"COMM-STOR*" II COMMUNICATIONS STORAGE UNIT

INSTALLATION PROCEDURES FOR 8A1/8B1 PROTOCOL OPTION

1. GENERAL

1.01 This section covers the COMM-STOR II Communications Storage Unit manufactured by Sykes Datatronics, Incorporated, as described in their section SYKS 578-400-201.

1.02 Whenever this section is reissued, the reason(s) for reissue will be listed in this paragraph.

1.03 Information covering installation procedures for the 8A1/8B1 protocol option is contained in the attached reprint of the practice prepared by Sykes Datatronics, Incorporated.

1.04 The COMM-STOR II unit is available in two models: Model 8120A (single-drive unit) and Model 8220A (dual-drive unit). Edit, standby diskette power, and the extended user-

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command table are standard features in both models. Available options consist of:

Printer port

Forms

Expanded RAM memory

Rack-mount enclosure

Extended forms.

A plate on the rear of each unit indicates those options that are included in the unit.

1.05 Any form of the word display as used throughout this section refers to data output through the terminal port of the COMM-STOR II unit (ie, sending data to the terminal).

COMM-STOR II

COMMUNICATIONS STORAGE UNIT

INSTALLATION PROCEDURES

FOR THE 8A1/8B1 OPTION

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1. INTRODUCTION

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. The Comm-Stor II unit is available in two models: Model 8120A (single drive unit) and Model 8220A (dual drive unit). Edit, standby diskette power, and the extended user command table are standard features in both models. Available options consist of:

Printer Port

Forms

Expanded RAM Memory

Rack Mount Enclosure

Extended Forms

A plate on the rear of each unit indicates those options which are included in the unit (Figure 1).

1.02 Whenever this section is reissued the reason for the reissue will be listed in this paragraph.

1.03 Any form of the word *display* as used throughout this section refers to data output through the terminal port of the Comm-Stor II unit (i.e., sending data to the terminal).

DANGER AND WARNINGS

1.04

Danger: Turn off all the 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 a static bag immediately after removal from unit. Never handle the board outside the bag without being properly grounded.

Warning 3: Handle all diskettes with care.

(Refer to Paragraph 6.11.)

2. INSTALLATION OUTLINE

☐ (1) Review service order

☐ (2) Unpack and inspect equipment (Part 3)

☐ (3) Check environmental and placement requirements (Part 4)

☐ (4) Turn on (Part 5)

    (a) Front panel indicators

    (b) Turning the Comm-Stor II unit ON

☐ (5) Select the diskette (Part 6)

    (a) 8A1/8B1 System

    (b) Refresh

    (c) User

    (d) Diagnostic

☐ (6) Perform diagnostic check (Stand Alone Tests) (Part 7)

☐ (7) Install EIA cable(s) (Part 8)

☐ (8) Set transmission rates (Part 9)
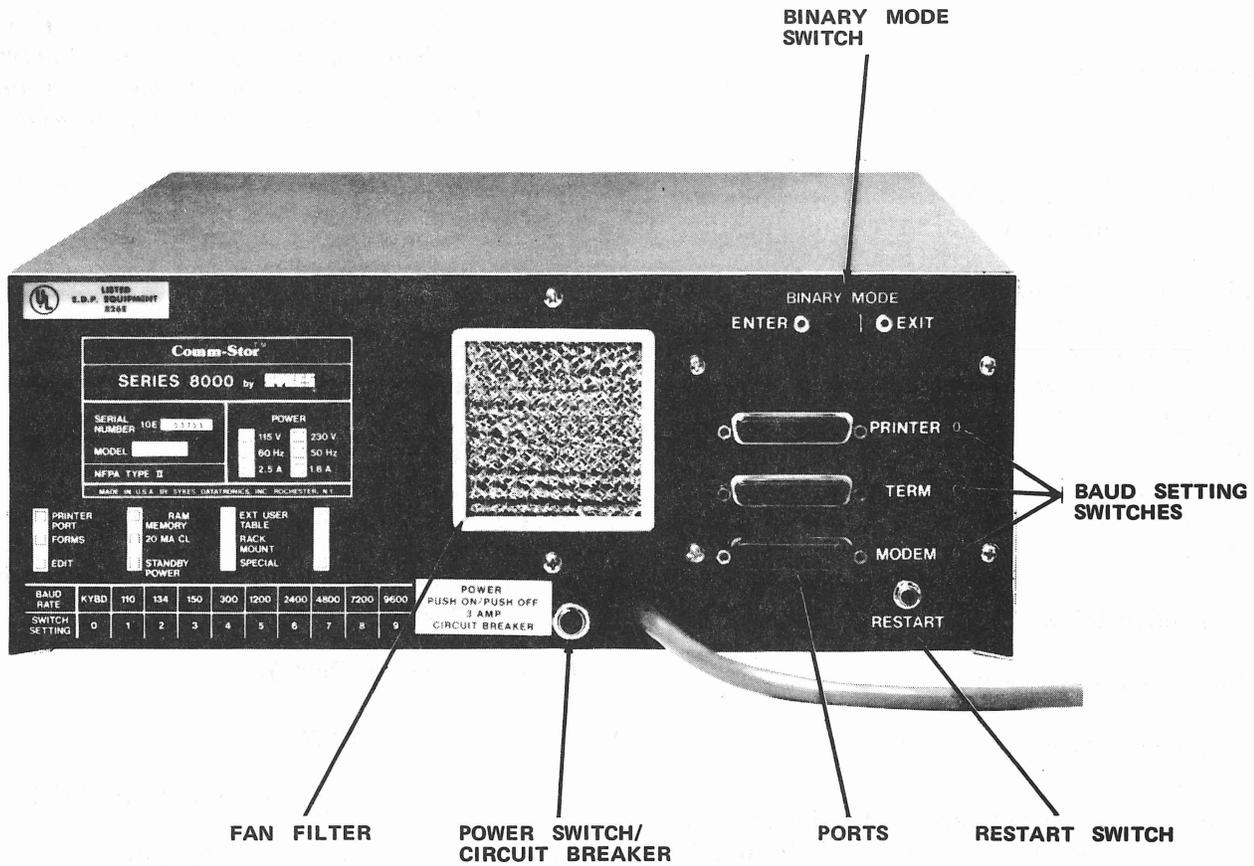
☐ (9) Configure the system (Part 10)

Fig. 1 — Rear View of the Comm-Stor II Unit

(a) Date Set

(b) Terminal

(c) Comm-Stor II Unit

(d) Printer (optional)

☐ (10) Build a User diskette (Part 10)

☐ (11) Local terminal tests (Part 11)

☐ (12) Perform operational checkout (On-Line Tests)(Part 12)

☐ (13) Instruct customer on diskette care (Part 6)

☐ (14) Have customer try out the Comm-Stor II unit

☐ (15) Complete the installation

(a) Give documentation to customer

(b) Clean up

(c) Complete

3. UNPACKING AND INSPECTING THE EQUIPMENT

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

UNPACKING INSTRUCTIONS (Figure 2)

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

(1) With box in upright position, open top flaps and fold outward.

(2) Turn box bottom side up, keeping top flaps folded outward.

(3) Lift box off unit and place aside.

(4) Remove inner packing material from around the Comm-Stor II unit.

(5) Remove plastic bag and all foreign material from the Comm-Stor II unit.

(6) Look for any accessories that would be packed separately (see part 1).

(7) Compare accessories and options (on rear plate of unit) with the packing slip to assure completeness of the order.

(8) Retain the shipping container for repacking if service is needed on the unit.

VISUAL INSPECTION

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

Warning: 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

ENVIRONMENTAL

4.01 The Comm-Stor II unit will function 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% (non-condensing) and temperature ranging from 45° to 95°F (7° to 35°C).

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. The rack mounted Comm-Stor II unit may be mounted in a 19-inch enclosure rack.

4.03 The Comm-Stor II unit must be situated such that it has at least 4 inches clearance at the rear to allow intake of air by the cooling fan and must be located away from any magnetic fields because of the media.
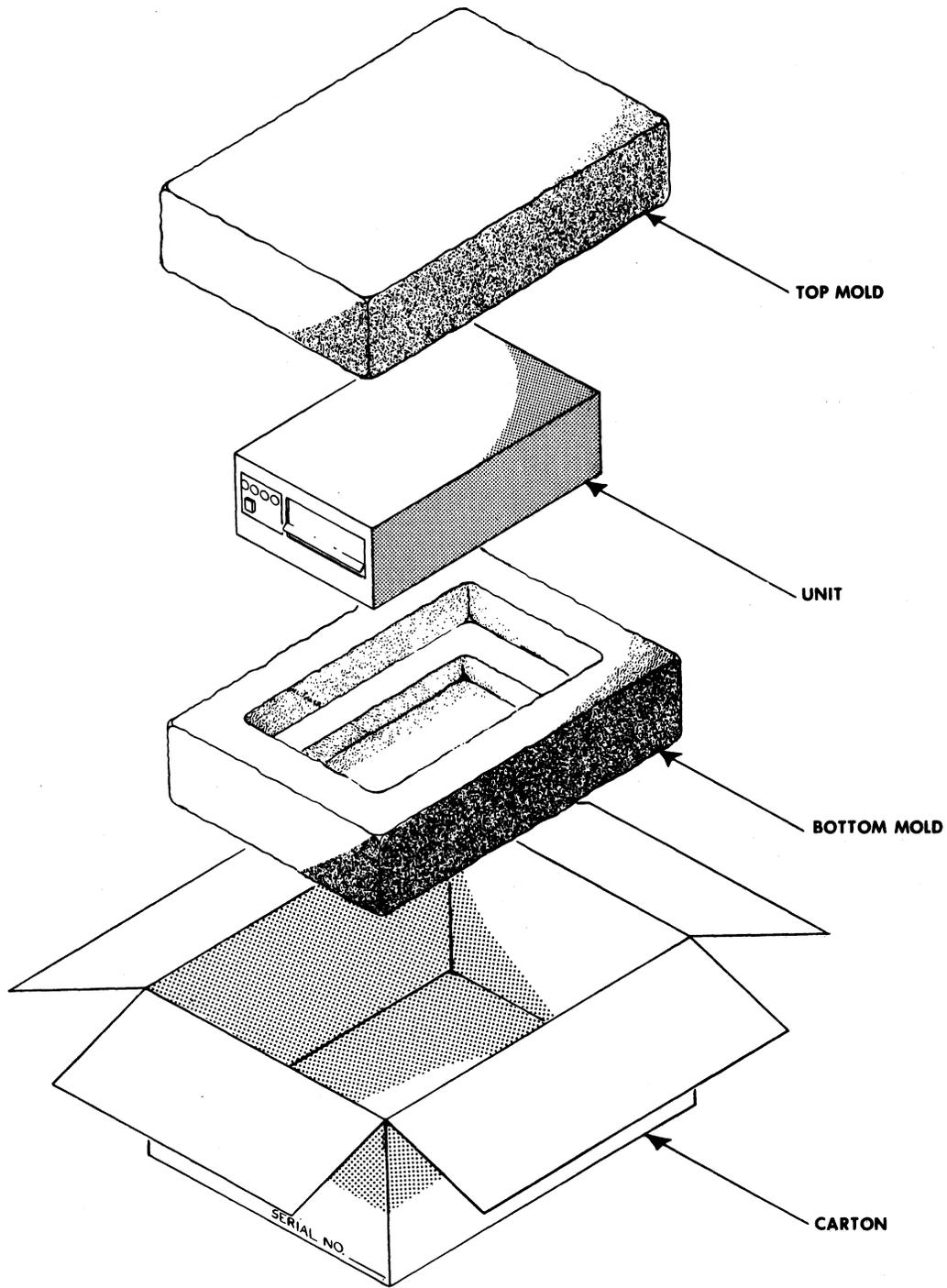
TOP MOLD

UNIT

BOTTOM MOLD

SERIAL NO.

CARTON

Fig. 2—Packaging Components

Comm-Stor II DISKETTE

DEVICE
CONNECTORS

FRONT PANEL
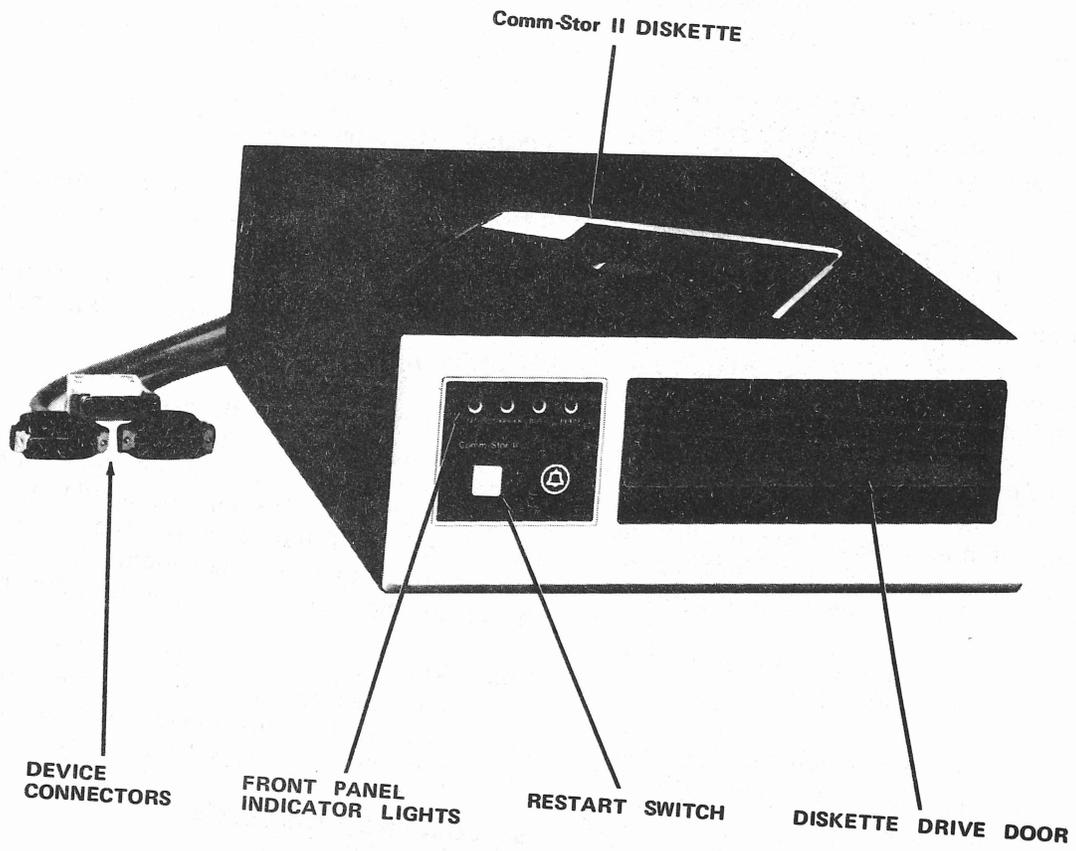INDICATOR LIGHTS

RESTART SWITCH

DISKETTE DRIVE DOOR

Fig. 3 — Front View of the Comm-Stor II Unit

ELECTRICAL POWER REQUIREMENTS

4.04 Voltage and frequency requirements are listed on the configuration plate attached to the rear of the unit. 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 usage, and that the Comm-Stor II is properly grounded.

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

5. POWER ON

FRONT PANEL INDICATORS

5.01 The front panel of the Comm-Stor II unit has several indicators to assist the operator. Two of the indicators, READY and BUSY, are duplicated in a dual drive unit to provide information about each drive. When the unit is turned on, all lamps are illuminated for a short time to allow the operator to perform a visual lamp test. The function of each indicator is described below (Figure 3).

Restart: A switch/indicator to show when the unit is turned on.

Ready: An indicator which signifies that a diskette has been properly inserted in the drive.

Busy: An indicator which signifies that data is being transferred to or from the diskette. A diskette should not be removed when the BUSY indicator is illuminated. To interrupt an operation, a RESET command should be entered and the operator should wait until the BUSY lamp extinguishes before removing the diskette.

Carrier: Indicates that the station is connected to the network controller.

Status: This indicator has a dual purpose: first, it indicates that data is being transferred to or from any of the ports, and second, it indicates the presence of a parity error from the terminal. The lamp will normally flicker when data is being transferred to or from any port. If a parity error occurs and data is not being transferred through any of the ports, it will stay on. No correction procedures are required. After a parity error, the lamp can only be extinguished by entering a RESET command from the terminal keyboard.

TURNING THE Comm-Stor II UNIT ON

5.02 The Comm-Stor II unit is to be connected to a power source as described in paragraph 4.04.

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

5.04 To turn on the unit, depress the power switch; the RESTART button on the *front panel* should illuminate. If it does not light, press the power switch again. It should be noted that there is also a RESTART button on the rear panel of the unit. Both buttons function identically; however, the one on the rear panel is non-illuminating.

5.05 When provided, the terminal and printer must also be turned on. The order in which power is applied to these devices will not affect the performance of the Comm-Stor II unit.

6. SELECTING THE DISKETTE

Comm-Stor II DISKETTES

6.01 This section contains important reference materials but no procedures necessary for installing the system.

6.02 Each diskette is composed of 77 tracks, and each track contains 26 sectors. General user information (data) is stored in the "library" section of the diskette and a listing of all files is kept in the Directory (Figure 4).

A. 8A1/8B1 System Diskette

6.03 This diskette contains 8A1/8B1 protocol information. It is used only with Comm-Stor

II units equipped to function in an 8A1/8B1 private line network.

6.04 The diskette also contains the configuration procedure for the 8A1/8B1 unit and the forms generation procedures for the Extended Forms option.

B. Refresh Diskette

6.05 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 User diskette, another Comm-Stor II unit can be identically configured by inserting the Refresh diskette and pressing the RESTART button.

C. User Diskette

6.06 The User diskette contains a Directory and messages. It is used for all normal operations.

6.07 The User diskette is created with the Configurator. It is initialized with such parameters as the maximum number of characters in the message name and the maximum message length.

D. Diagnostic Diskette

6.08 The Diagnostic diskette contains prerecorded information for running the Comm-Stor II User Diagnostic tests described in part 7.

INSERTING AND REMOVING THE DISKETTE

6.09 The drive doors (Figure 3) of all Comm-Stor II units are equipped with an interlock which prevents them from closing unless a diskette is fully inserted.

6.10 To insert a diskette:

(a) Turn 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 operator (Figure 5).

(c) Slide the diskette into the drive.

(d) Exert slight inward pressure with the index finger against the diskette and *gently* pull

the drive door down with the thumb. *Do not force the door closed!* A gentle horizontal pressure on the diskette is sufficient to release the interlock. When the door closes, the READY light on the front panel will illuminate, indicating that the respective drive is ready for use.

> *Warning: It is important that diskettes be inserted only with power on as spindle rotation aligns the diskette. A diskette need not be reinserted if power is turned off and on again, provided the door of the drive has not been disturbed.*
>
> *If the Comm-Stor II unit is turned off while a diskette is in the drive, opening and re-closing the door may cause mechanical deterioration of the diskette.*

6.11 To remove the diskette:

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

(b) Slide the diskette out of the drive.

DISKETTE CARE

6.12 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 using a felt marker — do not use a pencil or ball point 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 (unshielded power supplies, CRT monitors).*
>
> *Warning 5: Do not bend the diskette.*

Library

Sector 3

Directory

Sector 1

Sector 2

Header

IBM Index Track

Track 1

Track 0

Track   Sector
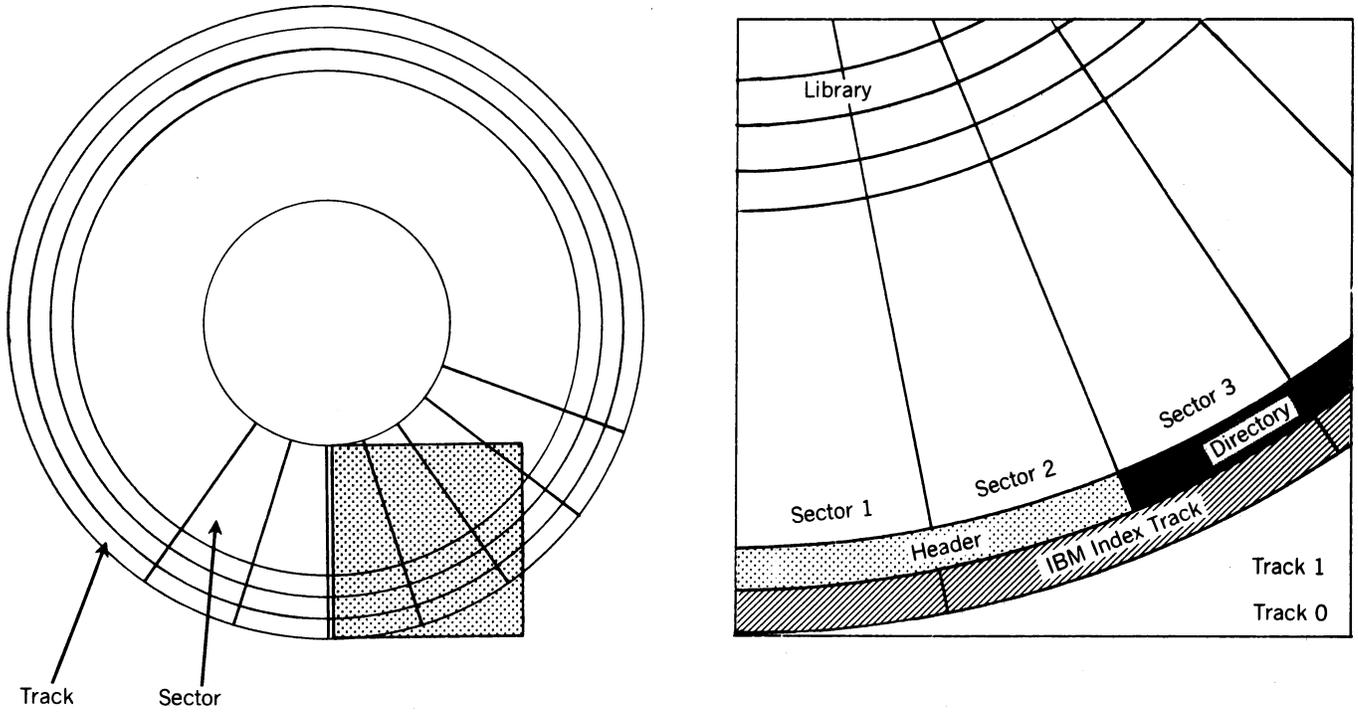
Fig. 4—Diskette Layout
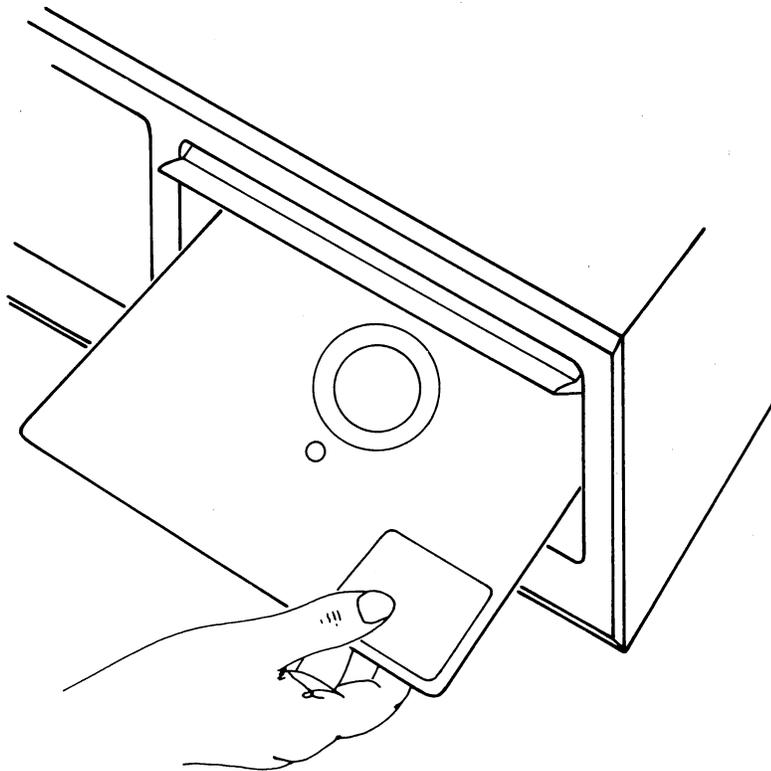
Fig. 5—Inserting the Diskette

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.

7. DIAGNOSTIC TESTS

7.01 This part describes the procedure for running each of the Comm-Stor II User Diagnostic tests and provides a general explanation of the results of those tests. *If an error occurs at any time during the tests, the unit should be replaced.*

7.02 A technical interpretation of the test results is found in section 578-400-501 *Test and Troubleshooting.* This information is required by communications technicians in order to pinpoint the fault and repair the Comm-Stor II unit. This section should be consulted any time a diagnostic or system fault occurs.

7.03 Nine tests are provided to test single and dual drive units and any optional hardware components. Individual tests are selected by setting the modem bit rate switch on the back of the Comm-Stor II unit. Settings 1-9 correspond to the nine tests (Table A). Test information and errors are reported on the front panel LEDs (light emitting diodes).

7.04 It is recommended that the LED/Switch test and the Hardware Features Check be performed *before* any other diagnostic test. Diagnostics should be performed in the order they are presented in this section.

TABLE A

MODEM SWITCH SETTINGS

SWITCH SETTING	TEST
1	LED/Switch Test
2	Internal Tests
3	Terminal and Modem Port Tests
5	Printer Port Test
6	Isochronous Operation Test
7	Hardward Features Check
8	Configuration Memory Test
9	Diskette Test

7.05 In addition to the diagnostic fault tables accompanying each test, two system faults may occur. Each is recognized by the blinking of a front panel light. The READY light will blink if a malfunction prevents the Comm-Stor II unit from reading the User Diagnostic diskette. The STATUS light will blink if:

(1) the binary switch is set to EXIT and the modem switch is set to 0, or

(2) the user has inserted the incorrect diskette.
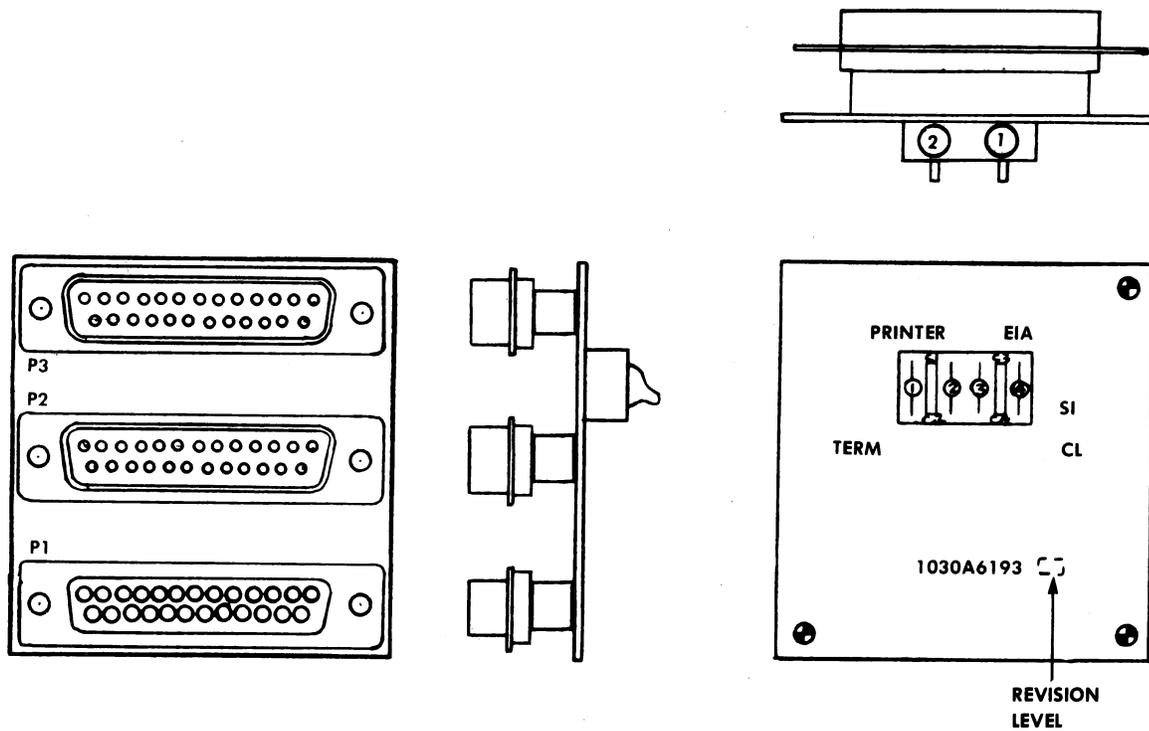
Fig. 6—Diagnostic Test Plug

TABLE B

LED DISPLAY

BIT RATE SWITCH SETTING	LED DISPLAY			
	STATUS	CARRIER	BUSY(1)	READY(1)
BINARY VALUE	8	4	2	1
0	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	ON
2	OFF	OFF	ON	OFF
3	OFF	OFF	ON	ON
4	OFF	ON	OFF	OFF
5	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF
7	OFF	ON	ON	ON
8	ON	OFF	OFF	OFF
9	ON	OFF	OFF	ON

Note: The LED display is a binary representation of the bit rate switch setting.

DEFINITION OF TERMS

7.06

Diagnostic Test Plug — the diagnostic test plug (Figure 6) is a three part EIA connector which has two switches, numbered "1" and "2", for stimulating the peripheral cabling. When mounted on the Comm-Stor II unit, it covers all three ports. The plug is part of the User Diagnostic Kit Option (Sykes part number 1030A5191).

Drive 1 — refers to the upper drive of an 8220A system; or the single drive of an 8120A system.

Drive 2 — refers to the lower drive of an 8220A system.

TEST PROCEDURES

7.07

Initialization

(a) Turn the Comm-Stor II unit ON. *Ignore the message:*

LOAD SYSTEM DISK

(b) Remove any diskettes from the drives. Insert a Standard Factory Refresh diskette into drive 1; close the drive door.

(c) Depress the Restart switch. The Refresh procedure ensures that the Comm-Stor II unit is set to the standard factory configuration.

(d) Remove the Refresh diskette. Insert the Diagnostic diskette into drive 1; close the drive door.

> *Note: Do not remove the Diagnostic diskette until instructed.*

LED/Switch Test

7.08

(a) Set the modem switch to 1.

(b) Set the binary switch to EXIT. Set the terminal switch to 0. Set the printer switch (if the Printer Port option is installed) to 0.

(c) Depress the RESTART button.

(d) LED Test: The front panel LEDs will react immediately as follows:

Requirement 1: All the LEDs are lit (1 second).

Requirement 2: BUSY 1 and READY 1 are lit (1/2 second).

Requirement 3: After both the BUSY 1 and READY 1 LEDs go OFF, the visual LED test will be performed. Each LED is lit independently and sequentially (1 second each) in a "walking" pattern. If a LED does not respond, it is defective.

Requirement 4: The READY 1 LED will come on again.

(e) *Bit Rate and Binary Mode Switch Tests:* The switch values are in a logically ORed state, and the test results are represented by the arrangement of the LED display.

Requirement 1: Set the bit rate switches to zero. At this time, the LED lights should be off (not lit).

Requirement 2: When the binary mode switch is moved to ENTER, the STATUS light should be lit; when set to EXIT, it should *not* be lit.

Requirement 3: Move the printer bit rate switch (if the option is installed) through its settings of 0-9 (the other bit rate switches should be set to 0). Examine the LEDs at each setting and compare the values displayed with those in Table B. (Each bit rate switch value should generate a corresponding LED display.) If a LED display is incorrect, the switch is defective. Return the printer switch to zero and follow the same procedure for the terminal and modem bit rate switches.

Hardware Features Check

7.09

(a) Set the modem switch to 7.

(b) Depress the RESTART button.

(c) The Diagnostic will immediately perform the visual LED test. The user may also perform the Switch test or proceed to step d.

(d) After the LED (or Switch) test is completed, open and close the drive 1 door.

Requirement: All LEDs will blink in unison.

(e) The installed hardware features will be indicated by a series of LED on/off patterns. To obtain the first pattern, open and close the drive 1 door. Determine the hardware feature by locating the LED on/off pattern on the Comm-Stor II unit in the first column of Table C; record the option.

(f) Open and close the drive 1 door again to obtain the second LED pattern and locate the associated option in the second column. Follow this procedure until all five patterns have been obtained. When the last pattern has been displayed, all the LEDs will blink in unison.

For example, if the *fourth* pattern is:

STS	CAR	BSY(1)	RDY(1)
O	O	●	●
(OFF)	(OFF)	(ON)	(ON)

this would indicate that the Forms option is installed.

Note 1: If an installed feature is not indicated by the Diagnostic, the associated component(s) either malfunctioned or is not properly installed. A faulty component should be replaced. If an option is not detected by this check, it will not be tested in any of the Diagnostics.

Note 2: RAM memory size is indicated by the first *or* second LED pattern. Therefore, one of these patterns will show *all the LEDs OFF*. For example, if a unit contains 16K of RAM memory, the first pattern will be:

O   O   O   O

The second pattern will be:

O   ●   O   ●

Internal Tests: Memory/Disk/Timer/Bit Rate

7.10

(a) Remove the diagnostic test plug or any cables from the rear panel.

(b) Set the modem switch to 2.

(c) Depress the RESTART button.

(d) The Diagnostic will immediately perform the visual LED test. The user may also perform the Switch Test or proceed to step e.

(e) Open and close the drive 1 door. The Diagnostic will execute the Internal tests. The tests will run about *10* minutes.

Requirement: When the tests are completed, all LEDs will blink in unison.

Note: Dual Drive 8220A System only: Upon completion of the test for drive 1, the READY 1 and BUSY 1 lights will blink in unison. Remove the User Diagnostic diskette from the upper drive 1; insert it into the lower drive 2 and close the drive door. Drive 2 tests will last about *3* minutes.

TABLE C

HARDWARE FEATURES

LED PATTERN				PATTERN SEQUENCE				
STS	CAR	BSY (1)	RDY (1)	EXPANDED RAM MEMORY SIZE (1st)	(2nd)	NUMBER OF DRIVES/ STANDBY MODE (3rd)	EDITOR/FORMS OPTIONS (4th)	PRINTER PORT/USER COMMAND TABLE OPTIONS (5th)
O	O	O	O	—	—	—	—	—
O	O	O	●	32K	0K	1 DRIVE NO STAND-BY NO 8A1/8B1	NO FORMS NO EDITOR	NO PRINTER PORT NO EXTENDED USER COMMAND TABLE
O	O	●	O	36K	4K	2 DRIVES NO STAND-BY NO 8A1/8B1	EDITOR	PRINTER PORT NO EXTENDED USER COMMAND TABLE
O	O	●	●	40K	8K	1 DRIVE STAND-BY NO 8A1/8B1	FORMS	NO PRINTER PORT EXTENDED USER COMMAND TABLE
O	●	O	O	*44K	12K	2 DRIVES STAND-BY NO 8A1/8B1	FORMS AND EDITOR	PRINTER PORT AND EXTENDED USER COMMAND TABLE
O	●	O	●	*48K	14K	1 DRIVE NO STAND-BY 8A1/8B1	EXTENDED EDITOR	—
O	●	●	O	*52K	16K	2 DRIVES NO STAND-BY 8A1/8B1	EXTENDED FORMS	—
O	●	●	●	*56K	20K	1 DRIVE STAND-BY 8A1/8B1	EDITOR AND EXTENDED FORMS	—
●	O	O	O	*60K	24K	2 DRIVES STAND-BY 8A1/8B1	FORMS AND EXTENDED EDITOR	—
●	O	O	●	N/A	28K	—	EXTENDED FORMS AND EXTENDED EDITOR	—

● ON   O OFF   *Reserved for future expansion.

(f) When the Internal tests are completed, all LED lights will blink in unison. The test results are stored in the tables in memory.

(g) Open and close the drive 1 door (or drive 2 door in a dual drive system).

Requirement 1: If at any time the LEDs blink in unison, go to step (h).

Requirement 2: If a series of LEDs are lit, refer to Table D for the first test results. If *no* LEDs are lit, go to requirement 3.

Requirement 3: Open and close the drive door again. If a series of LEDs are lit, refer to Table E for the second group of test results. If *no* LEDs are lit, go to requirement 4.

Requirement 4: Open and close the drive door again. If a series of LEDs are lit, refer to Table F for the third group of test results. If *no* LEDs are lit, go to requirement 5.

Requirement 5: Open and close the drive door again. If a series of LEDs are lit, refer to Table G for the fourth group of test results. If *no* LEDs are lit, go to requirement 6.

Requirement 6: Open and close the drive door again. If a series of LEDs are lit, refer to Table H for the final group of test results. If *no* LEDs are lit, go to requirement 7.

Requirement 7: Open and close the door to end the test. All LEDs will blink in unison.

(h) If no further fault conditions exist, the test will end with the LEDs blinking in unison. Those fault tables bypassed by the Diagnostic procedure contain no reportable results.

TABLE D

RAM FAULTS

LIGHT	INTERPRETATION
READY or BUSY	The main memory is faulty. Random and unpredictable operating faults may occur. Replace the Comm-Stor II unit.
CARRIER or STATUS	The expanded memory is faulty. Replace the Comm-Stor II unit.

TABLE E

CONFIGURATION MEMORY FAULTS

LIGHT	INTERPRETATION
READY	The main memory is faulty. Random and unpredictable operating faults may occur. Replace the Comm-Stor II unit.
BUSY	The Extended User Command Table is faulty. Replace the Comm-Stor II unit.

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TABLE F

ROM/TIMER/BIT RATE FAULTS

LIGHT	INTERPRETATION
READY	The main memory is faulty. Random and unpredictable operating faults may occur. Replace the Comm-Stor II unit.
BUSY	A timer fault has occurred.
CARRIER	A bit rate generator is faulty.

TABLE G

DRIVE 1 FAULTS

LIGHT	INTERPRETATION
READY or BUSY	Diskette drive 1 cannot read properly. Replace the Comm-Stor II unit.
CARRIER or STATUS	Diskette drive 1 cannot write properly. Replace the Comm-Stor II unit.

TABLE H

DRIVE 2 FAULTS

LIGHT	INTERPRETATION
READY or BUSY	Diskette drive 2 cannot read properly. Replace the Comm-Stor II unit.
CARRIER or STATUS	Diskette drive 2 cannot write properly. Replace the Comm-Stor II unit.

7.11   Terminal and Modem Ports Test

(a) Mount the diagnostic test plug on the rear panel. Set switch 1 to the EIA position and switch 2 to the TERM position.

(b) Set the modem switch to 3.

(c) Depress the RESTART button.

(d) The Diagnostic will immediately perform the visual LED test. The user may also perform the Switch test or proceed to step e.

(e) Set the terminal switch, referring to Table I. The modem *and* terminal ports will be tested at the specified bit rate.

(f) Open and close the drive 1 door. The Diagnostic will execute the terminal and modem port tests.

(g) The tests will run about *3* minutes.

Requirement: When the tests are completed, all LED lights will blink in unison.

(h) Open and close the drive 1 door.

Requirement 1: If at any time the LEDs blink in unison, go to step (i).

Requirement 2: If a series of LEDs are lit, refer to Table J for the first test results. If *no* LEDs are lit, go to requirement 3.

Requirement 3: Open and close the drive door again. If a series of LEDs are lit, refer to Table K for the second group of test results. If *no* LEDs are lit, go to requirement 4.

Requirement 4: Open and close the drive door again. If a series of LEDs are lit, refer to Table L for the third group of test results. If *no* LEDs are lit, go to requirement 5.

Requirement 5: Open and close the drive door again. If a series of LEDs are lit, refer to Table M for the fourth group of test results. If *no* LEDs are lit, go to requirement 6.

Requirement 6: Open and close the door to end the test. All LEDs will blink in unison.

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(i) If no further fault conditions exist, the test will end with the LEDs blinking in unison. Those fault tables bypassed by the Diagnostic procedures contain no reportable results.

TABLE I

BIT RATE SPECIFICATION

This table specifies both the terminal and modem port bit rates. If the rates are different, run the test twice (once at each bit rate).

DESIRED BIT RATE	SWITCH SETTING
110	1
134	2
150	3
300	4
1200	5
2400	6
4800	7
7200	8
9600	9

TABLE J

TERMINAL RECEIVE/TRANSMIT FAULTS

LIGHT	INTERPRETATION
READY or BUSY	The terminal port cannot receive and/or transmit characters properly. Replace the Comm-Stor II unit.
CARRIER	One or more of the following faults may occur: 1. The terminal port may not respond to a break (i.e., long space) from the terminal. 2. The terminal port cannot send a break to the terminal. 3. A terminal parity error indication may be falsely given. Replace the Comm-Stor II unit.
STATUS	The STATUS light is not used.

TABLE K

TERMINAL EIA CONTROL FAULTS

LIGHT	INTERPRETATION
READY BUSY CARRIER or STATUS	The terminal port is faulty. Replace the Comm-Stor II unit.

TABLE M

MODEM EIA CONTROL FAULTS

LIGHT	INTERPRETATION
READY BUSY CARRIER or STATUS	The modem port is faulty. Replace the Comm-Stor II unit.

TABLE L

MODEM RECEIVE/TRANSMIT FAULTS

LIGHT	INTERPRETATION
READY or BUSY	The modem port cannot receive and/or transmit characters properly. Replace the Comm-Stor II unit.
CARRIER	One or more of the following faults occur. 1. The modem port may not respond to a break (i.e., long space) from the modem. 2. The modem port cannot send a break to the modem. 3. A modem parity error indication may be falsely given. Replace the Comm-Stor II unit.
STATUS	Under certain conditions, transmission from the modem to the terminal may be faulty. Replace the Comm-Stor II unit.

Printer Port Test (if the option is installed)

7.12

(a) Mount the diagnostic test plug on the rear panel and set switches 1 and 2 to the EIA and PRINTER positions, respectively.

(b) Set the modem switch to 5.

(c) Depress the RESTART button.

(d) The Diagnostic will perform the visual LED test. The user may also perform the Switch test or proceed to step e.

(e) Set the terminal switch, referring to Table I.

(f) Open and close the drive 1 door. The Diagnostic will execute the Printer Port test.

(g) The test will run about *3* minutes.

Requirement: When the test is completed, all LED lights will blink in unison.

(h) Open and close the drive 1 door.

Requirement 1: If at any time the LEDs blink in unison, go to step (i).

Requirement 2: If a series of LEDs are lit, refer to Table N for the first test results. If *no* LEDs are lit, go to requirement 3.

TABLE N

PRINTER RECEIVE/TRANSMIT FAULTS

LIGHT	INTERPRETATION
READY or BUSY	The printer port cannot transmit characters properly. Replace the Comm-Stor II unit.
CARRIER	The printer port may not be able to send a break (i.e., long space) to printer. Replace the Comm-Stor II unit.
STATUS	The STATUS light is not used.

Requirement 3: Open and close the drive door again. If a series of LEDs are lit, refer to Table O for the second group of test results. If *no* LEDs are lit, go to requirement 4.

Requirement 4: Open and close the drive door again. If a series of LEDs are lit, refer to Table L for the third group of test results. If *no* LEDs are lit go to requirement 5.

Requirement 5: Open and close the drive door again. If a series of LEDs are lit, refer to Table M for the fourth group of test results. If *no* LEDs are lit, go to requirement 6.

Requirement 6: Open and close the door to end the test. All LEDs will blink in unison.

TABLE O

PRINTER EIA CONTROL FAULTS

LIGHT	INTERPRETATION
READY BUSY CARRIER or STATUS	The printer port is faulty. Replace the Comm-Stor II unit.

(i) If no further fault conditions exist, the test will end with all the LED lights blinking in unison. Those fault tables bypassed by the Diagnostic procedures contained no reportable results.

Isochronous Operation Test*

7.13

(a) Mount the diagnostic test plug on the rear panel. Set switch 1 to the EIA position and switch 2 to the TERM position.

(b) Set the modem switch to 6.

(c) Depress the RESTART button.

(d) The Diagnostic will immediately perform the visual LED test. The user may also perform the Switch test or proceed to step e.

(e) Open and close the drive 1 door. The Diagnostic will execute the Isochronous Operation test.

(f) The test will run about *3* minutes.

Requirement: When the test is completed, all LED lights will blink in unison.

(g) Open and close the drive 1 door.

Requirement 1: If at any time the LEDs blink in unison, go to step (h).

Requirement 2: If a series of LEDs are lit, refer to Table J for the first test results. If *no* LEDs are lit, go to requirement 3.

Requirement 3: Open and close the drive door again. If a series of LEDs are lit, refer to Table K for the second group of test results. If *no* LEDs are lit, go to requirement 4.

Requirement 4: Open and close the drive door again. If a series of LEDs are lit, refer to Table L for the third group of test results. If *no* LEDs are lit, go to requirement 5.

---

*This test may be performed only on List 03 (or higher) units.

Requirement 5: Open and close the drive door again. If a series of LEDs are lit, refer to Table M for the fourth group of test results. If *no* LEDs are lit, go to requirement 6.

Requirement 6: Open and close the door to end the test. All LEDs will blink in unison.

(h) If no further fault conditions exist, the test will end with all the LED lights blinking in unison. Those fault tables bypassed by the Diagnostic procedures contained no reportable results.

Configuration Memory Test

7.14

(a) Remove the diagnostic test plug from the back panel.

(b) Set the modem switch to 8. Set the terminal switch to 0.

(c) Depress the RESTART button.

(d) The Diagnostic will immediately perform the visual LED test. The user may also perform the Switch test or proceed to step e.

(e) Open and close the drive 1 door. The Diagnostic will execute the Configuration Memory test.

Requirement: When the BUSY LED comes on and stays on, turn the Comm-Stor II unit OFF.

(f) Wait about 1 minute. Turn the Comm-Stor II unit ON; the Diagnostic will again perform the visual LED test.

Requirement 1: Open and close the drive 1 door. If the BUSY LED or CARRIER LED begins blinking, refer to Table P.

Requirement 2: If no faults occur, the BUSY LED will come on and stay on. Turn the Comm-Stor II unit OFF and proceed to step i.

(g) Wait about 1 minute. Turn the Comm-Stor II unit ON; the Diagnostic will again perform the visual LED test. Open and close the drive 1 door.

Requirement: If no faults occur, all LEDs will blink in unison. If the BUSY LED or CARRIER LED begins blinking, refer to Table P.

Note: The user should wait at least 1 minute between steps e, f, and g. However, if the suspected Configuration Memory fault is time related, more or less time may be required betweeen steps for the fault to appear.

If the problem is heat related, the user may depress the RESTART button between steps rather than turn the Comm-Stor II unit OFF.

(h) The Diagnostic diskette may be removed at this time.

or

Leave the Diagnostic diskette in the drive and proceed to the *Diskette Test.*

Diskette Test

7.15

Note: The user should first verify the system's operation by running the Internal Tests.

(a) Set the modem switch to 9.

(b) Depress the RESTART button.

TABLE P

CONFIGURATION MEMORY FAULTS

BLINKING LIGHT:	INTERPRETATION
BUSY	The battery or the main configuration memory is faulty.
CARRIER	The battery of the Extended User Command Table memory is faulty.

(c) The Diagnostic will immediately perform the visual LED test. The user may also perform the Switch test or proceed to step d.

(d) Open and close the drive 1 door.

Requirement 1: When the READY and BUSY LEDs begin blinking, remove the Diagnostic diskette. Insert the diskette to be tested into drive 1; close the drive door.

Requirement 2: The READY and BUSY LEDs will stop blinking but remain on while the test is performed. The test will run about *2* minutes.

Requirement 3: If the test is completed without errors, the READY and BUSY LEDs will start blinking again. (READY 2 and BUSY 2 will blink on dual drive units.) This indicates that data stored on the diskette can be read without errors. However, this does not mean that the content of data is error-free (e.g., no typographical errors). The diskette should be removed from drive 1; another diskette may be inserted and tested at this time. (Additional diskettes may be tested on dual units by alternating between drives 1 and 2.)

Requirement 4: If an error occurs, a CARRIER LED will blink; the faulty diskette should be removed. The user must return to step e to perform additional diskette tests. The user may attempt to copy the faulty diskette in order to save valuable data. The faulty diskette should then be discarded as ERR - DISKETTE or ERR - BAD READ messages may occur. This is usually caused by a scratch on the diskette. Review the diskette handling procedures.

7.16 This completes the Diagnostic test procedures. Remove the Diagnostic diskette and proceed to part 8.

8. CABLE INSTALLATION

GENERAL

8.01 A terminal, printer, and modem can be connected to the Comm-Stor II unit via industry

TABLE Q
EIA RS-232C 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 (RS)	X	in	X	out		
5	Clear to Send (CS)	X	out	X	in	X	out
6	Data Set Ready (DR)	X	out	X	in	X	out
7	Circuit Ground (SG)	X	—	X	—	X	—
8	Carrier Detect (CD)	X	out	X	in	X	out
11,19	Secondary Request to Send (SRS)	X	in	X	out	X	in
12	Secondary Carrier Detect (SCD)	X	out	X	in	X	out
15	Modem Transmit Clock			X	in		
17	Modem Receive Clock			X	in		
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.

standard connectors on the rear of the unit (Figure 1). These connectors, commonly called "ports", conform to the Electronic Industries Association (EIA) specification to RS-232C.

8.02 Device cables connect to the ports on the rear of the unit. No special wiring of the cables is necessary.

8.03 Table Q shows the EIA interface signal connectors for the terminal, modem, and printer ports. These ports are also described in paragraphs 8.04 to 8.08.

TERMINAL PORT

8.04 The cable from the terminal connects to the port labeled TERM. This cable should have a male plug in accordance with industry standard procedures.

8.05 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.

PRINTER PORT

8.06 If the user has the Printer Port option, the cable from the printer is connected to the port labeled PRINTER. This cable should have a male plug in accordance with industry standard procedures.

8.07 If the Printer Port is installed but the user does not wish to use it at this time, the connector may be left unterminated.

MODEM PORT

8.08 Connect the cable from the data set to the port labeled MODEM. This cable should have a female plug in accordance with industry standard procedures.

9. SETTING TRANSMISSION RATES

GENERAL

9.01 A terminal generally should not have a lower transmission rate than the modem.

9.02 Transmission rates may be set from the thumbwheel switches on the back of the Comm-Stor II unit or from the terminal keyboard. Each port on the rear of the unit has a corresponding thumbwheel switch which sets the transmission rate for that port. The switches contain the numbers 1 through 9 which relate to a particular bit rate in accordance with the table on the rear of the unit. To set the bit rate, rotate the thumbwheel switch until the proper number appears. The RESTART switch must be depressed after changing any of the bit rate switches as the Comm-Stor II unit will not recognize the new bit rate setting until this is done.

9.03 Switch setting 0 is called the KYBD rate. In this setting, the operator may enter the different transmission rates from the terminal keyboard.

SETTING TRANSMISSION RATES FROM THE KEYBOARD

9.04 The transmission rates of the terminal, modem, and printer can be changed by entering commands at the terminal. In order to use this feature, the bit rate switch on the rear of the unit for the respective port is set to 0, the KYBD position. The operator may now select any of the transmission rates shown in Table R.

TABLE R

AVAILABLE BIT 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.

9.05 The terminal and modem do not need to have equal transmission rate settings, even when on-line operations are desired. It is preferred that the terminal be operated at a higher bit rate than the modem. In those cases where 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 or a CRT terminal in the page-transmit mode.

> *Note:* The RESTART switch (Figures 1 and 3) must be depressed after changing any of the bit rate setting switches as the Comm-Stor II unit will not recognize the new bit rate setting until this is done.

9.06 The following commands illustrate setting the bit rate for each port:

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

9.07 The first example may be used to set a Dataspeed 40/2 terminal transmission rate to 4800. The second example may be used to set a Dataset 212AR modem rate to 300. The third example may be used to set a Model 43 Teleprinter bit rate to 300.

9.08 Entering the transmission rate when the respective bit rate switch is not on the KYBD position will result in an error message preprinted at the terminal. Similarly, entering an illegal number will also result in an error message.

9.09 Setting the bit rate switches to any position other than KYBD and pressing the RESTART switch cancels the last KYBD command. It will be necessary, therefore, when going back to the KYBD command to re-enter the transmission rate at the terminal.

ISOCHRONOUS COMMAND

The isochronous mode of operation must be selected when the Comm-Stor II unit is connected to a synchronous data set. The modem bit rate switch must first be set to "0". This mode is selected by issuing the command:

.BM I[CR]

Data will be sent bit-synchronously under control of the data set clock. The data set must be optioned to provide a clock.

The Comm-Stor II unit will remain in this mode even if turned off. To change the mode use the modem bit rate switch or issue a standard .BM command with a bit rate specified, for example:

.BM 1200[CR]

10. CONFIGURATION PROCEDURES

10.01 Be sure that the terminal is placed in the on-line condition. All conversation with the Comm-Stor II unit takes place with the terminal on-line. Before proceeding, be certain that the Comm-Stor II unit is turned on.

> *Warning: Never insert diskettes when the Comm-Stor II unit is turned off.*

10.02 Turn the Comm-Stor II unit on; the following message will be displayed:

LOAD SYSTEM DISK

Place the 8A1/8B1 System diskette in drive 1 (upper drive on model 8220A) and close the door. If either the terminal or modem bit setting switch is incorrectly set, the front panel LEDs will blink in pairs. Recheck the position of the bit setting switches and consult the terminal manual to determine what these settings should be.

10.03 If the switches are correctly set, the Comm-Stor II unit will attempt to load the 8A1/8B1 protocol into memory. If the following message is displayed:

PROTOCOL NOT LOADED

the unit in use is not equipped for 8A1/8B1 operation or does not contain at least 8K expanded RAM memory. Verify that the service order has been completed properly.

10.04 When the 8A1/8B1 protocol is successfully loaded, an identification message is displayed followed by the request:

INSERT USER DISKETTE

10.05 If this message is not obtained, a malfunction of either the Comm-Stor II unit or the terminal is probable. Recheck the terminal to be sure it is in the on-line mode. Because the unit

assumes the terminal is always ready, a DTR signal will be ignored by the Configurator if one is sent by the terminal.

Note: If a message is displayed but it is incorrect (e.g., the parity error symbol for the terminal appears), check the bit switch settings on the Comm-Stor II unit. Ignore the message if the settings are correct and continue the preparation for configuration.

10.06 The user now has four seconds in which to begin entering the "password" which permits access to the Configurator. The password *is not configurable.* Type the password as follows:

1.) Strike the ESCAPE key three times.

2.) Type: CONFIG

These characters are not displayed on the terminal.

10.07 If the three ESCAPE characters are not received within four seconds, the Comm-Stor II unit sends one carriage return/line feed to the terminal. The user must restart the operation by opening and closing the door of drive 1. If an error is made while typing CONFIG, the user need only correct this character sequence beginning with "C", (the three [ESC]'s are already accepted).

10.08 Once the password is received, the Configurator will type an identification message followed by:

PLEASE TYPE FRAMING CHARACTER:

Note: If the identification message was received incorrectly and the bit settings were correct, check configuration parameter #37 at this time.

CONFIGURATION COMMANDS

10.09 When the framing character is entered, the Configurator sends a period prompt to the terminal. Respond by entering one of the available commands listed in Table S, depending on which operation the Configurator is to perform. Either upper or lower case letters may be entered. The first five commands require an End of Line character [EOL] (this may be a 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 operator; the leading period is a prompt from the Comm-Stor II unit.

TABLE S

CONFIGURATION COMMANDS

.C[CR]	CONFIGURE ALL PARAMETERS
.D[CR]	DISPLAY ALL PARAMETERS
.Cnnn[CR]	CONFIGURE PARAMETER nnn
.Dnnn[CR]	DISPLAY PARAMETER nnn
.[CR]	CONFIGURE/DISPLAY NEXT PARAMETER
..	CONFIGURE/DISPLAY SAME PARAMETER
.B	BUILD USER DISKETTES
.W	WRITE SYSTEM REFRESH DISKETTE
.R	STANDARD FACTORY REFRESH
.[^T]	TERMINATE CURRENT OPERATION; RETURN TO PERIOD PROMPT
.G	ACTIVATE FORMS GENERATION PROCEDURE (Not covered in this manual.)
.P	ACTIVATE 8A1/8B1 OPTION CONFIGURATOR

10.10 When configuring or displaying parameters, the Comm-Stor II unit displays the following information:

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, type the framing character, the new value, and then the framing character again.
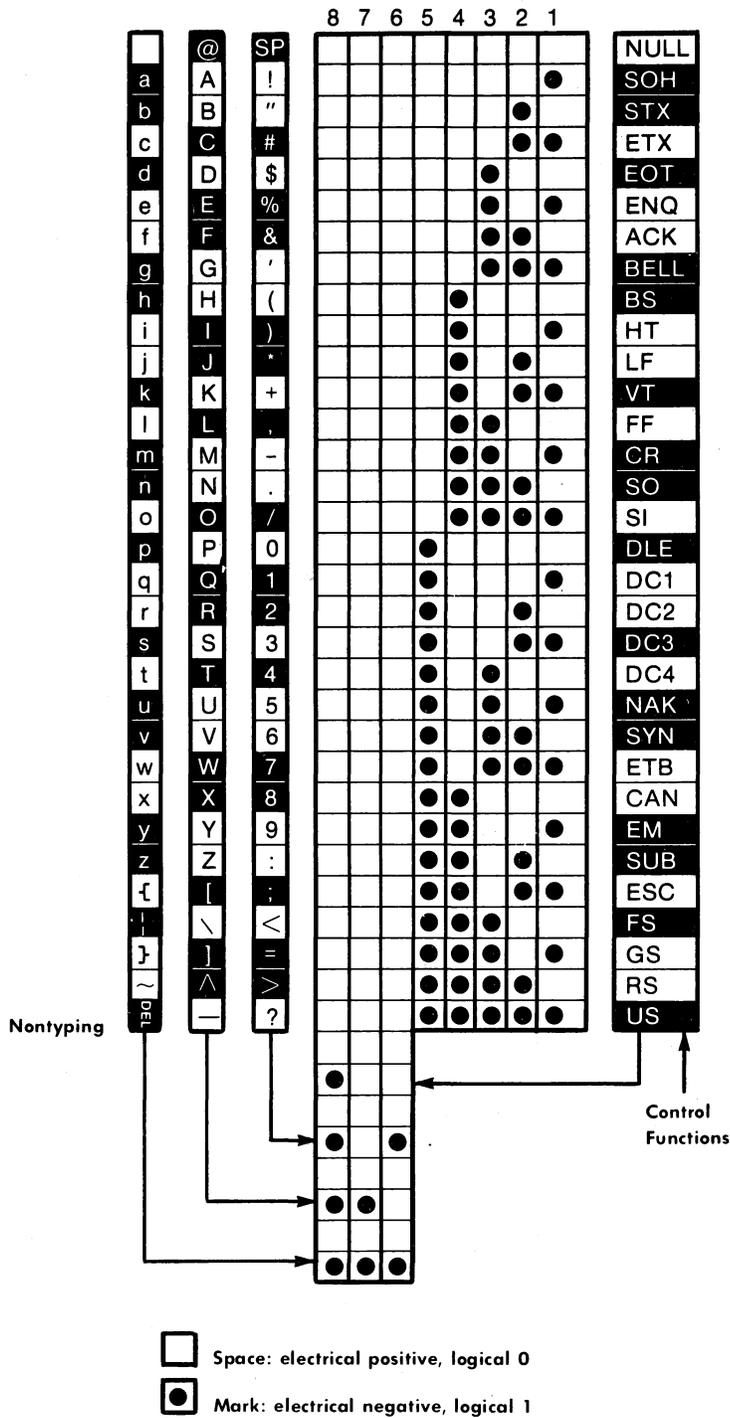
Fig. 7—American Standard Code for Information Interchange (ASCII)

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

To accept the command as is, type any character, usually a space bar. 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 Configurator will interpret it incorrectly.

10.11 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.

Example:

/Y/ *Do not* enter the full words YES or NO!

10.12 When configuring or displaying a parameter which is printable, the Comm-Stor II unit displays the current value of the parameter 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])

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

10.14 To configure a single character parameter to a character that is unavailable on the keyboard (perhaps a lower case letter on an upper case only keyboard), the character may be entered using the Binary Data feature as follows:

(a) Enter the command .Cnnn. The Comm-Stor II unit will type the parameter's title and correct value.

(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 most significant bit first (Figure 7).

(e) Type the framing character.

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

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

10.16 Some of the configuration parameters require *special responses* from the operator. These responses are discussed as they are encountered in the parameter explanations.

10.17 All commands used to display and configure parameters pause after displaying the current value to allow an operator response. The only exception to this is the .D command, which causes all parameters to be displayed sequentially with no pauses. This command is intended mainly to list all configurable parameters to determine the number of a desired parameter. The .B, .R, and .W commands do not apply to the standard configuration process.

10.18 The .P command is used to access part 2 of the configurator, the 8A1/8B1 options. Address and poll codes and responses are entered in this mode.

10.19 Except where specifically noted, all responses to questions asked by the Configurator are assumed to be standard ASCII characters. Printable characters will be represented in the text by the actual letters enclosed within quotes or parentheses.

EQUIPMENT SET UP PROCEDURE

10.20 Data set and terminal options may need to be configured at this time. Refer to the appropriate BSP for the equipment in use for the procedure. Also, see part 13 in this manual.

10.21 The Comm-Stor II unit requires a terminal capable of operating in the full duplex mode

to be connected to the terminal connector (port) on the rear panel of the unit*. The terminal must be capable of operating at one of the transmission bit rates shown in the table on the rear panel of the Comm-Stor II unit. Set the terminal port bit rate setting switch to the proper position for the transmission rate of the particular terminal in use. The Configurator will not function properly if the terminal bit rate setting switch is in position 0 (KYBD position).

10.22 The Configurator determines character length and parity convention by examining the modem bit rate setting switch on the rear panel. Set the *modem transmission rate* switch as shown below to match the characteristics of the *terminal* in use:

Position 0   7 bits + even parity
Position 1   7 bits + odd parity
Position 2   7 bits without parity
Position 3   8 bits + even parity
Position 4   8 bits + odd parity
Position 5   8 bits without parity
Position 6   invalid
or higher

10.23 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 lights will flash randomly.

BUILDING A USER DISKETTE

10.24 Create a User diskette following the procedure below:

(a) Place the 8A1/8B1 System diskette in the drive (drive 1 of a dual drive unit). Close the drive door. Depress the RESTART button.

(b) Follow the procedures in paragraphs 10.01-10.08. When the unit displays:

---

*The half duplex 40/1 terminal may be supported. Refer to *How to Configure … Comm-Stor II*, Bell System Practice 999-302-150.

PLEASE TYPE FRAMING CHARACTER.

Type the required character from the terminal.

(c) The unit now displays a period (.) prompt. Type "B" to begin the BUILD process.

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

STANDARD VALUES?

Type a "Y" (for YES) from the terminal.

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

DIRECTORY REQUIRES 2 TRACKS; 49 FILE SLOTS AVAILABLE.
AVERAGE FILE SIZE IS 11 SECTORS

followed by:

BUILD DISK(S)?

Type a "Y" from the terminal.

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

10.25 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. To continue in any form, depress the RESTART button and proceed normally from the beginning of the Configurator.

10.26 If errors persist, refer to Section 578-400-501 *Test and Troubleshooting.*

11. LOCAL TERMINAL TESTS

11.01 The terminal tests consist of the following:

(1) ENTER Message Test

(2) DISPLAY Message Test

(3) Move Message to Scratch Pad

(4) List Scratch Pad

(5) SEARCH/REPLACE

(6) SAVE Message (same location)

(7) ENTER Form Message (optional)

(8) LOAD Form Message

(9) ENTER Test Message

(10) DISPLAY Test Message

(11) PRINT Message (optional)

TERMINAL TESTS

Note: If failure occurs, refer to Table T. Locate the step in which the failure occurred and follow the indicated action. The symbol [CR] in the test procedures means "type a carriage return."

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

(b) Turn the Comm-Stor II unit on. The following message will be displayed on the terminal:

LOAD SYSTEM DISK

Remove any diskettes from the drive; insert the 8A1/8B1 System diskette and close the drive door.

(c) An identification message will be displayed followed by:

INSERT USER DISKETTE

Remove the 8A1/8B1 System diskette and insert an 8A1/8B1 User diskette. The Comm-Stor II unit will respond by displaying an asterisk(*). If this does not happen, check to see that the diskette is inserted properly (the READY light should be on) and that the unit is properly configured.*

---

*Refer to the manual, *How to Use ... Comm-Stor II with the 8A1/8B1 Protocol*, section 999-300-151.

(d) Type the following command string:

.E TEST [CR]

The unit should respond by illuminating the BUSY lamp and returning the cursor or print-head to the left margin.

(e) Type the following data:

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

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

The unit will turn off the BUSY lamp and display the message:

SEND?

Type an "N" from the terminal.

(g) Type the following command:

.D TEST[CR]

The unit will send the data entered in step (e) to the terminal. Visually verify the data.

(h) Type the following command:

.ED TEST[CR]

The unit will return the cursor or printhead to the left margin after a short delay.

(i) Type the following command:

;L[CR]

The unit will send the data entered in step (e) to the terminal. Verify the data.

(j) Type the following command:

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

TABLE T

TERMINAL TESTS ERROR ANALYSIS

TEST STEP	ACTION
c	(1) Check User Diskette. (2) Check Configuration Parameter #89 (ENTER Command).
e	Check Configuration Parameter #8 (End of Text Character).
f	Check Configuration Parameter #86 (DISPLAY Command).
g	(1) Check Configuration Parameter #115 (EDIT Command). (2) Check User diskette (Scratch Pad).
h	Check Configuration Parameter #122 (LIST Command).
i	Check Configuration Parameter #125 (SEARCH Command).
j	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).

The unit will respond by displaying:

4 TEST OK

at the terminal.

(k) Type the following command:

.SV TEST[CR]

The unit will display:

—SURE?

at the terminal.

(l) Type a Y at the terminal.

The unit will display the message:

SEND?

Type an N from the terminal.

(m) Type the following command:

.D TEST[CR]

The unit will display:

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

(n) If the unit has the Forms option, enter the following command, or proceed to step (v):

.E TESTFORM[CR]

The unit will illuminate the BUSY lamp and return the cursor or printhead to the left margin.

(o) Type the following data:

NAME   [◄——13 spaces——►] [CR]

ADDRESS   [◄——13 spaces——►] [CR]

(p) Type the configured "End of Text" character.

The unit will turn off the BUSY lamp and display the message:

SEND?

Type an N from the terminal.

(q) Type the following command:

.FC TESTFORM [CR]

The unit will return the cursor or printhead to the left margin.

(r) Type the following command:

.E MESSAGE1[CR]

The unit will send the following data to the terminal:

NAME[

(s) Type the following data:

JAMES SMITH [CR]

The unit will send the following data to the terminal:

ADDRESS [

(t) Type the following data:

ANYWHERE, USE[CR]

The unit will return the cursor or printhead to the left margin, turn off the BUSY lamp, and display the message:

SEND?

Type an N from the terminal.

(u) Type the following command:

.D MESSAGE1[CR]

The unit will send the following data to the terminal:

NAME   [JAMES SMITH   ]

ADDRESS [ANYWHERE, USA]

TABLE U

DATA SET/TERMINAL/PRINTER INTERFACE PROCEDURES

DEVICE	INTERFACE PROCEDURE
Data set 108J	(a) Connect EIA cable: female to the Comm-Stor II unit's modem port, male to the data set. (b) Set the modem bit rate switch to 4 (300 bits). (c) Be sure the configuration parameters are set to factory standard values.
Data set 202T	(a) Connect EIA cable: female to the Comm-Stor II unit's modem port, male to the data set. (b) Set the modem bit rate switch to 5 (1200 bits). (c) Be sure the configuration parameters are set to factory standard values.
Data set 201C	(a) Connect EIA cable: female to the Comm-Stor II unit's modem port, male to the data set. (b) Set the modem bit rate switch to 0. (c) From the terminal, type: .BM I[CR]
43 Teleprinter (43 KSR or RO)	(a) Connect EIA cable: female to the Teleprinter, male to the Comm-Stor II unit's terminal port. (b) Set the Comm-Stor II unit's terminal bit rate switch to: 4 (300 bits) - for 30 CPS operation 1 (110 bits) - for 10 CPS operation 0 - permits bit rate selection from terminal keyboard (c) Set terminal for full duplex operation. (d) Enable or disable parity detection. If parity detection is *enabled*, configure Parameter #37: Even Parity 7 Data Bits

TABLE U (Cont)

DATA SET/TERMINAL/PRINTER INTERFACE PROCEDURES

DEVICE	INTERFACE PROCEDURE
	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 V as indicated. (f) Those parameters not specified above or in Table V should remain at factory standard values. (g) If a terminal and data set are used together, set modem bit rate switch to 300 or less. To operate modem at a higher bit rate than the terminal: (1) Configure Parameter #144 (Modem Buffer) to a size capable of handling the longest continuous transmission from the communications line, through the Comm-Stor II unit to the terminal. (2) Be sure the Comm-Stor II unit is *not in Monitor Mode;* enter .MX[CR] from the terminal. (3) Set terminal for full duplex operation.
Dataspeed 40/2 Terminals	(a) Connect EIA cable: female to terminal, male 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

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TABLE U (Cont)

DATA SET/TERMINAL/PRINTER INTERFACE PROCEDURES

DEVICE	INTERFACE PROCEDURE
	The following 40/2 terminal options and Comm-Stor II parameters must be set functionally equal: <table><tr><td>**40/2:**</td><td>3</td><td>4</td><td>8</td><td>42</td></tr><tr><td>Comm-Stor II:</td><td>Set bit rate on 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 communications system in use. (d) Configure the parameters listed in Table V as indicated. (e) If the Extended Forms option is installed, configure Parameter #33 (Modem Off-Line Alert character): NULL (f) If a terminal and modem are used together, set the Comm-Stor II unit's terminal bit rate switch equal to or greater than the modem bit rate. (g) Place the terminal in the send/receive mode. (h) Those parameters not specified above or in Table W 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 W should remain at factory standard values.

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TABLE V

COMM-STOR II CONFIGURATION FOR MODEL 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 W

COMM-STOR II CONFIGURATION FOR DATASPEED 40/1, 40/2 TERMINALS

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
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 Re-display	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

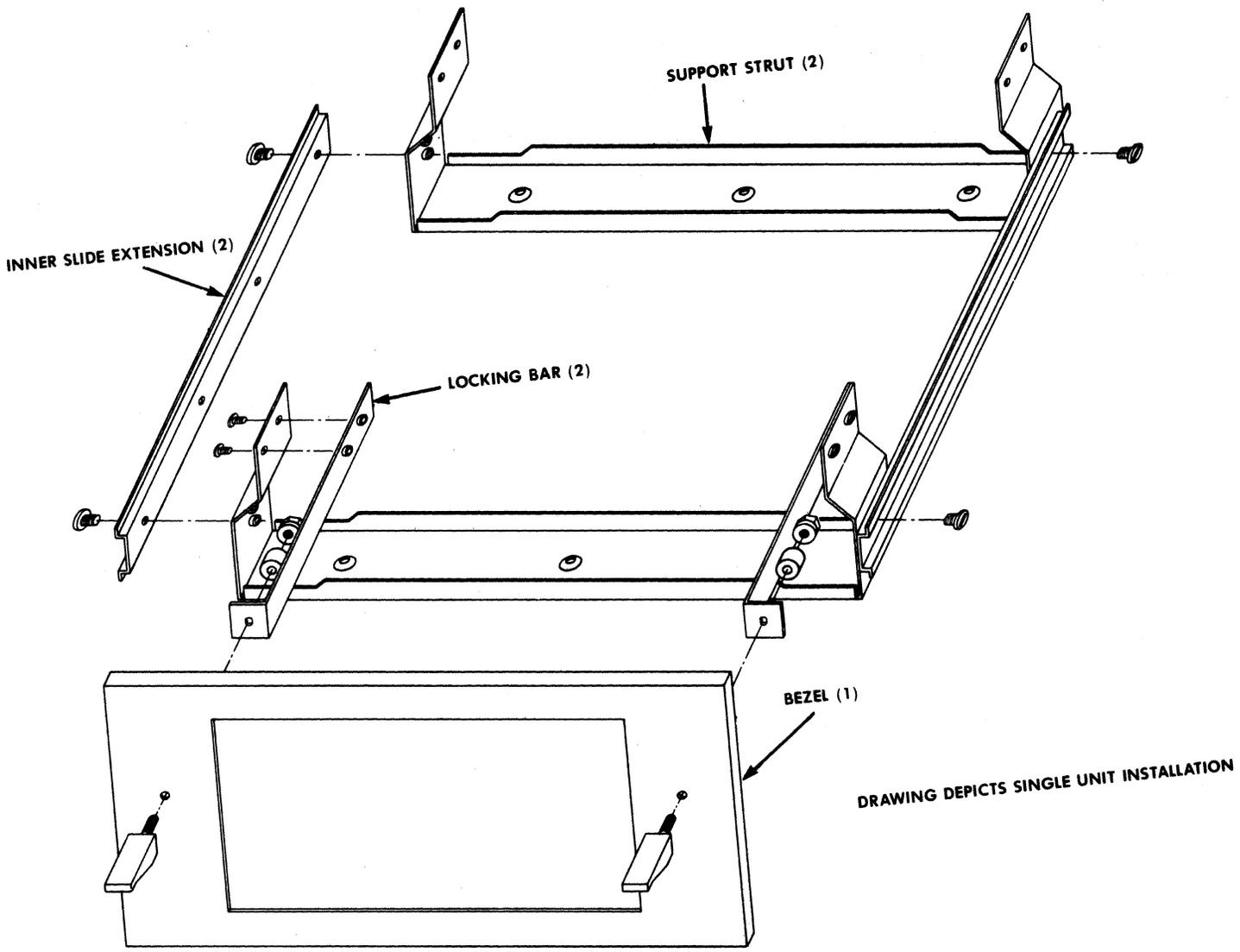*It is recommended that this parameter be set to the value required by the communications system in use.

SUPPORT STRUT (2)

INNER SLIDE EXTENSION (2)

LOCKING BAR (2)

BEZEL (1)

DRAWING DEPICTS SINGLE UNIT INSTALLATION

Fig. 8—Rack Slide Assembly Installation Components for the Comm-Stor II Unit

.25

RECEIVER (2)

1.75 (REF)

1.25

7.00

REQ'D OPENING FOR BEZEL

.50

OUTER SLIDE (2)

1.25

.25

NOTE: Dimensions are shown in inches
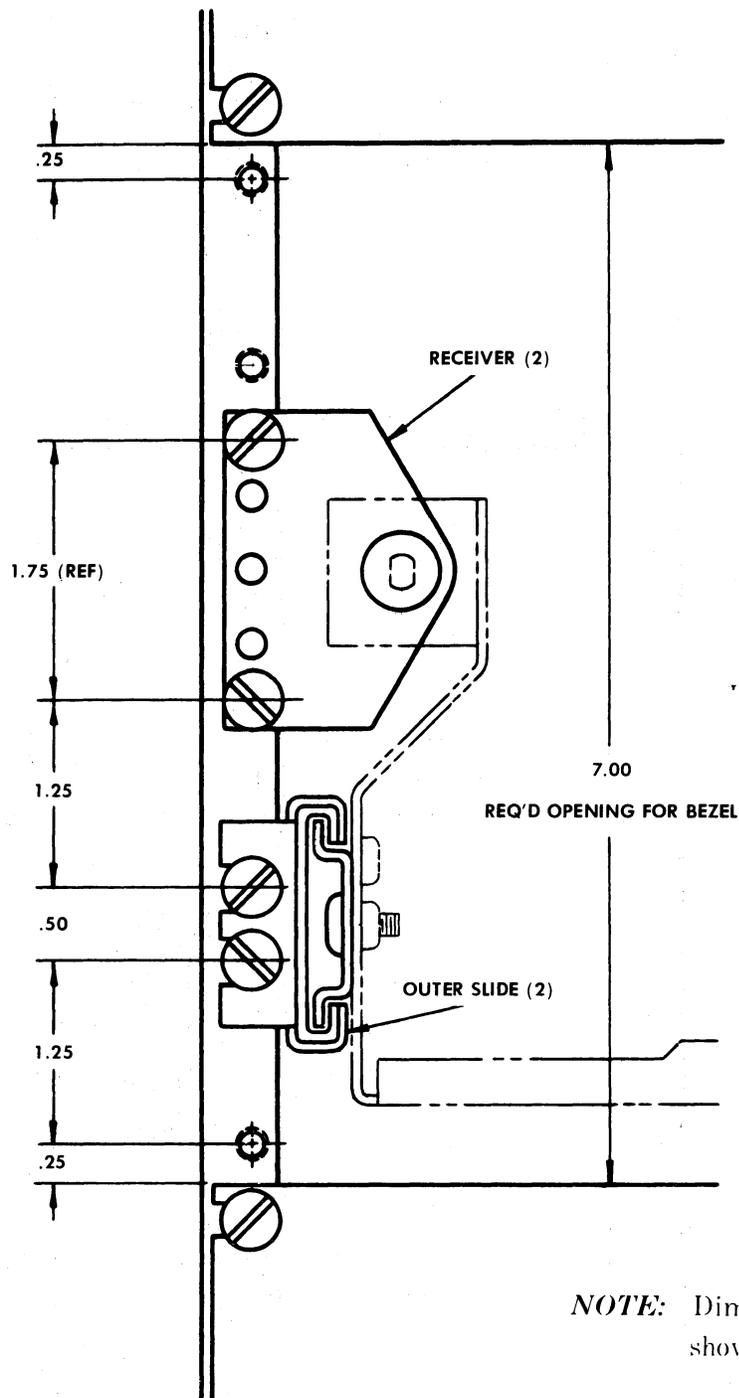
Fig. 9—Rack Slide Receiver Installation for Model 8120A

.25

RECEIVER (2)

10.50
REQ'D OPENING FOR BEZEL

.50

1.25

.50

OUTER SLIDE (2)

1.25

.50

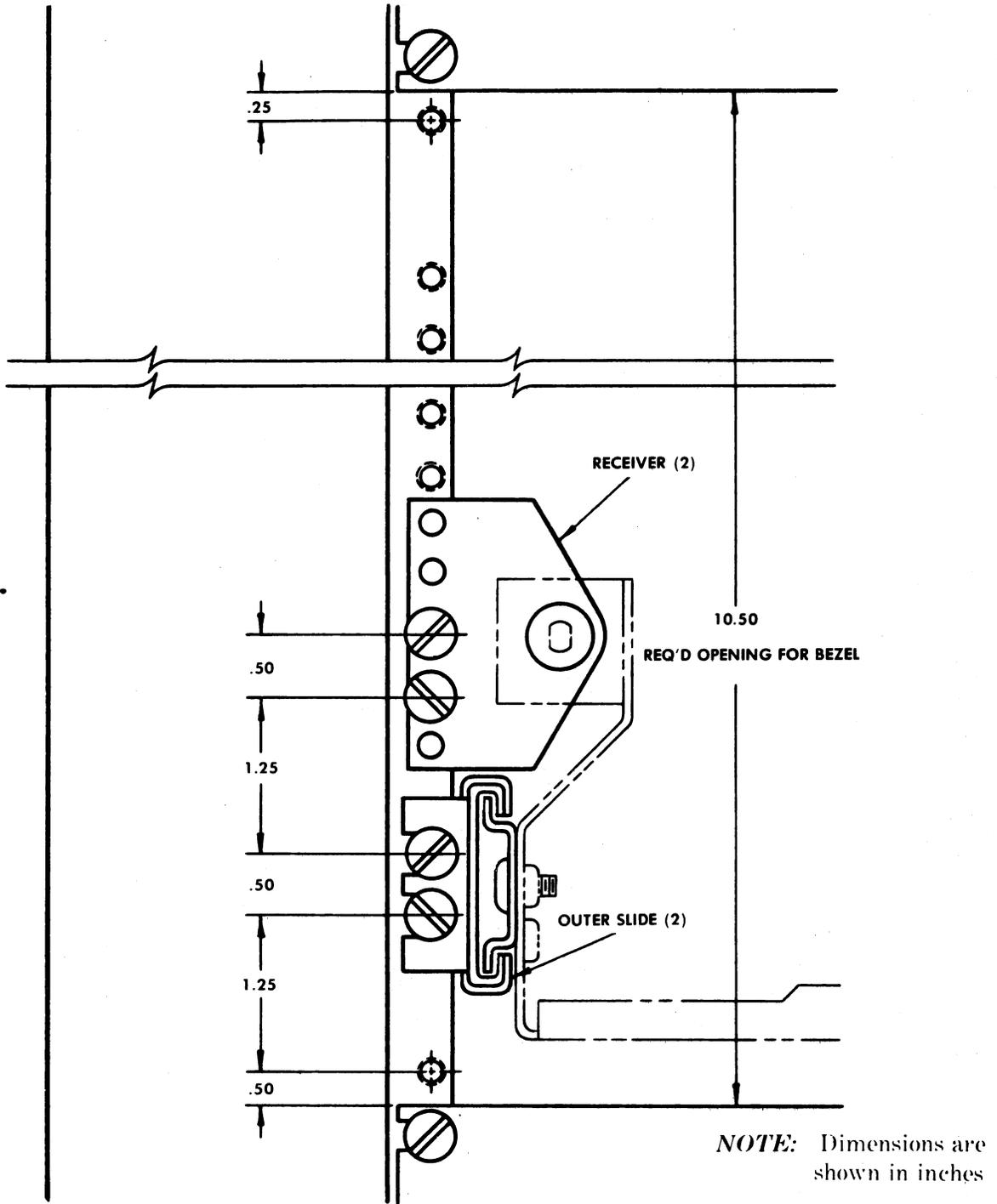*NOTE:* Dimensions are shown in inches

Fig. 10—Rack Slide Receiver Installation for Model 8220A

(v) If the Comm-Stor II unit has a printer port, type the following command:

.P TEST[CR]

The unit will send the following data to the printer:

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

This concludes local testing.

(w) Cancel the messages TEST, TESTFORM, and MESSAGE1. Type the following command strings:

(1) .CN TEST[CR]

(2) .CN TESTFORM[CR]

(3) .CN MESSAGE1[CR]

12. OPERATIONAL CHECKOUT (ON-LINE TESTS)

12.01 An operational checkout should be performed after installation or when troubleshooting. Procedures for checkout and correction of operational difficulties are provided in Section 578-400-501, *Test and Troubleshooting Procedures.*

13. TYPICAL DATA SET/PRINTER/TERMINAL OPTIONS

13.01 This part describes some of the peripheral devices that can be interfaced with the Comm-Stor II unit. Table U lists these devices and the procedure required for interfacing each. Although configuration information is given, the installer should not attempt to reconfigure the system. When required, the appropriate Refresh diskette will be supplied by the user.

14. INSTRUCTIONS FOR INSTALLATION OF RACK MOUNTED 8120A OR 8220A SYSTEMS

14.01 To install the 19 inch flush rack mount and slides, proceed as follows (refer to Figures 8-10):

(a) Remove the inner section of the slide assemblies and attach to the support struts as shown (Figure 8) using four #10-32 x ⅜ screws. Each end of the support struts has two thread inserts for this purpose. When rack mounting a single diskette drive unit, use only the lower inserts for attaching the slide extensions. When mounting a dual diskette drive unit, the upper ones are used.

(b) Attach the two locking bars in position using four #8-32 x 1/4 screws.

(c) Mount the bezel to the chassis assembly as follows. Remove the four screws from the bottom of the cover on the underside of the unit and slide the cover off from the rear of the unit.

Slide the bezel over the chassis from the rear of the unit until it mates with the recessed perimeter on the back of the front panel. Replace the top cover and four screws.

The bezel has two small holes on its face. When installing a single drive bezel, these holes must be toward the top, i.e., above the center line of the bezel. When installing a dual drive bezel, these holes must be toward the bottom.

(d) Check that the two outer telescoping sections of the slide assemblies mate with the inner options on the support assembly and install in the rack cabinet as shown (Figure 9 or 10) using either two #10-32 x 3/8 or #12-24 x 3/8* screws as required for each of the front brackets, and #10-32 x 3/8 screws and nut plates as required to secure the rear portions of the slides to the rack.

(e) Fasten the receivers using two #10-32 x 3/8 or #12-24 x 3/8* screws as required. Observe the diagrams carefully as the mounting dimensions are very important. The locating dimensions should be followed to insure proper operation of the slide mechanism and latches. The receivers have a five hole pattern for mounting. The receivers on single drive units use a different mounting pattern than those on dual drive units. Also, the receivers have an offset with a large single hole. This offset must be outermost (toward viewer) when mounted to the rack.

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*Older racks may have #12-24 mounting holes. Hardware is not supplied with the kit.

(f) The slide rack assembly may now be inserted into the cabinet. Check the alignment of the entire slide assembly to insure proper operation from the collapsed to the fully extended position. Make any necessary adjustments to the slide assembly and retighten all the screws.

(g) Remove the slide assembly and attach it to the bottom of the chassis/bezel assembly by aligning the chassis mounting holes with the support strut mounting holes. Each of the support struts has three mounting holes for this purpose. On the front support strut use only the two outermost holes. On the rear strut use only the center hole. Secure the chassis with three #8-32 x 5/8 flat head screws.

(h) Insert the threaded portion of a latch through one of the small holes on the face of the bezel and the locking bar behind it. Place the rubber bushing on the threaded portion of the latch behind the locking bar and install the special plastic nut finger tight only against the rubber bushing. Be certain the latch is in a released position, i.e., the latch is protruding *away* from the bezel face in a horizontal position.

Install the second latch assembly in the same manner.

(i) Insert rack-slide/chassis-bezel assembly into the cabinet. (Do not push the outer portions of the bezel as permanent damage may result. The latches or adjacent areas are better suited for this.)

The rubber bushings of the latch assemblies should engage with holes in the receivers. When the bezel is seated firmly against the rack, the unit is secured by firmly pressing down on the latches until they are resting against the face of the bezel.

(j) To open the unit, grasp the latches between the thumb and forefinger and lift upwards and away from the bezel face until both are released. The latches are then used as handles to pull the unit out to the fully extended position.

(k) The binary switch on the rear panel of the unit must be placed in the EXIT position and remain as such; the front switch will now override it.

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 items should normally be present in standard maintenance tool kits.

TOOLS

Nut Driver, 1/4"

Nut Driver, 11/32"

Wrench, Hex Key 3/32"

Wrench, Hex Key 1/16"

Wrench, Hex Key 5/64"

Subminiature Long Nose Pliers

Flat Needle File and Fine Emery Board

Screwdriver, Phillips 1/4", 4" blade, 2 point size

Screwdriver, Phillips 1/8", 2" blade, 0 point size

Screwdriver, Slotted 1/4", 4" blade

Screwdriver, Slotted 1/8", 2" blade

Tweezers

Static Ground Strap (Simco Neutrostat, 3M Velostat, or equivalent)

IC Removal and Insertion Tool (Jensen #331B202 and #331B102)

SUPPLIES

Head Cleaner Solution (Miller Stephenson MS200 or Isopropyl Alcohol)

Soft Wiping Cloth (Lint-free)

Contact Cleaner (Miller Stephenson MS230)

Fan Filter Spray Super Filter Coat #1, Research Products Corp.

Conductive Foam Blocks (for holding ICs)

DISKETTES

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

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

Standard Factory Refresh Diskette
(locally supplied)

8A1/8B1 System Diskette (Sykes part number 1030A5214)

Data Diskettes (Sykes part number 1030A5185)