

``COMM-STOR*'' II COMMUNICATIONS STORAGE UNIT TESTING AND TROUBLESHOOTING PROCEDURES

1. GENERAL

1.01 This section covers the COMM-STOR II Communications Storage Unit manufactured by Sykes Datatronics, Incorporated.

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

1.03 The testing and troubleshooting procedures covering the COMM-STOR II Communications Storage Unit are contained in the attached reprint of the practice prepared by Sykes Datatronics, Incorporated. No special equipment is required for the procedures described in the practice.

1.04 This section does not apply to COMM-STOR II Communications Storage Units equipped for 8A1/8B1 Protocol operation. Testing and troubleshooting procedures for such systems are described in Section 578-400-501.

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Comm-Stor II
COMMUNICATIONS STORAGE UNIT
TEST AND TROUBLESHOOTING PROCEDURES

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7. CHECKLIST #2—OTHER DIFFICULTIES	18	1.01 This section provides testing and troubleshooting procedures for the Comm-Stor® II Communications Storage Unit, hereafter referred to as Comm-Stor. No special equipment is required for the procedures described herein.	
8. ON-LINE CHECK	19	1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.	
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1.04 An operational checkout should be performed after installation or on trouble calls. It may be a brief checkout to make sure the station is operable, or a complete checkout to exercise all features and options. Since off-line checkout procedures do not check the interface or send and receive capabilities, an on-line checkout is also required to completely test the Comm-Stor.

1.05 With the station arrangement properly interfaced to the system where it will be used, conduct a complete checkout of send and receive capabilities, taking into account all option and feature variables. Check all operational modes in sending to or receiving from another station in the system.

1.06 Use the local checkout for installation if a complete checkout has not been performed prior to installation. Continue with a complete checkout, if needed, to check all features and options.

1.07 On maintenance or trouble calls at a location, confine the checkout to the specified trouble area. Use the local checkout to isolate poorly defined trouble areas. Perform a complete checkout after an extensive repair.

1.08 If the indicated response is not obtained in any step of a checkout procedure, repeat the step to make sure that the procedure has been performed correctly. If the results are still unsatisfactory, replace the module indicated as the possible cause.

1.09 As a further aid to troubleshooting, refer to the wiring diagrams for Comm-Stor in Section 578-400-400. For help in identifying components, refer to Section 578-400-700, Disassembly/Reassembly and Parts.

DANGER AND WARNINGS

1.10

***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 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:*

- *Never touch the exposed diskette surface. Handle the diskette only near the label.*
- *Do not write on the diskette cover; write only on the label. If possible, write on the label before placing it on the diskette.*
- *Do not attempt to clean a dirty or dusty diskette; such a diskette should be discarded.*
- *Keep the diskette away from potentially magnetic materials (paper clips, etc.) or magnetic sources (unshielded power supplies, CRT monitors, etc.).*
- *Do not bend the diskette.*
- *Do not expose the diskette to extremes of heat or cold.*
- *Keep the diskette in its protective cover when not in use.*
- *Store diskettes vertically in boxes when not in use.*

2. PRELIMINARY CHECK

2.01 Before turning on any equipment, check that the station is connected to a properly grounded AC service. Also check the seating of all circuit boards and cable connectors.

2.02 If there are operational difficulties with a Comm-Stor unit, peripheral devices such as the terminal, modem, and printer should be checked, depending on the area of difficulty.

2.03 Also, a check of Comm-Stor's variable configuration data should be made. All configuration parameters should be checked and changed if required. The parameters should then be rechecked after the unit has been off for several hours.

2.04 If difficulties are encountered with data transfers on and off a diskette, other diskettes should be tried and a check should be made of diskette handling procedures.

3. USER DIAGNOSTIC DESCRIPTION

3.01 The User Diagnostic Kit (SYKES Part #1030A5191) consists of a special Diagnostic diskette and a 3-port EIA connector plug (Fig. 1). The test procedure is automatically loaded off the diskette into Comm-Stor's memory when the test is performed. In the first half of the test interval, tests are performed on Comm-Stor's memory, disk drive, and other internal system devices.

3.02 In the second half of the test, the 3-port EIA connector plug is installed on the back of Comm-Stor. Comm-Stor will test its own terminal, modem, and printer ports.

3.03 The results of tests A-D are displayed on the front panel LEDs, allowing the tests to operate independently of the terminal.

USER DIAGNOSTIC TESTS

Test A—LED/Switch Test

Test B—Internal Tests: Memory, Disk Read/Write

Test C—Terminal and Modem Port Tests

Test D—Printer Port Test

Test M—RAM Memory Test*

Test V—Drive/Disk Verify Test*

Test CM—CMOS/Volatility Test*

4. BASIC TROUBLESHOOTING PROCEDURE

4.01 To simplify isolating the problem area of the Comm-Stor unit, begin all troubleshooting procedures by loading or attempting to load the User Diagnostic diskette as described in Part 5.

4.02 Because of the complicated interconnection of Comm-Stor circuitry, it is recommended

that a spare set of modules be used to swap/verify the operation of questionable areas as described in the User Diagnostic Procedure.

4.03 If the unit is completely dead, or will not load and execute the User Diagnostic Procedure, refer to Table R, Checklist #1 on page 15 of this section.

4.04 If the unit passes all tests in the User Diagnostic Procedure, but other difficulties are still experienced, refer to Table S, Checklist #2 on page 17 of this section.

5. USER DIAGNOSTIC PROCEDURE

5.01 If a Comm-Stor malfunction prevents reading the User Diagnostic diskette, the READY light will blink.

5.02 In certain cases when the incorrect test sequence is used or the switch settings are incorrect, the STATUS light will blink.

5.03 The diagnostic test plug (Fig. 1) has two switches, numbered "1" and "2", for simulating the peripheral cabling. The plug is placed over *all three* EIA ports.

DIAGNOSTIC TESTS

Test A—LED/Switch Test

5.04

(a) Power OFF the Comm-Stor unit.

(b) Open drive (1) door.

(c) Power ON Comm-Stor unit.

(d) Insert a REFRESH diskette with the standard factory configuration into drive (1); close the drive door. Depress the RESTART button. Remove the REFRESH diskette.

(e) Insert the User Diagnostic diskette into drive (1); close the drive door. Depress the RESTART button.

(f) LED Test: The following LED patterns are displayed immediately:

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

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

Requirement 3: Walking lights: each LED is lit independently and sequentially (1 second each).

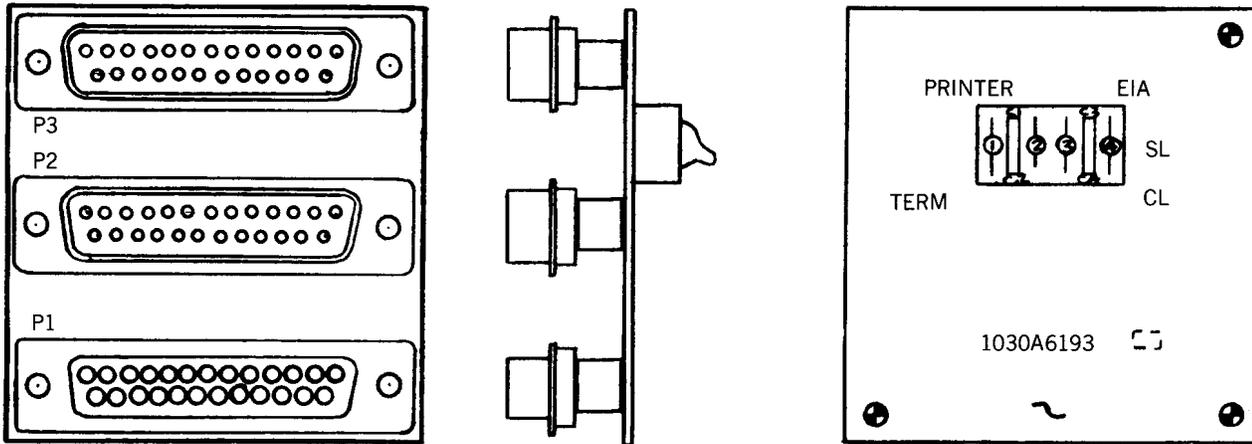


Fig. 1—Diagnostic Test Plug

TABLE A
LED DISPLAY (TEST A)

BAUD 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 baud switch setting.

TABLE B
FAILURE INTERPRETATION

TEST FAILURE	PROBABLE CAUSE
LED Test	Replace the EIA board (LED driver circuit). If the LED still fails, replace the defective LED.
Baud Switch	Replace the defective BCD switch on Microprocessor-RAM board. If switch still fails, replace the MP-RAM board (BCD switch multiplexer).
Binary Switch	Replace the "ENTER/EXIT" switch on I/O panel. If switch still fails, replace the EIA board.

(g) Switch Test: The switch test values are in a logical "OR" state represented by the LED display.

Requirement 1: Set the baud rate switches to zero, and set the BINARY MODE switch to EXIT. 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 be off (not lit).

Requirement 3: Set the MODEM and PRINTER switches to zero. Move the TERMINAL baud switch through its settings of zero to nine. Examine the LEDs at each setting and compare the values displayed with Table A. (Each baud switch setting should generate a corresponding LED display.) Return the TERMINAL switch to zero and follow the same procedure for the MODEM and PRINTER (if PRINTER option is installed) baud switches.

(h) Refer to Table B for failure interpretation.

Test B—Internal Tests: Memory/Disk

5.05

(a) Set the MODEM switch to indicate whether or not the system has the 4K Expanded RAM option (refer to Table C).

TABLE C
SPECIFYING EXPANDED RAM

4K EXPANDED RAM OPTION INSTALLED?	MODEM SWITCH SETTING
NO	5
YES	6

(b) Open and close drive (1) door. Test B will begin.

Requirement: Wait for Test B to be completed; all the LED lights will blink in unison.

Note: Dual drive 8220A system only: Upon completion of the Disk Test for drive (1), the READY (1) and BUSY (1) lights will blink in unison. Remove the User Diagnostic diskette from drive (1); insert it into drive (2) and close the drive door. The requirement stated above also applies to drive (2).

(c) The test results are now available by opening and closing the drive (1) door (or drive (2) door in a Dual Drive system).

Requirement 1: The first set of results displayed in the LED lights corresponds with Table D.

Requirement 2: When the door is opened and closed a second time, the LED light display corresponds with Table E.

Requirement 3: Repeat the open-and-close door procedure to obtain the results of Tables F, G, and H.

Requirement 4: Finally, open and close the door to end the test, obtaining a unison blinking of all the LED lights.

(d) If at any time no further fault conditions exist, the test will terminate with the LED lights blinking in unison. Those fault tables bypassed by the Diagnostic Procedure contain no reportable results.

Test C—Terminal or Modem Ports Test

5.06

(a) Mount the diagnostic test plug on the rear panel. Set switch 1 up (EIA) and switch 2 down (TERM). Depress the RESTART button.

(b) Set the TERM and MODEM baud switches, referring to Tables I and J, and set the PRINTER switch, if the option is installed, to zero.

(c) Open and close the drive (1) door. Test C will begin.

(d) Wait for the test to be completed.

Requirement: All the LED lights will blink in unison.

TABLE D

RAM FAULTS

LIGHT	INTERPRETATION	REMEDY
READY	The main memory is faulty. Random and unpredictable operating faults may occur.	Replace the MP-RAM board.
BUSY	The forms memory is faulty. Forms may show errors when displayed.	Replace the MP-RAM board.
CARRIER OR STATUS	The Extended Forms memory is faulty.	Replace the Expanded RAM board.

TABLE E

CMOS FAULTS

LIGHT	INTERPRETATION	REMEDY
READY	The main memory is faulty. Random and unpredictable operating faults may occur.	Replace the MP-RAM board.
BUSY	The Extended Command Table is faulty.	Replace the MP-RAM board.

TABLE F
ROM FAULTS

LIGHT	INTERPRETATION	REMEDY
READY	The main memory is faulty. Random and unpredictable operating faults may occur.	Replace the ROM board.

TABLE G
DRIVE 1 FAULTS

LIGHT	INTERPRETATION	REMEDY
READY or BUSY	Disk Drive 1 cannot read properly.	Replace Disk Drive Assembly. If Drive 1 still fails, replace the Disk Controller board and cable. Continued failure of Drive 1 indicates a bad User Diagnostic diskette.
CARRIER or STATUS	Disk Drive 1 cannot write properly.	(same as above)

TABLE H
DRIVE 2 FAULTS

LIGHT	INTERPRETATION	REMEDY
READY or BUSY	Disk Drive 2 cannot read properly.	Replace the Disk Drive Assembly. If Drive 1 still fails, replace the Drive Controller board and cable. Continued failure of Drive 1 indicates a bad User Diagnostic diskette.
CARRIER or STATUS	Disk Drive 2 cannot write properly.	(same as above)

**TABLE I
BAUD RATE SPECIFICATION**

<p>This table specifies the terminal, modem, and printer port baud rates. If the terminal and modem port rates are different, run the test twice (once at each baud rate).</p>	
DESIRED BAUD RATE	TERM SWITCH SETTING
110	1
134	2
150	3
300	4
1200	5
2400	6
4800	7
7200	8
9600	9

**TABLE J
CHARACTER STRUCTURE SPECIFICATION**

DESIRED CHARACTER STRUCTURE	MODEM SWITCH SETTING
7 Bits + Even Parity	0
7 Bits + Odd Parity	1
7 Bits Without Parity	2
8 Bits + Even Parity	3
8 Bits + Odd Parity	4
8 Bits Without Parity	5

(e) The test results are now available by opening and closing the drive (1) door.

Requirement 1: The first set of results displayed in the LED lights correspond with Table K.

Requirement 2: When the door is opened and closed a second time, the LED light display corresponds with Table L.

Requirement 3: Repeat the open-and-close door procedure to obtain the results of Tables M and N.

Requirement 4: Finally, open and close the door to end the test, obtaining a unison blinking of all the LED lights.

(f) If at any point no further fault conditions exist, the test will terminate with all the LED lights blinking in unison. Those fault tables by-passed by the Diagnostic Procedure contained no reportable results.

Test D—Printer Port Test (if option installed)

5.07

(a) Set both switches 1 and 2 of the diagnostic test plug UP (EIA and Printer). Depress the RESTART button.

(b) Set the TERM and MODEM switches, referring to Tables I and J. Set the PRINTER switch to one.

(c) Open and close the drive (1) door. Test D will begin.

(d) Wait for Test D to be completed.

Requirement: All the LED lights will blink in unison.

TABLE K

TERMINAL RECEIVE/TRANSMIT FAULTS

LIGHT	INTERPRETATION	REMEDY
READY or BUSY	The terminal port cannot receive and/or transmit characters properly.	Replace the EIA board.
CARRIER	One or more of the following faults may occur: <ol style="list-style-type: none"> 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 EIA board.
STATUS	The status light is not used.	

TABLE L

TERMINAL EIA CONTROL FAULTS

LIGHT	INTERPRETATION	REMEDY
READY BUSY CARRIER OR STATUS	The terminal port is faulty.	Replace the EIA board.

**TABLE M
MODEM RECEIVE/TRANSMIT FAULTS**

LIGHT	INTERPRETATION	REMEDY
READY or BUSY	The modem port cannot receive and/or transmit characters properly.	Replace the EIA board.
CARRIER	One or more of the following faults may 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 EIA board.
STATUS	Under certain conditions, transmission from the modem to the terminal may be faulty.	Replace the EIA board.

**TABLE N
MODEM EIA CONTROL FAULTS**

LIGHT	INTERPRETATION	REMEDY
READY BUSY CARRIER OR STATUS	The modem port is faulty.	Replace the EIA board.

(e) The test results are now available by opening and closing the drive (1) door.

Requirement 1: The first set of results, displayed in the LED lights, correspond with Table O.

Requirement 2: When the door is opened and closed a second time, the LED light display corresponds with Table P.

Requirement 3: Finally, open and close the door to end the test, obtaining a unison blinking of all the LED lights.

(f) If at any point no further fault conditions exist, the test will terminate with all the LED lights blinking in unison. The fault tables bypassed by the Diagnostic Procedure contained no reportable results.

(g) Remove Diagnostic diskette.

Test M—RAM Memory Test

5.08 The purpose of this test is to provide a detailed analysis of the problem area in RAM Memory (refer to Table Q). This test need only be run if a RAM failure existed during Test B in Table D or E.

TABLE O

PRINTER RECEIVE/TRANSMIT FAULTS

LIGHT	INTERPRETATION	REMEDY
READY or BUSY	The printer port cannot transmit characters properly.	Replace the Printer Board.
CARRIER	The printer port may not be able to send a break (i.e., long space) to the printer.	Replace the Printer Board.
STATUS	The status light is not used.	

TABLE P

PRINTER EIA CONTROL FAULTS

LIGHT	INTERPRETATION	REMEDY
READY BUSY CARRIER OR STATUS	The printer port is faulty.	Replace the Printer Board.

(a) Connect a terminal to Comm-Stor's terminal port and set the terminal baud rate switch for the appropriate baud rate.

(b) Power ON the Comm-Stor unit.

(c) Insert the User Diagnostic diskette into drive (1), and close the drive door.

(d) Depress the RESTART button. Comm-Stor will automatically perform the LED test.

(e) Type the letter "M" on the terminal. After a slight delay, the letter M will be echoed back to the terminal and the following statement will be displayed:

FORMS

At this point, the user should type "Y".

(f) The system will respond by printing the following message at the terminal:

TABLE Q
USER DIAGNOSTIC MEMORY TEST

BANK	ADDRESS RANGE	FUNCTION	PCB	IC LOCATION							
				0	1	2	3	4	5	6	7
00	0020-03FF	Standard System	MP-RAM	A1	A3	B1	B3	C3	C3	D1	D3
01	0400-07FF	1K Forms	MP-RAM	A2	A4	B2	B4	C2	C4	D2	D4
02	0800-0BFF	4K RAM	4K RAM/Printer	A1	B1	C1	D1	E1	F1	H1	J1
03	0C00-0FFF	4K RAM	4K RAM/Printer	A1	B1	C1	D1	E1	F1	H1	J1
04	1000-13FF	4K RAM	4K RAM/Printer	A1	B1	C1	D1	E	F1	H1	J1
05	1400-17FF	4K RAM	4K RAM/Printer	A1	B1	C1	D1	E1	F1	H1	J1
10	4000-40FF	Standard CMOS RAM	MP-RAM	F3	F3	F3	F3	E2	E2	E2	E2

- (1) Test M performs read/write tests on all memory addresses. The test procedure is loaded and executed in Bank 00. If FORMS and EXP RAM questions are answered NO, then Banks 01-05 are not tested.
- (2) If an error occurs, the following information will be displayed: the bank number, the first address which failed within that bank, the value written, and the value read. The bits within these values are organized as follows: 7654.3210. Bit 7 is the most significant bit.
- (3) Only the first 4K of RAM may be tested on the 16K RAM board. If a failure occurs, use the table above and change the device in Row 1, even if 2, 3, or 4 is indicated.

EXP RAM

Respond with "Y" if the optional 4K RAM board is installed or "N" if it is not. The memory test will now execute beginning at Bank 00.

Requirement 1: The following table will be displayed at the terminal:

Global W/R Test			
Bank	LOC	Write	Read
XX	XX	XX	XX
XX	XX	XX	XX

WHERE: BANK = hexadecimal RAM Bank number
 LOC = hexadecimal memory address
 WRITE = a 1 or a 0 indicates the logic level of each data bit written into RAM
 READ = a 1 or a 0 indicates the logic level of each data bit read from RAM.

The Global Write/Read test writes a unique value (an ascending number) into each memory location. After the entire memory is written into, each location is read and compared to the expected value. This test will detect addressing faults in both the address logic and in the memory chips themselves. Only the first error in each bank is reported.

Requirement 2: After completing the above test, Comm-Stor will print GLOB PAT and begin execution. This test writes a unique pattern into memory. After the entire memory is written, it is read back and a comparison is made. The test is repeated 7 times with a different pattern used each time. This test will detect pattern sensitivity and addressing faults.

Requirement 3: After completing the Global Pattern Test, Comm-Stor will respond with the following message:

TYPE KEY

Striking any key will cause the system to perform the final test, W/R ALL V.

This performs a write/read test at each location, writing and reading four different hexadecimal values in the following sequence:

- (1) Write the value.
- (2) Read the location (up to 6 tries) until the correct value is read.
- (3) If the correct value cannot be read, go back and write it again.
- (4) If it still cannot be read (6 tries), repeat the cycle up to 6 times until the correct value is read.

When an error is found (even if it disappears during retry), no more locations in that bank are tested. The test advances to the next bank.

A typical error display is:

BANK	LOC	WRITE	READ	
02	0801	1100.0010	1100.0000	5 4
				The number of write tries. ———— ↑ The number of read tries after the last write. ———— ↑

If the value cannot be read after 6 read-write cycles, then an H (HARD ERROR) is displayed in place of the retry numbers.

At the completion of this test it will loop to the beginning.

Test V—Drive/Disk Verify Test

5.09 This test provides a means of reading and verifying Track/Sector Identification fields (IDs) and data CRC characters for every sector on the diskette.

5.10 The main purpose of this test is to check the Disk Drive and the Disk Drive electronics' ability to read. If marginal problems exist, it is imperative that the test be run with several other diskettes or a known good diskette.

5.11 This test can also be used to check and verify diskettes. After the Disk Drive and electronics have been verified by successfully reading known good diskettes, the Verify Test can be used to verify questionable diskettes. Marginal or bad sectors are indicated by a display which indicates the track number (0-76), the sector number (01-26), and an "S" which indicates a Search Error or "CC" which indicates a CRC or data error.

- (a) Connect a terminal to Comm-Stor's terminal port and set the terminal baud rate switch for the appropriate baud rate.
- (b) Power ON Comm-Stor.
- (c) Insert the User Diagnostic diskette into drive (1), and close the door.
- (d) Depress the RESTART button. Comm-Stor will automatically perform the LED test.
- (e) Type the letter "V" on the terminal. After a slight delay, the letter V will be echoed back to the terminal and the following statement will be displayed:

INSERT IN

- (f) Test the system's ability to read a diskette. Insert a known good diskette into Drive 1 or Drive 2.

Note: Marginal diskettes can be tested in known good systems using the same procedure.

- (g) After the good diskette has been inserted, the following message will be displayed on the terminal:

TRK

Answer this prompting message with the decimal number of the track to be tested (0-76), or answer it with an upper case "A" which designates all tracks and sectors on the diskette.

- (h) Type a Carriage Return; the following prompt statement will be displayed on the terminal:

ID REVS (ID Revolutions)

Answer this message with a "C". The "C" causes the same search retry sequence used by Comm-Stor in normal operation (up to 12 search retries). If marginal diskettes are being tested, a number 1 through 9 can be entered to limit the number of search retries.

Limiting the number of retries will greatly increase the probability of an error indication when the diskette or Disk Drive electronics are marginal.

Note: It is normal to have some search errors when ID REVS equal 1 or 2.

- (i) The test will begin automatically after a Carriage Return has been entered following the ID REVS number.

The following table will be displayed:

TRK	SEC	TRK	= track number
		SEC	= sector number
RUN1		RUN1	= test cycle 1
XX	YY ZZ		If Read errors occur.

Read errors are indicated in the above table by the track (XX) and sector (YY) numbers where the error occurred. The third column (ZZ) describes the type of error: S = "search" or "diskette" type ID error; CC = "CRC" or "Bad Read" type data error.

The beginning of each read cycle is indicated by the display RUN1, RUN2, RUN3, etc.

The test will run continuously until interrupted. Striking the space bar on the terminal stops the

test and brings the procedure back to the TRK message. Striking the character "I" brings the procedure back to the INSERT IN message.

Test CM—CMOS Volatility Test

5.12 The CMOS Volatility Test will confirm:

- the ability of CMOS memory devices to be addressed and read,
- the ability of CMOS memory and associated devices to retain information when main power is disconnected.

5.13 The purpose of this test is to indicate Comm-Stor's ability to retain all configurable parameters. This test should be run if the unit fails to configure properly or loses parameters after refresh.

5.14 The test procedure will:

- Read the previous CMOS page 0 (and 1 if equipped) into RAM memory from the diskette.
 - Compare this image with the contents of page 0 (and 1 if equipped) beginning at location 4000.
 - Report if the comparison was "Good" or "Bad" for page 0 (and 1 if equipped).
 - Write the contents of both CMOS pages out to the diskette.
- (a) Connect a terminal to Comm-Stor's terminal port and set the terminal baud rate switch for the appropriate rate.
 - (b) Power ON Comm-Stor.
 - (c) Insert the User Diagnostic diskette into drive (1); close the drive door.
 - (d) Depress the RESTART button. Comm-Stor will automatically perform the LED test.

- (e) Type the letter "C" on the terminal. After a slight delay, the letter C will be echoed back to the terminal and the following statement will be displayed:

EXT TABLE?

Respond by typing "Y".

Requirement: The test will execute and print the following information:

PAGE 1 (GOOD or BAD)
EXT TABLE (GOOD or BAD)

Note: The test results should be ignored the first time the test is run. This enables the system to write the contents of CMOS memory onto the disk. When the question "EXT TABLE?" is asked again, the results will be valid.

(f) Two test sequences are possible:

- Sequence 1:
- (a) Run the test.
 - (b) Turn power OFF, wait 5 seconds, restore power.
 - (c) Repeat the test immediately.

Sequence 1 will confirm the following hardware components:

- The CMOS chips in their power down mode.
- The CMOS support chips.
- The on-board filter capacitor (which acts as a short-term power source for the CMOS system).

- Sequence 2:
- (a) Run the test.
 - (b) Turn power OFF.
 - (c) Wait until the next day to repeat the test.

Sequence 2 will confirm the previous hardware as well as the operation of the battery on the mother board.

The CMOS test will not alter CMOS memory.

6. CHECKLIST #1—DIAGNOSTIC DOES NOT RUN

6.01 Table R lists the most common causes for Comm-Stor failure. Observe the symptoms and proceed with the indicated remedies.

TABLE R

CHECKLIST #1

SYMPTOM	REMEDY
Unit completely dead. Cooling fan not spinning, drive motor not spinning, no illumination of power switch, no front panel LED illumination.	<ul style="list-style-type: none"> (a) Reset the circuit breaker by pushing the power switch/circuit breaker button located on the back panel. (b) Check the power outlet for 115 VAC. (c) Remove the top cover. Check the power harness connectors to make sure they are mated together properly and there are no loose wires. (d) Check the AC power connections at the power supply (red and gray wires). (e) With the unit unplugged, check the continuity of the power switch/circuit breaker, and the harnessing.

TABLE R (Cont)

CHECKLIST #1

SYMPTOM	REMEDY
<p>No power indication. No illumination of power switch. No illumination of LEDs when system powered ON or restarted.</p>	<p>(a) Check DC power supply voltages at base card edge connectors:</p> <ul style="list-style-type: none"> +5.0 VDC ± @ pins 5,6 +24.0 VDC± @ pins 7,8 +12.0 VDC± @ pins 99, 100 -12.0 VDC± @ pins 97,98 Ground @ pins 1,2,66 <p>If one or more of the DC voltages are not present at the base card edge connector, refer to Section 578-400-750, "Routine Maintenance Procedures" for power supply adjustment procedure.</p> <p>(b) If one or more of the power supply voltages are low, the power supply may be defective; or a defective component on one of the circuit boards could be loading down a particular voltage. Swap/verify the power supply. Swap/verify the circuit boards one at a time.</p>
<p>LEDs do not illuminate when system restarted. No head load solenoid activity when system restarted with disk inserted.</p>	<p>(a) Check DC voltages (refer to (b) above) at base card edge connector.</p> <p>(b) Check battery voltage 3.5 VDC MINIMUM.</p> <p>(c) Check battery connections.</p> <p>(d) Check front panel LED harness connection at EIA board.</p> <p>(e) If all the DC voltages appear to be normal, follow the sequence below:</p> <ol style="list-style-type: none"> (1) Power-off, remove Disk Controller board, and power-on. If LEDs come on, problem is in Disk Controller board or Disk Drive Assembly. Swap/verify these assemblies one at a time. (2) Power-off, remove printer option board if installed, power back on. If LEDs come on, problem is in printer option board.

TABLE R (Cont)

CHECKLIST #1

SYMPTOM	REMEDY
	(3) Power-off, swap/verify MP-RAM board. (4) Power-off, swap/verify ROM board. (5) Power-off, swap/verify base card.
LEDs light for one second and go off, but User Diagnostic Program does not load off the diskette.	(a) Check User Diagnostic diskette on another system. (b) Check for drive motor rotation. (c) Swap/verify drive ribbon wire cables. (d) Swap out the Disk Drive Assembly and restart the test. (e) Swap/verify the Disk Controller board. (f) Swap/verify the remaining circuit boards one at a time.

7. CHECKLIST #2—OTHER DIFFICULTIES

7.01 This part applies to Comm-Stor units which have passed the User Diagnostic tests with-

out failure. Table S lists potential trouble symptoms and recommended remedies; observe the symptoms and proceed with the indicated remedy.

TABLE S

CHECKLIST #2

SYMPTOM	REMEDY
System will not respond to certain keyboard commands.	(a) Using a Configuration diskette, display all parameters and check for valid configuration responses. Change invalid parameters if necessary and recheck. This can be done by "Refreshing" the unit. If over the course of time Configuration parameters change, check the battery voltage; if OK, replace MP-RAM board. (b) Swap/verify ROM board.
Unit does not respond with "Carriage Return", "Line Feed", or "Asterisk" when restarted.	(a) Terminal baud rate not set the same as terminal. (b) Parity of terminal and Comm-Stor not set the same.

TABLE S (Cont)

CHECKLIST #2

SYMPTOM	REMEDY
	<p>(c) System not Refreshed after MP-RAM board removal/replacement.</p> <p>(d) Check Configuration parameters as described in Section A, above.</p>
"Error-Diskette" Message	<p>(a) Probable worn or damaged diskette. Check system with other diskettes.</p> <p>(b) Check Disk Drive Assembly head-to-track alignment. (Refer to the Comm-Stor Service Manual.)</p> <p>(c) Swap/verify Disk Controller board.</p>
"Error-Bad Read" Message	<p>(a) Probable worn or damaged diskette. Check system with other diskettes.</p> <p>(b) Check head-to-track alignment of system which wrote data on the diskette and the system which is reading diskette.</p> <p>(c) Swap/verify Disk Controller board of system which wrote on diskette as well as system reading the diskette.</p> <p>(d) Check read/write compatibility. Write (.E ___) and then read (.D ___) a diskette.</p> <p>If successful, attempt reading the same diskette on another system. Check FDD Head/Track alignment.</p>
"Error-System" Message	<p>(a) Caused by a User diskette with a bad directory.</p> <p>(b) Swap/verify ROM board.</p> <p>(c) Swap/verify MP-RAM board.</p> <p>(d) Swap/verify Disk Controller board.</p> <p>(e) Swap/verify EIA board.</p>
Erroneous data transfer between Comm-Stor and peripheral terminal, modem, or printer	<p>(a) Check for proper baud rate adjustment of Comm-Stor and peripheral device.</p>

TABLE S (Cont)

CHECKLIST #2

SYMPTOM	REMEDY
	(c) Swap/verify EIA board for terminal or modem data transfer problems. (d) Swap/verify printer board for printer option data transfer problems. (e) Swap/verify MP-RAM board if erroneous data transfer exists through <i>all</i> I/O ports.

8. ON-LINE CHECKOUT

8.01 The following on-line check should be performed immediately after installing Comm-Stor and whenever send/receive problems are indicated. This procedure will determine whether Comm-Stor can communicate with the remote device through the modem port. Additionally, it will determine whether modem port commands can be initiated from the terminal and remote device.

STEP	PROCEDURE	TROUBLE ANALYSIS
1	Power on Comm-Stor and insert a User diskette.	
2	Check to be sure the data set is properly connected to Comm-Stor's modem port.	
3	Place a telephone call to the Test Center. Advise the desk that an <i>on-line test</i> of Comm-Stor II is being performed and that the FOX message is to be sent.	
4	Establish the data connection.	
5	The Test Center will send a FOX test message by entering: [CR] [LF] .R FOX[CR] [LF]	
6	The Test Center will cause FOX to be displayed on the station terminal by entering:	If Comm-Stor does not respond to .D command:

STEP	PROCEDURE	TROUBLE ANALYSIS
9	<p>After TESTFILE has been sent, the station operator will cause TESTFILE to be displayed on the station terminal by entering:</p> <p>.D TESTFILE[CR]</p> <p>Requirement: On <i>Dataspeed 40/1 and 40/2 terminals</i> the following display will appear followed by the terminal bell:</p> <pre>≡ 5 NULLS ≡ 5 DELETES ≡ 5 CRS ≡ ≡ ≡ ≡ ≡ 5 BAD PARITY???? 5 BELLS B_LB_LB_LB_LB_L</pre> <p>On <i>Model 43 Teleprinters</i>, the following display will appear followed by the terminal bell:</p> <pre>5 NULLS 5 DELETES 5 CRS</pre> <pre>5 BAD PARITY???? 5 BELLS</pre>	<p>(1) Proceed as described in analysis of Step 6.</p> <p>(2) If trouble persists, check Comm-Stor Configuration Parameters #58, 55,52,53.</p>
10	<p>Display the Directory listing of TESTFILE by entering:</p> <p>.DD TESTFILE[CR]</p> <p>Requirement: On <i>Dataspeed 40/1 and 40/2 terminals</i>, the following display will appear:</p> <pre>TESTFILE 65 ≡</pre> <p>On <i>Model 43 Teleprinters</i>, the following display will appear:</p> <pre>TESTFILE 65</pre>	Same as Step 6.