"COMM-STOR*" II COMMUNICATIONS STORAGE UNIT INSTALLATION PROCEDURES

1. GENERAL

1.01 This section provides installation information for the COMM-STOR II Communications Storage Unit (hereafter referred to as the Comm-Stor II unit) manufactured by Sykes Datatronics, Incorporated. This information is contained in the attached reprint of practice SYKS 578-400-200, Issue 3, prepared by Sykes Datatronics.

1.02 This section is reissued for the following reasons:

(a) Support of DATASPEED†-40 receive-only (RO) printer with simplified interface

(b) Revision D of the configuration diskette

(c) Installation procedures for each option/update kit

(d) Use of the start/stop function on DATASPEED-40/1 terminal set.

1.03 The Comm-Stor II unit is available in two basic models: Model 8120A (single drive unit) and Model 8220A (dual drive unit). Edit, standby disk power, and the extender user command table are standard features in both models. Available options/updates include:

(a) Printer port

(b) Extended editor

(c) Standard forms

(d) Extended forms

(e) Expanded random access memory (RAM)

(f) Patch programmable read-only memory (PROM) kit

(g) 4K RAM incremental kit.

1.04 The option label on the rear panel of each unit indicates those options which are included in the unit at the time of manufacture.

1.05 The options listed above may either be installed when purchased, or installed in the field to upgrade an existing Comm-Stor II unit. Refer to the attached practice when installing these options.

1.06 This section does not apply to Comm-Stor II units equipped for:

(a) 8A1/8B1 Protocol

(b) Comm-Stor II Station Message Detail Recording (SMDR) unit

(c) Comm-Stor II Call Rating System (CRS) unit

(d) Comm-Stor II Line Control Unit (LCU)

(e) Comm-Stor II Peformance Analysis System (PAS) unit.

1.07 To install the above units, refer to the following practices. (Check Divisional Index 578 for availability.)

SECTION	UNIT
578-400-201	8A1/8B1 Option
578-400-202	Comm-Stor II/SMDR Unit
578-400-203	Comm-Stor II/LCU Unit
578-400-205	Comm-Stor II/CRS Unit
578-400-206	Comm-Stor II/PAS Unit.

* Registered trademark of Sykes Datatronics, Inc.

† Registered trademark of AT&T.

NOTICE

This document is either
AT&T - Proprietary, or WESTERN
ELECTRIC - Proprietary

Pursuant to Judge Greene's Order of August 5, 1983, beginning on January 1, 1984, AT&T will cease to use "Bell" and the Bell symbol, with the exceptions as set forth in that Order. Pursuant thereto, any reference to "BELL" and/or the BELL symbol in this document is hereby deleted and "expunged".

Comm-Stor* II
COMMUNICATIONS STORAGE UNIT
INSTALLATION PROCEDURES

CONTENTS PAGE

*Comm-Stor is a registered trademark of Sykes Datatronics, Inc.

CONTENTS PAGE

CONTENTS PAGE

FIGURES

TABLES

CONTENT PAGE

1. INTRODUCTION

A. General

1.01 This section provides installation information for the Comm-Stor II Communications Storage Unit, hereafter referred to as the Comm-Stor II unit.

1.02 This section has been reissued to support:

- The DATASPEED* 40 RO Printer with simplified interface
- Revision D of the Configuration diskette
- Installation procedures for each option/update kit
- The use of the start/stop function on DATASPEED 40/1 terminal.

1.03 The Comm-Stor II unit is available in two basic models: Model 8120A (single drive unit) and Model 8220A (dual drive unit). Edit, standby disk power, and the Extended User Command Table are standard features in both models. Available options/updates include:

(a) Printer Port

(b) Extended Editor

*DATASPEED is a registered trademark of AT&T company.

(c) Standard Forms

(d) Extended Forms

(e) Expanded RAM

(f) Patch PROM Kit

(g) 4K RAM Incremental Kit

1.04 The option label on the rear panel of each unit indicates those options which are included in the unit at the time of manufacture (Fig. 1).

1.05 The options listed above may either be installed at the factory when purchased, or installed in the field to upgrade an existing Comm-Stor II unit. Refer to Part 5 of this practice when installing these options.

1.06 This section does not apply to Comm-Stor II units equipped for:

(a) 8A1/8B1 Protocol

(b) Comm-Stor II/SMDR Unit

(c) Comm-Stor II/CRS Unit

(d) Comm-Stor II/LCU Unit

(e) Comm-Stor II/PAS Unit

1.07 To install the above units, refer to the following practices:

UNIT	SECTION
8A1/8B1 Option	578-400-201
Comm-Stor II/SMDR Unit	578-400-202
Comm-Stor II/CRS Unit	578-400-205
Comm-Stor II/LCU Unit	578-400-203
Comm-Stor II/PAS Unit	578-400-206

1.08 All forms of the word *display* as used throughout this document refer to data output through the terminal port of the Comm-Stor II unit (i.e., sending data to either the terminal or printer).

1.09 The terms *baud* and *baud rate*, as used in this document, refer to data transmission and are equivalent to"bits per second".

1.10 A typical installation arrangement for the Comm-Stor II unit is illustrated in Fig. 2.

B. Danger and Warnings

1.11 The following danger and warning statements should be considered when removing or replacing any module or component.

Danger: Turn off all power and signal sources before removing or replacing any module or component.

Warning 1: To avoid possible internal damage to circuitry, wear a static discharge strap connected to ground to allow static discharge before handling circuit boards or components for removal or replacement. Avoid touching circuit lands or components as much as possible.

Warning 2: Put the replaced board in an antistatic bag immediately after removal from the unit. Never handle the board outside the bag without being properly grounded.

Warning 3: Handle all diskettes with care. (Refer to paragraph 9.11.)

2. INSTALLATION OUTLINE

(a) Review the service order.

(b) Unpack and inspect the equipment (Part 3).

(c) Check the environmental and placement requirements (Part 4).

(d) Install any option kits (Part 5).

(e) Connect the EIA cables (Part 6).

(f) Power on the Comm-Stor II unit (Part 7).

(1) Front panel indicators

(2) Powering on the Comm-Stor II unit

(g) Set transmission rates (Part 8).

(h) Select the diskette (Part 9).

(1) Configuration

(2) Refresh

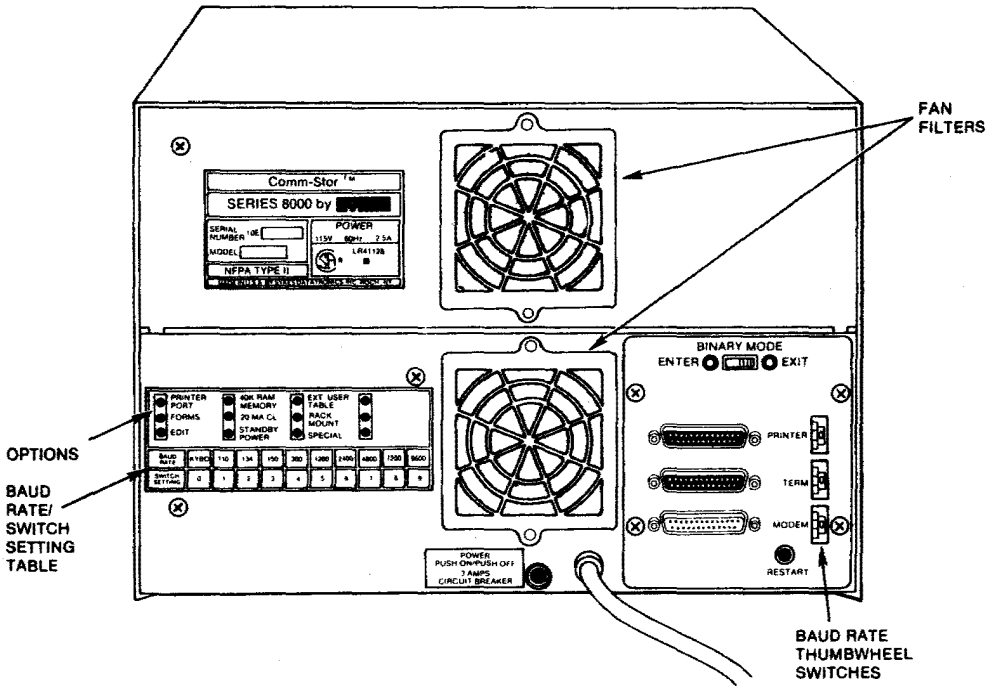


Fig. 1 — Rear View of the Comm-Stor II Unit (Dual Drive Unit)

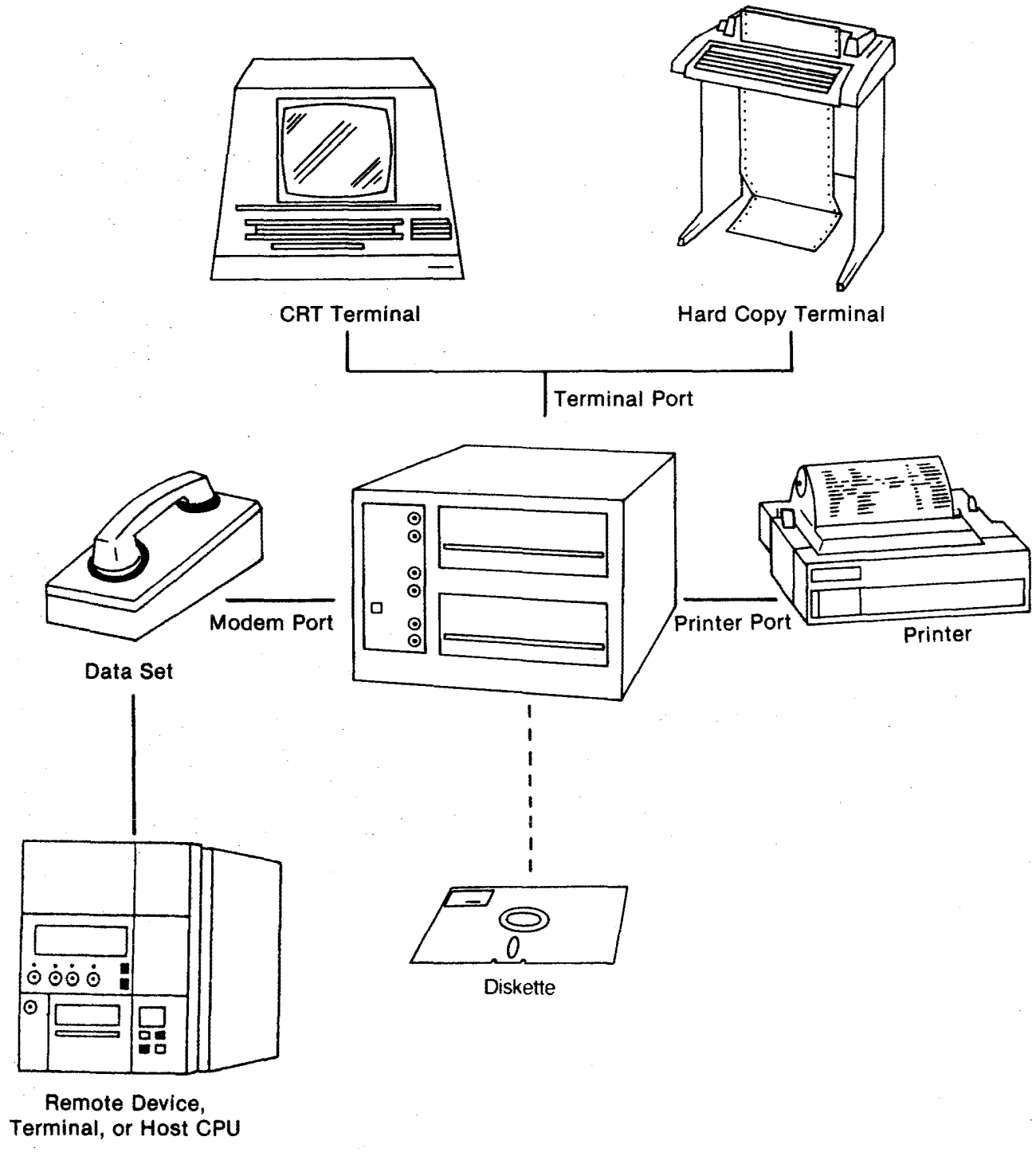


Fig. 2 — Typical Comm-Stor II Unit Installation Arrangement

(3) User

(4) Diagnostic

(i) Configure the system (Part 10).

(1) Data Set

(2) Terminal

(3) Comm-Stor II unit

(4) Printer (optional)

(5) Generate a Refresh diskette

(j) Build a User diskette (Part 10).

(k) Perform local terminal tests (Part 12).

(l) Perform operational checkout (on-line tests) (Part 13).

(m) Perform diagnostic tests (Part 14).

(n) Have the customer use the Comm-Stor II unit.

(o) Complete the installation.

(1) Give documentation to the customer.

(2) Clean up the site.

(3) Complete the paperwork.

3. UNPACKING AND INSPECTING THE EQUIPMENT

A. General

3.01 To avoid equipment damage, unpack the equipment as close as possible to the installation site.

B. Unpacking Instructions (Fig. 3)

3.02 To unpack the Comm-Stor II unit and accessories, proceed as follows:

(a) With the box in an upright position, open the top flaps and fold them outward.

(b) Grasp and remove the top mold.

(c) Remove any accessories which may have been stored on top of the Comm-Stor II unit.

(d) Lift the Comm-Stor II unit out of the box. (Refer to Fig. 3 for lifting points).

Warning: Do not use the drive doors as the lifting point during unpacking. Damage to the diskette drives may result.

Danger: It is recommended that two people lift the unit to avoid the possibility of personal injury or equipment damage.

(e) Inspect the remaining packaging material for any other accessories which may have been stored beneath the Comm-Stor II unit.

(f) Compare the accessories and options with the packing slip to assure the completeness of the order.

(g) Dispose of the box according to local practices.

C. Visual Inspection

3.03 After removing the Comm-Stor II unit from its shipping container, visually inspect the unit for any shipping damage.

Warning: Unless option/update kits are to be installed, it is not necessary to remove the cover to perform any of the installation operations. Removing the cover and improperly handling the integrated circuits or other components may cause failures in these parts.

4. ENVIRONMENTAL AND PLACEMENT REQUIREMENTS

A. Environmental

4.01 The Comm-Stor II unit functions satisfactorily under temperature and humidity conditions suitable for operation of other equipment in an office or laboratory environment; relative humidity ranging from 20% to 90% (noncondensing) and temperature ranging from 45°F to 95°F (7° C to 35° C).

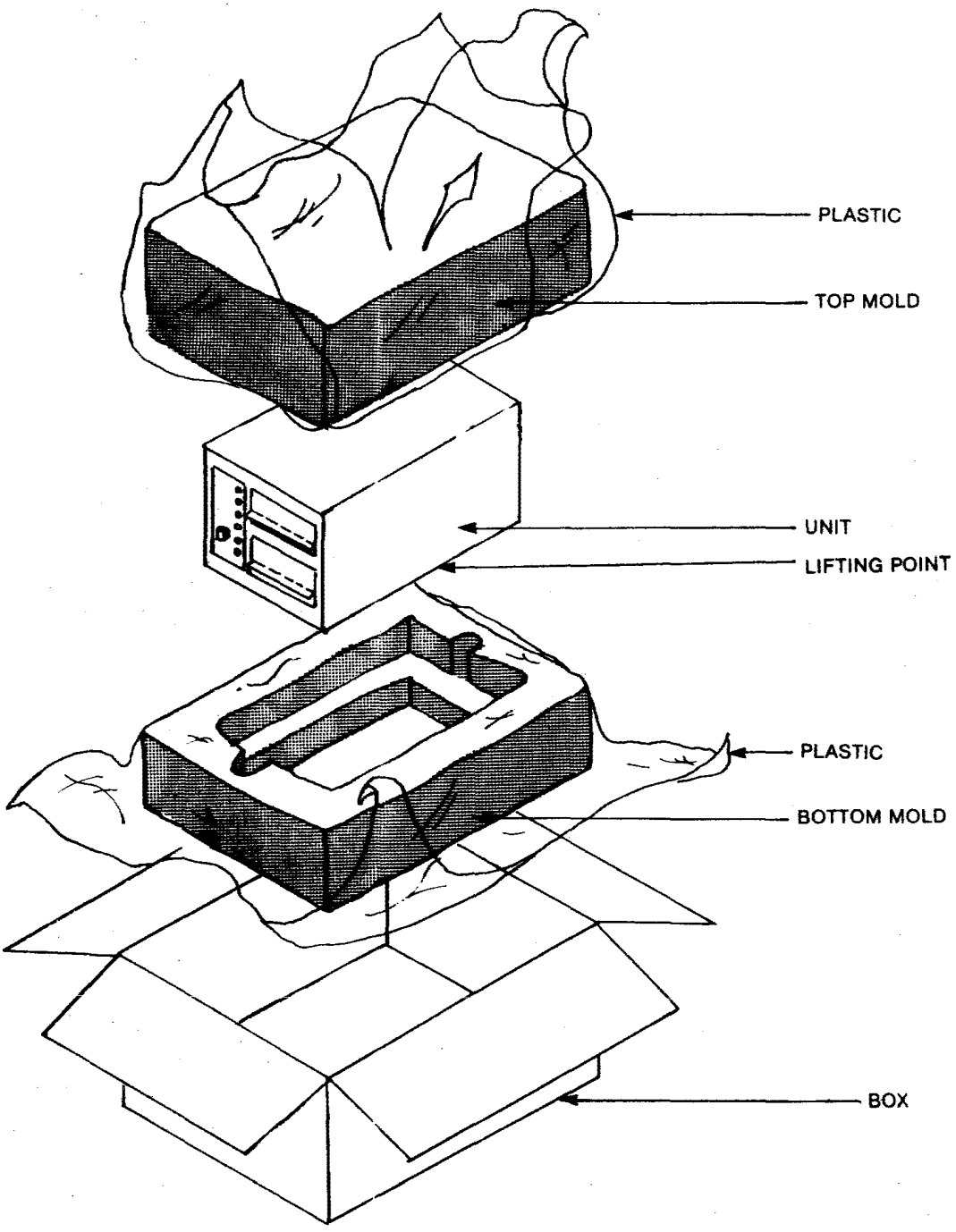


Fig. 3 — Packaging Components

B. Placement

4.02 The Comm-Stor II unit can be positioned at almost any angle and still function satisfactorily. However, the ideal position is right side up on a table or desk top, or any other hard, flat surface.

4.03 The Comm-Stor II unit must be located in a position that allows at least six inches of clearance behind the back panel for cooling purposes. This location must also be free of magnetic fields. Units not meeting these requirements are susceptable to reduced air flow, increasing dirt build-up in the air filters, and eventual component failure and diskette damage.

5. INSTALLATION OF OPTION/UPDATE KITS

A. General

5.01 The following paragraphs give the details necessary for the proper installation of the following option/update kits:

(a) Printer Port (Kit # 1030A5012)

(b) Expanded RAM (Kit # 1030A5013 or 1030A5014)

(c) Standard Forms (Kit # 1030A5114)

(d) Extended Forms (Kit # 1030A5198)

(e) Extended Editor (Kit # 1009A0506)

(f) Patch PROM Set (Kit # 1030A5206)

(g) 4K RAM Incremental Kit (Kit # 1009A0501)

5.02 The following warnings are provided for personal safety and prevention of equipment damage:

Danger: Turn off all power and signal sources connected to the Comm-Stor II unit before removing or replacing any module or component.

Warning 1: To avoid possible internal damage to the circuitry of the Comm-Stor II unit, wear a static discharge strap connected to ground while handling any circuit boards or components. Avoid touching circuit lands or components as much as possible.

Warning 2: Place any replaced boards or components in an anti-static bag immediately after removal from the unit. Never handle a board or component outside the bag without being properly grounded.

Warning 3: When inserting a new IC chip, be sure to line up the detent (key) properly to avoid damage to the chip.

B. Printer Port Option (Kit # 1030A5012)

5.03 The Printer Port option is installed as follows:

(a) Disconnect the Comm-Stor II unit from the power source.

(b) Turn the unit on its left side and remove the four mounting screws located on the bottom of the unit. These screws are used to secure the top cover of the unit.

(c) Turn the unit up again. Remove the cover by sliding it toward the rear of the unit.

(d) Remove the two screws which fasten the circuit board retainer to the chassis.

(e) Remove the circuit board retainer.

(f) Remove the screws which hold the I/O panel to the rear panel. Remove the I/O panel.

(g) Remove the MP/RAM board from slot A1.

(h) Using the hardware provided in the option/update kit, part number 1030A5012, install the mini thumbwheel in the space marked "SW3" (Fig. 4) if not already installed.

(i) Insert the Printer Port board, part number 1030A5012, into a vacant slot at the base card assembly usually slot A4.

(j) Reinstall the MP/RAM board in slot A1.

(k) Reinstall the I/O panel and refasten it to the back panel.

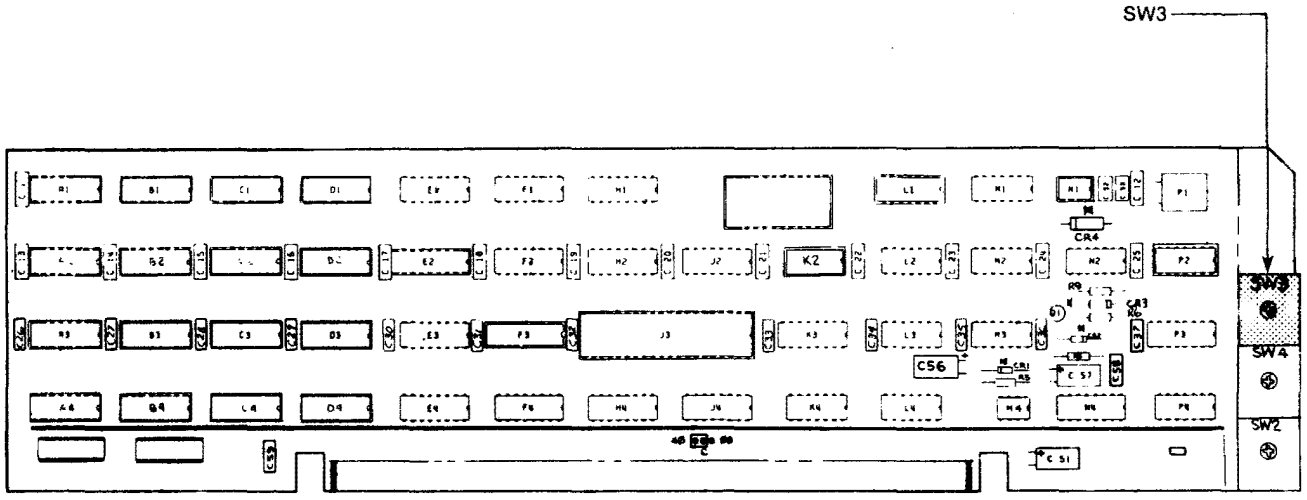


Fig. 4 — "SW3" Placement on the MP/RAM Board

(l) Attach connector P1 to the Communications Ports board and connector P2 to the Printer Port board.

(m) Attach a printer to the printer port, according to the instructions contained in Part 6 of this practice, or if no printer is available, set the printer baud rate switch to position zero.

(n) Connect the Comm-Stor II unit to a power source, according to the instructions contained in Part 7 of this practice.

(o) Test the Comm-Stor II unit using the User Diagnostic kit, part number 1030A5191. Refer to Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting* for the diagnostic procedures.

(p) Disconnect the Comm-Stor II unit from the power source and reassemble the unit by reversing Steps (b) through (e) of this procedure.

C. Expanded RAM Option (Kit # 1030A5013 or 1030A5014)

5.04 The Expanded RAM option is installed as follows:

(a) Disconnect the Comm-Stor II unit from the power source.

(b) Turn the unit on its left side and remove the four mounting screws located on the bottom of the unit. These screws are used to secure the top cover of the unit.

(c) Turn the unit up again. Remove the cover by sliding it toward the rear of the unit.

(d) Remove the screws which fasten the circuit board retainer to the chasis.

(e) Remove the circuit board retainer.

(f) Insert the Expanded RAM board, part number 1030A5013 or 1030A5014, into a vacant slot of the base card assembly, usually slot A4 or A5.

Note: The base board contains a universal bus; therefore the placement of boards is dependent only on whether there is enough room to mount them.

(g) Connect the Comm-Stor Ii unit to a power source, according to the instructions contained in Part 7 of this practice.

(h) Test the Comm-Stor II unit using the User Diagnostic kit, part number 1030A5191.

Refer to Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting* for the diagnostic procedures.

(i) Disconnect the Comm-Stor II unit from the power source and reassemble the unit by reversing Steps (b) through (e) of this procedure.

D. Standard Forms Option (Kit # 1030A5114)

5.05 The Standard Forms option is installed as follows:

(a) Disconnect the Comm-Stor II unit from the power source.

(b) Turn the unit on its left side. Remove the four mounting screws located on the bottom of the unit. These screws are used to secure the top cover of the unit.

(c) Turn the unit up again. Remove the cover by sliding it toward the rear of the unit.

(d) Remove the two screws which fasten the circuit board retainer to the chassis.

(e) Remove the circuit board retainer.

(f) Remove the ROM IIA board, part number 1030A6486, normally located in slot A2.

(g) Using an IC removal and insertion tool, part number TP407326, insert the ROM, part number 1030B6470, into location C3 on the ROM IIA board (Fig. 5).

(h) Reinsert the ROM IIA board into slot A2.

(i) Connect the Comm-Stor II unit to a power source, according to the instructions contained in Part 7 of this practice.

(j) Test the Comm-Stor II unit using the User Diagnostic Kit, part number 1030A5191. Refer to Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting* for the diagnostic procedures.

(k) Disconnect the Comm-Stor II unit from the power source and reassemble the unit by reversing Steps (b) through (e) of this procedure.

E. Extended Forms Option (Kit # 1030A5918)

Note: The Extended Forms option requires the following equipment to function:

(a) A minimum of 4K RAM

(b) Revision C or higher Configuration diskette

(c) AT.02 or higher patch PROM set.*

5.06 The Extended Forms option is installed as follows:

(a) Discount the Comm-Stor II unit from the power source.

(b) Turn the unit on its left side. Remove the four mounting screws located on the bottom of the unit. These screws are used to secure the top cover of the unit.

(c) Remove the cover by sliding it toward the rear of the unit.

(d) Remove the two screws which fasten the circuit board retainer to the chassis.

(e) Remove the circuit board retainer.

(f) Remove the ROM IIA board, part number 1030A6486, from slot A2 of the base card assembly.

---

*When removing the ROM IIA board in paragraph 5.06, notice that the revision level of each PROM is labeled on each PROM.

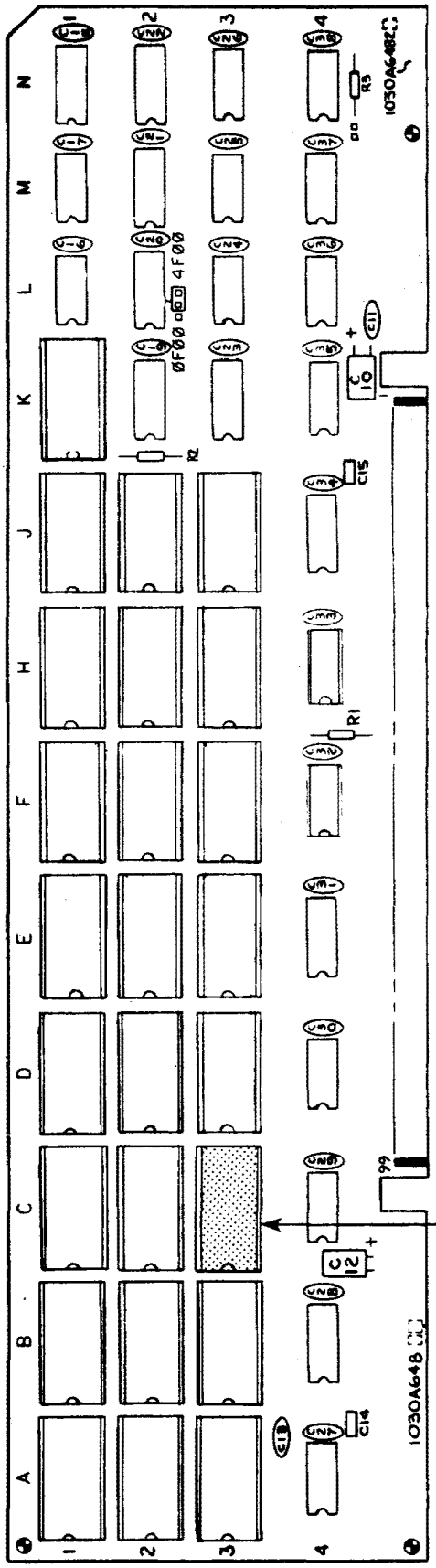


Fig. 5 — IC Placement for the Standard Forms Option

(g) Using an IC removal and insertion tool, part number TP407326, insert the following IC chips into the locations indicated (Fig. 6).

IC	PART NUMBER	LOCATION
ROM	1030B5197	E3
ROM	1030B5137	F1
ROM	1030B5138	F2
ROM	1030B5139	F3
ROM	1030B5140	H1
ROM	1030B5141 or 1030B5142*	H2
PROM	1030A5415	H3
HD-6605	100U18034	F4
HD-6605	100U18034	H4

(h) Using an IC removal and insertion tool, part number TP407326, remove any chip located in socket C3.

(i) Reinsert the ROM IIA board into slot A2.

(j) Connect the Comm-Stor II unit to a power source, according to the instructions contained in Part 7 of this practice.

(k) Using a revision C or higher Configuration diskette, refresh the system. Refer to Section 578-400-500, *Test and Troubleshooting* for procedures.

(l) Test the Comm-Stor II unit using the User Diagnostic kit, part number 1030A5191. Refer to Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting* for diagnostic procedures.

(m) Disconnect the Comm-Stor II unit from the power source and reassemble the unit by reversing Steps (b) through (e) of this procedure.

F. Extended Editor Option (Kit # 1009A0506)

Note 1: The 8A1/8B1 option cannot be used in conjunction with the Extended Editor option.

Note 2: The following equipment must be installed in the Comm-Stor II unit in order to install the Extended Editor option:

(a) AT.02 or higher patch PROM Kit, part number 1030A5206.†

(b) A revision C or higher Configuration diskette and instruction manual, part number 1030A5186.

(c) At least 4K of RAM, part number 1030A5167.

(d) A revision B or higher Comm-Stor II unit User Practice diskette, part number 1030A5019.

(e) Existing systems with an AT.01 patch PROM set, and a PROM in location E1 on the ROM IIA board must also purchase the ROM kit #2, part number 1009A0508.

5.07 The Extended Editor option is installed as follows:

(a) Disconnect the Comm-Stor II unit from the power source.

(b) Turn the unit on its left side. Remove the four mounting screws located on the bottom of the unit. These screws are used to secure the top cover of the unit.

(c) Turn the unit up again. Remove the cover by sliding it toward the rear of the unit.

(d) Remove the screws which fasten the circuit board retainer to the chassis.

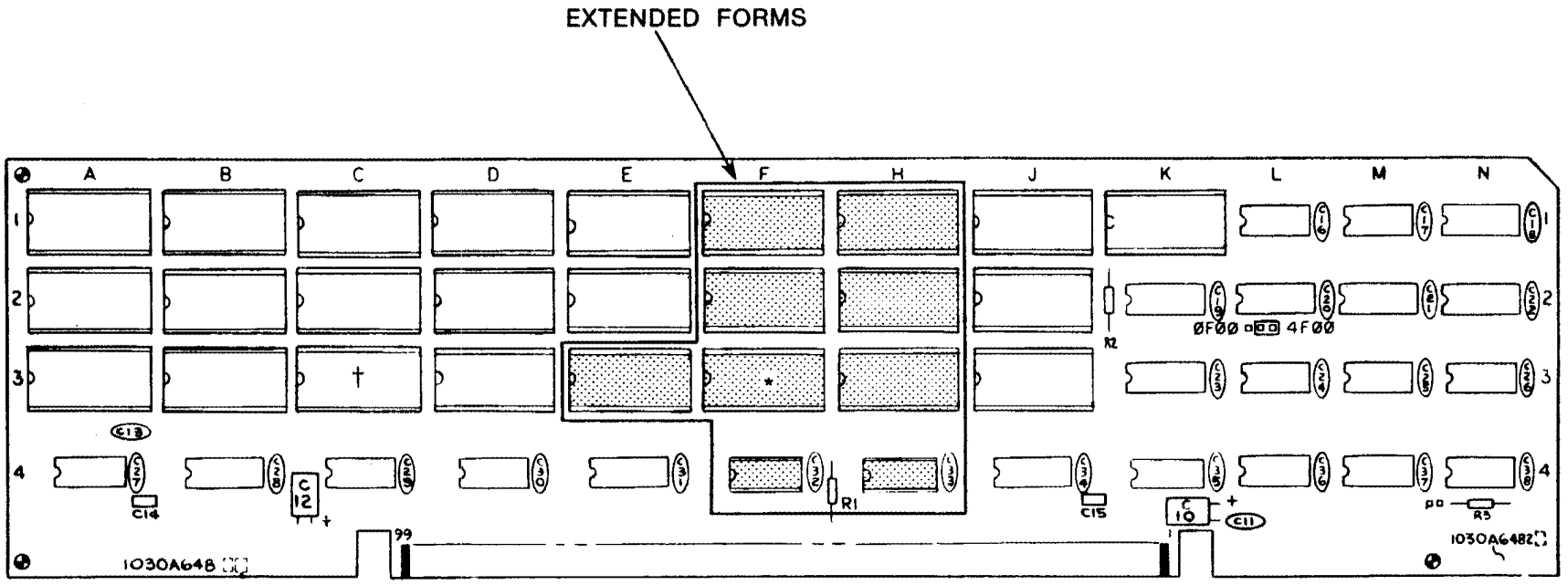
(e) Remove the circuit board retainer.

(f) Remove the ROM IIA board, part number 1030A6486, normally located in slot A2.

(g) Using an IC removal and insertion tool, part number TP407326, insert the ICs contained in the kit as follows (Fig. 7).

*No arithmetic capability.

†When removing the ROM IIA board in paragraph 5.07, notice that the revision level of each PROM is labeled on each PROM.



* With an AT.04 or higher patch PROM set, this IC (1030A5415) is already installed. *Do not remove it.*

† If IC Part Number 1030B6470 is found in location C3, remove it when installing the Extended Forms option.

Fig. 6 — IC Placement for the Extended Forms Option

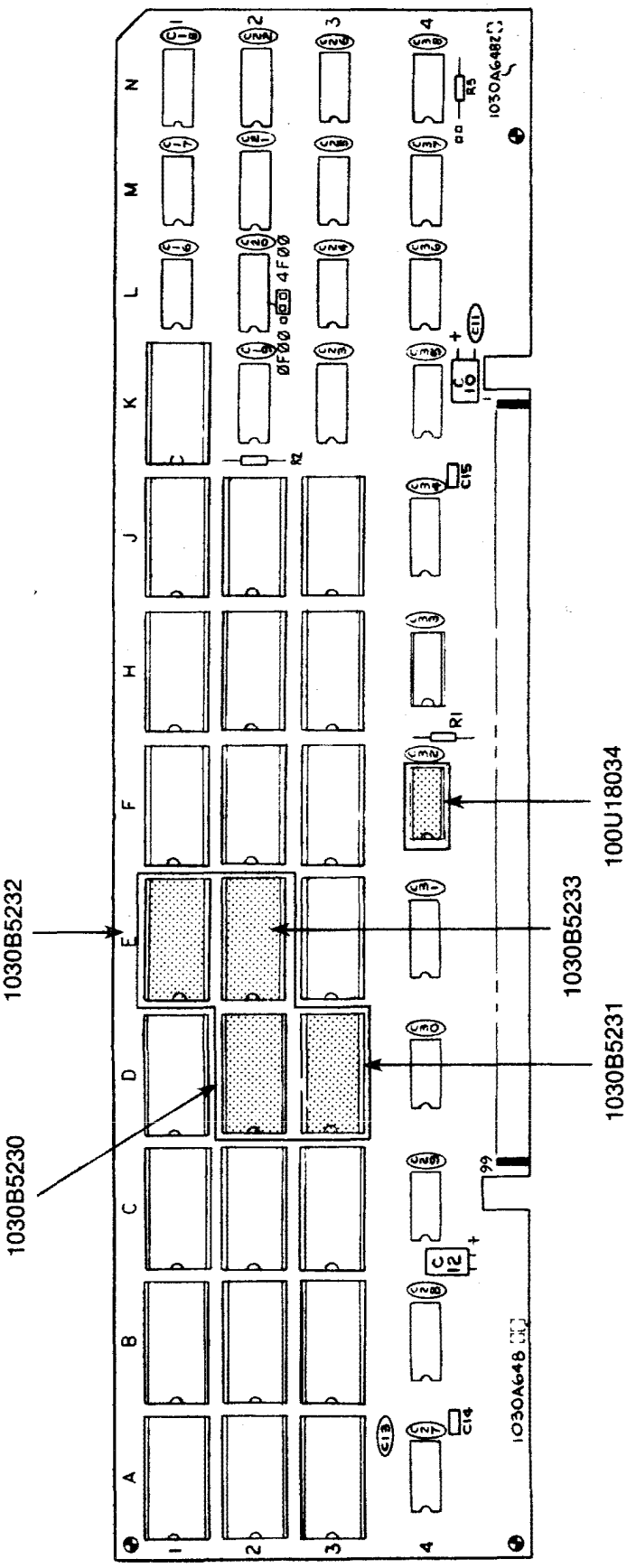


Fig. 7 — IC Placement for the Extended Editor Option

IC	PART NUMBER	LOCATION
ROM	1030B5230	D2
ROM	1030B5231	D3
ROM	1030B5232	E1
ROM	1030B5233	E2
HD-6605	100U18034	F4

(h) Using an IC removal and insertion tool, part number TP407326, remove the chip located in socket C2.

(i) Connect the Comm-Stor II unit to a power source, following the instructions contained in Part 7 of this practice.

(j) Using a revision C or higher Configuration diskette, refresh the system.

(k) Test the Comm-Stor II unit using the User Diagnostic kit, part number 1030A5191. Refer to Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting* for diagnostic procedures.

(l) Disconnect the Comm-Stor II unit from the power source and reassemble the unit by reversing Steps (b) through (e) of this procedure.

G. Patch PROM Kit (Kit # 1030A5206)

5.08 The Patch PROM Update kit is installed as follows:

(a) Disconnect the Comm-Stor II unit from the power source.

(b) Turn the unit on its left side. Remove the four mounting screws located on the bottom of the unit. These screws are used to secure the top cover of the unit.

(c) Turn the unit up again. Remove the cover by sliding it toward the rear of the unit.

(d) Remove the screws which fasten the circuit board retainer to the chassis.

(e) Remove the circuit board retainer.

(f) Remove the ROM IIA board, part number 1030A6486, normally located in slot A2 of the base card assembly.

(g) Insert the new patch PROMs into their locations. (Each PROM should be labeled with a letter/number code which will match the socket location.)

(h) If a PROM is already installed in location H3, and if it is not part number 1030A5415, remove it with an IC removal and insertion tool, part number TP407326. Replace it with the IC in the kit.

(i) Insert the ROM IIA board back into the base card assembly.

(j) Connect the Comm-Stor II unit to a power source, following the instructions contained in Part 7 of this practice.

(k) Test the Comm-Stor II unit using the User Diagnostic kit, part number 1030A5191. Refer to Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting* for the diagnostic procedures.

(l) Disconnect the Comm-Stor II unit from the power source and reassemble the unit by reversing Steps (b) through (e) of this procedure.

H. 4K RAM Incremental Kit (Kit # 1009A0501)

Note: The following equipment must already be installed in the Comm-Stor II unit in order to install the 4K RAM Incremental kit:

(a) An Expanded RAM board (1030A5013)

or

(b) A Printer Port/Expanded RAM board (1030A5014).

5.09 The 4K RAM Incremental kit is installed as follows:

(a) Disconnect the Comm-Stor II unit from the power source.

(b) Turn the unit on its left side. Remove the four mounting screws located on the bottom of the unit. These screws are used to secure the top cover of the unit.

(c) Remove the cover by sliding it toward the rear of the unit.

(d) Remove the screws which retain the circuit board retainer to the chassis.

(e) Remove the circuit board retainer.

(f) Remove the Expanded RAM board, part number 1030A5013 or 1030A5014, normally located in slot A4.

(g) Using the top of the board as a reference, insert the eight RAM chips contained in the option kit into the first empty horizontal row of sockets on the board. Refer to Fig. 8.

Note: Each 4K of RAM occupies one horizontal row (eight chips). Using the top of the board as a reference, fill each row of sockets in numeric order (i.e., row one must be filled before row two, etc.).

(h) Insert the Expanded RAM board back into slot A4.

(i) Connect the Comm-Stor II unit to a power source, following the instructions contained in Part 7 of this practice.

(j) Test the Comm-Stor II unit using the User Diagnostic kit, part number 1030A5191. Refer to Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting* for the diagnostic procedures.

(k) Disconnect the Comm-Stor II unit from the power source and reassemble the unit by reversing Steps (b) through (e) of this procedure.

6. CABLE INSTALLATION

A. General

6.01 A terminal, printer, and data set can be connected to the Comm-Stor II unit via industry standard connectors on the rear panel of the unit (Fig. 1). These connectors, commonly called "ports", conform to the Electronic Industries Association (EIA) specification RS-232C.

6.02 Device cables are attached to the rear panel of the Comm-Stor II unit. No special wiring of the cables is required and all leads should be wired pin-for-pin.

Caution: Be sure pins 21 and 25 are not connected.

6.03 Table A shows the EIA interface signal connections for the terminal, modem, and printer ports. These ports are also described in the following paragraphs.

B. Terminal Port

6.04 Using a male-female EIA interface cable, connect the *female* end to the terminal and the *male* end to the port labeled TERM. The terminal port is located on the rear panel of the Comm-Stor II unit (Fig. 1).

6.05 The installer must place the terminal in the Full Duplex mode for all operations. The terminal must remain in this mode for both full and half duplex data set connections.

C. Printer Port

6.06 Using a male-female EIA cable, connect the *female* end to the printer and the *male* end to the port labeled PRINTER. The printer port is located on the rear panel of the Comm-Stor II unit (Fig. 1).

6.07 If the printer port is installed, but the installer does not wish to use it at this time, the port may be left unterminated. However, the printer baud rate switch must be set to position zero.

D. Modem Port

6.08 Using a male-female EIA cable, connect the *male* end to the data set, and the *female* end to the port labeled MODEM. The modem port is located on the rear panel of the Comm-Stor II unit (Fig. 1).

7. POWER ON

A. Front Panel Indicators

7.01 The front panel of the Comm-Stor II unit has several indicators to assist the installer. Two of the indicators, READY and BUSY, are duplicated in a dual drive unit to provide information about each drive. When the power switch is first turned on, all LEDs are illuminated for a short time to allow the installer to perform a visual LED test. The function of each indicator is described in the following pages (Fig. 9).

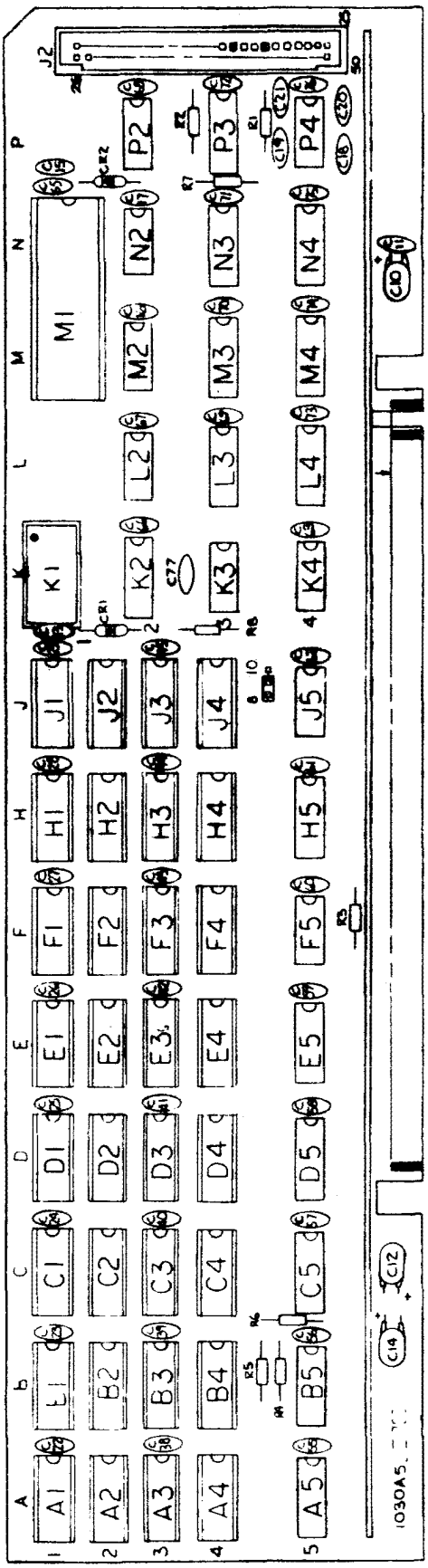


Fig. 8 — Expanded RAM Board

TABLE A

EIA RS-232C INTERFACE CONNECTIONS

PIN #	DESCRIPTION	TERMINAL PORT		MODEM PORT		PRINTER PORT	
		USED	DIRECTION	USED	DIRECTION	USED	DIRECTION
1	Chassis Ground (FG)	X	—	X	—	X	—
2	Transmitted Data (SD)	X	in	X	out		
3	Received Data (RD)	X	out	X	in	X	out
4	Request to Send (RTS)	X	in	X	out	X	in
5	Clear to Send (CTS)	X	out	X	in	X	out
6	Data Set Ready (DSR)	X	out	X	in	X	out
7	Circuit Ground (SG)	X	—	X	—	X	—
8	Carrier Detect (CD)	X	out	X	in	X	out
11	Secondary Request to Send (SRTS)	X	in	X	out	X	in
12	Secondary Carrier Detect (SCD)	X	out	X	in	X	out
20	Data Terminal Ready (DTR)	X	in	X	out	X	in
22	Ring Indicator (RI)	X	out	X	in	X	out

Note: Direction refers to signal direction with respect to the Comm-Stor II unit at each port, e.g., transmitted data is out of the unit on Pin #2 at the modem port.

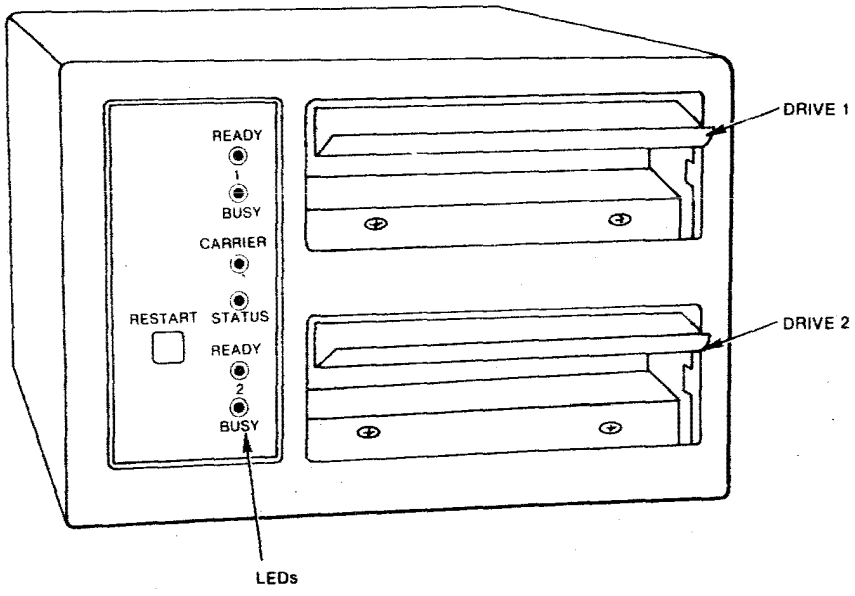


Fig. 9 — Front View of the Comm-Stor II Unit

RESTART: A switch/indicator to show when the unit is powered on. It is also used to reinitialize the system when necessary. It should be noted that there is also a RESTART switch on the rear panel of the unit. Both switches function identically; however, the one on the rear panel is non-illuminating.

READY: An LED indicator which signifies that a diskette has been properly inserted into the drive and that the drive door is closed. This indicator is duplicated in a dual drive unit to provide information about each drive. READY 1 refers to the LED for the top drive (drive 1) and READY 2 refers to the LED for the bottom drive (drive 2).

BUSY: An LED indicator which signifies that data is being transferred to or from the diskette. A diskette should not be removed when the BUSY LED is illuminated as data could be lost. Wait until the BUSY LED is off before removing the diskette. This LED is duplicated in a dual drive unit to provide information about each drive. BUSY 1 refers to the BUSY LED on drive 1 while BUSY 2 refers to the BUSY LED on drive 2.

CARRIER: An indicator which signifies the presence of a carrier detect signal from an optional data set.

STATUS: An LED indicator which has a dual purpose. First, it indicates by flickering that data is being transferred to or from any of the ports. Second, it indicates the presence of a parity error. If a parity error occurs and data is not being transferred through any of the ports, it illuminates at full brilliance. When a parity error occurs and data is being transferred through a port, this LED illuminates at half brilliance, but will return to full brilliance after completion of the data transfer.

> *Note:* If for any reason (such as storing the unit for longer than one year in a power down condition) the contents of the configuration memory are altered or destroyed, the STATUS LED on the front panel will illuminate when the unit is initially powered on. If this happens, refresh the unit. If the STATUS LED remains lit after the unit is refreshed, replace the battery, part number 300D00001.

B. Power Up

7.02 Voltage and frequency requirements are listed on the configuration plate attached to the rear panel of the. unit (Fig. 1). The standard operating requirements are 110V, 60Hz at 2.5 amps. Before connecting the Comm-Stor II unit to a power source, check to be certain that both voltage and frequency agree with local power sources, and that the A.C. outlet is properly grounded.

7.03 The units are shipped with a three-prong power plug commonly used in the U.S.A. and meet safety requirements. Do not attempt to defeat the purpose of this plug.

7.04 Connect the power plug on the rear panel of the unit to a power source.

7.05 The power switch, located on the rear panel of the unit, turns the power on and off and acts as a circuit breaker.

7.06 To power the unit on, press the power switch; the RESTART switch on the front panel should illuminate. If it does not light, press the power switch again.

> *Note:* When the Comm-Stor II unit is properly restarted, all LEDs will illuminate for about one second (LED check).

7.07 The terminal, data set, and printer when provided, must also be powered on. The order in which power is applied to these devices will not affect the performance of the Comm-Stor II unit. Refer to the appropriate Section for the proper instructions.

8. SETTING TRANSMISSION RATES

A. General

8.01 A terminal should not have a transmission rate lower than the data set, to avoid the possibility of garbled information.

8.02 Transmission rates may be set from the baud rate switches on the rear panel of the Comm-Stor II unit or from the terminal keyboard. Each port on the rear panel of the Comm-Stor II unit has a corresponding baud rate switch which sets the transmission rate for that port. The switches contain the numbers 0 through 9 which relate to a particular baud rate in accordance with the table on the rear panel of the unit. To set the baud rate, rotate the thumbwheel switch until the desired number appears. The RESTART switch must be pressed

after changing any of the baud rate switches to allow the Comm-Stor II unit to recognize the new baud rate setting.

8.03 Switch setting 0 is called the keyboard (KYBD) rate. In this setting, the installer must enter the different transmission rates from the terminal keyboard.

B. Setting Transmission Rates From The Keyboard

8.04 The transmission rates for the terminal, data set, and printer can be changed by entering commands at the terminal. In order to use this feature, set the baud rate switch for the respective port to position 0, the KYBD position. The installer may now select any of the following transmission rates listed in Table B.

TABLE B

AVAILABLE BAUD RATES

50*	150	1800*	4800
75*	300	2000*	7200
110	600*	2400	9600
134	1200	3600*	

*Transmission rate may be obtained *only* by keyboard entry.

8.05 The terminal and modem baud rate switches do not require equal transmission rate settings, even when on-line operations are desired. It is recommended however, that the terminal be operated at a higher baud rate than the data set. In a case where the batch transmission from the terminal to a remote station is made, the transmission rates must be set equal unless terminal input buffering has been implemented in the Comm-Stor II unit. Examples of batch transmission equipment are the paper tape reader on a hardcopy terminal or a CRT terminal in the Page-Transmit mode.

Note: The RESTART switch (Fig. 1 and 9) must be pressed after changing any of the baud rate setting switches. This allows the Comm-Stor II unit to recognize the new baud rate setting.

8.06 The following commands illustrate the setting of the baud rates for each port when the baud rate switches are set to position 0 (KYBD):

.BT 4800[CR]
.BM 300[CR]
.BP 300[CR]

8.07 The first example may be used to match a DATASPEED 40/2 terminal transmission rate of 4800 bps. The second example may be used to match a Data-set 212AR modem rate of 300 bps. The third example may be used to match a 43 Teleprinter baud rate of 300 bps.

8.08 Entering the transmission rate from the terminal when the respective baud rate switch is not set to the KYBD position will cause the error message, ERR-PREP SYS, to be displayed on the terminal. Similarly, entering an illegal number will also result in an error message.

8.09 Setting the baud rate switches to any position other than KYBD position and pressing the RESTART switch cancels the last KYBD command. It is necessary, therefore, when going back to the KYBD command to re-enter the baud rate at the terminal.

9. SELECTING THE DISKETTE

A. Comm-Stor II Unit Diskettes

9.01 This section contains important reference information but no procedures necessary for installing the system.

9.02 Each diskette is composed of 77 tracks, and each track contains 26 sectors. Data is stored in the "Library" section of the diskette where a listing of all files is kept in the directory (Fig. 10).

Configuration Diskette (1030A5186)

9.03 The Configuration diskette contains prerecorded procedures for configuring a system and for creating Refresh and User diskettes. Use of the Configuration diskette is covered briefly in Part 10 of this section and more completely in Section 999-302-150, *How to Configure . . . Comm-Stor II Units.*

Refresh Diskette (locally supplied)

9.04 Once the Comm-Stor II unit is configured, it is possible to store this configuration on a

diskette called a Refresh diskette. After a Refresh diskette has been created from a blank diskette, another Comm-Stor II unit can be identically configured by inserting the Refresh diskette into the drive and pressing the RESTART switch.

User Diskette (1030A5185)

9.05 The User diskette contains a directory and data files. It is used for storage of user data.

9.06 The User diskette is created with the Configuration diskette. It is initialized with such parameters as the maximum number of characters in the file name and fixed or variable length file specifications.

Diagnostic Diskette (1030A5191)

9.07 The Diagnostic diskette contains prerecorded information for running the Comm-Stor II unit User Diagnostic tests. This diskette is NOT interchangeable with the Diagnostic diskette used with the Comm-Stor II/SMDR, Comm-Stor II/CRS, Comm-Stor II/LCU, or Comm-Stor II/PAS units.

B. Inserting and Removing the Diskette

9.08 The drive doors of all Comm-Stor II units are equipped with an interlock which prevents them from closing unless a diskette is inserted properly (Fig. 11).

9.09 To insert the diskette:

(a) Power on the Comm-Stor II unit.

(b) Grasp the diskette between the thumb and index finger. The label should be face up and toward the user (Fig. 11).

(c) Slide the diskette into the drive.

(d) Exert a slight inward pressure with the index finger and *gently* pull the drive door down with the thumb. Do not force the drive door closed!! A gentle horizontal pressure on the diskette is sufficient to release the interlock. When the drive door closes, the front panel READY 1 or READY 2 LED illuminates, indicating that the respective drive is ready for use.

Warning 1: It is important that diskettes be inserted only with the power on as spindle rotation aligns the diskette.

Warning 2: Never leave a diskette in the unit when powering down.

Warning 3: Do not power on the Comm-Stor II unit with a diskette in the drive.

9.10 To remove the diskette:

(a) Gently lift the drive door until it is fully open.

(b) Slide the diskette out of the drive.

C. Diskette Care

9.11 A diskette must be handled with care. Improper treatment or carelessness may result in loss of data, and possibly, many hours of work. Observe the following warnings:

Warning 1: Never touch the exposed diskette surface. Handle the diskette only near the label.

Warning 2: Do not write on the diskette cover; write only on the label. If possible, write on the label before placing it on the diskette. If the label must be written on after being placed on the diskette, use only a felt tip pen.

Warning 3: Do not attempt to clean a dirty or dusty diskette; such a diskette should be discarded.

Warning 4: Keep the diskette away from metals or other potentially magnetic materials or magnetic sources (e.g., unshielded power supplies, CRT monitors).

Warning 5: Do not bend the diskette.

Warning 6: Do not expose the diskette to extremes of heat or cold.

Warning 7: Keep the diskette in its protective cover when not in use. Dust and liquid can damage the exposed diskette surface.

Warning 8: Store diskettes vertically in boxes when not in use.

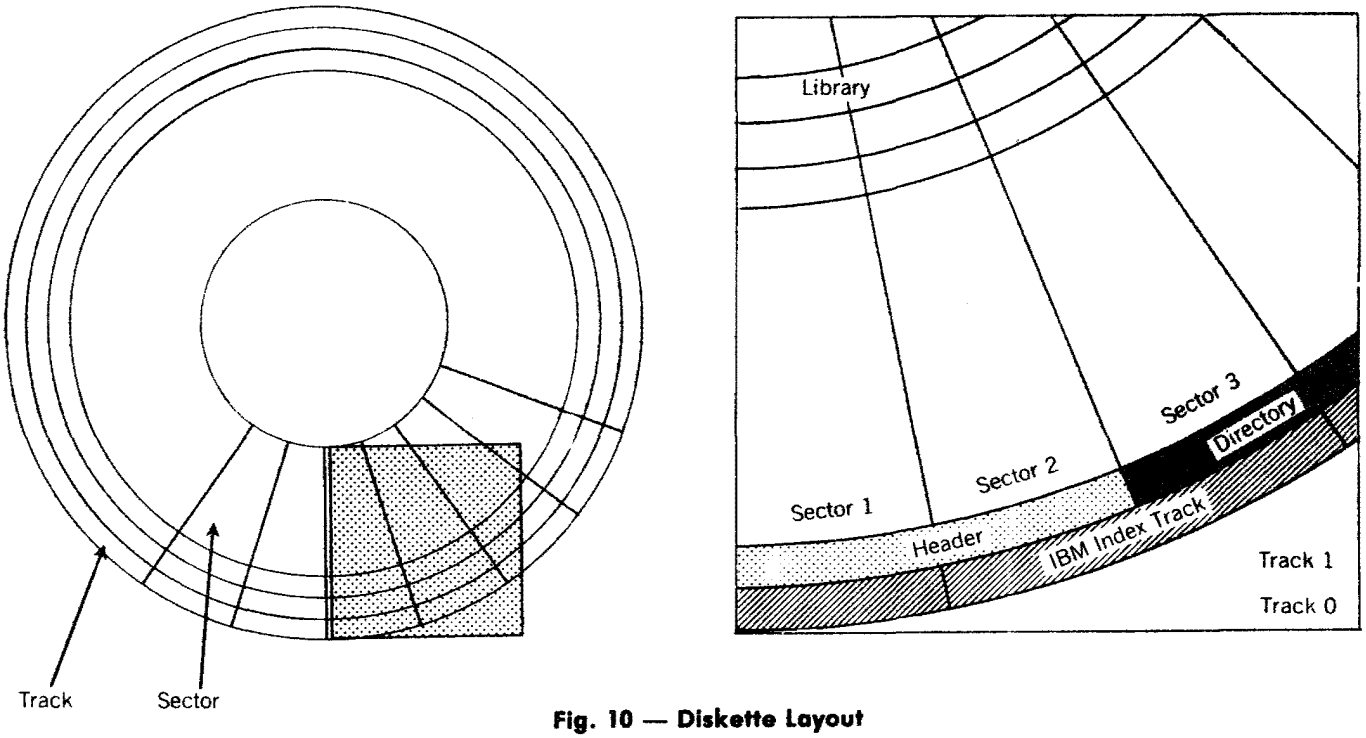


Fig. 10 — Diskette Layout

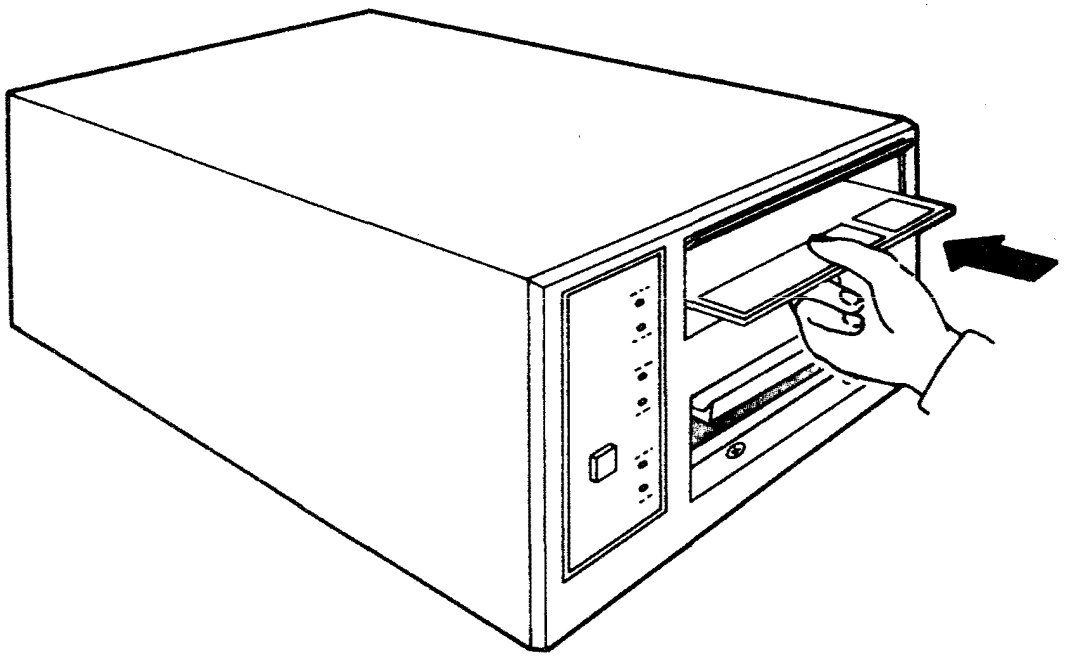


Fig. 11 — Inserting the Diskette

10. CONFIGURATION PROCEDURES

Note 1: If Bell System data sets, terminals, or printers are to be connected to the Comm-Stor II unit, reconfigure the parameters of the Comm-Stor II unit as listed in Tables D, E, F, and G to their required values.

Note 2: If the Comm-Stor II unit is to be connected to peripheral equipment other than Bell System data sets, terminals, or printers, perform the user diagnostic tests and inform the customer that their equipment may be connected.

A. Start-Up Procedures

10.01 The configuration process allows the Comm-Stor II unit to vary its characteristics (parameters) to meet the requirements of the other devices in the system. The Comm-Stor II unit asks the user to specify the parameters requiring change. The user responds by indicating the parameters and their values. These responses are interpreted by the Comm-Stor II unit and stored in configuration memory.

10.02 To use the configuration process, the Comm-Stor II unit must be set to communicate with the terminal in use. To do this, the terminal must first be:

(a) Connected to the TERM port of the Comm-Stor II unit (Part 6).

(b) Set to Full Duplex mode.

(c) Set to On-line mode.

(d) Set to the desired baud rate.

(e) Powered on.

10.03 The Comm-Stor II unit must then be set as follows:

(a) The terminal port baud rate must be set to the same rate as the terminal in use. To do this, set the terminal baud rate switch to the proper position using the rear panel baud rate table, or select the desired baud rate via keyboard command (Part 8).

(b) The printer port baud rate switch must be set to position zero if the printer port and/or the printer baud rate switch are present when a printer is not available.

(c) The modem baud rate switch must be set to match the terminal's character length and parity convention as follows:

Position	Characteristics
0	7 bits and even parity
1	7 bits and odd parity
2	7 bits and no parity
3	8 bits and even parity
4	8 bits and odd parity
5	8 bits and no parity
6 or higher	invalid

Note 1: These characteristics apply to the above positions during the configuration process only.

Note 2: If positions 2 or 5 are selected, the Comm-Stor II unit ignores the parity bit on incoming data from the terminal and sets the parity bit to zero for outgoing data to the terminal. If position 6 or higher is selected, the front panel LEDs will flash randomly, indicating an error. Position 5 or lower must be selected.

(d) The power switch must be turned on (Part 7).

10.04 Place the Configuration diskette in drive 1, close the drive door, and press the RESTART switch. If either the terminal or modem baud rate switch is incorrectly set, meaningless characters may be displayed at the terminal. The operator should recheck the position of the baud rate switches and consult the appropriate practice to determine what these settings should be.

10.05 If the switches are correctly set and the terminal is functioning correctly, the Comm-Stor II unit will send an identification message to the terminal:

COMM-STOR CONFIGURATOR VER. _____*

10.06 If this message is not obtained, a malfunction of the Comm-Stor II unit, the

*This blank will be filled by the Comm-Stor II unit with the version level of the diskette in use.

EIA cable, or the terminal is probable. Check to be sure that the terminal:

(a) Is on-line.

(b) Parity/word length is properly set.

(c) Baud rates are properly set.

(d) Is in Full Duplex mode.

(e) Cable connections are correct and secure.

10.07 After the Comm-Stor II unit's identification message and the request for the framing character appear, the installer enters a single character. This character is used before and after installer responses to configuration questions and precisely defines where the response begins and ends. Any character is acceptable; however, the character which is chosen cannot be part of any reply during the configuration process.

The customary selection at this point is the slash (/), which means that no system command that contains a slash may be defined. For example: (.DD) may not be reconfigured to (/DD). If the selected framing character conflicts with a system command, press the RESTART switch to restart the configuration process and to select another framing character.

B. Configuration Commands

10.08 When the framing character is entered, the Comm-Stor II unit sends a period (.) prompt to the terminal. The user can now respond by entering one of the available commands listed in Table C, depending on the Comm-Stor II unit operation to be performed. Either upper or lower case letters may be entered. The first five commands require an End-of-Line character [EOL] (this may be a carriage return, line feed, new line, Escape, or any control code) before the command is sensed by the Comm-Stor II unit. The rest of the commands are sensed immediately after the key is struck at the terminal. The underlined portion of each command indicates entries made by the user; the leading period is a prompt from the Comm-Stor II unit.

C. Parameter Description

10.09 When configuring or displaying parameters, the Comm-Stor II unit sends the following information to the terminal:

nnn:parameter title (current value)

Where nnn is the number of the particular parameter (001 or #01, or just 1). If a .C command is entered, the Comm-Stor II unit will pause after typing the current parameter value. To change the parameter value, enter the framing character, the new value, and then the framing character again. To accept the current value, enter a carriage return. The next parameter will then be displayed. Note that the framing character itself may not be used as part of a configurable parameter since the Comm-Stor II unit will interpret it incorrectly.

TABLE C

CONFIGURATION COMMANDS

.C[CR]	CONFIGURES ALL PARAMETERS
.D[CR]	DISPLAYS ALL PARAMETERS
.Cnnn[CR]	CONFIGURES PARAMETER nnn
.Dnnn[CR]	DISPLAYS PARAMETER nnn
.[CR]	CONFIGURES/DISPLAYS THE NEXT PARAMETER
..	CONFIGURES/DISPLAYS THE SAME PARAMETER
.B	BUILDS USER DISKETTES
.W	WRITES SYSTEM REFRESH DISKETTE
.R	STANDARD FACTORY REFRESH
.[^T]	TERMINATES CURRENT OPERATION; RETURN TO PERIOD PROMPT
.M	REMOTE CONFIGURATION
.Q	AT REMOTE TERMINAL, RETURNS CONTROL TO THE LOCAL TERMINAL.
.Q	AT LOCAL TERMINAL, INHIBITS CONVERSATION AND DISPLAY OF LOCAL COMMANDS ON THE REMOTE TERMINAL

10.10 There are several types of parameters, most falling into two groups: YES/NO parameters concerned with the availability and use of certain features, and single character parameters. When displaying or configuring a YES/NO parameter, the current value is displayed as YES or NO. To change the value, the new value is entered as a Y or N placed between framing characters. The Comm-Stor II unit will accept an upper or lower case entry for Y or N responses. *Do not* enter the full words YES or NO!

Example: /Y/

10.11 When configuring or displaying a parameter value which is printable, the Comm-Stor II unit displays the value as the character itself. In the case of nonprintable characters, the current value is shown in an interpretive mode. For example:

Control G = ([∧ G])
Carriage Return = ([CR])

> *Note:* the interpretive representation is used by the Comm-Stor II unit as a means of printing a nonprinting character. Always strike the single key corresponding to the desired character.

10.12 To configure a single character parameter to a character that is unavailable on the keyboard (perhaps a lower case letter on an all upper case keyboard), the character may be entered using the binary data feature as follows:

(a) Enter the command .Cnnn. The Comm-Stor II unit will send the parameter's title and its current value to the terminal.

(b) Set the binary switch to the ENTER position.

(c) Type the framing character.

(d) Type one to eight binary digits ("1"s and "0"s); typing the most significant bit first. (Refer to Fig. 12 and start the sequence from right to left.)

(e) Type the framing character.

(f) Set the binary switch to the EXIT position.

10.13 The Comm-Stor II unit will echo the entered information both in binary (as entered) and as an interpreted ASCII character as described above.

10.14 Some of the configuration parameters require *special responses* from the user. These responses are discussed in Section 999-302-150, *How to Configure . . . Comm-Stor II Unit.*

10.15 The Comm-Stor II unit pauses after the display and after the configured command to allow a response. The only exception to this is the .D[CR] command, which causes all parameters to be displayed sequentially with no pauses. This command lists all configurable parameters to determine the number of a desired parameter. The .B, .R, and .W commands are system management processes and do not apply to the standard configuration process.

10.16 Except where specifically noted, all responses to questions asked by the Comm-Stor II unit are assumed to be standard ASCII characters. Printable characters will be represented in the text by the actual letters enclosed within quotes or parentheses.

D. Factory Standard Refresh

10.17 To refresh the system to factory standard values:

(a) Insert the Configuration diskette (part number 1030A5186) into the drive (drive 1 of a dual drive unit).

(b) Close the drive door.

(c) Press the RESTART switch.

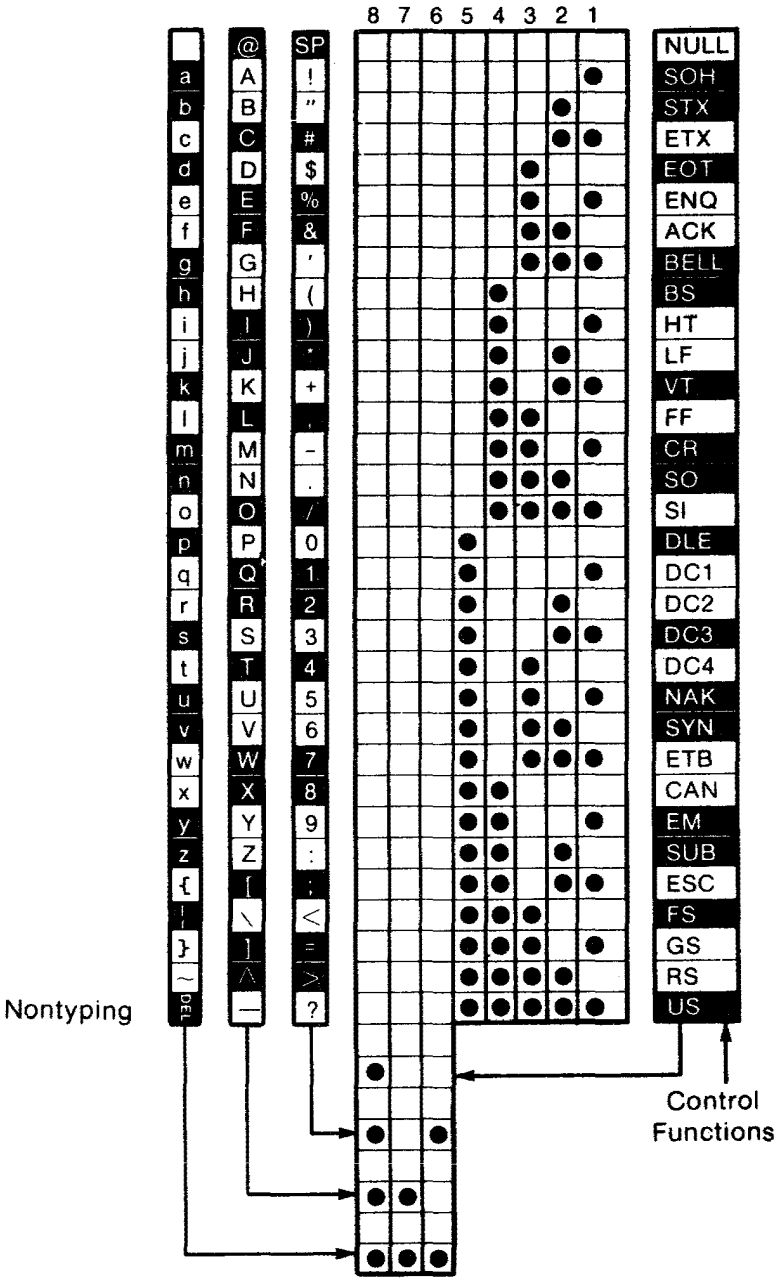
(d) The Comm-Stor II unit sends the following display to the terminal:

COMM-STOR CONFIGURATOR, VER._____
PLEASE TYPE FRAMING CHARACTER

(e) Enter the framing character. This is usually configured as a slash (/).

(f) The Comm-Stor II unit sends a period (.) prompt to the terminal.

(g) Enter R[CR].



Note: To obtain even parity, the characters and functions shown with shaded backgrounds have 8th bit marking.

Fig. 12 — American Standard Code for Information Interchange (ASCII)

(h) The Comm-Stor II unit sends the following question to the terminal:

-SURE?

(i) Enter Y to the "-SURE?" prompt.

(j) Once refreshed, the Comm-Stor II unit sends period (.) prompt to the terminal.

(k) Depending upon the next operation to be performed, either enter another command (Table C) or remove the Configuration diskette from the drive.

E. Building A User Diskette

10.18 Create a User diskette using the following procedure:

(a) Place the Configuration diskette in the drive (drive 1 of a dual drive unit). Close the drive door. Press the RESTART switch.

(b) The Comm-Stor II unit will send the following message to the terminal:

COMM-STOR CONFIGURATOR VER._____
PLEASE TYPE FRAMING CHARACTER

(c) Enter the required character from the terminal.

(d) The Comm-Stor II unit now displays a period (.) prompt. Type "B" to begin the build process.

(e) The Comm-Stor II unit will ask:

DUP OLD DISK?

(f) Enter an "N" (for no) from the terminal.

(g) The Comm-Stor II unit will now ask a series of questions relating to the format of the User diskette. Respond as indicated by the underlined portion of text:

FIXED LENGTH FILES? N
MAXIMUM NUMBER OF FILE SLOTS PER DISKETTE? 100
NUMBER OF LINES ON SCRATCH PAD? 254
MAXIMUM NUMBER OF CHARACTERS PER LINE? 80
MAXIMUM NUMBER OF CHARACTERS PER FILE NAME? 20
MAXIMUM NUMBER OF CHARACTERS IN EXTENSION? 12
USE IBM SPARE TRACKS? N

(h) The Comm-Stor II unit will now display:

DIRECTORY REQUIRES 2 TRACKS; 100 FILE SLOTS AVAILABLE.
AVERAGE FILE SIZE IS 15 SECTORS

followed by:

BUILD DISK(S)? Y

(i) The Comm-Stor II unit is ready to build the User diskette. Follow the instructions displayed on the terminal.

10.19 If an error occurs in reading from or writing to the diskette at any time during the configuration or diskette creation process, the Comm-Stor II unit will display an appropriate error message and halt. Press the RESTART switch to start the process again.

10.20 If errors persist, refer to Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting* for the diagnostic procedures.

11. TYPICAL DATA SET/PRINTER/TERMINAL OPTIONS

11.01 This part describes some but not all of the peripheral devices that can be interfaced with the Comm-Stor II unit. Table D lists some of these devices and the procedure required for interfacing each. Although configuration information is given, the installer should configure the parameters specified by the CSR-BS on the service order or worksheet.

12. LOCAL TERMINAL TESTS

A. General

12.01 The terminal tests consist of the following:

- Enter File Test

TABLE D

DATA SET/TERMINAL/PRINTER INTERFACE PROCEDURES

DEVICE	INTERFACE PROCEDURE
Data set 113CR, 103JR	(a) Using an EIA cable, connect the *female* end to the Comm-Stor II unit's modem port, the *male* end to the data set. (b) Set the Comm-Stor II unit modem baud rate switch to position 4 (300 bps). (c) Be sure that the Comm-Stor II unit's Configuration Parameters are set to factory standard values.
Data set 212AR	(a) Using an EIA cable, connect the *female* end to Comm-Stor II unit's modem port, the *male* end to the data set. (b) Set the Comm-Stor II unit's modem baud rate switch to: position 4 (300 bps) — for low speed operation position 5 (1200 bps) — for high speed operation position 0 — to permit baud rate selection from the terminal keyboard
Data set 202SR	(a) Using an EIA cable, connect the *female* end to Comm-Stor II unit's modem port, the *male* end to the data set. (b) Configure Parameter #44 (Half Duplex Modem): YES (c) Configure Parameters #42 and #43 (Line Turnaround characters): Check the remote terminal or computer for the appropriate characters. (d) Configure Parameter #45 (Request to Send Timeout): 200 msec (factory standard value). (e) Configure Parameter #46 (Secondary Dropped Option): Check the remote terminal or computer for the appropriate value. (f) Set the data set for "Soft Turnoff on RTS" *Note:* This also provides recommended Receive Data Squelch of 156 msec. (Refer to Pub. 41719, *Technical Reference.*) (g) If Reverse Channel option is installed, configure Parameter #44 [Secondary (Supervisory) Channel Available]: YES (h) When the Comm-Stor II unit's Echo mode feature is used, the data set should not provide local copy of primary channel.

TABLE D (Cont)

DEVICE	INTERFACE PROCEDURE
43 Teleprinter (43 KSR or RO)	(i) Set the Comm-Stor II unit's modem baud rate switch to position 5 (1200 bps). (j) Those parameters not specified should remain at factory standard values. (a) Using an EIA cable, connect the *female* end to the 43 Teleprinter, the *male* end to the Comm-Stor II unit's terminal port. (b) Set the Comm-Stor II unit's terminal baud rate switch to: position 4 (300 bps) – for 300 baud operation position 1 (110 bps) – for 110 baud operation position 0 – to permit baud rate selection from the terminal keyboard (c) Set the terminal for Full Duplex operation. (d) Enable or disable Parity Detection. If Parity Detection is *enabled*, configure Parameter #37 to: Even Parity 7 Data Bits If Parity Detection is *disabled*, configure Parameter #37 to factory standard values: No Parity 8 Data Bits 8th Bit Deasserted (e) Configure the parameters listed in Table E as indicated. (f) Those parameters not specified above or in Table E should remain in factory standard values. (g) If a terminal and data set are used together, set the modem baud rate switch to 300 bps or less. To operate the data set at a higher baud rate than the terminal: (1) Configure Parameter #144 (Modem Buffer) to size capable of handling the longest continuous transmission from the communications line, through the Comm-Stor II unit, to the terminal. A minimum buffer memory of 4K RAM is required to support this operation. (2) Be sure the Comm-Stor II unit is *not in Monitor mode*; enter .MX[CR] from the terminal.

TABLE D (Cont)

<table>
<tr><th>DEVICE</th><th>INTERFACE</th></tr>
<tr><td>DATASPEED 40/2 Terminals</td><td>
(3) Set the terminal for Full Duplex operation.

(a) Using an EIA cable, connect the female end to the terminal, the male end to the Comm-Stor II unit's terminal port.

(b) The following terminal options must be selected for compatible operation:
Option 10a Line Ending Sequence = [CR][LF]
Option 11b Receive After Send
Option 40b Do Not Go Receive on Sending[CR]
Option 41b Full Duplex
Option 44a Enable EIA Interface
Option 45b Disable Current Loop Interface
Option 46a 103-Type Data Set Interface
Option 47b Disable Printer Interface
Option 49b Disable Interrupt Feature for KD Stations
Option 50a Go Local and Hold Upon Printer's SSI Loss

The following 40/2 terminal options and Comm-Stor II unit parameters must be set functionally equal.

<table>
<tr><th>DEVICE</th><th colspan="4">OPTION/PARAMETER</th></tr>
<tr><td>40/2:</td><td>3</td><td>4</td><td>8</td><td>42</td></tr>
<tr><td>Comm-Stor II Unit:</td><td>Set baud rate on the rear panel or keyboard</td><td>39</td><td>8</td><td>37,38</td></tr>
</table>

All other terminal options may be left at the factory standard setting.

(c) Configure Parameters #41- #56, 148, 149 to match the requirements of the communication system in use.

(d) Configure the parameters listed in Table E as indicated.

(e) If the Extended Forms option is installed, configure Parameter #33 (Modem Off-Line Alert character): NULL

(f) If a terminal and data set are used together, set the Comm-Stor II unit's terminal baud rate switch equal to or greater than the modem baud rate.
</td></tr>
</table>

TABLE D (Cont)

DEVICE	INTERFACE PROCEDURE
	(g) Place the terminal in the Send/Receive mode. (h) Those parameters not specified above or in Table F should remain at factory standard values.
DATASPEED 40/1 Terminals	(a) Follow steps (a) through (g) described for the DATASPEED 40/2 terminal. (b) Configure Parameter #39 (40/1 Terminal): YES (c) Those parameters not specified above or in Table F should remain at factory standard values.
DATASPEED 40 RO Printer	(a) Follow steps (a) through (g) for the DATASPEED 40/2 terminal. (b) Configure Parameter #65 to (Y)ES with option O. (c) Those parameters not specified above, or in Table F, should remain at factory standard value.

TABLE E

Comm-Stor II UNIT CONFIGURATION FOR 43 TELEPRINTERS

PARAMETER NUMBER	DESCRIPTION	REQUIRED VALUE
27	Delete Character Entered	BS
37,38	Terminal Parity*	Even, 7 bits
58,59	Modem Parity*	Even, 7 bits
153	Auto Load Enabled	YES
156	Preprint Line	YES
196	End of Page Indication Option	3

*It is recommended that this parameter be set to the value required by the communications system in use.

TABLE F

Comm-Stor II UNIT CONFIGURATION FOR DATASPEED 40 PERIPHERALS

PARAMETER NUMBER	DESCRIPTION	REQUIRED VALUE
27	Delete Character Entered	BS
36	Terminal Null Character	LF
37,38	Terminal Parity*	Even, 7 bits
58,59	Modem Parity*	Even, 7 bits
65	Does Printer Provide SRTS?	YES, 1
134	Line Re-enter Character	NULL
144	Buffer Sizes	/10/
145	Lower DSR During Standby	YES
153	Auto Load Enabled	YES
154	Does Terminal Have Cursor Control	YES
155	Preprint Page	YES
159	Enable Redisplay	YES
165	Auto Tab Character	NULL
168	Verify Page Character	DEL (RUB)
174	Cursor Left Character Entered	BS
176	Cursor Right Output Character	ESC C
177	Cursor Up Output Character	ESC 7
178	Cursor Down Output Character	ESC B
179	Carriage Return Output Character	ESC G
180	Cursor Home Output Character	ESC H
181	Clear Screen Output Character	ESC R
196	End of Page Indication Option	1

*It is recommended that this parameter be set to the value required by the communication system in use.

- Display File Test
- Move File to Work Space
- List Work Space
- Search/Replace
- Save File (same location)
- Enter Form File (optional)
- Load Form File
- Enter Test File
- Display Test File
- Print File (optional)

B. Terminal Tests

Note: If a failure occurs, refer to Table G. Locate the step in which the failure occurred and follow the indicated action.

(a) Place the terminal in the On-line mode.

(b) Insert the User diskette into the drive (drive 1 of a dual drive unit); close the drive door.

(c) Press the RESTART switch. The Comm-Stor II unit will respond by displaying an asterisk (*). If a (B) appears, change the binary switch from the ENTER position to EXIT position. If nothing appears, check to see that the diskette is inserted properly (the READY LED should be lit) and that the unit is properly configured.

(d) Enter the following command string:

.E TEST[CR]

Requirement: The unit should respond by illuminating the BUSY 1 LED and returning the cursor/printhead to the left margin.

(e) Enter the following data:

THIS IS A TEST OF THE COMM-STOR II SYSTEM.[CR]
ABCDEFGHIJKLMNOPQRSTUVWXYZ[CR]
0123456789[CR]
LOCAL TEST[CR]

(f) ENTER the configured "End-of-Text" character (Parameter #8 — usually a Control C [ETX]).*

Requirement: The Comm-Stor II unit should respond by turning off the BUSY 1 LED.

(g) Enter the following command to display the "TEST" file:

.D TEST[CR]

Requirement: The Comm-Stor II unit should respond by sending the data entered in Step (e) to the terminal. Verify data.

(h) Enter the following command to move the "TEST" file to the work space:

.ED TEST[CR]

Requirement: The Comm-Stor II unit should respond by returning the cursor/printhead to the left margin after a short delay.

(i) Enter the following command to list the work space:

;L[CR]

Requirement: The Comm-Stor II unit should respond by displaying the data entered in Step (e). Verify the data.

(j) Enter the following command to search and replace:

;S/LOCAL TEST/TEST OK/[CR]

Requirement: The Comm-Stor II unit should respond by displaying:

TEST OK

at the terminal.

---

*Refer to Section 999-302-150, *How to Configure . . . Comm-Stor II Unit.*

TABLE G

TERMINAL TESTS ERROR ANALYSIS

TEST STEP	ACTION
d	(1) Check the User Diskette (2) Check Configuration Parameter #89 (Enter Command)
f	Check Configuration Parameter #8 (End-of-Text Character)
g	Check Configuration Parameter #86 (Display Command)
h	(1) Check Configuration Parameter #115 (Edit Command) (2) Check the User Diskette (Work Space)
i	Check Configuration Parameter #122 (List Command)
j	Check Configuration Parameter #125 (Search Command)
k	Check Configuration Parameter#116 (Save Command)
q	Check Configuration Parameter #129 (Forms Complete Command)
r	Check Configuration Parameters #126-#137 (Forms Commands)
v	Check Configuration Parameters #61-#66 (Printer Commands)

(k) Enter the following command to .save the "TEST" file:

.SV TEST[CR]

Requirement: The Comm-Stor II unit should respond by displaying the following statement at the terminal:

--SURE?

(l) Enter a Y[CR] at the terminal.

Requirement: The Comm-Stor II unit should respond by returning the cursor/printhead to the left margin.

(m) Enter the following command to display the "TEST" file command:

.D TEST[CR]

Requirement: The Comm-Stor II unit should respond by displaying:

THIS IS A TEST OF THE COMM-STOR II SYSTEM.
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
TEST OK

(n) If the Comm-Stor II unit has the Forms option, enter the following command to enter the "TEST FORM" file or proceed to Step (v):

.E TESTFORM[CR]

Requirement: The Comm-Stor II unit should respond by illuminating the BUSY LED and returning the cursor/printhead to the extreme left margin.

(o) Enter the following data:

NAME [ ][CR]
ADDRESS [ ][CR]

(p) Enter the configured "End-of-Text" character.

(q) Enter the following command to enter the Forms Complete mode:

.FC TESTFORM[CR]

Requirement: The Comm-Stor II unit should respond by returning the cursor/printhead to the left hand margin.

(r) Enter the following command to enter the "FILE 1" file:

.E FILE1[CR]

Requirement: The Comm-Stor II unit should respond by displaying the following data at the terminal:

NAME [

(s) Enter the following data:

JAMES SMITH[CR]

Requirement: The Comm-Stor II unit should respond by displaying the following data at the terminal:

ADDRESS [

(t) Enter the following data:

ANYWHERE, USA[CR]

Requirement: The Comm-Stor II unit should respond by returning the cursor/printhead to the left margin and turning off the BUSY 1 LED.

(u) Enter the following command to display the "FILE 1" file:

.D FILE1[CR]

Requirement: The Comm-Stor II unit should respond by displaying the following data at the terminal:

NAME [JAMES SMITH]
ADDRESS [ANYWHERE, USA]

(v) If the Comm-Stor II unit has a printer port, enter the following command to print the "TEST" file on the printer:

.P TEST[CR]

Requirement: The Comm-Stor II unit should respond by displaying the following data at the printer:

THIS IS A TEST OF THE COMM-STOR II SYSTEM.
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
TEST OK.

This concludes local testing.

13. ON-LINE TESTS

13.01 The following on-line checks should be performed immediately after installation of the Comm-Stor II unit, and whenever send/receive problems are indicated. This procedure will determine whether the Comm-Stor II unit can communicate with the network controller through the modem port (Table H).

14. DIAGNOSTIC TESTS

14.01 Diagnostic procedures for the Comm-Stor II unit can be found in Section 578-400-500, *Comm-Stor II Unit Test and Troubleshooting Procedures.*

14.02 Both Revision A and B of the Diagnostic diskette support the AT.05 patch PROM set. Refer to the appropriate section to verify this option.

15. TOOLS, SUPPLIES, AND DISKETTES

15.01 The following tools and supplies may be required for installing or servicing the Comm-Stor II unit. Most of these tools should be present in standard maintenance tool kits.

A. Tools

15.02 Refer to Table I for the list of tools (equivalent tools may be substituted).

B. Supplies

Head Cleaner Solution (Miller Stephenson — MS200 or Isopropyl Alcohol)

Gauze, Lint-Free

Contact Cleaner

Fan Filter Spray Super Filter Coat #1 (Research Products Corp.)

Conductive Foam Blocks (for holding IC's)

C. Diskettes

15.03 The following diskettes are required for installing or servicing the Comm-Stor II unit:

User Diagnostic Diskette
(contained in Kit #1030A5191; comprising of a diskette and a test plug)

Standard Factory Refresh Diskette
(locally supplied)

Configuration Diskette (part #1030A5186)

User Diskette (part #1030A5185)

TABLE H

COMMUNICATION CHECKOUT

STEP	PROCEDURE	TROUBLE ANALYSIS
1.	Power on the Comm-Stor II unit and insert a User diskette.	
2.	Check to be sure the data set is properly connected to the Comm-Stor II unit modem port.	
3.	Place a telephone call to the Data Test Center (DTC). Advise the representative that an *On-line test* of the Comm-Stor II unit is being performed and that the FOX message is to be sent.	
4.	Establish the data connection.	
5.	The DTC will send a FOX test message by entering: [CR][LF] .R FOX [CR] [LF]	
6.	The DTC will cause the FOX message to be displayed on the station terminal by entering: [CR][LF] .D FOX[CR] [LF] The FOX message should be displayed on the terminal as follows:	If the Comm-Stor II unit does not respond to .D command: (1) Check EIA cables and connections. (2) Check baud rate settings. (3) The User diskette has not been inserted or a bad User diskette has been inserted.
	THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 [CR] THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 [CR] THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 [CR] THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 [CR] THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 [CR] [ETX]	
	Note: Carriage returns [CR] may appear as ≡ on DATASPEED 40/1, and 40/2 terminals, and not at all on Model 43 Teleprinters.	(4) Check data set operation. (5) Check the Comm-Stor II unit's Configuration Parameters: 3, 5, 77, 86, 101, 67, 58, 37, 41-46.

TABLE H (Cont)

STEP	PROCEDURE	TROUBLE ANALYSIS
		(6) Check data terminal operations. (7) Obtain test from another test center. (8) Replace the Comm-Stor II unit. (9) Call DATEC or Technical support.
7.	The station operator will send the FOX message to the DTC by entering: [CR].S FOX[CR] *Requirement:* DTC will verbally verify that the FOX message has been received.	Same as Step 6.
8.	The DTC will transmit the following option message: [CR][LF] .R TESTFILE[CR][LF] ←≡ 5SpNULLSNuNuNuNuNu←≡ 5SpDELETES ←≡ 5SpCRS←←←←← ≡ 5SpBADSpPARITY 12345 (each sent with odd parity) 5SPBELLSBLBLBLBLBL ETX (test set stops sending at this point)	
9.	After the TESTFILE message has been sent, the station operator will cause the TESTFILE message to be displayed on the station terminal by entering: .D TESTFILE [CR]	(1) Proceed as described in analysis of Step 6. (2) If trouble persists, check the Comm-Stor II unit's Configuration Parameters: 52, 53, 55, 58.

TABLE H (Cont)

STEP	PROCEDURE	TROUBLE ANALYSIS
	Requirement: On *DATASPEED 40/1 and 40/2 terminals* the following display will appear followed by the terminal bell: ≡ 5 NULLS ≡ 5 DELETES ≡ 5 CRS ≡ ≡ ≡ ≡ ≡ 5 BAD PARITY????? 5 BELLS BLBLBLBLBL On *43 Teleprinters*, the following display will appear followed by the terminal bell: 5 NULLS 5 DELETERS 5 CRS 5 BAD PARITY????? 5 BELLS	
10.	Display the directory listing for the TESTFILE by entering: .DD TESTFILE[CR] ***Requirement:*** On *DATASPEED 40/1 and 40/2 terminals*, the following display will appear: TESTFILE 65 ≡ On *43 Teleprinters*, the following display will appear: TESTFILE 65	Same as Step 6.

TABLE I

TOOLS

TOOL DESCRIPTION	BELL SYSTEM PART NUMBER
Nut Driver 1/4"	TP113777 Kit
Nut Driver 11/32"	TP113777 Kit
Wrench, Hex Key 3/32"	C Wrench Kit
Wrench, Hex Key 1/16"	C Wrench Kit
Wrench, Hex Key 5/64"	C Wrench Kit
Subminiature Long Nose Pliers	KS21257
Flat Needle File or Fine Emery Board	TP125758
Screwdriver, Phillips 1/4", 4" blades, 2 point size	Type B Size 2 AT7739
Screwdriver, Phillips 1/8", 2 blade, 0 point size	Type B Size 1 AT7739
Screwdriver, Slotted 1/4", 4" blade	AT7825
Screwdriver, Slotted 1/8", 2" blade	AT7825
Tweezers	TP151392
Static Ground Strap	TP346392
IC Removal & Insertion Tool	TP407326