turn off the teleprinter, turn the ON LINE/OFF/LOC. switch to the OFF position.

On-Line/Off-Line

When the ON LINE/OFF/LOC. switch is set to the ON LINE position, the teleprinter is on-
line (connected to the computer).

When the ON LINE/OFF/LOC. switch is set to the LOC. position, the teleprinter is off-line
(operable, but not connected to the computer).

Modes of Operation

The ON LINE/OFF/LOC. switch, the MODE switch, and the switch on the tape reader con-
trol panel together determine the teleprinter's mode of operation. The various modes, and
the associated switch settings, are summarized in Table 3. In general, the ON LINE/OFF/
LOC. switch determines whether the teleprinter is on-line or off-line, the MODE switch
determines whether input is to be punched on tape and how output from the computer is to
be handled, and the switch on the tape reader control panel determines whether input is to be
through the tape reader or the keyboard.

Using the Keyboard

> *NOTE:* *The ON LINE/OFF/LOC. switch must be set to either the ON LINE*
> *or LOC. position. The MODE switch may be set to K, KT, or T. The*
> *switch on the tape reader control panel must be set to either the STOP*
> *or FREE position.*

If the teleprinter is off-line and the MODE switch is set to either the K or KT position, char-
acters entered through the keyboard are printed by the teleprinter (if the MODE switch is set
to the T position, the ASCII code for each character is punched on tape as well).

If the teleprinter is on-line and the MODE switch is set to either the K or KT position, characters entered through the keyboard are printed by the teleprinter and the ASCII code for each character is transmitted to the computer (if the MODE switch is set to the T position, the ASCII code for each character is punched on tape as well).

The SHIFT and CTRL keys are used in conjunction with the keys which are imprinted with two characters. In general, the CTRL key is used for generating the nonprinting characters (discussed in the following paragraph) and the SHIFT key is used for generating all other "shifted" characters.

Some of the keys generate nonprinting characters. If the teleprinter is on-line, the ASCII code for each such character is transmitted to the computer *even though nothing is printed.* A few of the nonprinting characters also cause the teleprinter to perform a discernable action (such characters cause the action when the teleprinter is on-line *or* off-line). If the MODE switch is set to the T position, the ASCII code for each nonprinting character is punched on tape as well. The nonprinting characters are summarized in Table 4.

The REPT key is used in conjunction with the other keys to repeatedly enter a character. Press and hold the REPT key and then press and hold the desired character key. The character is entered repeatedly until either key is released.

The BREAK and BRK RLS keys are non-functional.

The LOC CR, LOC B SP, and LOC LF keys cause the carriage to move or the paper to be advanced with nothing printed, punched, or transmitted to the computer. The LOC CR key causes the carriage to move to the leftmost print position of the current line (carriage return). The LOC B SP key causes the carriage to move one print position to the left (backspace). The LOC LF key causes the paper to advance to the next line (line feed).

To produce leader or trailer on a punched tape, press and hold the CTRL, SHIFT, REPT, and @ keys until the desired amount of leader or trailer has been produced. Leader or trailer is a section of tape containing only feed holes.

Instructions for loading fan-folded forms into an HP 2754B Teleprinter are provided in the *HP 2754A/2754B Teleprinter Operating and Service Manual (02754-9007).*

Using the Tape Punch

> *NOTE:* *The ON LINE/OFF/LOC. switch must be set to either the ON LINE or LOC. position. The MODE switch must be set to either the KT or T position. The switch on the tape reader control panel may be set to RUN, STOP, or FREE position.*

If the teleprinter is off-line and the MODE switch is set to the T position, characters entered through the keyboard or read through the tape reader are punched on tape (as well as printed).

Table 3. Modes of Operation: 2754A/B

ON LINE/OFF/LOC. Switch Position	MODE Switch Position*	FREE/STOP/RUN Switch Position	Teleprinter Mode of Operation
OFF	K, KT, or T	FREE, STOP, or RUN	No operation. Power is off.
ON LINE	K	FREE or STOP	Input through the keyboard is printed and transmitted to the computer. Character output from the computer is printed. Binary output from the computer is ignored.
ON LINE	KT	FREE or STOP	Input through the keyboard is printed and transmitted to the computer. Output from the computer is printed (it can also be punched under control of the computer program using the teleprinter).
ON LINE	T	FREE or STOP	Input through the keyboard is printed, punched on tape, and transmitted to the computer. All output from the computer is printed and punched on tape.
ON LINE	K	RUN	Input from tape reader is printed and transmitted to the computer. Character output from the computer is printed. Binary output from the computer is ignored.
ON LINE	KT	RUN	Input from tape reader is printed and transmitted to the computer. Output from the computer is printed (it can also be punched under control of the computer program using the teleprinter).
ON LINE	T	RUN	Input from tape reader is printed and transmitted to the computer. All output from the computer is printed and punched on tape.
LOC.	K or KT	FREE or STOP	Input through the keyboard is printed.
LOC.	T	FREE or STOP	Input through the keyboard is printed and punched on tape.
LOC.	K or KT	RUN	Input from tape reader is printed.
LOC.	T	RUN	Input from tape reader is printed and punched on tape.

* The TTs and TTr switch positions are non-functional.

Table 4. Nonprinting Characters: 2754A/B

Key*	Teleprinter Action	ASCII Code Punched on Tape and/or Transmitted to Computer
ESC	None.	ESC
LINE FEED	The paper is advanced to the next line.	LF
RETURN	The carriage moves to the leftmost print position of the current line.	CR
BELL	A bell in the teleprinter rings.	BEL
VT	The paper advances to the next physical "vertical tab" stop.	VT
EOT	None.	EOT
WRU	None.	ENQ
TAPE	None.	DC2
~~TAPE~~	None.	DC4
TAB	The carriage moves to the next physical "horizontal tab" stop.	HT
X OFF	None.	DC3
Q	None.	DC1
RU	None.	ACK
FORM	The paper advances to the next physical "top-of-form" stop.	FF

* The CTRL key must be pressed simultaneously with the specified key.

If the teleprinter is on-line and the MODE switch is set to the KT position, output received from the computer is printed; it can also be punched on tape under control of the computer program using the teleprinter (characters entered through the keyboard or read through the tape reader are not punched). If the teleprinter is on-line and the MODE switch is set to the T position, characters entered through the keyboard or read through the tape reader are punched on tape (as well as printed and transmitted to the computer) and all output received from the computer is punched on tape (as well as printed).

To produce leader or trailer on a punched tape, press and hold the CTRL, SHIFT, REPT, and @ keys on the keyboard until the desired amount of leader or trailer has been produced.

To turn off the tape punch, set the MODE switch to the K position.

Instructions for loading tape into the tape punch are provided in the *HP 2754A/2754B Teleprinter Operating and Service Manual (02754-9007)*.

Using the Tape Reader

> *NOTE:* *The ON LINE/OFF/LOC. switch must be set to either the ON LINE or*
> *LOC. position. The MODE switch may be set to the K, KT, or T posi-*
> *tion. The switch on the tape reader control panel must be set to the*
> *RUN position.*

To load tape into the tape reader, open the tape reader cover, mount the tape on the power feed sprockets (as the tape is read, it moves from right to left), and then snap the tape reader cover down on the tape.

If the teleprinter is off-line, the tape is read as soon as the switch on the tape reader control panel is moved to the RUN position. As the tape is read, the characters on the tape are printed by the teleprinter (if the MODE switch is set to the T position, the characters are punched on tape as well).

If the teleprinter is on-line, the tape will be read only when the switch on the tape reader control panel is set to the RUN position and an appropriate instruction is executed in the computer. As the tape is read, the characters on the tape are printed by the teleprinter and transmitted to the computer (if the MODE switch is set to the T position, the characters are punched on tape as well).

To stop the tape reader, move the switch on the tape reader control panel to the STOP position.

To remove tape from the tape reader, move the switch on the tape reader control panel to the FREE position. Then pull the remaining tape through the reader mechanism or open the tape reader cover and lift out the tape.

PROCEDURE 2
Card Readers

HP 2761A OPTICAL MARK READER (all options except 007 and 008)

The HP 2761A Optical Mark Reader is a desk-top remote data-transmission terminal which reads data from 3 1/4-inch by 7 3/8-inch punched or marked cards. The reading speed varies according to the option specified when the reader was ordered. The various options are summarized in Table 5. Except for options 007 and 008, the HP 2761A is designed to operate in conjunction with a Bell Telephone System 102A or 103A Data Set (or equivalent). The input hopper is located above the output stacker. Options 007 and 008 are described as a separate device later in this manual.

Table 5. Options for 2761A

OPTION	FUNCTION
01	Allows reading of 40 card columns at 10 characters per second
04	Allows reading of 40 card columns at 105 characters per second.
05	Allows reading of 80 card columns at 10 characters per second.
09	Allows reading of 80 card columns at 105 characters per second.
36	Stops the card feeding when the card hopper is empty or the storage bin is full.

Power On/Power Off

NOTE: The power cord must be connected to a 115 Vac electrical outlet.

The POWER switch is located on the back of the reader. To turn on the reader, set the POWER switch to the ON position. The POWER indicator on the front control panel is illuminated whenever the reader is on.

To turn off the reader, set the POWER switch to the OFF position.

START, STOP, and DISCONNECT Switches

Once a data link has been established between the data set and the computer, the START switch makes the reader ready (the cards in the input hopper will be read when an appropriate instruction is executed in the computer.

The STOP and DISCONNECT switches inhibit the card feeding process and make the reader not ready. The STOP switch retains the data link, whereas the DISCONNECT switch terminates the data link.

PHONE NOT READY and CONNECTION COMPLETE Indicator Lights

When illuminated, the PHONE NOT READY light indicates that no data link exists between the data set and the computer.

When illuminated, the CONNECTION COMPLETE light indicates that a data link has been established between the data set and the computer.

To Start

Turn on the reader. Remove any cards left in the input hopper or output stacker from a previous operation and then place the desired deck of cards in the input hopper face down with the preprinted clock marks on the right. Place the card feed weight on the card stack with the notch mated to the card gate.

Press the TALK switch on the data set connected to the reader. Lift the handset on the data set and dial the receiving data set. When a continuous tone is heard, press the DATA switch on the data set and return the handset to the cradle. The reader transport motor should be running, the PHONE NOT READY light should go out, and the CONNECTION COMPLETE light should be illuminated.

Press and hold the START switch on the reader control panel until cards start to feed (usually about 5 seconds). After the final card passes through the transport mechanism, press the STOP switch on the reader control panel and then load more cards into the input hopper. Repeat the procedure described in this paragraph as often as is necessary.

After all reading is finished, press the DISCONNECT switch on the reader control panel. The data link between the data set and the computer should be terminated, the CONNECTION COMPLETE light on the reader control panel should go out, and the PHONE NOT READY light on the reader control panel should be illuminated.

HP 2761A OPTICAL MARK READER (options 007 and 008)

The HP 2761A Optical Mark Reader is a desk-top remote data-transmission terminal which reads data from 3 1/4-inch by 7 3/8-inch punched or marked cards. The reader is capable of reading 40-column cards at 227 characters-per-second or 80-column cards at 455 characters-per-second. The option 007 and 008 HP 2761A Optical Mark Readers are designed to be connected directly to an HP computer by way of an HP 12602B printed-circuit assembly (PCA). The input hopper is located above the output stacker.

Power On/Power Off

> *NOTE:* *The power cord must be connected to a 115 Vac electrical outlet.*

The POWER switch is located on the back of the reader. To turn on the reader, set the POWER switch to the ON position. The POWER indicator on the front control panel is illuminated whenever the reader is on.

To turn off the reader, set the POWER switch to the OFF position.

READY and STOP Switches and READY Indicator Light

Pressing the READY switch makes the reader ready (the cards in the input hopper will be read when an appropriate instruction is executed in the computer). The READY indicator light is illuminated whenever the reader is ready.

Pressing the STOP switch inhibits the card feeding process and makes the reader not ready.

ON LINE Indicator Light

The ON LINE indicator light is illuminated whenever an instruction which addresses the reader is executed in the computer.

To Start

Turn on the reader. Remove any cards left in the input hopper or output stacker from a previous operation and then place the desired deck of cards in the input hopper face down with the preprinted clock marks on the right. Place the card feed weight on the card stack with the notch mated to the card gate.

Press the READY switch on the reader control panel. The cards will be read when an appropriate instruction is executed in the computer. After the final card has passed through the transport mechanism, press the STOP switch on the reader control panel and then load more cards into the input hopper. Repeat the procedure described in this paragraph as often as is necessary.

After all reading is finished, turn off the reader.

HP 2891A CARD READER

The HP 2891A Card Reader reads data from conventional 80-column, 12-row punched cards at a speed of 1000 cards-per-minute. As the operator faces the front of the card reader, the input hopper is on the right and the output stacker is on the left.

Power On/Power Off

> *NOTE:* *The power cord must be connected to an appropriate ac electrical outlet (115 or 230 Vac, depending upon the type of power that the particular card reader was designed to use).*

Pressing the POWER switch alternately turns the card reader on and off. The POWER switch also serves as the power on/off indicator.

Ready/Not Ready

To be operational, the card reader must be ready. The START and STOP switches make the card reader ready and not ready, respectively. Whenever the card reader is ready, the START switch is illuminated. Similarly, whenever the card reader is not ready, the STOP switch is illuminated.

The START switch has no effect if a card reader error status exists. Pressing the CLEAR switch clears the error status (provided that the error condition has been corrected).

To Start

If the card reader is off, press the POWER switch. Place the deck of cards to be read in the input hopper face down with column 1 at the left. Then press the CLEAR and START switches. The cards will be read when an appropriate instruction is executed in the computer.

END OF FILE Switch

If the operator places a deck of cards in the input hopper and presses the END OF FILE switch, a special status signal will be generated and sent to the computer when the input hopper next becomes empty. The END OF FILE switch is meant to be used for signalling the end of a large deck of data cards which varies in size from one run to the next. However, the switch has no effect unless the computer program using the card reader is designed to take advantage of this feature.

When set (on), the END OF FILE switch is illuminated. The switch can be reset (cleared) by again pressing the END OF FILE switch or by pressing the CLEAR switch.

Error Conditions

If an error condition occurs, the card reader's motor stops and the STOP switch and an error indicator light are illuminated. There are six error indicator lights: PICK FAIL, CARD MOTION, LIGHT CURRENT, DARK CURRENT, HOPPER EMPTY, and STACKER FULL. The appropriate corrective actions associated with each light are described in Table 6.

Table 6. 2891A Error Conditions

Indicator Light	Error Condition	Corrective Action
PICK FAIL	Card would not move from the input hopper into the card reader.	Remove the first (front) card from the input hopper. Smooth the card's edges or reproduce it. Then place the card at the front of the deck in the hopper and press CLEAR and START.
CARD MOTION	A card jammed inside the card reader or moved too slowly through the card reader.	If a card is jammed, remove it and reproduce it. Then place the card at the front of the deck in the hopper and press CLEAR and START.

If there are no signs of a card jam, remove the top card from the output stacker and place it at the front of the deck in the input hopper. Then press CLEAR and START. |
LIGHT CURRENT	One of the phototransistors failed (the card reader tries to detect light for all phototransistors just before the leading edge of the card passes the read station).	Remove the top card from the output stacker and place it at the front of the deck in the input hopper. Then press CLEAR and START.
DARK CURRENT	One of the phototransistors failed (the card reader tries to detect dark for all phototransistors as the leading edge of the card passes the read station).	Remove the top card from the output stacker and place it at the front of the deck in the input hopper. Then press CLEAR and START.
HOPPER EMPTY	The input hopper is empty.	Put more cards in the input hopper and then press CLEAR and START.
STACKER FULL	The output stacker is full.	Remove the cards from the output stacker and then press CLEAR and START.

NOTE: If a CARD MOTION, LIGHT CURRENT, or DARK CURRENT error persists, call your HP representative.

HP 2892A CARD READER

The HP 2892A Card Reader reads data from conventional 80-column, 12-row punched cards at a speed of 600 cards-per-minute. As the operator faces the card reader, the input hopper is on the right and the output stacker is on the left.

Power On/Power Off

> *NOTE:* *The power cord must be connected to an appropriate ac electrical outlet (115 or 230 Vac, depending upon the type of power that the particular card reader was designed to use).*

Pressing the POWER switch alternately turns the card reader on and off. The POWER switch also serves as the power on/off indicator.

On-Line/Off-Line

The ON LINE/OFF LINE toggle switch is located on the back of the card reader. There is no indicator light associated with this switch.

When the ON LINE/OFF LINE switch is set to the ON LINE position, the card reader is on-line (connected to the computer). When the ON LINE/OFF LINE switch is set to the OFF LINE position, the card reader is off-line (not connected to the computer).

Ready/Not Ready

To be operational, the card reader must be both on-line and ready. The RESET and STOP switches make the card reader ready and not ready, respectively. Whenever the card reader is ready, the RESET switch is illuminated. Similarly, whenever the card reader is not ready, the STOP switch is illuminated.

To Start

If the card reader is off, press the POWER switch. Place the deck of cards to be read in the input hopper face forward with column 1 on the left. Then press the RESET switch. The cards will be read when an appropriate instruction is executed in the computer.

END OF FILE Switch

If the operator places a deck of cards in the input hopper and presses the END OF FILE switch, a special status signal will be generated and sent to the computer when the input hopper next becomes empty. The END OF FILE switch is meant to be used for signalling the end of a large deck of data cards which varies in size from one run to the next. However, the switch has no effect unless the computer program using the card reader is designed to take advantage of this feature.

When set (on), the END OF FILE switch is illuminated. The switch can be reset (cleared) by again pressing the END OF FILE switch or by pressing the RESET switch.

SHUTDOWN Switch

The SHUTDOWN switch is located on the back of the card reader. When the switch is set to the AUTO position (the normal position), the vacuum/blower motor and the drive motor turn off after the last card has been picked from the input hopper. When the switch is set to the MANUAL position, the vacuum/blower motor and the drive motor run continuously whenever the card reader is on.

LAMP TEST Switch

The LAMP TEST switch is located on the back of the card reader. Pressing and holding the LAMP TEST switch should illuminate all the indicator lights on the front control panel except the END OF FILE switch. The LAMP TEST switch is used to make sure that all the bulbs are functioning.

Error Conditions

If an error condition occurs, the card reader's motors stop and the STOP switch and an error indicator light are illuminated. There are four error indicator lights: READ CHECK, MOTION CHECK, PICK CHECK, and HOPPER/STACKER. The appropriate corrective actions associated with each light are described in Table 7.

Table 7. 2892A Error Conditions

Indicator Light	Error Condition	Corrective Action
HOPPER/ STACKER	The input hopper is empty or the output stacker is full.	If the input hopper is empty, put more cards in the hopper and press RESET.
		If the output stacker is full, remove the cards from the stacker and press RESET.
PICK CHECK	Card would not move from the input hopper into the card reader.	Remove the first (front) card from the input hopper. Smooth the card's edges or reproduce it. Then place the card at the front of the deck in the hopper and press RESET.
MOTION CHECK	A card jammed inside the card reader or moved too slowly through the card reader.	If a card is jammed, remove it and re-produce it. Then place the card at the front of the deck in the hopper and press RESET.
		If there are no signs of a card jam, re-move the top card from the output stacker and place it at the front of the deck in the input hopper. Then press RESET.
READ CHECK	A torn card passed through the card reader or one of the phototransistors failed.	Examine the top card in the output stacker. If it is torn, reproduce it. In any case, place the card at the front of the deck in the input hopper and press RESET.

NOTE: *If a MOTION CHECK or READ CHECK error persists, call your HP representative.*

PROCEDURE 3
Line Printers

HP 2610A LINE PRINTER

There are two models of the HP 2610A Line Printer: a 200 lines-per-minute (lpm), 64-character model and a 150 lpm, 96-character model. The two models look identical externally.

Power On/Power Off

> *NOTE:* *The power cord must be connected to an appropriate ac electrical out-*
> *let (115 or 230 Vac, depending upon the type of power that the particular*
> *line printer was designed to use).*

Pressing the POWER ON/RESET switch alternately turns the line printer on and off. The POWER ON/RESET switch is illuminated whenever the line printer is on. If the line printer is on, turning it off will abort any print operation currently in progress.

On-Line/Off-Line

Pressing the START switch places the line printer on-line (connected to the computer). The START switch is illuminated whenever the line printer is on-line.

Pressing the STOP switch places the line printer off-line (not connected to the computer). The STOP switch is illuminated whenever the line printer is off-line.

Advancing the Paper

The PAGE EJECT switch is functional only when the line printer is off-line. Each time the PAGE EJECT switch is pressed, the paper advances to the top line of a new page.

Instructions for preparing a format tape are provided in the *HP 2610A Line Printer Reference Manual (02610-90005).*

To Start

If the line printer is off, press the POWER ON/RESET switch. Make sure that an adequate supply of paper is loaded in the line printer and then press the START switch. Output will be printed when an appropriate instruction is executed in the computer.

Instructions for loading paper into the line printer are provided in the *HP 2610A Line Printer Reference Manual (02610-90005).*

To Stop

Press the STOP switch. If a print operation is currently in progress, it is merely interrupted (not aborted). Press the START switch to continue the print operation at the point where it was interrupted.

Press the POWER ON/RESET switch to turn off the line printer and abort any print operation currently in progress.

Error Conditions

There are two error indicator lights on the control panel: PAPER FAULT and PAPER OUT. When illuminated, the first indicates that the paper has jammed within the paper feeding mechanism and the second indicates that the line printer has run out of paper. In either case, the line printer automatically switches off-line. Correct the error condition and then press the START switch (pressing the START switch clears the line printer error status and places the line printer on-line).

HP 2614A LINE PRINTER

There are two models of the HP 2614A Line Printer: a 600 lines-per-minute (lpm), 64-character model and a 400 lpm, 96-character model. The two models look identical externally.

Power On/Power Off

NOTE: *The power cord must be connected to an appropriate ac electrical out-let (115 or 230 Vac, depending upon the type of power that the particular line printer was designed to use).*

Pressing the POWER ON/RESET switch alternately turns the line printer on and off. The POWER ON/RESET switch is illuminated whenever the line printer is on. If the line printer is on, turning it off will abort any print operation currently in progress.

On-Line/Off-Line

Pressing the START switch places the line printer on-line (connected to the computer). The START switch is illuminated whenever the line printer is on-line.

Pressing the STOP switch places the line printer off-line (not connected to the computer). The STOP switch is illuminated whenever the line printer is off-line.

Advancing the Paper

The PAGE EJECT switch is functional only when the line printer is off-line. Each time the PAGE EJECT switch is pressed, the paper advances to the top line of a new page.

Instructions for preparing a format tape are provided in the *HP 2614A Line Printer (Print Head Assembly) Operating and Service Manual (02614-90006)*.

To Start

If the line printer is off, press the POWER ON/RESET switch. Make sure that an adequate supply of paper is loaded in the line printer and then press the START switch. Output will be printed when an appropriate instruction is executed in the computer.

Instructions for loading paper into the line printer are provided in the *HP 2614A Line Printer (Print Head Assembly) Operating and Service Manual (02610-90006)*.

To Stop

Press the STOP switch. If a print operation is currently in progress, it is merely interrupted (not aborted). Press the START switch to continue the print operation at the point where it was interrupted.

Press the POWER ON/RESET switch to turn off the line printer and abort any print operation currently in progress.

Error Conditions

There are two error indicator lights on the control panel: PAPER FAULT and PAPER OUT. When illuminated, the first indicates that the paper has jammed within the paper feeding mechanism and the second indicates that the line printer has run out of paper. In either case, the line printer automatically switches off-line. Correct the error condition and then press the START switch (pressing the START switch clears the line printer error status and places the line printer on-line).

HP 2767A LINE PRINTER

The HP 2767A Line Printer is a 356 to 1110 lines-per-minute, 64-character line printer. It prints up to 80 characters per line. The print line is divided into four 20-character zones. The printing speed decreases with each additional zone which is used (refer to Table 8).

Table 8. Printing Speeds, 2767A

Number of Zones Used	Printing Speed
4 (print positions 1-80)	356 lines-per-minute (lpm)
3 (print positions 1-60)	460 lpm
2 (print positions 1-40)	650 lpm
1 (print positions 1-20)	1110 lpm

Power On/Power Off

> *NOTE:* *The power cord must be connected to an appropriate ac electrical outlet (115 or 230 Vac, depending upon the type of power that the particular line printer was designed to use).*

The line printer is on whenever the power cord is connected to an ac electrical outlet and the ac power circuit breaker on the maintenance panel behind the front cover is set to the ON position. The POWER indicator light on the control panel is illuminated whenever the line printer is on.

To turn off the line printer, either unplug the power cord or set the ac power circuit breaker on the maintenance panel to the OFF position.

On-Line/Off-Line

Moving the ON LINE/OFF LINE toggle switch on the control panel to the ON LINE position places the line printer on-line (connected to the computer). The ON LINE indicator light on the control panel is illuminated whenever the line printer is on-line.

Moving the ON LINE/OFF LINE toggle switch on the control panel to the OFF LINE position places the line printer off-line (not connected to the computer).

Ready/Not Ready

To be functional, the line printer must be both on-line and ready. The READY indicator light on the control panel is illuminated whenever the line printer is ready. To be ready, the line printer must be on, all interlocks must be closed, and the PRINT INHIBIT switch on the main-tenance panel behind the front cover must be off.

Advancing the Paper

The PAPER STEP and TOP OF FORM toggle switches on the control panel are functional only when the line printer is off-line. Each time the PAPER STEP toggle switch is moved, the paper advances to the next line. Each time the TOP OF FORM toggle switch is moved, the paper advances to the top line of a new page.

To Start

Make sure that the line printer is ready and that an adequate supply of paper is loaded in the line printer. Then move the ON LINE/OFF LINE toggle switch on the control panel to the ON LINE position. Output will be printed when an appropriate instruction is executed in the computer.

Instructions for loading paper into the line printer are provided in the *HP 2767A Line Printer Operating and Service Manual (02767-90002)*.

To Stop

Move the ON LINE/OFF LINE toggle switch on the control panel to the OFF LINE position. If a print operation is currently in progress, it will merely be interrupted (not aborted). Move the ON LINE/OFF LINE toggle switch to the ON LINE position to continue the print operation at the point where it was interrupted.

Error Conditions

The PAPER FAULT error indicator light is located on the maintenance panel behind the front cover. Whenever the line printer runs out of paper or the paper jams within the paper feeding mechanism, the line printer automatically switches off-line and the PAPER FAULT error indicator light is illuminated. Correct the error condition, move the MASTER CLEAR toggle switch on the maintenance panel to the MASTER CLEAR position, and then move the ON LINE/OFF LINE toggle switch on the control panel to the ON LINE position.

HP 2778A LINE PRINTER

The HP 2778A Line Printer is a 300 lines-per-minute line printer. It prints 64 characters (including one character space) in either of two page widths: 120 or 132 characters-per-line, depending upon the particular model ordered.

Power On/Power Off

NOTE: *The power cord must be connected to a 115 Vac electrical outlet.*

Pressing the POWER ON switch turns on the line printer. The POWER ON switch is illuminated whenever the line printer is on.

Pressing the POWER OFF switch turns off the line printer.

On-Line/Off-Line

Pressing the START switch places the line printer on-line (connected to the computer). The START switch is illuminated whenever the line printer is on-line.

Pressing the STOP switch places the line printer off-line (not connected to the computer). The STOP switch is illuminated whenever the line printer is off-line.

6 LINE/8 LINE Switch

Pressing the 6 LINE/8 LINE switch alternately selects vertical spacing of six lines-per-inch (lpi) or 8 lpi. The 6 LINE/8 LINE switch is illuminated white for 6 lpi and red for 8 lpi. Since HP supplies only a 6 lpi format tape and all HP software expects the line printer to operate at 6 lpi, the 6 LINE/8 LINE switch should always be set for 6 lpi whenever the line printer is connected to an HP computer.

Advancing the Paper

The PAGE EJECT switch is functional only when the line printer is off-line. Each time the PAGE EJECT switch is pressed, the paper advances to the top line of a new page.

Instructions for preparing a format tape are provided in the *HP 2778A Line Printer (Print Head Assembly) Operating and Service Manual (02778-90004)*.

To Start

If the line printer is off, press the POWER ON switch. Make sure that an adequate supply of paper is loaded in the line printer and then press the START switch. Output will be printed when an appropriate instruction is executed in the computer.

Instructions for loading paper into the line printer are provided in the *HP 2778A Line Printer (Print Head Assembly) Operating and Service Manual (02778-90004)*.

To Stop

Press the STOP switch. If a print operation is currently in progress, it is merely interrupted (not aborted). Press the START switch to continue the print operation at the point where it was interrupted.

Press the POWER OFF switch to turn off the line printer and abort any print operation currently in progress.

Error Conditions

There is only one error indicator light on the control panel: PAPER OUT. When illuminated, the PAPER OUT light indicates that the line printer has run out of paper. In such a case, the line printer automatically switches off-line.

If the paper jams within the paper feeding mechanism, the line printer merely switches off-line.

Correct the error condition and then press the START switch (pressing the START switch clears the line printer error status and places the line printer on-line).

PROCEDURE 4
Magnetic Tape Units

CAUTION: *Magnetic tapes are easily damaged by excessive handling or dust.*
Touch the tape only on the shiny side and never more than two
feet from the end. Always keep tape reels in cases when not in
use. If a tape is to be written upon, check to be sure that the
Write Enable Ring is inserted in the reel. If a tape is not to be
written upon, make sure that the Write Enable Ring is removed
from the reel.

HP 3030 SERIES DIGITAL MAGNETIC TAPE UNITS

Power On/Power Off

Open the back door of the tape unit. Inside, on the floor of the tape unit, are two switches:
TRANSPORT POWER and DATA ELECT.

To turn on the tape unit, set both switches to the ON position. Then close the door and turn
the handle to start the ventilation fans.

To turn off the tape unit, set both switches to the OFF position.

On-Line/Off-Line

Pressing the AUTO pushbutton on the front of the tape unit places the tape unit on-line
(connected to the computer). The AUTO pushbutton is illuminated whenever the tape unit
is on-line.

Pressing the LOCAL pushbutton on the front of the tape unit places the tape unit off-line
(not connected to the computer). The LOCAL pushbutton is illuminated whenever the tape
unit is off-line.

LOAD POINT, REWIND, and REVERSE Pushbuttons

The LOAD POINT, REWIND, and REVERSE pushbuttons are functional only when the
tape unit is off-line.

When pressed, the LOAD POINT pushbutton causes the tape to be spaced forward (from the
supply reel onto the take-up reel) until a load point tab is sensed on the tape. When a load
point tab is found, the tape stops moving and the LOAD POINT pushbutton is illuminated.
A load point search can be terminated by pressing the LOCAL pushbutton.

When pressed, the REWIND pushbutton causes the tape to be rewound (from the take-up reel onto the supply reel) until a load point tab is sensed. The rewind speed depends upon how much tape is on the take-up reel. When there is a small amount of tape on the take-up reel, the rewind is done at low speed. If the rewind is initiated when there is a large amount of tape on the take-up reel, the rewind is done at high speed and then shifts to low speed when there is a small amount of tape left on the take-up reel. The REWIND pushbutton is illuminated when pressed, and remains illuminated until the rewind is complete. The rewind can be prematurely terminated by pressing the LOCAL pushbutton.

When pressed, the REVERSE pushbutton causes the tape to be rewound (from the take-up reel onto the supply reel) at low speed for as long as the pushbutton is depressed.

Address Selector Switch

When the tape unit is connected to an HP computer, the address selector switch is non-functional.

CHANGE DENSITY Switch

NOTE: On some models, this switch is non-functional.

The CHANGE DENSITY switch is functional only when the tape unit is off-line. Each time the CHANGE DENSITY switch is pressed, the tape unit changes to a different recording density (200, 556, or 800 bytes-per-inch). Three indicator lights just to the right of the CHANGE DENSITY switch identify the recording density currently being used. When the tape unit is connected on an HP computer, the tape unit must be set for 800 bpi.

Transport Switch

The transport switch is located in the lower center of the front of the tape unit.

When held in the START position, the switch causes the tape to be sucked down into the two vacuum columns. When the tape movement halts, the switch should be released.

When held in the BRAKES position, the switch disengages the tape reel brake mechanisms so that the reels can be turned manually. The switch must be held in the BRAKES position all during manual tape manipulation.

Mounting a Magnetic Tape

To mount a reel of magnetic tape on an HP 3030 Series tape unit, do as follows:

a.   Slide the front window door of the tape unit all the way down.

b.   Make sure that the Write Enable Ring of the tape reel is present or absent (as desired).

c.   Place the reel on the right hub so that the tape is winding down from the right side. Hold the reel on the hub (do this by pressing against the inner part of the reel, not against the outer edge of the reel) and turn the hub clockwise until it locks.

d.   While holding the transport switch in the BRAKES position (the transport switch is located in the lower center of the front of the tape unit), grip the end of the tape, wind it around the outside of the right tape guide so that the dull side of the tape is facing up, and thread it through the read/write mechanism. Then wind the tape around the outside of the left tape guide and onto the take-up reel. The tape should be wrapped around the take-up reel at least three times. Note that during reading or writing the take-up reel turns in a counter-clockwise direction.

e.   Hold the transport switch in the START position. When tape motion stops, release the transport switch and then raise the front window door of the tape unit all the way up.

f.   Press the LOCAL pushbutton and then press the LOAD pushbutton. The tape unit will search the tape for a load point tab. When the load point tab is found, the tape stops moving. If the tape does not stop moving within a reasonable amount of time (approximately 30 seconds), then no load point tab is present. In such a case, the tape must be removed from the tape unit and a load point tab must be affixed to the tape as described in the *HP 3030 Series Magnetic Tape Units Instruction Manual (03950-90009)*.

g.   Press the AUTO pushbutton. If the Write Enable Ring is present in the tape reel, the WRITE ENABLED indicator light on the front of the tape unit should be illuminated.

The tape is now ready to be used by the computer program.

Removing a Magnetic Tape

To remove a reel of magnetic tape from an HP 3030 Series tape unit, do as follows:

a.   Press the LOCAL pushbutton.

b.   Press the REWIND pushbutton.

c.   When the tape is at the load point, slide the front window door of the tape unit all the way down.

d.   While holding the transport switch in the BRAKES position (the transport switch is located in the lower center of the front of the tape unit), manually wind the tape onto the original reel.

e.   Hold the tape reel (do this by pressing against the inner part of the reel, not against the outer edge of the reel) and turn the hub counterclockwise.

f.   Remove the reel from the hub. Then mount another tape or raise the front window door of the tape unit all the way up.

HP 7970 SERIES DIGITAL MAGNETIC TAPE UNITS

Power On/Power Off

Open the front door of the tape unit. The power toggle switch is located in the lower left corner of the front of the tape unit.

To turn on the tape unit, set the power switch to the ON position.

To turn off the tape unit, set the power switch to the OFF position.

On-Line/Off-Line

Pressing the On-line pushbutton switch places the tape unit on-line (connected to the computer). The ON LINE indicator light is illuminated whenever the tape unit is on-line.

Pressing the Reset pushbutton switch places the tape unit off-line (not connected to the computer). The RESET indicator light is illuminated whenever the tape unit is off-line.

Load and Rewind Switches and Indicator Lights

The Load and Rewind pushbutton switches are functional only when the tape unit is off-line.

Pressing the Load switch causes the tape to move forward (from the top reel onto the bottom reel) until a load point tab is sensed. When a load point tab is found, the tape stops moving and the LOAD indicator light is illuminated. A load point search can also be terminated by pressing the Reset switch.

Pressing the Rewind switch causes the tape to rewind (from the bottom reel onto the top reel) until a load point tab is sensed. The REWIND indicator light is illuminated when the Rewind switch is pressed, and remains illuminated until the rewind is finished. A rewind can be prematurely terminated by pressing the Reset switch.

Density Select Switches and Indicator Lights

> NOTE: Unless the tape unit is to be connected to something other than an HP computer, the density select switches and indicator lights are present only on the 7-track Read-And-Write and Read-Only models.

There are three available sets of density select switches and indicator lights. The first set consists of six indicator lights (labeled 9TR, 7TR, 200, 556, 800, and 1600) and five pushbutton switches. Pressing the top switch alternately selects 7-track and 9-track operation. When the tape unit is set for 7-track operation, the 7TR indicator light is illuminated; when the tape unit is set for 9-track operation, the 9TR indicator light is illuminated. The other four switches select the recording density (200, 556, 800, or 1600 bytes-per-inch). The appropriate indicator light is illuminated to identify the recording density currently being used.

The second set consists of three indicator lights (labeled 200, 556, and 800) and three pushbutton switches. The switches select the recording density (200, 556, or 800 bytes-per-inch). The appropriate indicator light is illuminated to identify the recording density currently being used.

The third set consists of two indicator lights (labeled 800 and 1600) and one pushbutton switch. Pressing the switch alternately selects a recording density of 800 or 1600 bytes-per-inch. The appropriate indicator light is illuminated to identify the recording density currently being used.

Parity Select Switch and Indicator Lights

> NOTE: On some models, the parity select switch and indicator lights are not present.

The indicator lights are labeled ODD and EVEN. Pressing the switch alternately selects odd and even parity checking. The appropriate indicator light is illuminated to identify the type of parity checking currently being used.

Mounting a Magnetic Tape

To mount a reel of magnetic tape on an HP 7970 Series tape unit, do as follows:

a.   Open the front door of the tape unit and then flip up the quick release latch on the upper hub.

b.   Make sure that the Write Enable Ring of the tape reel is present or absent (as desired).

c.   Place the reel on the top hub so that the tape is winding down from the right side. Hold the reel on the hub (do this by pressing against the inner part of the reel, not against the outer edge of the reel) and flip down the quick release latch on the hub.

d.   Unwind approximately three feet of tape from the supply reel and thread the tape through the read/write mechanism and to the take-up reel according to the diagram on the front panel of the tape unit. Then wind the tape onto the take-up reel. The tape should be wrapped around the take-up reel at least three times. Note that during reading and writing the take-up reel turns in a clockwise direction.

e.   Close the front door of the tape unit.

f.   Press the Reset switch and then press the Load switch. When the LOAD indicator light is illuminated press the On-line switch.

The tape is now ready to be used by the computer program.

Removing a Magnetic Tape

To remove a reel of magnetic tape from an HP 7970 Series tape unit, do as follows:

a.   If the LOAD indicator light is *not* illuminated, press the Rewind switch.

b.   When the LOAD indicator light is illuminated, press the Rewind switch again. This causes the tape to rewind completely onto the supply (upper) reel.

c.   Open the front door of the tape unit and then flip up the quick release latch on the upper hub.

d.   Remove the reel and flip down the quick release latch. Then mount another tape or close the front door of the tape unit.

PROCEDURE 5
Disc and Drum Memories

HP 2766A DISC MEMORY

The HP 2766A Disc Memory is a rack-mounted, fixed-head disc memory unit which uses a set of permanently installed disc platters.

Power On/Power Off

The power switch is located on a separate, rack-mounted power supply unit (HP 2772A Power Supply).

To turn on the disc memory unit, set the power switch on the power supply to the ON position. The POWER indicator light on the power supply is illuminated whenever the disc memory unit is on.

To turn off the disc memory unit, set the power switch on the power supply to the OFF position.

Protect/Unprotect

A protect/unprotect switch on the HP 12610C printed-circuit assembly (PCA) permits a read-only status to be selected for some or all disc tracks. This protect feature is in effect when the switch is in the up position. As shipped from the factory, the card can protect track 0000 only. By removing diodes from the PCA before it is installed in the computer, additional groups of tracks can be protected when the switch is in the up position.

If protection is *not* desired for any track, no removal of diodes is required; the protect/ unprotect switch is simply set to the down position. Similarly, if only track 0000 is to be protected, no diodes are removed; the switch is simply set to the up position.

When more than one track is to be protected, diodes are removed from the HP 12610C PCA in accordance with Table 9. If the disc has fewer than 1000 (octal) tracks, the table applies to the extent of the number of tracks on the disc.

The locations of the track protect diodes are shown in figure 5-2 of the *HP 12610C Disc Memory Interface Kit Operating and Service Manual (12610-90013)*. Diodes which have been removed can later be replaced to reduce the number of tracks protected. When removing or replacing diodes, observe the normal precautions for avoiding damage to components and circuit cards.

There are no indicator lights associated with the protect/unprotect switch.

Table 9. Track Protect Diodes, 2766A

TRACKS PROTECTED WITH TRACK PROTECT SWITCH UP (OCTAL TRACK ADDRESS)	DIODES REMOVED	QUANTITY OF PROTECTED TRACKS (DECIMAL)
0000	None	1
0000 and 0001	CR1	2
0000 thru 0003	CR1,2	4
0000 thru 0007	CR1,2,3	8
0000 thru 0017	CR1,2,3,4	16
0000 thru 0037	CR1,2,3,4,5	32
0000 thru 0077	CR1,2,3,4, 5,6	64
0000 thru 0177	CR1,2,3,4,5, 6,7	128
0000 thru 0377	CR1,2,3,4,5, 6,7,8	256
0000 thru 0777	CR1,2,3,4,5, 6,7,8,9	512

MOTOR POWER ON Indicator Light

The MOTOR POWER ON indicator light, located on the front control panel of the HP 2766A Disc Memory, is illuminated whenever the disc memory unit is on.

MOTOR RESET Switch

If the temperature inside the sealed cover rises to an unsafe level, one of the two thermostats automatically removes ac power from the disc memory motor. After the temperature has cooled to a safe level, the MOTOR RESET switch is used to restore ac power to the disc memory motor.

ACTUATION PRESSURE LOW Indicator Light

The ACTUATION PRESSURE LOW indicator light, located on the front control panel of the HP 2766A Disc Memory, is illuminated when the head actuation pressure is below the nominal level of 1-5/8 psi and the pressure pump is operating. After the disc attains operating speed, the pressure pump operates for approximately two to four seconds causing the ACTUATION PRESSURE LOW indicator light to be illuminated. When the pressure has built up to the operating level of 1-5/8 psi, the indicator light goes off. After this initial start, the pump will cycle two or three times for approximately one second and the indicator light will flash as the pump settles down. Thereafter, the pump should not cycle and the indicator light should not be illuminated more than once in any 10-minute interval. If the indicator light is illuminated more often, or if it is steadily illuminated, call an HP representative.

DRUM TEMP HIGH Indicator Light

The DRUM TEMP HIGH indicator light, located on the front control panel of the HP 2766A Disc Memory, is illuminated when the temperature of the disc housing rises above a safe limit of $150°F$ or the temperature of the motor winding rises above $270°F$. When such a condition occurs, ac power is automatically removed from the disc memory motor. The indicator light goes off when the temperature is restored to a safe limit and the MOTOR RESET switch is pressed.

DRUM SPEED LOW Indicator Light

The DRUM SPEED LOW indicator light, located on the front control panel of the HP 2766A Disc Memory, is illuminated until the motor reaches a speed of 3450 rpm (nominal) for 60 Hz systems or 2880 rpm (nominal) for 50 Hz systems. When the motor is up to speed, the indicator light goes off and normally remains off during operation. If the motor drops below 3100 rpm (nominal) for 60 Hz systems or 2850 rpm (nominal) for 50 Hz systems, the indicator light is illuminated to warn that the disc speed has dropped below a safe operating speed. In such a case, the head actuation pressure drops to zero and the data and timing heads are automatically retracted. If a DRUM SPEED LOW condition occurs during normal operation, call an HP representative.

HP 2770A AND 2771A DISC MEMORIES

The HP 2770A and 2771A Disc Memories are rack-mounted, fixed-head disc memory units which use a set of permanently installed disc platters.

Power On/Power Off

The power switch is located on a separate, rack-mounted power supply unit (HP 2772A Power Supply).

To turn on the disc memory unit, set the power switch on the power supply to the ON position. The POWER indicator light on the power supply is illuminated whenever the disc memory unit is on.

To turn off the disc memory unit, set the power switch on the power supply to the OFF position.

Protect/Unprotect

A protect/unprotect switch on the HP 12606B printed-circuit assembly (PCA) permits a read-only status to be selected for some or all disc tracks. This protect feature is in effect when the switch is in the up position. As shipped from the factory, the PCA can protect track 0000 only. By removing diodes from the PCA before it is installed in the computer, additional groups of tracks can be protected when the switch is in the up position.

If protection is *not* desired for any track, no removal of diodes is required; the protect/unprotect switch is simply set to the down position. Similarly, if only track 0000 is to be protected, no diodes are removed; the switch is simply set to the up position.

When more than one track is to be protected, diodes are removed from the HP 12606B PCA in accordance with Table 10. If the disc has fewer than 200 (octal) tracks, the table applies to the extent of the number of tracks on the disc.

The locations of the track protect diodes are shown in figure 5-2 of the *HP 12606B Disc Memory Interface Kit Operating and Service Manual (12606-90012)*. Diodes which have been removed can later be replaced to reduce the number of tracks protected. When removing or replacing diodes, observe the normal precautions for avoiding damage to components and circuit cards.

There are no indicator lights associated with the protect/unprotect switch.

Table 10. Track Protect Diodes, 2770A, 2771A

TRACKS PROTECTED WITH TRACK PROTECT SWITCH UP (OCTAL TRACK ADDRESS)	QUANTITY OF PROTECTED TRACKS (DECIMAL)	DIODES REMOVED
00	1	None
00, 01	2	CR1
00 through 03	4	CR1,2
00 through 07	8	CR1,2,3
00 through 17	16	CR1 through CR4
00 through 37	32	CR1 through CR5
00 through 77	64	CR1 through CR6
00 through 177	128	CR1 through CR7

MOTOR POWER ON Indicator Light

The MOTOR POWER ON indicator light, located on the front control panel of the disc memory unit, is illuminated whenever the disc memory unit is on.

MOTOR RESET Switch

If the temperature inside the sealed cover rises to an unsafe level, one of the two thermostats automatically removes ac power from the disc memory motor. After the temperature has cooled to a safe level, the MOTOR RESET switch is used to restore ac power to the disc memory motor.

ACTUATION PRESSURE LOW Indicator Light

The ACTUATION PRESSURE LOW indicator light, located on the front control panel of the disc memory unit, is illuminated when the head actuation pressure is below the nominal level of 1-5/8 psi and the pressure pump is operating. After the disc attains operating speed, the pressure pump operates for approximately two to four seconds causing the ACTUATION PRESSURE LOW indicator light to be illuminated. When the pressure has built up to the operating level of 1-5/8 psi, the indicator light goes off. After this initial start, the pump will cycle two or three times for approximately one second and the indicator light will flash as the pump settles down. Thereafter, the pump should not cycle and the indicator light should not be illuminated more than once in any 10-minute interval. If the indicator light is illuminated more often, or if it is steadily illuminated, call an HP representative.

DRUM TEMP HIGH Indicator Light

The DRUM TEMP HIGH indicator light, located on the front control panel of the disc memory unit, is illuminated when the temperature of the disc housing rises above a safe limit of $150°F$ or the temperature of the motor winding rises above $270°F$. When such a condition occurs, ac power is automatically removed from the disc memory motor. The indicator light goes off when the temperature is restored to a safe limit and the MOTOR RESET switch is pressed.

DRUM SPEED LOW Indicator Light

The DRUM SPEED LOW indicator light, located on the front control panel of the disc memory unit, is illuminated until the motor reaches a speed of 3450 rpm (nominal) for 60 Hz systems or 2880 rpm (nominal) for 50 Hz systems. When the motor is up to speed, the indicator light goes off and normally remains off during operation. If the motor drops below 3100 rpm (nominal) for 60 Hz systems or 2850 rpm (nominal) for 50 Hz systems, the indicator light is illuminated to warn that the disc speed has dropped below a safe operating speed. In such a case, the head actuation pressure drops to zero and the data and timing heads are automatically retracted. If a DRUM SPEED LOW condition occurs during normal operation, call an HP representative.

HP 2774A AND 2775A DRUM MEMORIES

The HP 2774A and 2775A Drum Memories are rack-mounted drum memory units which are connected to an HP computer by way of an HP 12610A or 12610B Drum Memory Interface Kit.

Power On/Power Off

Both the HP 2774A and 2775A Drum Memory units use a separate, rack-mounted power supply unit (HP 2776A or 2777A Drum Power System). Located on the power supply unit are two switches: AC POWER and DC POWER. Each switch has an associated indicator light.

To turn on the drum memory unit, set both power switches to the ON position. Both power indicator lights are illuminated whenever the ac and dc power are on.

To turn off the drum memory unit, set both power switches to the OFF position.

Protect/Unprotect

A protect/unprotect switch on the HP 12610A or 12610B printed-circuit assembly (PCA) permits a read-only status to be selected for some or all drum tracks. This protect feature is in effect when the switch is in the up position. As shipped from the factory, the PCAs can protect track 0000 only. By removing diodes from the PCAs before they are installed in the computer, additional groups of tracks can be protected when the switch is in the up position.

If protection is *not* desired for any track, no removal of diodes is necessary; the protect/ unprotect switch is simply set to the down position. Similarly, if only track 0000 is to be protected, no diodes are removed; the switch is simply set to the up position.

When more than one track is to be protected, diodes are removed from the PCA in accordance with Table 11. If the drum has fewer than 1400 (octal) tracks, the table applies to the extent of the number of tracks on the drum.

The locations of the track protect diodes are shown in figure 5-2 of the *HP 12610A Drum Memory Interface Kit Operating and Service Manual (12610-90012)*, or the *HP 12610B Drum Memory Interface Kit Operating and Service Manual (12610-9001)*. Diodes which have been removed can later be replaced to reduce the number of tracks protected. When removing or replacing diodes, observe the normal precautions for avoiding damage to components and PCAs.

There are no indicator lights associated with the protect/unprotect switch.

Table 11. Track Protect Diodes, 2774A, 2775A

TRACKS PROTECTED WITH TRACK PROTECT SWITCH UP (OCTAL TRACK ADDRESS)	DIODES REMOVED	QUANTITY OF PROTECTED TRACKS (DECIMAL)
0000	None	1
0000 and 0001	CR1	2
0000 thru 0003	CR1,2	4
0000 thru 0007	CR1,2,3	8
0000 thru 0017	CR1,2,3,4	16
0000 thru 0037	CR1,2,3,4,5	32
0000 thru 0077	CR1,2,3,4,5,6	64
0000 thru 0177	CR1,2,3,4,5,6,7	128
0000 thru 0377	CR1,2,3,4,5,6,7,8	256
0000 thru 0777	CR1,2,3,4,5,6,7,8,9	512
0000 thru 1377	CR1,2,3,4,5,6,7,8,9,10	768

HEADS Switch

Setting the HEADS switch to the OUT position retracts the read/write heads away from the drum surface.

Setting the HEADS switch to the IN position moves the read/write heads to their normal operating position in relation to the drum surface.

DRUM READY Indicator Light

The DRUM READY light is illuminated whenever the drum is rotating at the proper speed and the read/write heads are *not* retracted (HEADS switch in the IN position).

CLOCKS Switch

This switch is to be used only by the HP representative. It is set to one position or the other at the time the drum is installed and should not be moved thereafter.

10 AMP Fuse

The fuse (labeled 10 AMP) is located at the left end of the control panel. If the fuse blows, call your HP representative.

HP 2883A DISC FILE

The HP 2883A Disc File is a free-standing, moving-head disc drive which uses a removable disc pack.

Power On/Power Off

Power to the disc drive is controlled by a master circuit breaker on the HP 2885A Sequencer in the equipment bay.

To turn on the disc drive, set the master circuit breaker to the ON position.

To turn off the disc drive, set the master circuit breaker to the OFF position.

On-Line/Off-Line

Setting the ON LINE/OFF toggle switch to the ON LINE position places the disc drive on-line (connected to the computer). The ENABLE/DISABLE indicator light is illuminated whenever the disc drive is on-line.

Setting the ON LINE/OFF switch to the OFF position places the disc drive off-line (not connected to the computer).

START/STOP Switch and FILE READY Indicator Light

When a disc pack is mounted, setting the START/STOP toggle switch to the START position turns on the spindle motor. When the disc pack is rotating at the proper speed, the FILE READY indicator light is illuminated.

Setting the START/STOP switch to the STOP position turns off the spindle motor. In such a case, the FILE READY indicator light turns off immediately and the disc pack slows to a halt. It normally takes approximately 20 seconds for the disc pack to come to a complete halt.

SELECT LOCK Indicator Light

If a file unsafe condition occurs, the SELECT LOCK indicator light is illuminated. In such a case, *leave the disc drive power and the spindle motor on* and call an HP representative.

FORMAT/OFF Switch

The FORMAT/OFF toggle switch controls whether or not the computer program may write sector addresses on the disc pack (this process of writing sector addresses on a disc pack is referred to as "formatting"). When the FORMAT/OFF switch is set to the FORMAT position, the computer program may format the disc pack. When the FORMAT/OFF switch is set to the OFF position, the computer program cannot format the disc pack.

There are no indicator lights associated with the FORMAT/OFF switch. Under normal circumstances, the FORMAT/OFF switch should be set to the OFF position.

Mounting a Disc Pack

Open the disc compartment cover. Pick the new pack up by the handle on the top of the pack and remove the bottom cover from the pack by twisting the bottom latch counter-clockwise. Place the new pack on the disc drive spindle and rotate the handle on the top of the pack clockwise until the pack locks on the spindle.

Then lift the top cover of the pack out of the disc compartment. Close the disc compartment cover and set the START/STOP switch to the START position. If the ENABLE/DISABLE indicator light is off, set the ON LINE/OFF switch to the ON LINE position. When the FILE READY indicator light is illuminated, the disc pack is ready to be used by the computer program.

Removing a Disc Pack

Set the START/STOP switch to the STOP position. After approximately 20 seconds, the disc pack will stop rotating. When the disc pack has come to a complete halt, open the disc compartment cover and place the top cover of the pack on the disc pack. Turn the handle on the top of the pack counterclockwise until it clicks several times. Then lift the pack out of the disc compartment. Put the bottom cover on the pack and fasten it in place by twisting the bottom latch clockwise. Close the disc compartment cover or mount another disc pack. *Do not leave the disc compartment cover open.*

HP 7900A DISC DRIVE

The HP 7900A Disc Drive is a rack-mounted, moving-head disc drive which uses two disc modules: one permanently installed disc platter and a removable disc cartridge.

Power On/Power Off

The power switch is located on a separate, rack-mountable power supply unit (HP 13215A Disc Power Supply). When the power switch is set ON, the DRIVE POWER light on the disc drive control panel is illuminated.

Before turning off the power, always be sure that the LOAD/UNLOAD switch is set to UNLOAD and that the disc has stopped rotating (approximately 30 seconds after setting the LOAD/UNLOAD switch to UNLOAD, an audible "click" can be heard; this noise signals that the disc has stopped rotating).

Opening the Disc Compartment Door

The disc compartment door can only be opened when the power is on and the disc is not rotating. To open the door, grip the handle at the top of the door and pull out and down.

Unloading a Disc Cartridge

Open the disc compartment door. Pull the cartridge out of the compartment. Then close the compartment door or load another disc cartridge.

Loading a Disc Cartridge

Open the disc compartment door. If there is already a cartridge loaded, remove it. Before inserting the new cartridge check to see if it is a 24-sector disc cartridge. To perform the check, turn the cartridge upside down and make sure that two slots approximately 1'' apart are visible through the opening near the center of the cartridge. If only one slot is visible, turn the center hub slightly until a pair of slots is visible. If a pair of slots cannot be seen, the cartridge is of the wrong sector density and *should not be used.* If the cartridge is a 24-sector cartridge, turn it rightside up and insert it into the disc compartment. When the cartridge is all the way in, close the compartment door and move the LOAD/UNLOAD switch to the LOAD position. When the disc is rotating at the proper speed, the DRIVE READY light turns on.

Data Protect Switches

The data protect switches are located just inside the disc compartment. The 7900A accommodates two disc modules: one is permanently mounted; the other is a removable disc cartridge. The permanently mounted disc module is referred to as the lower disc (L/D) and the removable disc cartridge is referred to as the upper disc (U/D). The data protect switch on the right side of the compartment controls the upper disc and the switch on the left controls the lower disc. When a data protect switch is set on, an indicator light on the control panel is illuminated (DATA PROTECT U/D or DATA PROTECT L/D). The data protect switches allow the operator to protect either or both disc modules from being written upon. When a data protect switch is set on, the disc drive is in a "read-only" state with regard to the associated disc module.

DRIVE FAULT Light

If the DRIVE FAULT light on the disc drive control panel is illuminated, set the LOAD/ UNLOAD switch to UNLOAD. Wait until the DRIVE FAULT light goes off and then set the LOAD/UNLOAD switch back to LOAD.

SOFTWARE PROTECT Switch

Remove the grill located on the front of the drive below the disc compartment door: first press the upper left corner of the grill (the upper right corner should react by protruding out from the front of the drive). Then grip the upper right corner of the grill and pull out.

Located behind the grill on the left is the SOFTWARE PROTECT switch. This switch controls whether or not the computer program may write sector addresses on the disc modules (the process of writing sector addresses on the disc modules is referred to as "formatting"). If the SOFTWARE PROTECT switch is set to PROTECT the computer program cannot format the disc. If the SOFTWARE PROTECT switch is set to OVERRIDE, the program may format the disc modules, protect a track, or mark a track as "defective".

There are no indicator lights associated with the SOFTWARE PROTECT switch. Under normal circumstances, the SOFTWARE PROTECT switch should be set to PROTECT.

HP 7901A DISC DRIVE

The HP 7901A Disc Drive is a rack-mounted, moving-head disc drive which uses a removable disc cartridge.

Power On/Power Off

Pressing the POWER switch alternately turns the power on and off. The POWER switch is illuminated whenever the power is on.

Before turning off the power, always be sure that the LOAD switch is off and that the disc has stopped rotating (the DRIVE UNLOCK light is illuminated when the disc is not rotating).

Opening the Disc Compartment Door

The disc compartment door can only be opened when the power is on and the disc is not rotating. To open the door, grip the handle at the top of the door and pull out and down.

Unloading a Disc Cartridge

Open the disc compartment door. Pull the cartridge out of the compartment. Then close the compartment door or load another cartridge.

Loading a Disc Cartridge

Open the disc compartment door. If there is a cartridge already loaded, remove it. Before inserting the new cartridge, check to see that it is a 24-sector disc cartridge. To perform the check, turn the cartridge upside down and make sure that two slots (approximately 1'' apart) are visible through the opening near the center of the cartridge. If only one slot is visible, turn the center hub slightly until a pair of slots is visible. If a pair of slots cannot be seen, the cartridge is of the wrong sector density and *should not be used*. If the cartridge is a 24-sector cartridge, turn it rightside up and insert it into the disc compartment. When the cartridge is all the way in, close the compartment door and press the LOAD switch. When the disc is rotating at the proper speed, the DRIVE READY light turns on.

Setting the Device Number

There is an indicator light on the control panel which contains four numbers (0, 1, 2, and 3). This light specifies which physical device number the disc drive is currently assigned. To change the device number, open the disc compartment door. On the left just inside the compartment is a switch (UNIT SELECT) with the numbers 0, 1, 2, and 3 imprinted beside it. Move the switch to the position corresponding to the desired device number.

DATA PROTECT Switch

The DATA PROTECT switch is located on the right just inside the disc compartment. When the operator sets the DATA PROTECT switch to PROTECT, the disc drive is in a "read-only" state. When the disc drive is in the "read-only" state, the DATA PROTECT light on the control panel is illuminated.

DRIVE FAULT Light

If the DRIVE FAULT light on the control panel is illuminated, press the LOAD switch and then press it again (after pressing the switch the first time, it is only necessary to wait approximately five seconds before pressing it again).

SOFTWARE PROTECT Switch

Remove the grill located on the front of the drive below the disc compartment door: first, press the upper left corner of the grill (the upper right corner should react by protruding out from the front of the drive). Then grip the upper right corner of the grill and pull out.

Located behind the grill on the right is the SOFTWARE PROTECT switch. This switch controls whether or not the computer program may write sector addresses on the disc (the process of writing sector addresses is referred to as "formatting"). If the SOFTWARE PROTECT switch is set to PROTECT, the computer program cannot format the disc. If the SOFTWARE PROTECT switch is set to OVERRIDE, the program may format the disc, protect a track, or mark a track as "defective".

There are no indicator lights associated with the SOFTWARE PROTECT switch. Under normal circumstances, this switch should be set to PROTECT.