

B/1965 B/1995

-----  
CABINET 12

VOLUME 1 OF 3

-----  
CONTAINS

INSTALLATION MANUAL A 2233 4858 AE

ECN 20077 A

UNIT 2228 7726

# Burroughs Corporation

INTER-OFFICE CORRESPONDENCE

TO:

CORPORATE UNIT S.M.G. / B.M.G.		LOCATION	DEPT.
NAME Field Engineering		DATE January 18, 1984	
FROM Product Assurance & Support	DEPT. & LOCATION Liège Plant		

SUBJECT

c.c.

Corrections to B1965/95 Installation Manual.

The following is a list of the functional and spelling errors found in revision AD of the Installation Manual.

Any other errors found or comments should be forwarded to Product Assurance & Support, Liège, Belgium.

Functional corrections listed by page number

Page 5-4 Add the following paragraph :

ET 1100 Firmware Configuration

*TD 4F 80 chars per LINE*

The following configuration is recommended for the ET 1000 series terminals when utilized as system ODT on B1965/1995 systems :

```

0080  08 A1 0A 00 17 00 1F 1E
      10 24 24 04 08 01 04 04

0090  00 00 4C 00 2C 29 00 4F
      17 1D 2A 08 2C 2A 34 29

00A0  00
    
```

The hexadecimal characters should be written into scratchpad address 0080 through 00A0.

The following terminal configuration menu screen corresponds to the above configuration table.

Detailed bit definition is found in the Ergonomic Terminal Installation, Operation and Maintenance Guide and in ET 1100 Operator's Guide Manual, form number 1160397.

ADDRESS:  
 \$\$]SCREEN     ]GPSELECT     ]PRINTER     ]GROUP POLL

BUFFERS:  
 [3840 ]SCREEN     [2048 ]DCOM     [256 ]SOFTKEY     [256]KEYBOARD     [2048]PRINTER

DCOM:  
 [9600 ]BPS     [N]SYNC     [N]RS232  
 [N]ODT     [N]POINT-TO-POINT     [N]MONITOR     [Y]PARITY CHK  
 [N]EARLYFILL SCREEN     [N]BEEP ON NAK     [010]MIN CTS DELAY  
 [ ]TRANS NUM     [Y]DC1 RCV MODE HOLD     [A]SPECIFY KEY  
 [000]RCV DELAY     [N]RTS HOLD     [Y]RCV MODE HOLD  
 [N]CKT 116     [N]CKT 111/126     [N]OPT POL/SEL

PRINT:  
 [1200 ]BPS     [Y]PARITY BIT     [7]BITS/CHAR     [D]AUX INPUT  
 [E]PARITY E/O     [Y]PARITY CHK     [N]2 STOP BITS     [N]DELAY AFTER CR/LF  
 [0]BUSY 0/1     [N]EXTEND LINE     [Y]TRANSLATE

EDIT:  
 [Y]AUTO FORMS SKIP     [Y]FORMS XMT TO CURSOR  
 [Y]LOWERCASE LOCKOUT     [N]DCOM LF-XCR     [Y]DCOM CR-XLF  
 [1F ]OPEN     [1E ]CLOSE ALT FORM DELIM     [N]LINE-AT-A-TIME TRANSMIT  
 [N]SOH CLEAR'S SCREEN     [N]HT     [N]CR     [N]ETX WRITE FROM DCOM  
 [Y]CURSOR WRAPAROUND     [N]HT     [N]CR WRITE FROM KYBD     [ ]ETX ADV  
 [Y]FIXED TABS     [N]CLEAR FORM     [Y]KBD CR/LF     [Y]SOH EXIT  
 [N]YT PAGE ADV     [N]FF CLR TABS     [N]DC2 ADV DCP     [N]TAB RETAIN  
 [24 ]ROW [ 80]COL END OF PAGE ALARM     [N]KEYSTROKE BUFFER  
 [ 6 ]RPT RATE     [ 5 ]RPT DELAY     [ 2 ]CLICK LVL     [ 2 ]ALARM LVL

SCREEN:  
 [Y]60 HZ     [R]CURSOR     [N]BLINK CURSOR  
 [80]CHAR/LINE     [ 24 ]LINE/PAGE     [ 24]LINE/SCREEN  
 [01 ]INTL LANG     [N]SI/SO XMT     [N]SI/SO RCV

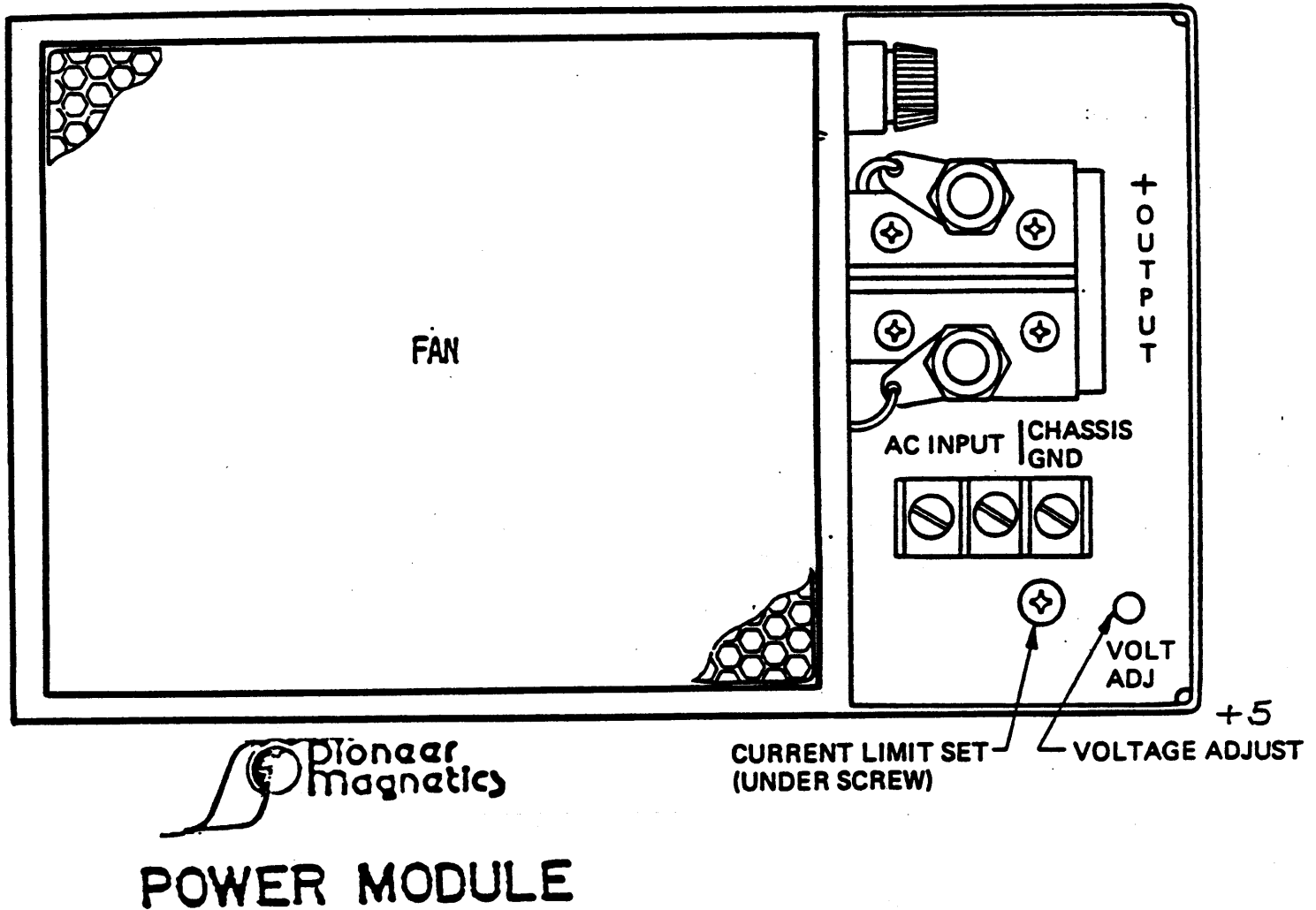
Configuration Menu

Page 7-3 Step 3

Clock alignment specification 2233 3638 should be clock alignment specification 2233 3686.

Page 7-8 Fig. 3-a

Add the pioneer magnetic power module drawing.



Page 9-40 § 2

Add :

See CMS configuration and card location diagram in the system Test & Field documents for correct card locations.

Page A-2 Statement 11

( See fig. A-1 for reference ), s/b ( see fig. A-2 for reference ).

Add statement 13-a :

Install front door lock 1990 8094, 2 places on items 1991 7897  
( 4 screws 10-32 ).

Install rear door lock, 2 places on items 1991 7905 ( 4 screws 10-32 ).  
Adjust hinges and doors.

Page C-1 Appendix C

Add DSC RAM DUMP 2233 4981.

Spelling corrections listed by page number

Page 9-2 Statement d :

Instaled, s/b installed,  
Docment, s/b document.

Page 9-29 Table 0008

Receive date, s/b received data.

Page 9-33 Table 0203

L0 (4X), s/b L0 (\$X).

Page C-1 DCS-2 TEST, s/b DSC-2 TEST.

Page C-2 DCS-2 cd 5, s/b DSC-2 cd 5.

TABLE OF CONTENTS

1. PURPOSE . . . . .	PAGE 1-1
2. OVERVIEW . . . . .	PAGE 2-1
3. RECEIVING INSPECTION . . . . .	PAGE 3-1
4. PROCESSOR UNPACKING & INSTALLATION . . . . .	PAGE 4-1
A. SYSTEM UNPACKING . . . . .	PAGE 4-1
1. PROCESSOR UNPACKING (SINGLE OR DUAL CABINET)	PAGE 4-1
2. TABLE TOP UNPACKING AND ASSEMBLY (OPTIONAL) . . . . .	PAGE 4-4
3. OVERPACK UNPACKING . . . . .	PAGE 4-6
B. INSTALLATION . . . . .	PAGE 4-7
1. SINGLE PROCESSOR INSTALLATION . . . . .	PAGE 4-7
2. DUAL PROCESSOR INSTALLATION . . . . .	PAGE 4-12
3. TABLE TOP INSTALLATION . . . . .	PAGE 4-12
5. ODT CONFIGURATION . . . . .	PAGE 5-1
6. POWER CONNECTION . . . . .	PAGE 6-1
7. POWER ON CHECKS . . . . .	PAGE 7-1
A- BACKPLANE POWER VERIFICATION . . . . .	PAGE 7-1
B- SYSTEM CLOCK VERIFICATION . . . . .	PAGE 7-3
C- AIR LOSS / OVER TEMP ASSEMBLY . . . . .	PAGE 7-10
8. CENTRAL PROCESSOR TESTING . . . . .	PAGE 8-1
A- Processor and S-memory Verification . . . . .	PAGE 8-1
B- Multi-Line Control & Quad line-0 Verification. . . . .	PAGE 8-3
C- Data Comm Processor 4 & line-0 Verification. . . . .	PAGE 8-4
9. I/O SUBSYSTEM INSTALLATION & CHECK . . . . .	PAGE 9-1
DISK SUBSYSTEM CONTROLLER-2 VERIFICATION . . . . .	PAGE 9-1
1. DSC-2 UNPACKING & INSTALLATION . . . . .	PAGE 9-1
2. DISK DRIVE CABLE INSTALLATION . . . . .	PAGE 9-4
3. DSC-2 TESTING . . . . .	PAGE 9-9
4. PRINTER CABLE INSTALLATION . . . . .	PAGE 9-10
5. DSC PRINTER TESTING . . . . .	PAGE 9-10
MAGNETIC TAPE CONTROL-6(TTL version) . . . . .	PAGE 9-11
1. MTC-6T(TTL) UNPACKING & INSTALLATION . . . . .	PAGE 9-11
2. MTC-6T TESTING . . . . .	PAGE 9-12
MAGNETIC TAPE CONTROL-5 . . . . .	PAGE 9-13
1. MTC-5B UNPACKING & INSTALLATION . . . . .	PAGE 9-13
2. MTC-5B TESTING . . . . .	PAGE 9-14
CARD READER CONTROL-1(TTL) . . . . .	PAGE 9-15
1. CRC-1T UNPACKING & INSTALLATION . . . . .	PAGE 9-15
2. CRC-1T TESTING . . . . .	PAGE 9-16
PRINTER CONTROL-7 . . . . .	PAGE 9-17
1. PC-7B UNPACKING & INSTALLATION . . . . .	PAGE 9-17
2. PC-7B TESTING . . . . .	PAGE 9-18
READER/SORTER-2B . . . . .	PAGE 9-19
1. R/S-2B UNPACKING & INSTALLATION . . . . .	PAGE 9-19
2. R/S-2B TESTING . . . . .	PAGE 9-20
SUB-DISTRIBUTION CARD . . . . .	PAGE 9-21
1. SUB-DISTRIBUTION CARD UNPACKING & INSTALLATION . . . . .	PAGE 9-21

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

2. SUB-DISTRIBUTION CARD TESTING . . . . .	PAGE 9-22
I/O INTERFACE DAISY CHAIN . . . . .	PAGE 9-22
MULTI LINE CONTROL-4 . . . . .	PAGE 9-24
1. MULTI LINE CONTROL-4 UNPACKING & INSTALLATION . . . . .	PAGE 9-24
2. MLC-4 TESTING . . . . .	PAGE 9-26
DATA COMMUNICATION PROCESSOR 4 . . . . .	PAGE 9-41
1. DCP-4 UNPACKING . . . . .	PAGE 9-41
2. INSTALLATION INSTRUCTIONS . . . . .	PAGE 9-41
3. CHANNEL STRAPPING INSTRUCTIONS . . . . .	PAGE 9-41
4. LINE ADAPTER INSTRUCTIONS . . . . .	PAGE 9-44
10. COLD START . . . . .	PAGE 10-1
11. CLEAR START & ON-LINE TESTING . . . . .	PAGE 11-1
FIELD INSTALLABLE OPTIONS . . . . .	PAGE A-1
1. EXPANSION CABINET INSTALLATION . . . . .	PAGE A-1
2. TABLE INSTALLATION . . . . .	PAGE A-7
3. SECOND PROCESSOR . . . . .	PAGE A-7
4. SECOND DSC-2 . . . . .	PAGE A-10
5. I/O EXTENSION-5 . . . . .	PAGE A-12
6. SECOND MULTI LINE CONTROL . . . . .	PAGE A-14
7. REMOTE MAINTENANCE LINK INSTALLATION . . . . .	PAGE A-16
PHYSICAL CHARACTERISTIC . . . . .	PAGE B-1
CROSS REFERENCE TO DOCUMENTS . . . . .	PAGE C-1
I/O & MEMORY TERMINATION LOCATION . . . . .	PAGE D-1
SYSTEM CONFIGURATION . . . . .	PAGE E-1
A. MCPII SYSTEM CONFIGURATION . . . . .	PAGE E-1
B. CMS SYSTEM CONFIGURATION . . . . .	PAGE E-7
C. HYBRID SYSTEM CONFIGURATION . . . . .	PAGE E-13
MISCELLANEOUS . . . . .	PAGE F-1
A. DATACOMM CABLES MECHANICAL FITTING STANDARDIZATION . . . . .	PAGE F-1
B. KIT VDE INSTALLATION . . . . .	PAGE F-4
TABLE OF ILLUSTRATIONS . . . . .	TI-1

TABLE OF ILLUSTRATIONS

Figure 4-1 Cabinet Unpacking . . . . .	4 - 2
Figure 4-2 Cabinet Unpacking . . . . .	4 - 3
Figure 4-3 Table top assembly. . . . .	4 - 5
Figure 4-4 Locking,Rear wheel. . . . .	4 - 9
Figure 4-5 cabinet-12 front door, unlatching . . . . .	4 - 10
Figure 4-6 cabinet-12 rear door, unlatching. . . . .	4 - 11
Figure 4-11 Table top installation,rear. . . . .	4 - 13
Figure 4-12 Table top installation,front . . . . .	4 - 14
Figure 5-1 SD2 board layout. . . . .	5 - 2
Figure 6-1 Buckboost transformer cover,removal . . . . .	6 - 3
Figure 6-2 Buckboost transformer adjustment. . . . .	6 - 4
Figure 7-1 +5 volts monitor point. . . . .	7 - 5
Figure 7-2 +/-12v monitor point. . . . .	7 - 6
Figure 7-3 +5,-2,+/-12 volts adjustment locations. . . . .	7 - 7
Figure 7-3a +5 volts adjustment locations. . . . .	7 - 8
Figure 7-3b +5 volts adjustment locations. . . . .	7 - 9
Figure 9-1 Periph. GND connections . . . . .	9 - 3
Figure 9-1a Disk drive cable installation. . . . .	9 - 5
Figure 9-1b Disk drive cable installation. . . . .	9 - 6
Figure 9-1c Disk drive cable installation. . . . .	9 - 7
Table 9-1 Cross reference for Data comm. . . . .	9 - 26



Figure 9-2 MLC-4 8 Mhz adjustment location . . . . . 9 - 36

Figure 9-3 Quad L/A ODT configuration. . . . . 9 - 37

Figure 9-4 Quad L/A remote configuration . . . . . 9 - 37

Figure 9-5 Quad L/A TDI configuration. . . . . 9 - 38

Figure 9-6 Quad L/A RS232C configuration . . . . . 9 - 39

Figure 9-7 to 9 - 23 DCP-4 configuration . . . . . 9 - 58

Figure A-1 Exp cab-7 . . . . . A - 5

Figure A-2 Exp cab-7 connections . . . . . A - 6

Figure B-1 Physical characteristicC . . . . . B - 2

Figure F-1 Hood connector update . . . . . F - 2

Figure F-2 Datacomm connector update . . . . . F - 3

Figure F-3 Cable Disk VDE adapter. . . . . F - 5



I N N SSSS TTTT AAA L L AAA TTTT I OOO N N  
 I NN N S T A A L L A A T I O O NN N  
 I N N N SSS T AAAAA L L AAAAA T I O O NN N  
 I N NN S T A A L L A A T I O O N NN  
 I N N SSSS T A A LLLLL LLLLL A A T I OOO N N

M M AAA N N U U AAA L  
 MM MM A A NN N U U A A L  
 M M M M AAAAA N N N U U AAAAA L  
 M M M A A N NN U U A A L  
 M M A A N N UUU A A LLLLL

2233 4858  
 REV. AE

This manual was updated by System Engineering  
 at the Liege Plant of the Burroughs Corporation.  
 Prepared june, 1983

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

1. PURPOSE

This manual provides information and directions for installation, inspection, and testing of the B 1965 / B 1995 systems. All references to the B 1965 system in this manual are understood to include B 1995. Site preparation is not covered in these instructions.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

2. OVERVIEW

This manual describes in serial fashion the unpacking, the necessary mechanical and electrical connections, and the inspections required before operation. It also includes connection to site power source, power checkout and system start-up procedures for a system configuration consisting of either a single processor, single processor with expansion cabinet, or a dual processor.

Information concerning the addition of field installable options to expand the system capability is provided in Appendix A.

Reference is made to other documents in the Test & Field (T&F) package. Those documents are identified by eight digit number in the T & F Index.

System dimensions and weights are listed in Appendix B.

All Test & Field documents referenced in this manual by part/document number are cross-referenced in Appendix C.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

3. RECEIVING INSPECTION

The system (Central Processor and Peripheral) will consist of several shipping containers and boxes. Visually check each shipping container and box for signs of damage. If any damage is found, insure that the type of damage is noted on the bill of lading or similar type documents supplied by the shipper, refer to Field Marketing Manual 2.11.8 for domestic sites. If the installation is at an International site, local branch management should refer any damage to their Head Office Product Distribution representative.

Remove the Manufacturing Work Order from each shipping container. Ensure that the configuration of the cabinet(s) and overpack match the Manufacturing Work Order, and the customer order. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.PROCESSOR UNPACKING & INSTALLATION

This section of the Installation Manual covers in a step by step fashion the unpacking and installation of the B 1965 or B 1995 system. The first subsection (A.SYSTEM UNPACKING) deals with removing the Processor cabinet(s) from its shipping container. The second subsection (B.PROCESSOR INSTALLATION) covers single or dual processor installation.

## A. SYSTEM UNPACKING

## 1. PROCESSOR UNPACKING (SINGLE OR DUAL CABINET)

This subsection details the steps required to remove the system Cabinet-12 , the Expansion Cabinet-7 or a dual cabinet from the shipping container. Complete this step for single or dual cabinet.

- a. Remove the straps (2 or 3).
- b. Remove the top of the container, item two (2) in fig.4-1 by opening the 4 flaps, item one (1) in fig. 4-1.
- c. Remove the wood support, one(1) for single cabinet two(2) for dual cabinet, item seven(7) in fig. 4-1.
- d. Remove the document and their container, item three(3) fig 4-1.
- e. Remove the four (4) corners, item four (4) in fig. 4-1.
- f. Remove the cardboard box item five (5) in fig. 4-1.
- g. Place the wood support item seven(7) against the skid feet.
- h. Place the top remove in the step b. on the top of the wood support item seven(7).
- i. Put down the lower flap, item eight(8) in fig.4-2
- j. Secure support(7), top(2) and flap(8) with nails two(2) for single four(4) for dual, item nine(9), see fig. 4-2. This will be used as a ramp to remove the cabinet.
- k. Lower the casters on the cabinet so that the cabinet can be supported by the casters
- l. Remove 4(single) or 6(dual) foam support, item six(6) fig 4-1.
- m. Roll the cabinet down the ramp and onto the floor.

DO NOT PUSH THE CABINET FROM THE TOP. IT MAY TIP OVER.

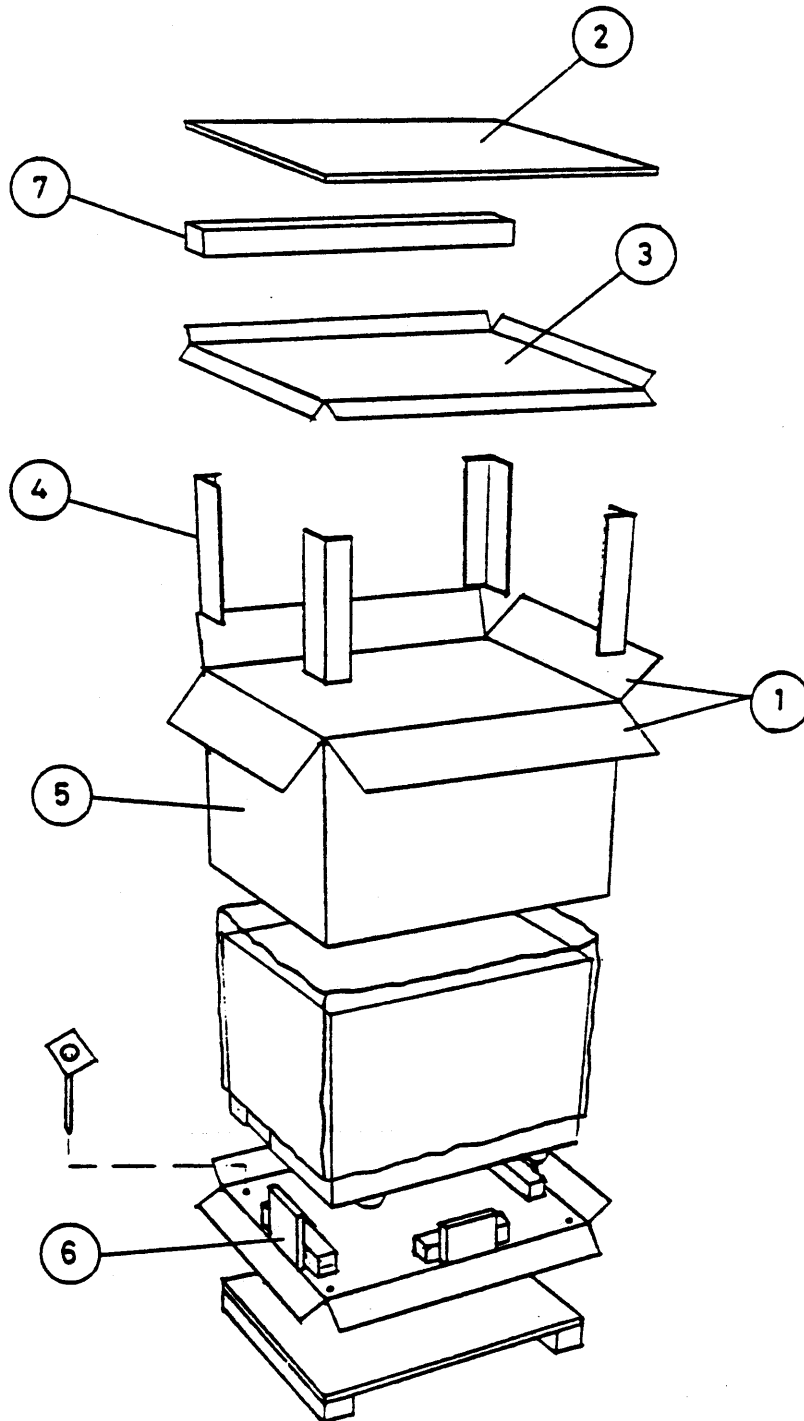


figure 4-1



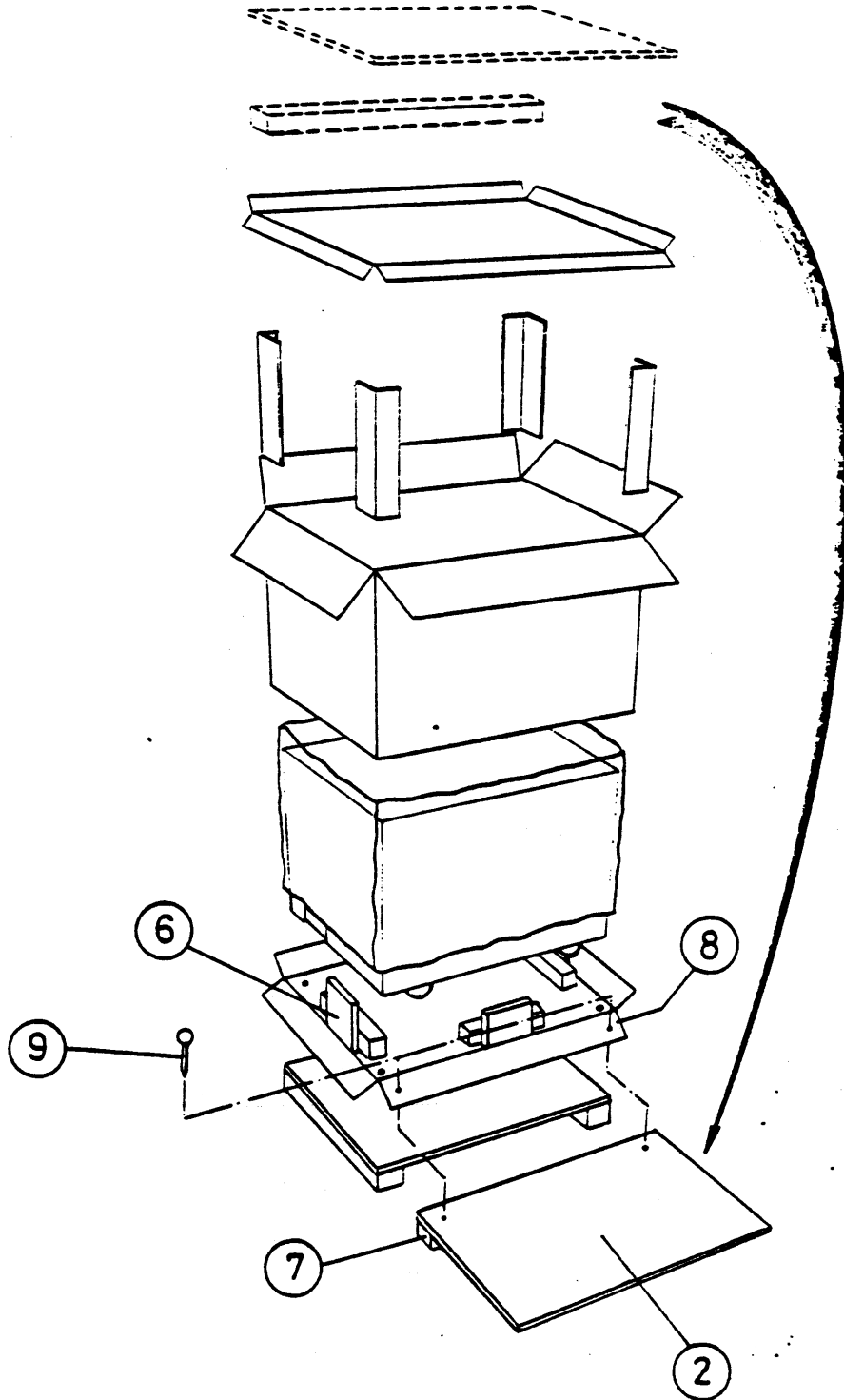


figure 4-2

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 2. TABLE TOP UNPACKING AND ASSEMBLY (OPTIONAL)

This subsection details the steps required to unpackage and assemble the TABLE TOP.

- a. Open the box containing the TABLE TOP. Note: this carton is very heavy. Use care not to scratch any part of the table.
- b. Remove the bag containing all required hardware. Temporarily set aside the mounting hardware, retaining only the nuts and bolts needed to assemble the table top.
- c. Place the "LEG" on its side (to protect from scratching), with the weld nuts facing up. See figure 4-3
- d. Install the leveling feet and adjust to approximately 5/8 inches from the bottom of the skirt.
- e. Attach the "TOP" to the "LEG" using 5/16-18 hardware, see figure 4-3.
- f. Attach the "KNEE" panel and "COVER" to the "TOP" and "LEG" using 5/16-18 and #10-32 hardware, see figure 4-3.
- g. This completes the "TABLE TOP" assembly. Set the Table top aside for the time and proceed to the next step.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

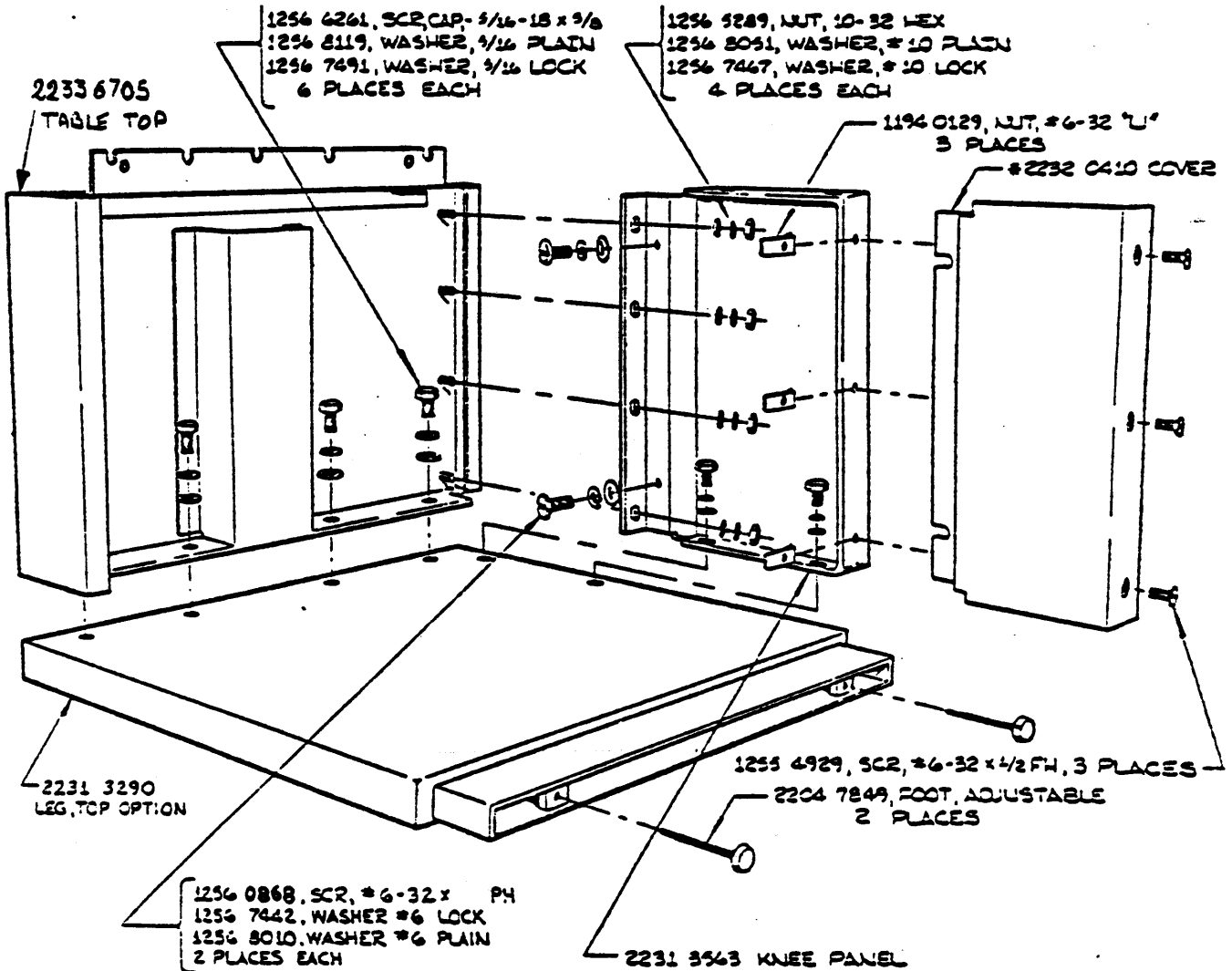


figure 4-3

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

**3. OVERPACK UNPACKING**

One or more separate shipping containers called "overpack" will be shipped with the System Cabinet.

A major packing list (listing units in the overpack by unit number and quantity required) and a separate minor packing list for each unit (itemizing the part number and quantity of each item comprising the unit) accompanies each overpack.

The Overpack contains:

1. Kits and other hardware not installed prior to shipment.
2. Test & Field Reference Documents, including System Maintenance test routines, with a packing slip listing each document.

Check the contents of the overpack against the packing list.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

**B. PROCESSOR INSTALLATION**

This subsection covers the physical installation of a single, dual or expanded system. Step one (1) below deals with installation of a single processor in one (1) or two (2) cabinets (expanded system), step two (2) with a dual processor system and step three (3) with the "TABLE TOP" installation.

**1. SINGLE PROCESSOR INSTALLATION**

After the processor cabinet has been removed from its shipping container, (see subsection 1 of this section for removal procedures) position the cabinet in its final location at the customer's site, and perform the steps below:

1. Adjust the castors to level the cabinet, see figure 4-4.
2. After the cabinet has been leveled lock the rear castors with their locking mechanism. This will lock the cabinet in position.
3. If the "TABLE TOP" is to be installed then perform the TABLE TOP INSTALLATION below. Otherwise proceed to the next step.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

1. SINGLE PROCESSOR INSTALLATION continued

4. Verify that the amount of S-memory installed matches the configuration of the jumpers on cards "A"(MAXS) and "S"(AOB). See examples below for typical Memory configurations.

512-K		1024-K	
CARD A	CARD S	CARD A	CARD S
"K8"	"C6"	"K8"	"C6"
A----P	A----P	A P	A----P
B N	B----N	B----N	B N
C----M	C M	C----M	C M
D----L	D L	D----L	D L
E----K	E K	E----K	E K
F----J	F----J	F----J	F----J
G H	G----H	G H	G----H
R----S	R----S	R----S	R----S

1536-K		2048-K	
CARD A	CARD S	CARD A	CARD S
"K8"	"C6"	"K8"	"C6"
A P	A P	A----P	A P
B N	B----N	B----N	B N
C----M	C M	C----M	C M
D----L	D L	D----L	D L
E----K	E K	E----K	E K
F----J	F----J	F----J	F----J
G H	G----H	G H	G----H
R----S	R----S	R----S	R----S

Refer to "M- PROC CD A9 JUMPER CHIP INSTRUCTION" diagram #19901974 and "MEM-CONT-1 JUMPER CHIP INSTRUCTIONS" drawing #2230 2509 for jumper chip configurations.

5. Verify jumpers chips on card H9 (see schematic H9 page 4)
6. Verify that the I/O buss is properly terminated (refer to I/O INTERFACE DAISY CHAIN pages 9-17 and 9-18).
7. Verify that the memory buss is properly terminated (refer to appendix D).

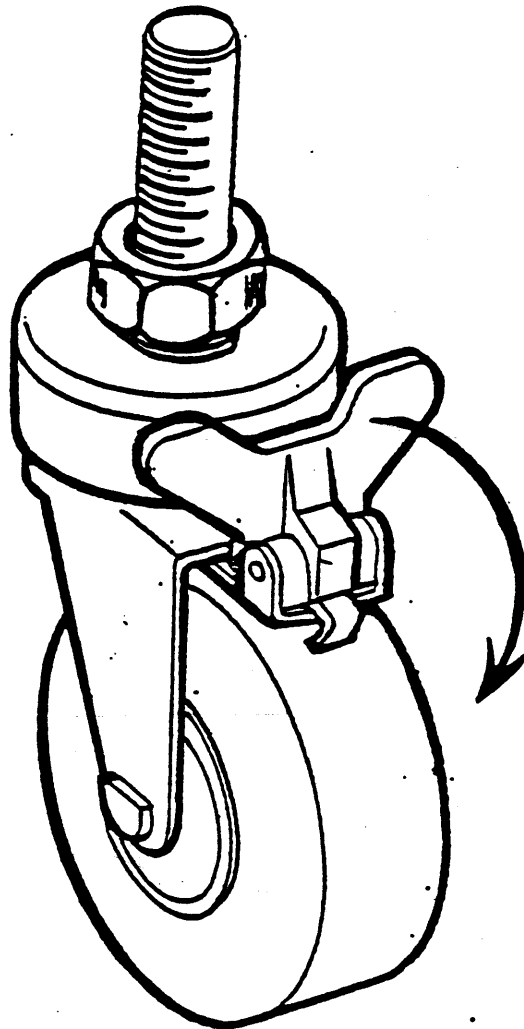


figure 4-4

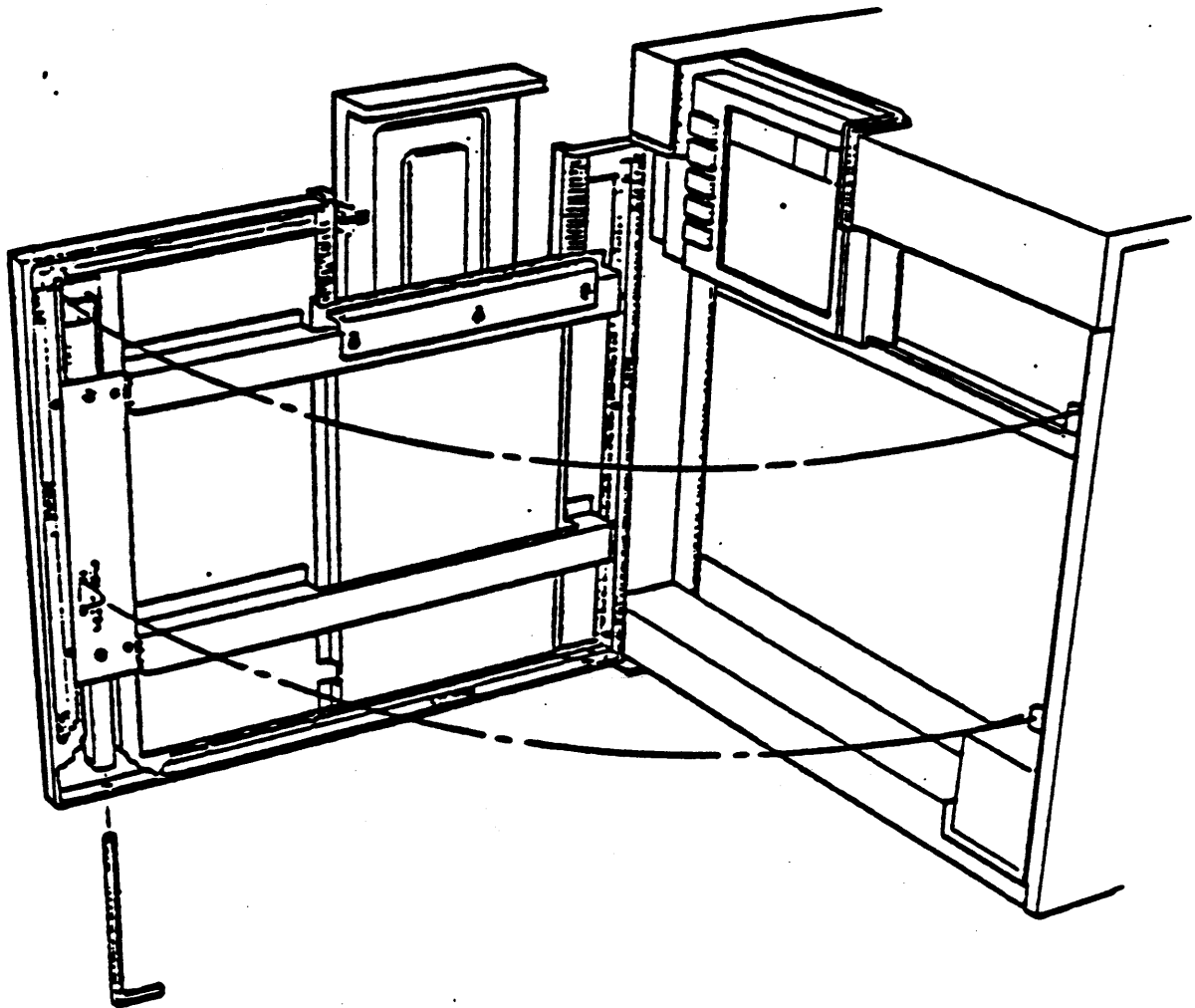


figure 4-5



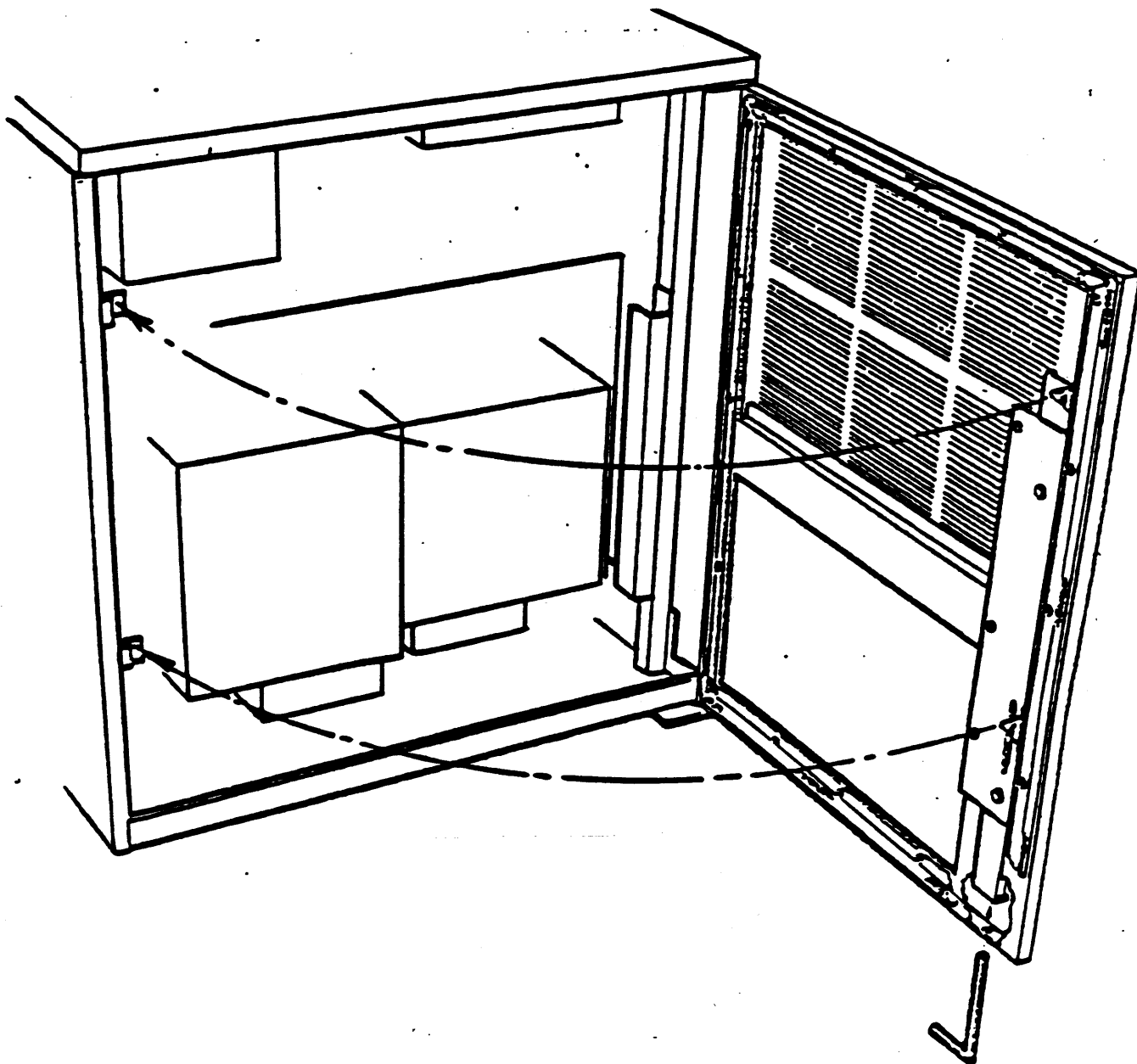


figure 4-6

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 2. DUAL PROCESSOR INSTALLATION.

1. Refer to steps 1,2,3,5,6 and 7 in single processor installation section (page 4-6).
2. Verify that the amount of S-memory installed matches the configuration of the jumpers for "MAXS" (cards A in "A" and "B" processors) and for "AOB" (card S9 in MBU-9). Refer to step 4 in single processor installation section (page 4-7).

## 3. TABLE TOP INSTALLATION

This sub section covers the installation of the TABLE TOP for either a single or dual system.

1. If you have not already done so follow the procedure to assemble the TABLE TOP outlined in the unpacking instruction above.
2. Open both the front and rear doors on the Main processor cabinet, see figure 4-5 through 4-7 to open the doors.
3. Attach the KNEE panel bracket(2231 3555) to the rear of the cabinet by opening the rear door 90 degrees, and feeding the bracket through the gap between the door and the side panel. Install the #10-32 hardware but do not tighten. See figure 4-11.
4. Attach the table mounting bracket (2232 0485) to the front of the cabinet by opening the front door 90 degrees, and feeding the bracket through the gap between the door and the side panel. Slide the bracket up the inside of the side panel until the mounting holes are aligned. Install the #10-32 hardware, but do not tighten, see figure 4-12.
5. Feed the notched extension on the TABLE TOP through the gap between the cabinet top and side panel, and attach the assembly to the front and rear brackets with #10-32 hardware. Adjust the height to match the Main Cabinet and tighten all hardware. Level the table by adjusting the feet up or down, see figure 4-4. This completes the TABLE TOP installation.

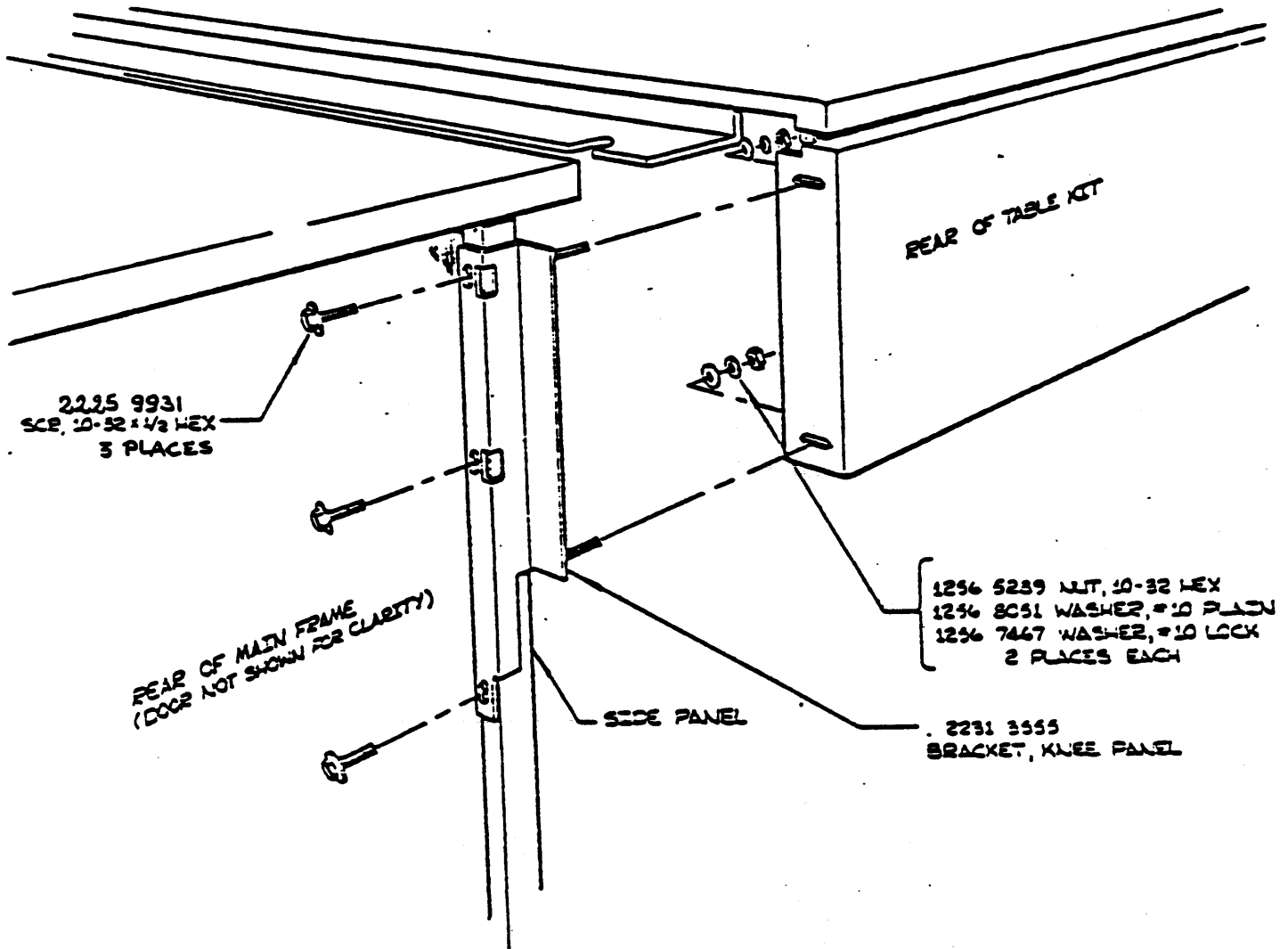


figure 4-11

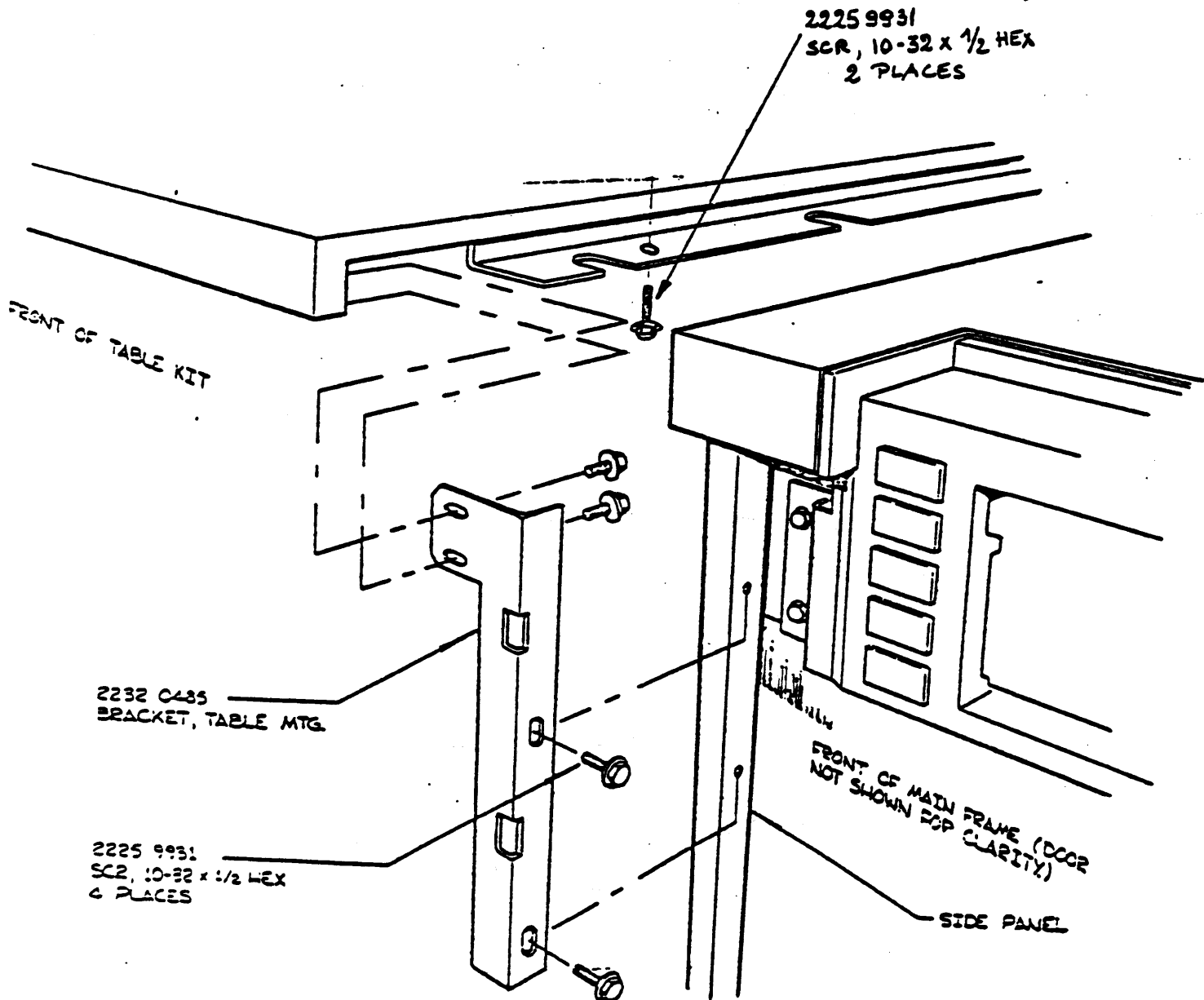


figure 4-12

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

5. ODT CONFIGURATION

The terminals specified for use as an ODT for the B1965/B1995 system is the Burroughs MT985 and the Burroughs ET 1100.

The ODT and Keyboard are not physically attached to the B1965/B1995 system as in previous B1000 systems. This flexibility allows the ODT to be installed anywhere within the computer facility, limited only by the length of the cable. Remove the terminal and its Keyboard from the shipping carton, attach the rubber feet to the Monitor, connect the Keyboard, and position the ODT, either on top of the Processor, the Table Top, or other location within the computer facility.

Some adjustment to the hardware and to the firmware loaded in the ODT as delivered must be made for B1965/B1995 application. The adjustment procedure is detailed in the terminal T & F package.

**HARDWARE ADJUSTMENTS for MT985.**

Adjustment of the contacts on SA01 and SA02, mounted on the SD2 Board inside the display unit, is required for correct Data Comm operations. Follow the instructions in the T & F documents for removal of the display cover.

Ensure that the switch contacts for "ASYNC TDI" operation, SA01 and SA02 are ON; all others are OFF as shown in the diagrams below. Refer to 5-1 for switch location on the SD2 board.

	1	2	3	4	5	6	7	
SA01								ON
	X	X	X	X	X	X	X	OFF

	1	2	3	4	5	6	7	
SA02				X	X	X		ON
	X	X	X				X	OFF



## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## MT985 FIRMWARE CONFIGURATION

The MT985 configuration parameters must be set for B1965/B1995 use. Follow the procedures in the MT985 T & F package to write into the terminal scratchpad and subsequently to transfer this scratchpad information into EAROM. All ALPHA characters must be entered in upper case.

The following hexadecimal characters should be written into scratchpad address 0080 through 00A0;

The following characters are for 2.x and 3.x firmware For other firmware see MT985 T & F package

0080	0A A1 0A 00 17 4F 1F 1E
	10 24 24 47 08 XX 47 41
0090	00 2F 4C 17 4F 00 20 4F
	17 40 00 08 03 50 0B 47
00A0	06

XX address 8D :for firmware 3.8 and above the add. 8D define the keyboard type.  
(see the MT985 T & F Package for definition)

For firmware below 3.8 set add. 8D to 01.

Detailed bit definition is found in the MT985 T & F Package.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## ET1100 FIRMWARE CONFIGURATION

The ET1100 configuration parameters must be set for B1965/1995 use. Follow the procedures in the ET1100 T & F package to write the parameters into the terminal. All ALPHA characters must be entered in upper case.

The following hexadecimal characters should be written into scratchpad address 0080 through 00A0 ;

0080	08 A1 0A 00 17 00 1F 1E
	10 24 24 04 08 01 04 04
0090	00 00 4C 00 2C 29 00 4F
	17 1D 2A 08 2C 2A 34 29
00A0	00

The following terminal configuration menu screen corresponds to the above configuration table.

Detailed bit definition is found in the Ergonomic Terminal Installation, Operation and Maintenance Guide, and in ET1100 Operator's Guide Manual, form number 1160397.



## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## ADDRESS:

[ \$\$!SCREEN [ !GPSELECT [ !PRINTER [ !GROUP POLL

## BUFFERS:

[3840!SCREEN [2048!DCOM [256!SOFTKEY [256!KEYBOARD [2048!PRINTER

## DCOM:

[9600!BPS [N!SYNC [N!RS232  
 [N!ODT [N!POINT-TO-POINT [N!MONITOR [Y!PARITY CHK  
 [N!EARLYFILL SCREEN [N!BEEP ON NAK [O!MIN CTS DELAY  
 [ !TRANS NUM [Y!DC1 RCV MODE HOLD [A!SPECIFY KEY  
 [O!RCV DELAY [N!RTS HOLD [Y!RCV MODE HOLD  
 [N!CKT 116 [N!CKT 111/126 [N!OPT POL/SEL

## PRINT:

[1200!BPS [Y!PARITY BIT [7!BITS/CHAR [D!AUX INPUT  
 [E!PARITY E/O [Y!PARITY CHK [N!2 STOP BITS [N!DELAY AFTER CR/LF  
 [O!BUSY 0/1 [N!EXTEND LINE [Y!TRANSLATE

## EDIT:

[Y!AUTO FORMS SKIP [Y!FORMS XMT TO CURSOR  
 [Y!LOWERCASE LOCKOUT [N!DCOM LF-XCR [Y!DCOM CR-XLF  
 [I!OPEN [E!CLOSE ALT FORM DELIM [N!LINE-AT-A-TIME TRANSMIT  
 [N!SOH CLEAR SCREEN [N!HT [N!CR [N!ETX WRITE FROM DCOM  
 [Y!CURSOR WRAPAROUND [N!HT [N!CR WRITE FROM KYBD [ !ETX ADV  
 [Y!FIXED TABS [N!CLEAR FORM [Y!KBD CR/LF [Y!SOH EXIT  
 [N!VT PAGE ADV [N!IFF CLR TABS [N!DC2 ADV DCP [N!TAB RETAIN  
 [24!ROW [80!COL END OF PAGE ALARM [N!KEYSTROKE BUFFER  
 [6!RPT RATE [5!RPT DELAY [2!CLICK LVL [2!ALARM LVL

## SCREEN:

[Y!60 HZ [R!CURSOR [N!BLINK CURSOR  
 [80!CHAR/LINE [24!LINE/PAGE [24!LINE/SCREEN  
 [O!INTL LANG [N!SI/SO XMT [N!SI/SO RCV

fig 5-2 ET1100 Configuration Menu

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## ODT CABLING

The ODT shipped with the system is shipped with a special ODT Data Comm cable. Attach this Data Comm cable to the ODT, insure all ground pigtaills are connected. Attach the the ODT cable to the system I/O cable interface panel, Data Comm connector marked for the ODT.

In MCP II mode the I/O interface panel connector must be connected to the MLC-4 in PORT 1 Line 0 for proper operation.

In CMS mode the I/O interface panel connector must be connected to the DCP-4 Base 0 Line 0 for proper operation.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

6. POWER CONNECTION

The main cabinet and the expansion cabinet each require a single phase, nominal 240 volts. 20 amps power source. A 2-wire plus ground, 50Hz or 60 Hz, source is permitted. The mainframe distributes power to components within the cabinet (power supplies and blowers). It does NOT distribute AC to the peripherals. All peripherals, including the ODT terminal and disk drives, must obtain AC from some other source.

The B1965/B1995 is provided with a 15 ft. AC input cord is terminated with a Hubble 2321 20A 250V locking plug (NEMA L6-20P) or equivalent. In the event that this plug must be changed in the field to comply with local code (possibly in an international installation), the color code for the individual power code wires is presented below.

Color	Function
Brown	Line
Blue	Line or Neutral
Green/Yellow	Earth

## A. BUCK-BOOST ADJUSTMENT

- a. Measure the input voltage, using a digital meter, at the wall connector, and record the value measured. DO NOT PLUG SYSTEM IN AT THIS TIME.
- b. Open the rear door on the main cabinet. If a dual open the rear door on the second cabinet. See figure 4-6 to open the doors.
- c. Remove the cover to the Buck-Boost Transformer, then position the "TAPSELECT" wire (T 220) to the appropriate tap on the buck-boost transformer, refer to figure 6-2. Use the following chart for selecting transformer taps:

V Nominal (VAC)	V Input Range (VAC)	Transformer Tap
200	174 - 212	200 VAC
208	181 - 220	208 VAC
220	191 - 233	220 VAC
230	200 - 244	230 VAC
240	209 - 254	240 VAC

If the AC input voltage measured at the B1965/B1995 cabinet

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

circuit breaker cannot be maintained within the voltage range specified for a given tap, reliable operation of the B1965/B1995 system cannot be guaranteed. It is the responsibility of the customer to provide adequate electrical service to the system.

- d. If the system is a Dual, or Expanded system, adjust the Buck-Boost transformer in the second cabinet.
- f. Replace the Buck-Boost transformer cover(s).
- g. Connect the power cord(s) to the site receptacle(s).

This completes the power connection, now proceed to the next section.

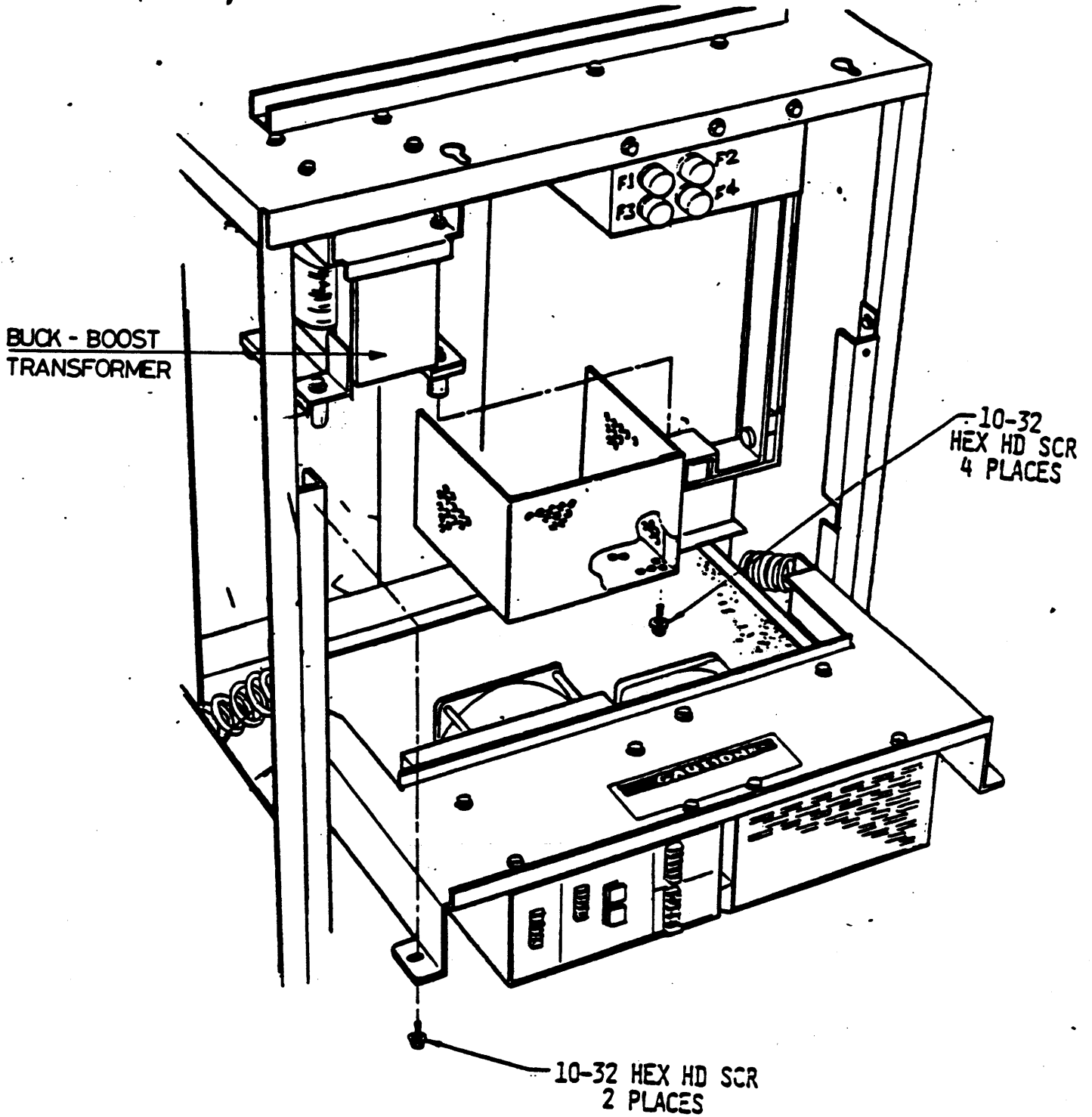


figure 6-1

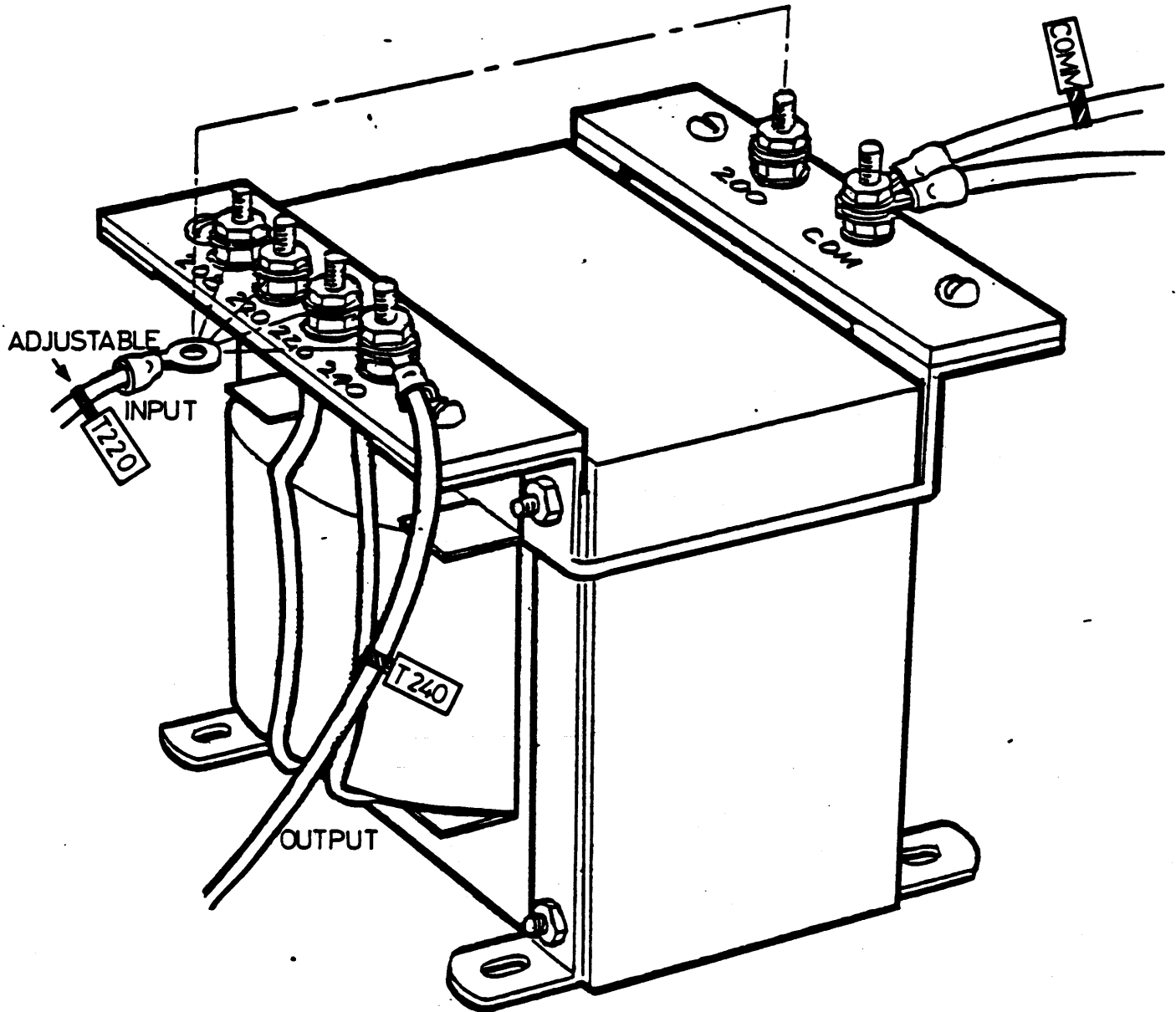


figure 6-2

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

7. POWER ON CHECKS

This section of the Installation Manual deals with the initial power on of the system and the electrical checks prior to processor or I/O control testing. Perform each subsection below to verify all backplane voltages and all system clocks.

## WARNING

During initial system installation, to prevent damage to logic cards, back out all cards from the backplane before applying power. Perform steps 1 through 5 below, then install all logic cards and repeat these same steps to insure proper operating voltages.

## A- BACKPLANE POWER VERIFICATION

Open the front door(s) on the cabinet(s) and turn on the Circuit Breakers. Then press the system "POWER ON" push button. After about ten (10) seconds all lights should turn off except the "POWER" and "A MASTER" lamps. If not, refer to the System Maintenance Guide for fault isolation.

If no problem is encountered perform the following steps to check and adjust as required the system voltages.

NOTE: Refer to figure 7-3 for location of adjustment screws, if required in the following steps.

1. Measure the AC input voltage at the power supply, to assure the voltage is in the range of 207-255 VAC.
2. Monitor the +5 volts DC at the backplane, see figure 7-1, and adjust the supply for +5.00 -0/+1 volts DC. If a second cabinet was installed repeat this step on the Expansion Cabinet power supply.
3. Monitor the +12 volts DC at Terminal Strip TB-1 mounted on the top of the backplane (see figure 7-2) for +12.00 -0/+1 volts DC. Adjust the +12VDC power supply for this value. If a second cabinet was installed repeat this step on the Expansion Cabinet power supply.
4. Monitor the -12 volts DC at Terminal Strip TB-1 mounted on the top of the backplane (see figure 7-2) for -12.00 -0/+1 volts DC. If required adjust the -12VDC supply for this value. If a second cabinet was installed repeat this step on

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

the EXpansion Cabinet power supply.

5. Monitor the -2 volts at the buss bar for  $-2.05 -0/+0.05$  vDC. If required adjust the -2vDC supply for this value. If a second cabinet was installed repeat this step on the Expansion Cabinet power supply.

**NOTE:**

It is NOT necessary to adjust the -2 voltage if no CTL controls are present.



## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## B- SYSTEM CLOCK VERIFICATION

Upon satisfactory completion of the "Backplane Voltage Verification" in the step above, the last step before processor or I/O testing, is to verify that all System, Multi Line Control, Disk Subsystem Controller, and if applicable Sub-Distribution card clocks are within specification. Perform each applicable step below to verify all system and I/O clocks.

**WARNING:**

ALL BACKPLANE VOLTAGES MUST BE SET TO THEIR NOMINAL VALUES BEFORE CHECKING OR ADJUSTING CLOCKS.

**NOTE:**

FOR ALL ADJUSTMENTS LISTED BELOW REFER TO THE M-PROCESSOR CLOCK SPECIFICATION # 2233 3686. SEE THE SPECIFICATION'S INDEX FOR THE APPROPRIATE PAGE FOR EACH ADJUSTMENT.

1. Refer to the M-Processor Clock Alignment specification, #2233 3686 for all checks and adjustments.
2. Perform the "Preliminary Set-up" procedures on paragraph # 4 of the Clock Alignment specification #2233 3686.
3. Check the following clocks and adjust if required:  
(Clock alignment specification 2233 3686 # 5.0 - 5.8):
  - a. System clock width.
  - b. I/O clock Delay.
  - c. I/O clock Width.
  - d. Pad/Cache/Stack clock Delay.
  - e. Memory clock.
  - f. Multi-line Clock.(If present, MCP II only)
4. If the system is configured with an I/O expansion-5 or a second DSC-2 in the second cabinet, then check the following on the Sub-Distribution card(s):  
(Clock alignment specification 2233 3686 # 5.6 - 5.8):
  - a. Sub-Distribution Delay.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

- b. Sub-Distribution Clock Width.
5. Check the DSC-2 clock.
  6. If the system is a dual processor make sure that A processor and B processor H9 jumpers are correct (Clock alignment specification # 22333686 # 6).
  7. Check the following clock adjustments on the B-processor H9 card: (Clock alignment specification 2233 3686 # 6.1 - 6.3)
    - a. "B" processor System clock width.
    - b. "B" processor System clock delay.
    - c. "B" processor Pad/Stack/Cache clock.

This completes the POWER ON CHECKS. Turn the Processor off at this time.

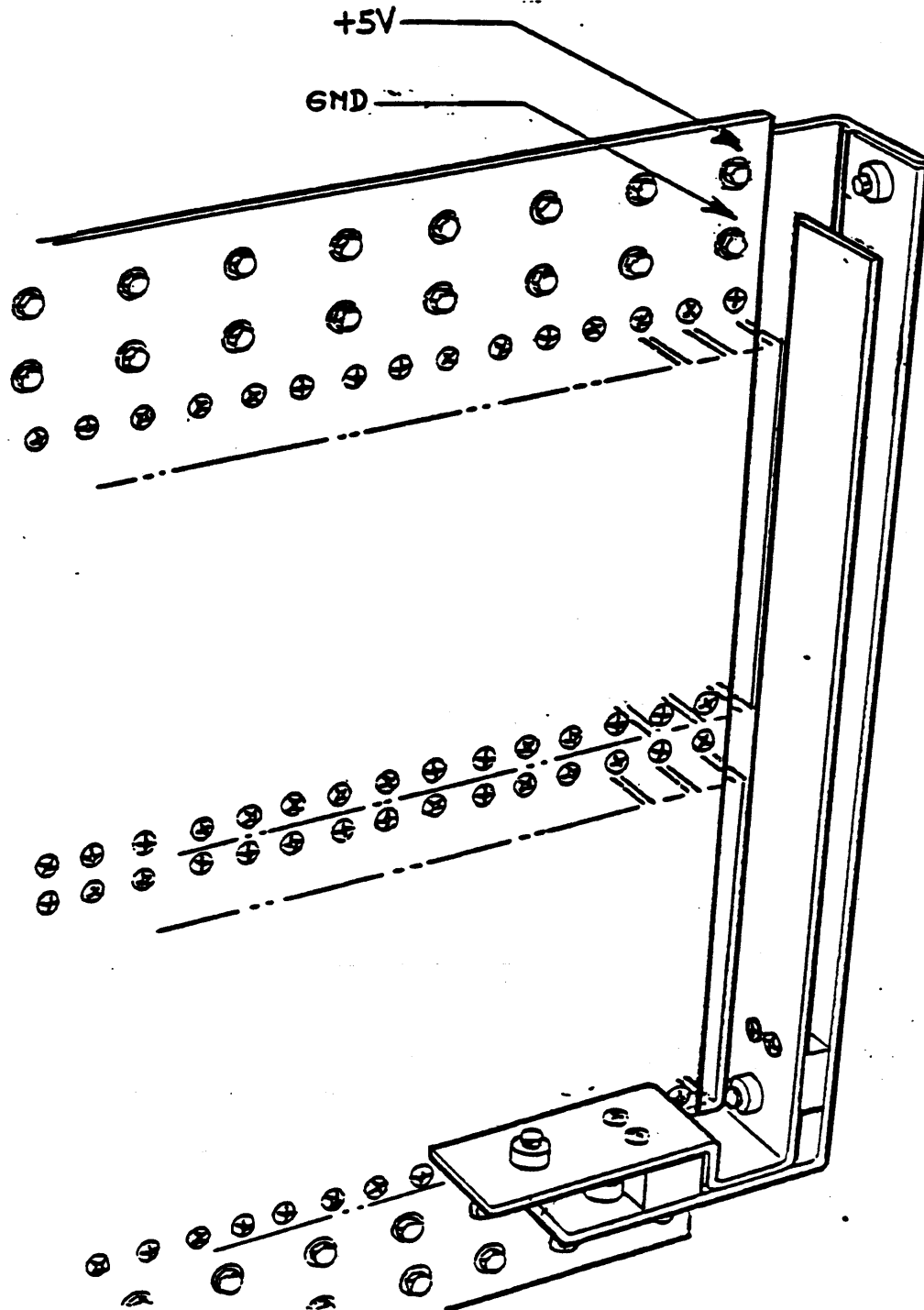


figure 7-1

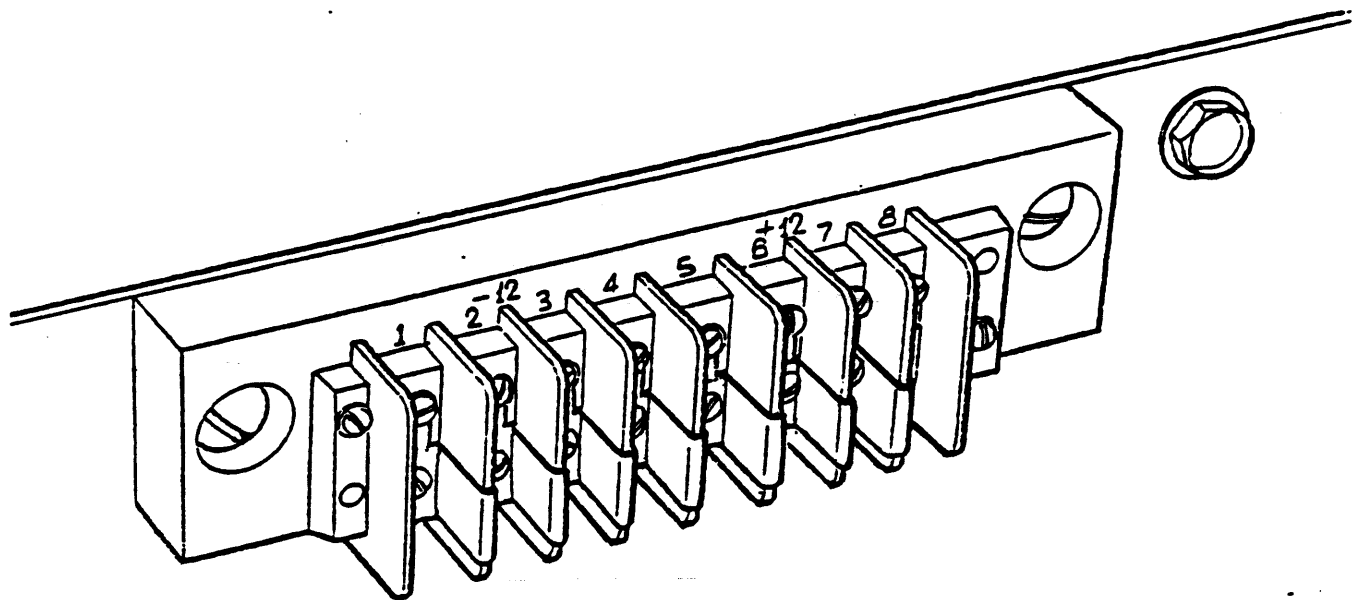


figure 7-2

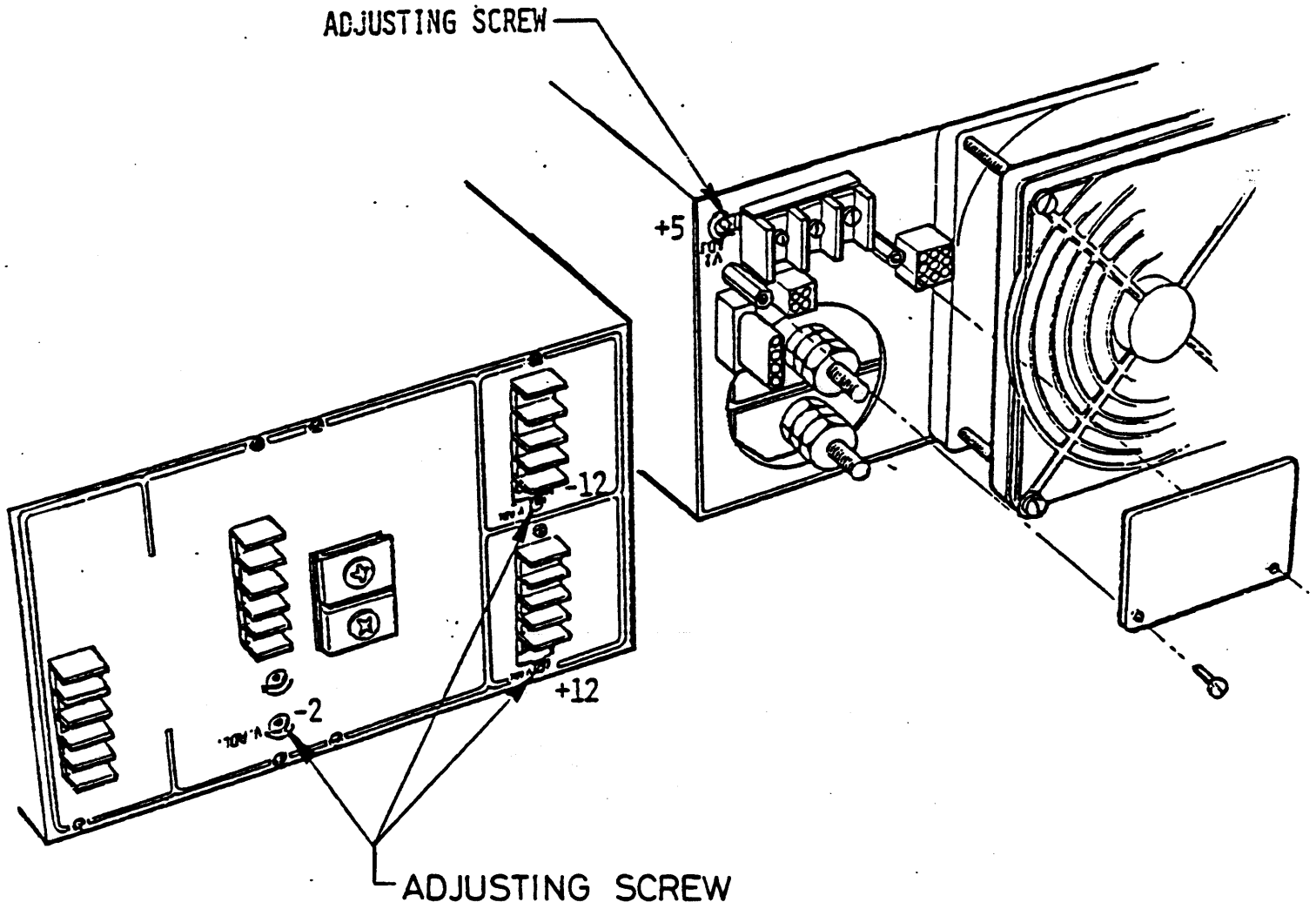
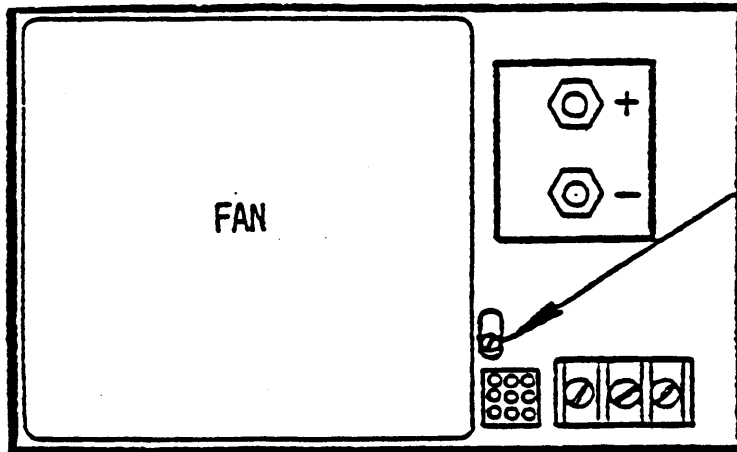
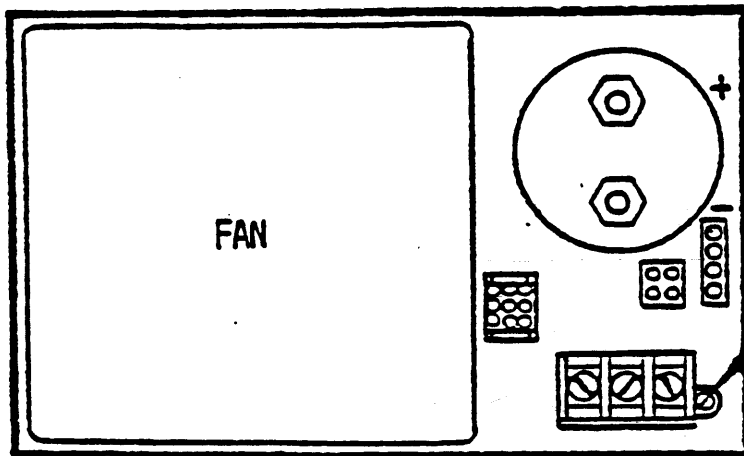


figure 7-3



**CORAL SPRINGS  
POWER MODULE**



**LH RESEARCH  
POWER MODULE**

Figure 7-3a

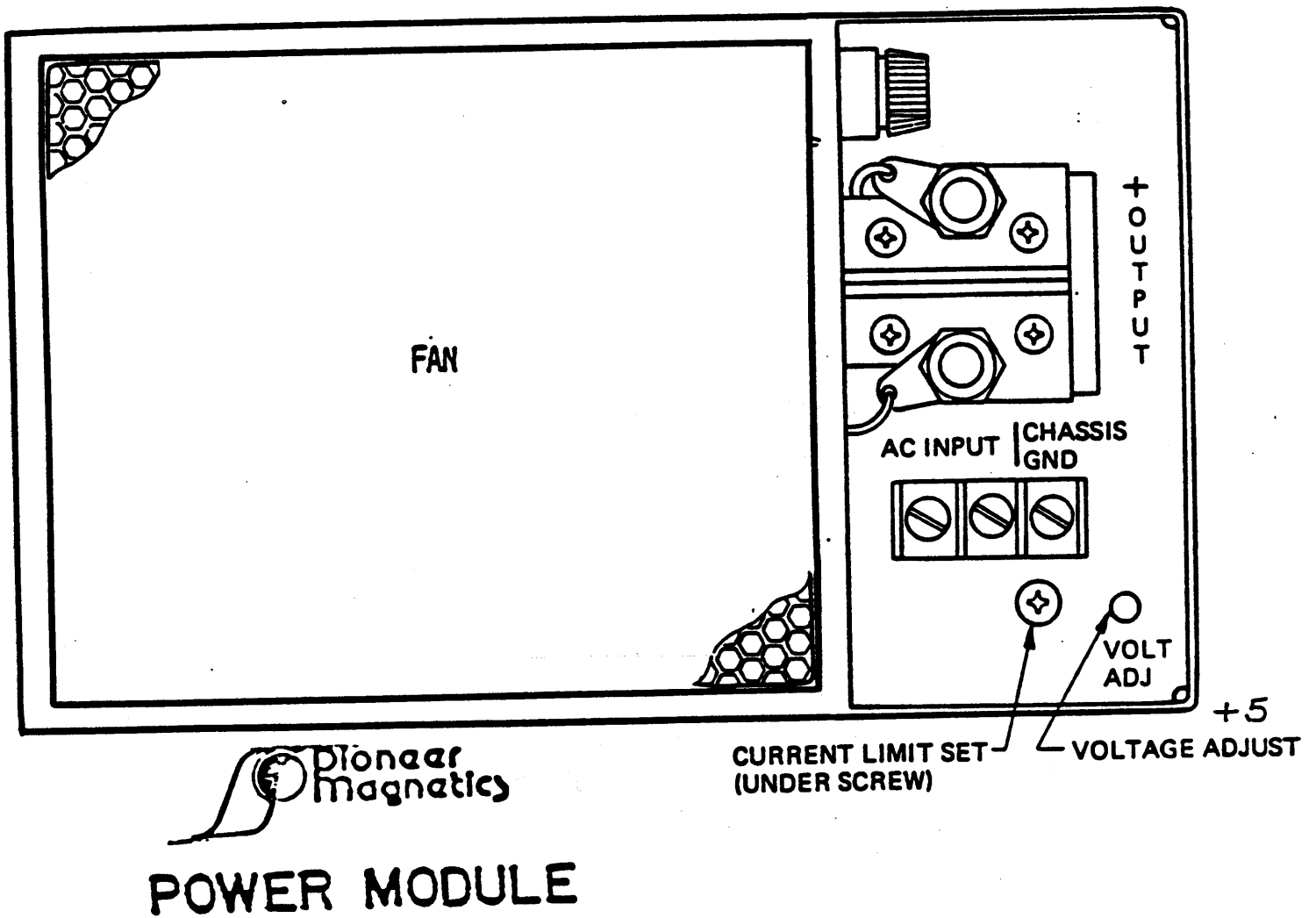


figure 7-3b

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## C- AIR LOSS / OVER TEMP ASSEMBLY

removal and replacement

1. Open the rear door.
2. Remove the side skin (see fig A-1)
  - a. remove 5 screws (bottom).
  - b. loosen 5 captive fasteners (top) ,inside the cabinet.
3. Disconnect the harness cable.
4. Unscrew the airloss.overtemp assembly.
3. Remove from cabinet.

## STRAPPING

a. On DL1 ( 2 boards )

On air loss board

In Cabinet-12 (8 fans) strap between W1 - W2.(below the LED's)

In Cabinet expansion 7 (6 fans) don't strap.

b. On DL2 ( 1 board )

In Cabinet-12 (8 fans) insert strap in loc R7.

In Cabinet expansion-7 (6 fans) remove strap in location R7.



B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 8. CENTRAL PROCESSOR TESTING

A complete maintenance test package (as defined in the System T&F Index) is shipped with the system.

This section, together with the System Maintenance Guide (SMG), outlines the procedures for loading diagnostic tests, to verify the Processor, S-memory, the Data-Comm Control and portions of the Disk Subsystem Control-2 (DSC), after mechanical and electrical installation and checkout.

### A- Processor and S-memory Verification

Verification of the Cassette Tape drive, Operator Display Terminal (ODT), H9 card, Processor, and S-memory are accomplished by the following steps

1. Place the ODT "Power" switch in the ON position. The ODT will perform a diagnostic self test during its power-on cycle. Successful completion of the self test will be indicated by six asterisks appearing in the upper left hand corner of the CRT. Any other indication is indicative of an ODT failure and the procedure in the ODT T&F Documentation and the Technical Manual should be followed to effect repair.
2. Upon obtaining satisfactory results in Step 1, press the POWER ON pushbutton on the Processor's Operator Panel, and observe the Operator panel's lights. They should all come on for about ten seconds then all but the "Power" and "A Master" lights should turn off. If all the lights fail to come on, remain on, or are blinking a fault with the "H9" card, or cables is indicated. Refer to the System Maintenance Guide for the procedure to isolate and effect repair. When the power-on cycle is complete observe that the ODT is displaying the Operator Page; if not, refer to the System Maintenance Guide for the procedure to isolate and effect repair.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

3. Upon obtaining satisfactory results in Step 2, perform each of the following manual tests, to verify that the "X", "Y", and "LR" registers are functioning correctly:
  - a. Enter X=AAAAAA Y=AAAAAA LR=AAAAAA on the ODT and press XMT
  - b. The X, Y, and LR registers should be observed to contain Hex A's. If not, refer to the System Maintenance Guide for fault isolation procedures.
  - c. Enter X=555555 Y=555555 LR=555555 on the ODT and press XMT
  - d. The X, Y, and LR registers should be observed to contain Hex 5's. If not, refer to the System Maintenance Guide for fault isolation procedures.
  - e. Enter X=000000 Y=000000 LR=000000 on the ODT and press XMT.
  - f. The X, Y, and LR registers should be observed to contain Hex 0's. If not, refer to the System Maintenance Guide for fault isolation procedures.
4. Upon obtaining satisfactory results in Step 3, place the Processor Test Cassette (CT-2231 3258) in the Cassette Drive, and follow the loading and operator instructions in the System Maintenance Guide to test the Processor. Note: If the system is a Dual processor, turn the Slave OFF.
5. Upon obtaining satisfactory results in Step 4, place the S-memory test Cassette (CT-2231 3274) in the Cassette Drive, and follow the loading and operator instructions in the System Maintenance Guide to test the S-memory. Note: If the system is a Dual processor, turn the Slave OFF.
6. If the System is a Dual processor system then make the other processor the Master and repeat steps 3 through 5 above. Note: Only test one (1) through four (4) of the S-Memory test need to be executed to verify the second processor's ability to access the shared memory.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

B- Multi-Line Control & Quad line-0 Verification. (MCPII mode)

(for CMS operation see C- ).

The System, when in the halted state, communicates with the ODT via the H-9 card (MAC). When the processor is running, all communication between a program and the ODT is via the MLC and Quad line 0. The verification of the MLC and Quad line-0 must be accomplished prior to running any additional tests or loading the MCP.

To verify the MLC and Quad line-0 perform the following steps.

1. Insert the MLC test (CT-2229 0308) in the cassette drive, and follow the loading and operator instructions in the System Maintenance Guide to test the MLC and Quad line-0.
2. When the "BOJ" message is displayed on the ODT screen for the MLC test, the path to the ODT has been established. By default the test routine starts execution of the diagnostic and tests for port 1 line 0 (console and ODT mode). Refer to the System Maintenance Guide, for the further information.

Successful completion of the above test provides the assurance that other tests requiring the MLC-ODT path will function correctly.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

C- Data Comm Processor 4 & line-0 Verification. (CMS operation)

(for MCP II operation see B- ).

The System, when in the halted state, communicates with the ODT via the H-9 card (MAC). When the processor is running, all communication between a program and the ODT is via the DCP and line 0. The verification of the DCP and line-0 must be accomplished prior to running any additional tests or loading the MCP.

To verify the DCP and line-0 perform the following steps.

1. Insert the DCP test (CT-3156 0303) in the cassette drive, and follow the loading and operator instructions in the SMG to test the DCP and line-0.

Successful completion of the above test provides the assurance that other tests requiring the DCP-ODT path will function correctly.

Note : The cables from DCP line 0 to I/O plate aren't tested.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

9. I/O SUBSYSTEM INSTALLATION & CHECK

This section of the Installation Manual outlines, in detail, the procedures for installing any I/O subsystem qualified for the B 1965/1995 system. As it is not possible to foretell the configuration of any particular system, this section is divided into two (2) parts. The first part covers the installation of those controls required to Cold Start your system, either for a Disk COLD START or a Tape COLD START. The second part covers the installation procedures for all other subsystems. It should be noted that, the first step in each procedure deals with unpacking a control, and its physical checkout. If the control has been previously installed in the system this step may be omitted, otherwise the step should be performed.

If not otherwise accomplished, install each peripheral subsystem, Disk, Tape, Printer, etc. at this time. Insure that all off-line test and adjustments are performed before proceeding to any of the procedures below.

PART 1 [Controls required for COLD/START!]

## DISK SUBSYSTEM CONTROLLER-2 VERIFICATION

## 1. DSC-2 UNPACKING &amp; INSTALLATION

Perform each step below to unpackage and check the DSC-2. If the DSC-2 control had been previously installed perform steps 1.c, 1.d, and 1.e to check the channel and configuration jumpers. Then perform sections 3 and 5 to test the Disk and Printer portions of the control.

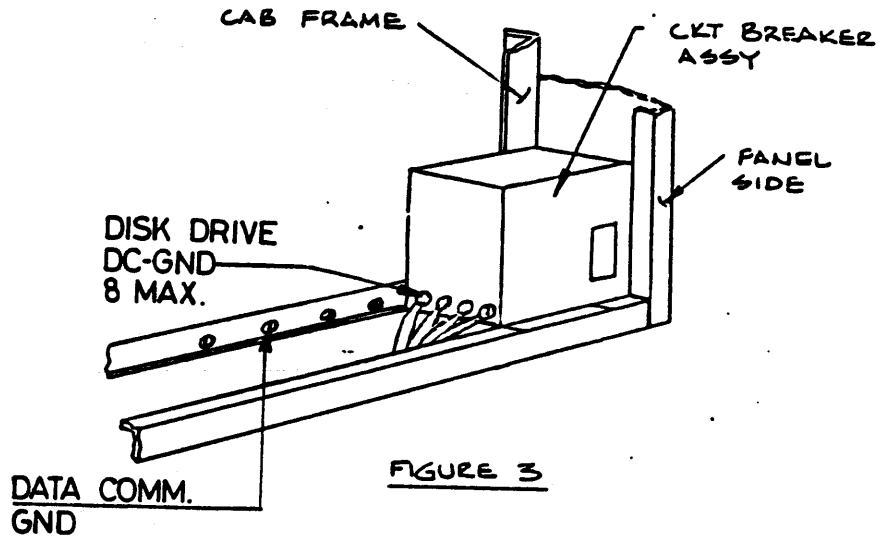
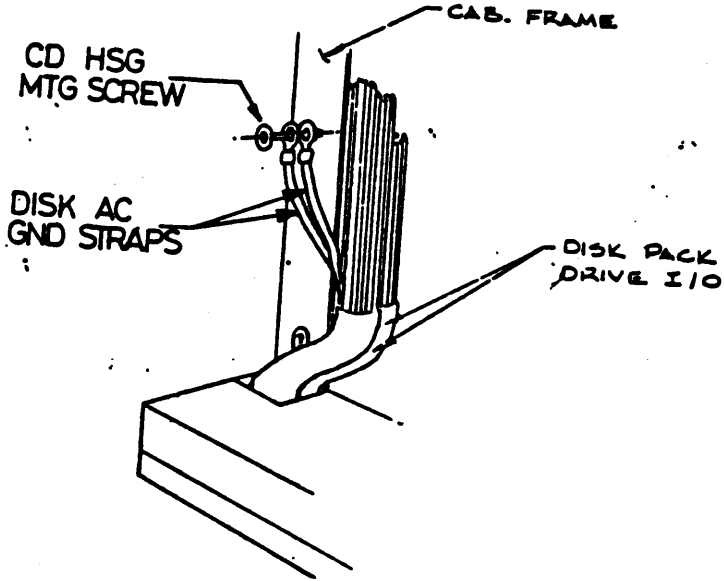
- a. Remove the DSC-2 from the shipping container.  
There should be five (5) logic cards, the DSC-2 T&F documents, a Diagnostic Test Cassette, cables, and a Unit Travel Log. Verify that all items on the packing list are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 1. DSC-2 UNPACKING &amp; INSTALLATION continued

- b. Note the physical condition of each card, if any card appears damaged do not install it in the system. Take the appropriate action to effect repairs before use in the system.
- c. Configure the Disk Channel assignment jumper on DSC card one (1). If a Printer is to be attached to the DSC then the Printer Channel assignment is also jumpered at this time. Refer to the "Jumper Chip Configuration" instructions in the DSC T&F document.
- d. Insure that the Printer Configuration Jumper is installed correctly. Refer to the "Jumper Chip Configuration" instructions in the DSC T&F document. Note: this jumper is used by the DSC to indicate that Printer Channel assignment is valid(used). If this jumper indicates no DSC Printer, then regardless of the Printer Channel assignment made in step "c" above the same channel number may be used by another I/O control. This is to say that if the DSC is jumpered for a Disk on channel 9 and a Printer on channel 8, but the Printer Configuration Jumper is wired for no DSC printer, then another I/O control may use channel 8 as a valid channel number.
- e. Configure the Disk Type and Disk Drive Present jumpers on DSC card (5). The appropriate jumpers need only be installed for those units actually present. Refer to the "Jumper Chip Instruction" in the DSC T&F documents.
- f. Install the logic cards in the backplane, refer to the card Location/Interconnection Diagram in the System T&F documents, for correct card location.
- g. Install Frontplane jumper cables between cards one (1) and two (2) at \$X and \$Y.
- h. Install the I/O Interface Panel for the Printer using the mounting hardware shipped with the DSC control. Attach the ribbon cable from the I/O Interface Panel to DSC card two (2) #Y.



Disk drive AC GND and DC GND connections

fig 9 - 1

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 2. DISK DRIVE CABLE INSTALLATION

The following procedure is used to install the Disk Drive Interface cables.

## NOTE:

There is no I/O Interface Panel connector for the Disk Drive. The cables from the Disk Drives are connected directly to the DSC. The cables enter the cabinet via a hole in the bottom of the cabinet near the front.

## A. New FCC cable.

1. Remove the cable support from the frame.  
(remove 2 screws "ITEM 2" fig 9-1a).
2. Remove and discard the cover plate.  
(remove 2 screws "ITEM 1" fig 9-1a).
3. Remove the clamp from the support.  
(remove 2 screws "ITEM 3" fig 9-1b).
4. Install the cable between the frame and the I/O plate  
(fig 9-1b).
5. Adjust the cable position to locate the cable shield in  
front of the support (fig 9-1b).
6. Install the clamp with 2 screws "ITEM 3" (fig 9-1b)
7. Replace the support with cable on the frame  
(2 screws "ITEM 2" fig 9-1c).
8. Attach the Disk Drive interface cables from drive 0  
through 3 to the lower connector on DSC card five (5).  
  
Attach the Disk Drive interface cables from drive 4 through  
7 to the upper connector on DSC card five (5).
9. Connect DC GND (see fig 9-1).



## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## B. Old cable (not FCC).

1. Remove and discard the support and clamp.
2. Install the cable through the hole of the I/O plate.
3. Attach the Disk Drive interface cables to the DSC card five (5) (see 8. above).
4. Connect AC GND and DC GND (see fig 9-1).

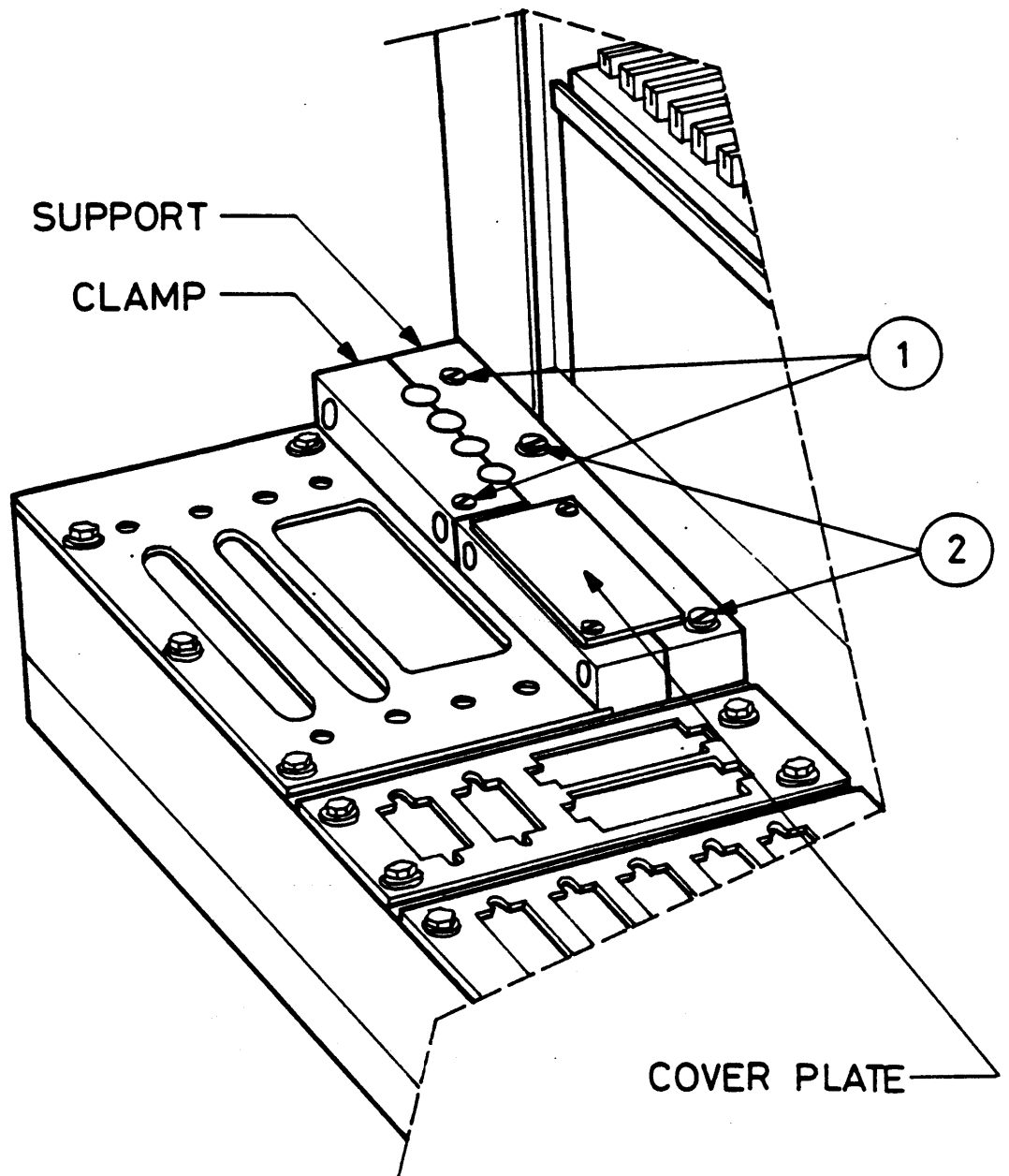


Fig 9 - 1a.

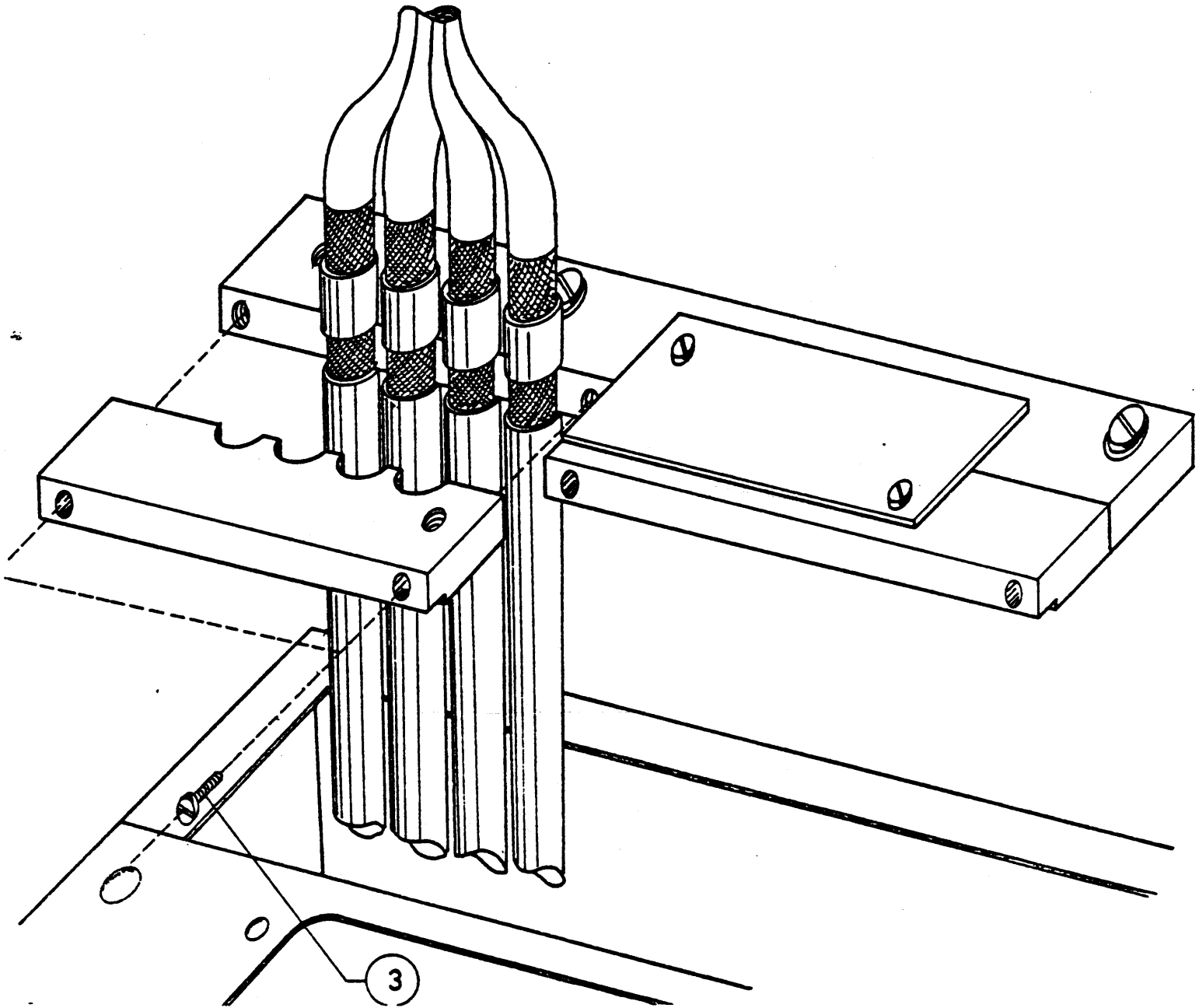


Fig 9 - 1b.

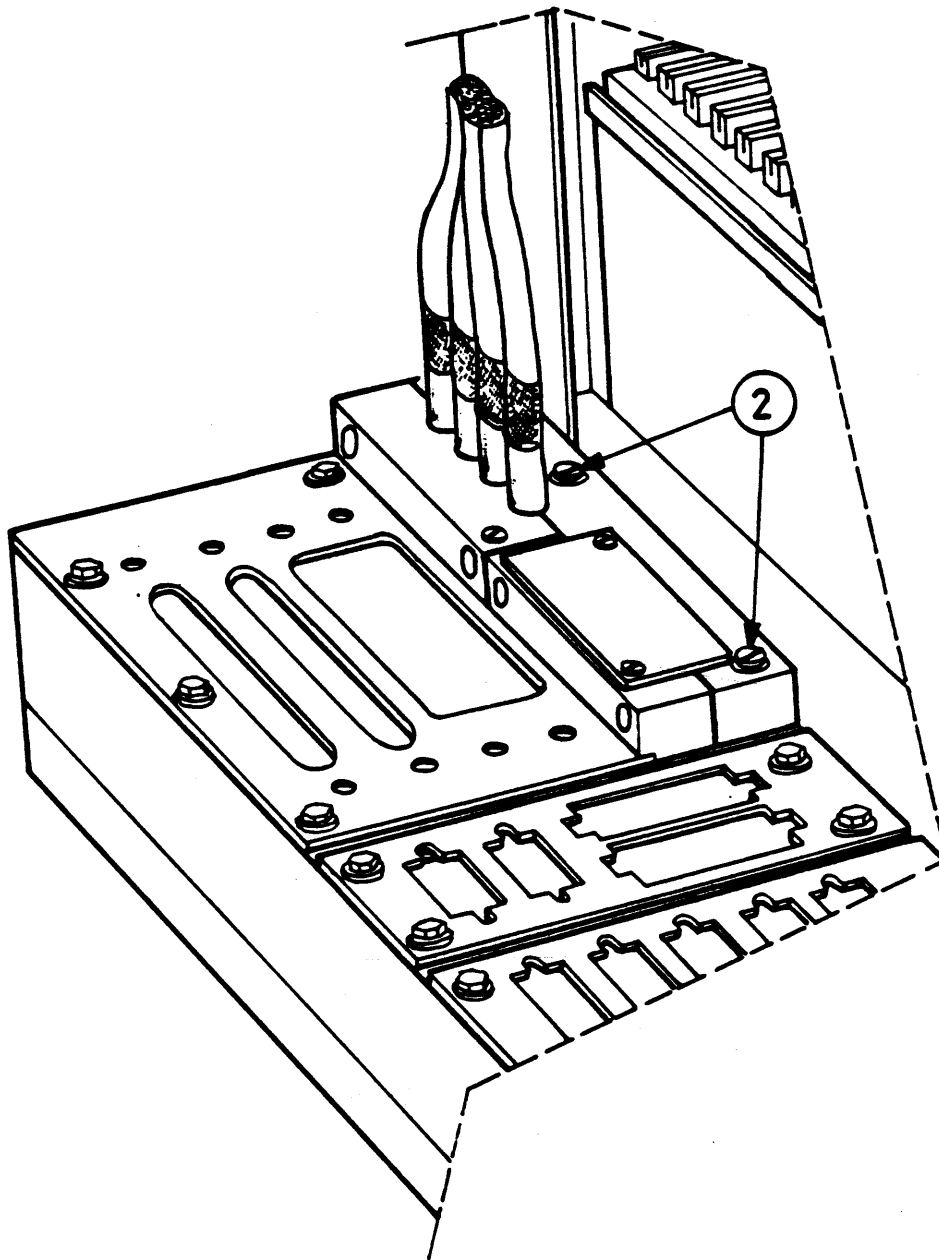


Fig.9 - 1c.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 3. DSC-2 TESTING

After you have completed the physical installation of the DSC and the Disk Drives, the drives may require adjustment or alignment. Follow the steps below to test the DSC, and adjust or align the disk drives.

## NOTE:

If the DSC was previously installed you may wish to perform steps 1.c through 1.h to verify Channel assignment and Drive Type.

- a. Place the DSC-2 Diagnostic test cassette in the Cassette Drive and follow the loading and operator instructions in the System Maintenance Guide to test the DSC-2 (Select the Disk channel ONLY for test)
- b. Upon obtaining satisfactory results in step a, perform the necessary Disk Drive adjustments and alignments using the Alignment tests in the DSC-2 Diagnostic test.
- c. Upon obtaining satisfactory result in step b, repeat steps "a" and "b" above for all remaining Disk Drives attached to the DSC.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

#### 4. PRINTER CABLE INSTALLATION

While a Printer is not required to perform a COLD/START, the DSC has the capability of controlling a B9246-3/6, or a B9246-11/13 Line Printer referred to as the DSC Printer. To complete the installations and testing of the DSC the DSC Printer should be connected at this time. Additionally troubleshooting and fault isolation is enhanced by having a Line Printer available.

- a. Install the Printer Interface cable by connecting it to the I/O Interface connector for the printer. Access is via the hole in the bottom of the cabinet near the front.

#### 5. DSC PRINTER TESTING

Perform the following to test the DSC Printer portions of the DSC and confidence testing for the Line Printer.

- a. Place the DSC Diagnostic Test cassette in the Cassette Drive and follow the loading and operator instructions in the System Maintenance Guide to test the DSC Printer.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## MAGNETIC TAPE CONTROL-6(TTL version)

## 1. MTC-6T(TTL) UNPACKING &amp; INSTALLATION

Perform each step below to unpackage and check the MTC-6T(TTL) control. If the Magnetic Tape control had been previously installed, perform step 1.c to check channel and configuration jumpers, then perform step 2.

- a. Remove the MTC-6T from the shipping container. There should be one (1) Logic card, the MTC-6T T&F documents, a Diagnostic Test Cassette, cables, and a Unit Travel Log. Verify these and all other items on the Packing List are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical conditions of the logic card, if the card appears damaged, do not install it in the system. Take the appropriate action to effect repairs before use in the system.
- c. Configure each of the following jumpers to conform to the required subsystem, i.e. Drive type, number of units, etc.
  - i. Unit Present Jumper
  - ii. Magnetic Tape subsystem Type
  - iii. Channel assignment

Refer to the Installation Instruction for the MTC-6T document number 2233 3652.

- d. Install the logic card in the one card I/O position in the Processor, refer to the Card Location/Interconnection Diagram in the System T&F documents for card locations.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 1. MTC-6T(TTL) UNPACKING &amp; INSTALLATION continued

- e. Install the I/O Interface cable assembly per the "Installation Instruction MTC-6T". Use the mounting hardware supplied with the Control.
- f. Install the ribbon cables from the I/O Interface cable assembly to Y\$ and Y# on the MTC-6T Logic card.
- g. For B 9491-4 or B 9498 operations refer to the MTC-6T "Installation Instruction" MTC-6T T&F documents for Formatter and Drive Jumper configurations.

## 2. MTC-6T TESTING

After you have completed the physical installation of the MTC-6T and the Magnetic Tape Drives, thorough testing of the control and subsystem can be performed. Follow the steps below to test the MTC-6T and the Tape subsystem.

## NOTE:

If the MTC-6T was previously installed you may wish to perform step 1.c above to verify the Drive and Channel assignment jumpers.

- a. Place the MTC-5B&6 Diagnostic test cassette CT-2233 5053 in the Cassette Drive and follow the loading and operation instructions in the System Maintenance Guide to test the MTC-6T and the first Tape Drive.
- b. Upon obtaining satisfactory results in step a, repeat the confidence test for each remaining Tape Drive attached to the Control.



## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## MAGNETIC TAPE CONTROL-5

## 1. MTC-5B UNPACKING &amp; INSTALLATION

Perform each step below to unpackage and check the MTC-5B control. If the Mag Tape control-5 had been previously installed perform step 1.c below to check channel configuration jumper. Then perform step 2 to test the control.

## NOTE:

The MTC-5B can ONLY be installed in an I/O Extension backplane with a Sub-Distribution card configured for CTL operation.

- a. Remove the MTC-5B from the shipping container. There should be two (2) Logic cards, the MTC-5B T&F documents, a Diagnostic Test Cassette, cables, and a Unit Travel Log. Verify these and all other items on the Packing List are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical condition of each card, if any card appears damaged do not install it in the system. Take the appropriate action to effect repair before use in the system.
- c. Configure the following jumpers on the CONTROL card; Subsystem ID, Unit Present, and Channel Assignment. Refer to the "JUMPER CHIP INSTRUCTION" document #2229 9689 in the MTC-5B T&F documents.

## NOTE:

The MTC-5B can ONLY be installed in the I/O Extension with a Sub-distribution card configured for CTL controls.

## WARNING:

DO NOT install a CTL control in a TTL card slot, or serious damage WILL result.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 1. MTC-5B UNPACKING &amp; INSTALLATION continued

- d. Install the MTC-5B Logic cards in the backplane. Refer to the "Installation Mag Tape Control-5 Instruction" document #2233 8701 in the MTC-5B T&F documents for correct card placement.
- e. Install the I/O Interface Panel and cable, using the mounting hardware shipped with the MTC-5B control. Attach the I/O Interface ribbon cable to frontplane connector X# on the "DATA" card. Attach The "MEC" Interface cable to the I/O Interface Panel connector.
- f. If this is the initial installation of the MTC-5B control, then the WRITE ENABLE ADJUSTMENT should be performed. Refer to "MAG TAPE CONTROL-5 DATA CARD JUMPER CHIP INSTRUCTION" document #2233 7810 for the instruction for this adjustment.
- g. If this is the initial installation of the MTC-5B control. Refer to the Subdistribution clock adjustments and I/O bus termination instruction found elsewhere in this document. These must be performed before testing or use of the control.

## 2. MTC-5B TESTING

After you have completed the physical installation of the MTC-5B and the Mag. Tape Drives, thorough testing of the control and the subsystem can be performed. Follow the steps below to test the MTC-5B and the Tape subsystem.

## NOTE:

If the MTC-5B was previously installed you may wish to perform step 1.c above to verify the Channel assignment, the Unit Type and Present Jumpers.

- a. Place the MTC-5&6 Diagnostic cassette CT-2233 5053 in the Cassette Drive, then follow the loading and operator instructions in the System Maintenance Guide to test the MTC-5B and the first Drive.
- b. Upon obtaining satisfactory results in step a, repeat the non Diagnostic Test for each remaining Tape Drive attached to the control.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## PART 2 [Controls NOT required for COLD/START!]

## CARD READER CONTROL-1(TTL)

## 1. CRC-1T UNPACKING &amp; INSTALLATION

Perform each step below to unpackage and test the CRC-1T(TTL) control. If the Card Reader control had been previously installed perform step 1.c below to check the channel configuration jumper. Then perform step 2 to test the Card Reader control.

- a. Remove the CRC-1T from the shipping container, There should be one (1) Logic card, The CRC-1T T&F documents, a Diagnostic Test Cassette, cables, and a Unit Travel Log. Verify these and all other items on the Packing List are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical conditions of the Logic card, if the card appears damaged, do not install it in the system. Take the appropriate action to effect repairs before use in the system.
- c. Configure the Channel Assignment Jumper. Refer to the "Instruction - Jumper Chip Configuration" document #1988 8015 in the CRC-1T T&F documents.
- d. Install the Logic card in any one card I/O position within the Processor, See Card Location/Interconnection Diagram in the System T&F documents, for correct card locations.
- e. Install the I/O Interface Panel for the Card Reader using the mounting hardware shipped with the CRC-1T control. Attach the ribbon cable from the I/O Interface to the control at #Y. Attach the I/O Interface cable from the Card Reader to the I/O Interface Panel connector.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 2. CRC-1T TESTING

After you have completed the physical installation of the CRC-1T and the Card Reader device, thorough testing of the control and the Card Reader can be performed. Follow the step below to test the CRC-1T and the Card Reader.

## NOTE:

If the CRC-1T was previously installed you may wish to perform step 1.c above to verify the Channel Assignment.

- a. Place the CRC-1T Diagnostic Test Cassette CT-2232 1418 in the Cassette Drive and follow the loading and operator instructions in the System Maintenance Guide to test the CRC-1T and the Card Reader.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## PRINTER CONTROL-7

## 1. PC-7B UNPACKING &amp; INSTALLATION


Perform each step below to unpackage and install the Printer Control-7. If the Printer control-7 had been previously installed, then perform step 1.c below to check channel configuration. Then perform step 2 to test the Printer-7 control.

## NOTE:

The PC-7B can ONLY be installed in an I/O Extension back-plane with a Sub-Distribution card configured for CTL operation.

## WARNING:

DO NOT install a CTL control in a TTL card slot, or serious damage WILL result.

- 
- a. Remove the PC-7B from the shipping container. There should be one (1) Logic card, the PC-7B T&F documents, a Diagnostic Test cassette, cables, and a Unit Travel Log. Verify these and all other items on the Packing List are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at a International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
  - b. Note the physical condition of the logic card, if the card appears damaged do not install it in the system. Take the appropriate action to effect repair before use in the system.
  - c. Configure the Channel Assignment, and Format Jumpers. Refer to "Instruction - Jumper Chip Configuration" document #2230 0982 in the PC-7B T&F documents.
  - d. Install the PC-7B in any one (1) card slot or the first card slot of a two (2) card control position in the I/O Extension. Refer to the Card Location/Interconnection Diagram on the System T&F documents.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

- e. Install the I/O Interface panel, and cable, using the mounting hardware shipped with the control. Attach the I/O Interface ribbon cable to location #Y on the control and attach the I/O Interface cable from the Line Printer.
- f. If this is the initial installation of the PC-7B control, then the "WECLK" should be verified. There is no adjustment for this signal, but failure may occur if it is out of specification. If "WECLK" is out of specification verify that the Sub-Distribution clocks are adjusted correctly.

## 2. PC-7B TESTING

After you have completed the physical installation of the PC-7B and the Line Printer, thorough testing can be performed. Follow the step below to test the PC-7B and the Line Printer.

- a. Place the PC-7B Diagnostic Test Cassette CT-2228 3931 in the Cassette Drive and follow the loading and operator instructions in the System Maintenance Guide to test the Printer Control-7 and the Line Printer.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## READER/SORTER-2B

## 1. R/S-2B UNPACKING &amp; INSTALLATION

Perform each step below to unpackage, install and test the Reader/Sorter -2 Control. If the Reader/Sorter-2 control had been previously installed perform step 1.c below to check the channel configuration. Then perform step 2 to test the Reader/Sorter-2 control.

## NOTE:

The R/S-2B can ONLY be installed in an I/O Extension backplane with a Sub-Distribution Card configured for CTL operation.

- a. Remove the R/S-2B from the shipping container. there should be two (2) Logic cards, The R/S-2B T&F documents, a Diagnostic Test Cassette, cables, and a Unit Travel Log. Verify these and all other items on the Packing list are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical condition of both cards, if any card appears damaged do not install it in the system. Take the appropriate action to effect repairs before use in the system.
- c. Configure the Channel Assignment Jumper on card one (1). Refer to "Sorter Reader Card 1 Instruction - Jumper Chip Configuration" document #2230 0701 in the R/S-2B T&F documents.
- d. Install the R/S-2B logic cards in a two (2) card slot position in the I/O Extension. Refer to "Installation Reader/Sorter Control-2 Instructions" for proper card positions.
- e. Install the I/O Interface Panel and cable using the, mounting hardware shipped with the control. Attach the ribbon cable to the MICR/OCR card frontplane connectors Y5 and Y#. Attach the I/O Interface cable from the Reader/Sorter.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 2. R/S-2B TESTING

After you have completed the physical installation of the R/S-2B and the Reader/Sorter, thorough testing of the control and the Reader/Sorter device can be performed. Follow the step below to test the R/S-2B control and the Reader/Sorter.

## NOTE:

If the R/S-2B was previously installed, you may wish to perform step 1.c and 1.e above to verify the Channel Assignment and cable installation.

- a. Place the R/S-2B Maintenance test cassette CT-2233 4601 in the Cassette Drive and follow the loading and operator instruction in the System Maintenance Guide to test the R/S-2B and the Reader/Sorter.



## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## SUB-DISTRIBUTION CARD

## 1. SUB-DISTRIBUTION CARD UNPACKING &amp; INSTALLATION

Perform each step below to unpackage, install and test the Sub-Distribution Card in an I/O Extension or a DSC-2 backplane. If the had been previously installed perform steps 1.c through 1.f ONLY.

## NOTE:

The Sub-Distribution card will support ONLY CTL controls within the I/O Extension Base-5.

- a. Remove the Sub-Distribution card from the shipping container. There should be one (1) Logic card, The Sub-Distribution card T&F documents, cables, and the Unit Travel Log. Verify these and all other items on the Packing List are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical condition of the Logic card, if the card appears damaged do not install it in the system. Take the appropriate action to effect repairs before use in the system.
- c. Configure the Sub-Distribution card for DSC-2 EXT-1 or I/O EXT-5 operations, refer to "Sub Distribution card Jumper Chip Instruction" documents #1988 7256.
- d. Verify that the System Clock Skew and Pulse Width timing are correct, refer to the System Clock Alignment specification #2233 3686.
- e. Configure the Termination Jumper on the Sub-Distribution card depending on the location of the card in the Daisy chain. Refer to "Sub Distribution card Jumper Chip Instruction" documents #1988 7256.
- f. Install the Sub-Distribution card, in the DSC backplane or the I/O Extension backplane, in the first card slot on the right. Install the Daisy chain ribbon cable depending on the location of the Sub-Distribution card within the Daisy chain. Refer to "Card Location/Interconnection" diagram, for cable installation.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

2. SUB-DISTRIBUTION CARD TESTING

There is no test specifically for the Sub-Distribution card. Install any appropriate control and execute the test for this control. This will indirectly test the Sub-Distribution card.

I/O INTERFACE DAISY CHAIN

Terminating the I/O Interface Daisy Chain is very important for proper system operations. Use the following rules when installation I/O controls in separate backplanes or a second processor.

Basically the rule is that both end of the I/O Interface is terminated. The physical left end does not change, but the physical right most end of the bus is determined by the configuration.

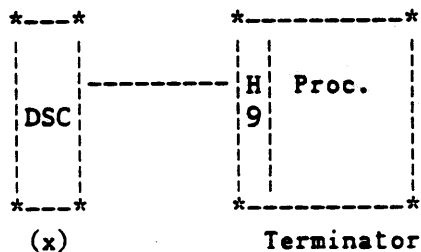
CASE 1. In a single processor system with no I/O expansion, the "H" card in the processor contain the Termination. ✓ orig.

CASE 2. In a single processor system with an I/O expansion and second DSC-2. The I/O-5 MUST be at the end of the Daisy Chain and its Sub Distribution card is Terminated. All other cards capable of Termination MUST have the Terminators removed. ✓

CASE 3. In a Dual processor system the second processor's "H" card is Terminated and all other Terminators are removed.

EXAMPLES:

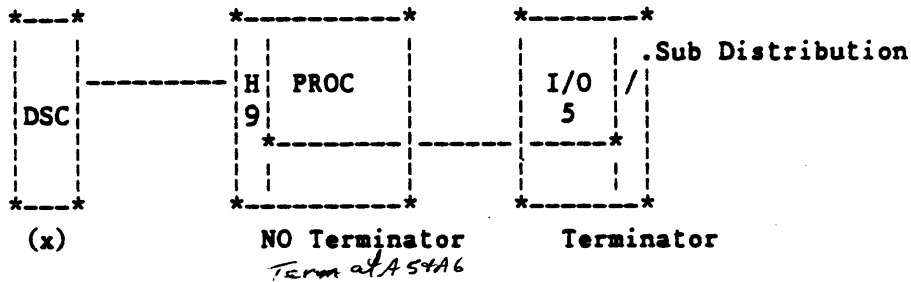
Single Processor no I/O extensions



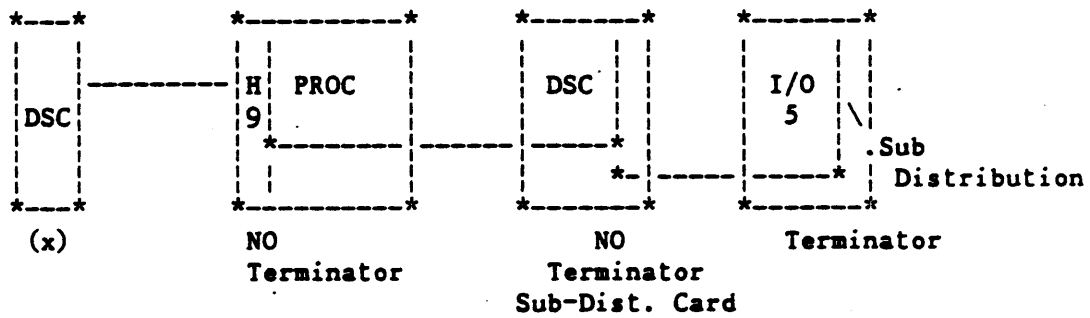
B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

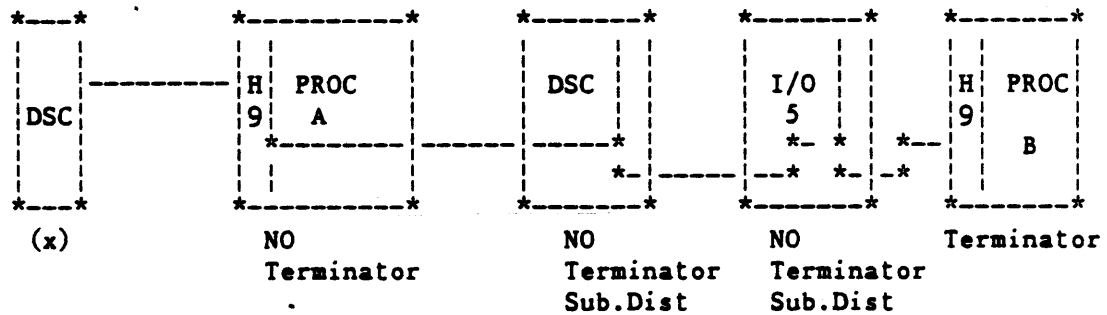
Single Processor with I/O Expansion-5



Single Processor with 2nd DSC-2 and I/O-5



DUAL Processor and I/O expansion



(x) = Permanent non-removable terminator

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## MULTI LINE CONTROL-4

## 1. MULTI LINE CONTROL-4 UNPACKING &amp; INSTALLATION

Perform each step below to unpackage , install and test the Multi Line Control-4. If the MLC-4 has previously been installed then perform steps 1.c through 1.e

- a. Remove the MLC-4 from the shipping container. There should be one BASE card and one or more Line Adapter cards, one backplane, MLC-4 T&F documents, cables, and the Unit Travel Log. Verify these and all other items on the Packing List are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical condition of each logic card, if any card appears damaged do not install it in the system. Take the appropriate action to effect repairs before use in the system.
- c. Configure the MLC-4 Base card PORT number. Refer to the "MLC-4 BASE JUMPER CHIP INSTRUCTION" documents #1988 8114. Remember that the BASE card installed in the CABINET-12 processor backplane is on Port-1 and that a BASE card installed in CABINET-7 is on Port-3.
- d. Install the BASE card in either the Processor backplane or in the extension backplane, refer to "CARD Location/Interconnection" diagram for card location.
- e. Configure the CLOCK SELECT OPTIONS on each Line Adapter card. Use figure 9-2 to configure the Line Adapter card.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

- f. Configure each LINE ADAPTER (per the site's requirement), by referring to each step below depending on the type of line.

## ODT-LINE 0

The Line Adapter for Port 1, Line 0, is reserved for the System ODT or optional TDI terminal(s), and must be configured as a TDI line, see figure 9-3 to configure line 0 jumpers.

## REMOTE(optional)-LINE 3

The Line Adapter for line 3, Port 1, is reserved for Remote Maintenance if REMOTE is to be installed. Refer to figure 9-4 to configure line 3 jumpers.

## TDI-LINES

Any line not required for ODT or REMOTE may be configured for Direct Connect. See figure 9-5, this figure shows how to configure any line on a LINE ADAPTER card as TDI. Configure those lines required for TDI by placing the jumpers as shown.

## RS232C-LINES

Any line not required for ODT or REMOTE may be configured for RS232C operation. See figure 9-6, this figure shows the jumper required for RS232C operations for all Line Adapters on a LINE ADAPTER card. Configure those lines required by placing the jumpers as shown for RS232C operations.

## LINE OPTIONS

The TDI and RS232C configurations in figures 9-5, and 9-6 cover most standard site's requirements. If the configuration of site equipment requires special use of the Data Comm interface, refer to table 9-1 and quad line adapter strappable options (see following page), for the definition and jumpering instructions for each Interface line.

- g. Install the Line adapter cards and Interface cables, refer the "CARD LOCATION/INTERCONNECT" diagram for card location, and cable locations.
- h. Install the DATA COMM cables and connect their GND (see fig 9-1)

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 2. MLC-4 TESTING

Complete testing of the MLC-4 and the Line Adapters is best performed executing stand alone diagnostic sections followed by testing each line and one terminal device. As the configuration for any site will vary, no specific test is called for, but it is left to the user to refer to the System Maintenance Guide's section on the MLC for the different tests available.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

CROSS REFERENCE FOR DATACOMM SIGNALS  
OR CONNECTOR PIN TO QUAD

PIN	TABLE ENTRY	CCITT	EIA	FUNCTION
01	-----	101	AA	FRAME GROUND
02	0001	103	BA	TRANSMIT DATA
03	0008, 0205	104	BB	RECEIVED DATA
04	0002, 0003	105	CA	REQUEST TO SEND
05	0006, 0200	106	CB	CLEAR TO SEND
06	0007, 0204	107	CC	DATA SET READY
07	-----	102	AB	SIGNAL GROUND
08	0201	109	CF	CARRIER DETECT
09	-----	---	---	-----
10	-----	---	---	-----
11	0100	126	CK	-----
11	0100			NEW SYNC (BURROUGHS)
12	0304			LINE(3) REMOTE LINK ENABLE
13	-----	---	---	-----
14	0101	---	---	NEW SYNC (W/E)
15	0202	114	DB	TRANSMIT CLOCK (DTE)
16	-----	---	---	-----
17	0203	115	DD	RECEIVE CLOCK
18	0102	116	---	SELECT STANDBY
18	0102	---	---	DIAL MODE (BURROUGHS)
19	-----	---	---	-----
20	0004, 0005	108/2	CD	DATA TERMINAL READY
21	-----	---	---	-----
22		125	CE	RINGING INDICATOR
23	0103	111	CH	RATE SELECT
24	0104	---	ED	EOT DISCONNECT
24	0104	116	---	SELECT STANDBY (BPO)
25	-----	---	---	-----
26				AUXILLARY OUTPUT FOR LOOPBACK CONNECTOR

	*-->	
CLOCK	0303	STRAP USART/TIMER CLOCK COUNTER FOR 8MHZ
CONTROL	0301	STRAP MEMORY ACCESS WAIT STATE
OPTIONAL	0300	STRAP CLOCK GENERATOR, XTAL/EXTERNAL
	0302	STRAP EXTERNAL INPUT FOR BOARD OSC/TEST INPUT
	*-->	

NOTE: (PIN) REFERS TO THE QUAD FRONTPLANE CONNECTOR PINS, WHICH CORRESPOND TO CCITT AND EIA CONNECTOR DESIGNATIONS.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

QUAD LINE ADAPTER STRAPPABLE OPTIONS

TABLE 0001		Select one of Four(4) options listed below	Each Quad Line has a column with connector, strapping options and a reference to the schematic.			
SIGNAL TYPE	LINE ADP. CONNECTOR		L3 (#Y)	L2 (\$Y)	L1 (#X)	L0 (\$x)
CARD PIN=02	TWO WIRE DIRECT DRIVER FOR DATA OUTPUT	FROM>>	H2A7	F5A7	D1A7	B3A7
		TO >>	H3A7 [S!	F4A7 [S!	D2A7 [S!	B4A7 [S!
EIA -BA	RS232 DRIVER FOR DATA OUTPUT	FROM>>	H2A6	F5A6	D1A6	B3A6
		TO >>	H3A6 [S!	F4A6 [S!	D2A6 [S!	B4A6 [S!
CCITT - 103	WIDE BAND DRIVER FOR DATA OUTPUT	FROM>>				B3A8
		TO >>				B4A8 [S!
	TTL DRIVER FOR DATA OUTPUT	FROM>>	H2A8			
		TO >>	H3A8 [S!			
SCHEMATIC LOCATION			12D8	11D8	10D8	09D8
TABLE 0002		SELECT ONE (1) OF TWO(2) OPTIONS TO CONTROL REQUEST TO SEND	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTIONS AND A REFERENCE TO THE SCHEMATIC			
SIGNAL TYPE	LINE ADP. CONNECTOR		L3 (#Y)	L2 (\$Y)	L1 (#X)	L0 (\$X)
CARD PIN=04	REQUEST TO SEND FORCED ACTIVE	FROM>>	H9A7	G1A7	D8A7	COA7
		TO >>	H9A8 [S!	G1A8 [S!	D8A8 [S!	COA8 [S!
EIA -CA	REQUEST TO SEND CONTROLLED BY PROGRAM	FROM>>	H9A7	G1A7	D8A7	COA7
		TO >>	H9A8 [O!	G1A8 [O!	D8A8 [O!	COA8 [O!
CCITT -105	SCHEMATIC LOCATION					
			12C2	11C2	10C2	09C2

[S! - PINS SHORTED

[O! - PINS OPENED



B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

QUAD LINE ADAPTER STRAPPABLE OPTIONS

*-----*		
TABLE 0003	SELECT ONE(1) OR TWO(2) OPTIONS LISTED BELOW FOR REQUEST TO SEND	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTIONS AND A REFERENCE TO THE SCHEMATIC.
SIGNAL TYPE	LINE ADP. CONNECTOR ----->>	L3(#Y)   L2(\$Y)   L1(#X)   L0(\$X)
PIN=04	REQUEST TO SEND OUT RS232 DRIVER	FROM>> H1A6 TO >> H1A7 [S!
EIA -CA	REQUEST TO SEND TTL DRIVER REMOTE LINK	FROM>> H1A7 TO >> H1A8 [S!
CCITT -105	SCHEMATIC LOCATION   12D3	
*-----*		
TABLE 0004	SELECT ONE OR TWO OPTIONS LISTED BELOW FOR DATA TERMINAL READY	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATIC.
SIGNAL TYPE	DATA TERMINAL READY FORCED ACTIVE	FROM>> H7A7   F9A7   D6A7   B8A7 TO >> H7A8   F9A8   D6A8   B8A8 [S!   [S!   [S!   [S!
PIN=20	DATA TERMINAL READY CONTROLLED BY PROGRAM	FROM>> H7A7   F9A7   D6A7   B8A7 TO >> H7A8   F9A8   D6A8   B8A8 [O!   [O!   [O!   [O!
EIA-CD		
CCITT -108	SCHEMATIC LOCATION   12A7   11A7   10A7   09A7	
*-----*		
TABLE 0005	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW. FOR DATA TERMINAL READY	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATIC.
SIGNAL TYPE	CONNECTOR LOCATION	L3(#Y)   L2(\$Y)   L1(#X)   L0(\$X)
PIN=20	DATA TERMINAL READY OUT RS232 DRIVER FOR DATA TERMINAL READY	FROM>> HOA6 TO >> HOA7 [S!
EIA-CD	DATA TERMINAL READY TTL DRIVER REMOTE LINK	FROM>> HOA7 TO >> HOA8 [O!
CCITT -108	SCHEMATIC LOCATION   12B6	
*-----*		

[S! - PINS SHORTED

[O! - PINS OPENED

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

QUAD LINE ADAPTER STRAPPABLE OPTIONS

TABLE 0006		CLEAR TO SEND (CTS) SELECT ONE (1) OR TWO (2) OPTIONS LISTED BELOW		EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATIC			
SIGNAL TYPE	LINE ADP. CONNECTOR		L3 (#Y)	L2 (\$Y)	L1 (#X)	L0 (\$X)	
PIN-05	CTS IS CONTROLLED BY THE LINE RECEIVER FROM THE DEVICE	FROM >>	H7C8	F9C8	DOC8	B2C8	
		TO >>	H7C9	F9C9	DOC9	B2C9	
			[S!]	[S!]	[S!]	[S!]	
EIA-CB	CTS IS ALWAYS REPORTED PRESENT	FROM >>	H8C8	G0C8	D1C8	B3C8	
		TO >>	H8C9	G0C9	D1C9	B3C9	
			[S!]	[S!]	[S!]	[S!]	
SCHEMATIC LOCATION			13B5	13B4	13B3	13B2	
TABLE 0008		SELECT ONE OF THREE OPTIONS LISTED BELOW		EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATIC			
SIGNAL TYPE	LINE ADP. CONNECTOR		L3 (#Y)	L2 (\$Y)	L1 (#X)	L0 (\$X)	
PIN-03	TWO WIRE DIRECT PATH FOR RECEIVED DATA	FROM >>	G6A7	E8A7	C5A7	A7A7	
		TO >>	G7A7	E9A7	C6A7	A8A7	
			[S!]	[S!]	[S!]	[S!]	
EIA-BB	RS232 PATH FOR RECEIVED DATA	FROM >>	G6A6	E8A6	C5A7	A7A6	
		TO >>	G7A6	E9A6	C6A6	A8A6	
			[S!]	[S!]	[S!]	[S!]	
CCITT -104	WIDE BAND PATH FOR RECEIVED DATA	FROM >>				A7A8	
		TO >>				A8A8	
						[S!]	
SCHEMATIC LOCATION			12C6	11C6	10C6	09C6	

[S! = PINS SHORTED

[O! = PINS OPENED

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QUAD LINE ADAPTER STRAPPABLE OPTIONS

TABLE 0100	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATICS.				
SIGNAL TYPE	LINE ADP. CONNECTOR----->	L3(#Y)	L2(\$Y)	L1(#X)	L0(\$X)	
PIN=11	AUXILLARY DRIVER FOR DOR DATA OUTPUT	FROM>> TO >>	H4A7 H4A8 [S!	F6A7 F6A8 [S!	D3A7 D3A8 [S!	B5A7 B5A8 [S!
	(111)RATE SELECT DRIVER FOR DATA OUTPUT	FROM>> TO >>	H6A7 H6A8 [S!	F8A7 F8A8 [S!	D5A7 D5A8 [S!	B7A7 B7A8 [S!
SCHEMATIC LOCATION		12D2	11D2	10D2	09D2	
TABLE 0101	SELECTABLE OPTION	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATIC				
SIGNAL TYPE	LINE ADP. CONNECTOR----->	L3(#Y)	L2(\$Y)	L1(#X)	L0(\$X)	
PIN=14	AUXILLARY DRIVER FOR DATA OUTPUT	FORM>> TO >>	H5A7 H5A8 [S!	F7A7 F7A8 [S!	D4A7 D4A8 [S!	B6A7 B6A8 [S!
	SCHEMATIC LOCATION		12D2	11D2	10D2	09D2
TABLE 0102	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATIC.				
SIGNAL TYPE	LINE ADP. CONNECTOR----->	L3(#Y)	L2(\$Y)	L1(#X)	L0(\$X)	
PIN=18	AUXILLARY DRIVER FOR DATA OUTPUT	FROM>> TO >>	H5A6 H5A7 [S!	F7A6 F7A7 [S!	D4A6 D4A7 [S!	B6A6 B6A7 [S!
	(111)STANDBY SELECT DRIVER FOR DATA OUTPUT	FROM>> TO >>	H8A7 H8A8 [S!	GOA7 GOA8 [S!	D7A7 D7A8 [S!	B9A7 B9A8 [S!
SCHEMATIC LOCATION		12D2	11D2	10D2	09D2	

[S! = PINS SHORTED

[O! = PINS OPENED

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2233 4858 REVISION AE

QUAD LINE ADAPTER STRAPPABLE OPTIONS

TABLE 0103	SELECTABLE OPTION	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATIC				
SIGNAL TYPE	LINE ADP. CONNECTOR ----->	L3(#Y)	L2(\$Y)	L1(#X)	LO(\$X)	
PIN-23	DATA RATE DRIVER FOR DATA OUTPUT	FROM>> TO >>	H6A6 H6A7 [S!	F8A6 F8A7 [S!	D5A6 D5A7 [S!	B7A6 B7A7 [S!
	SCHEMATIC LOCATION		12D2	11D2	10D2	09D2
TABLE 0104	SELECTABLE OPTIONS	EACH QUAD LINE HAS A COLUMN WITH CONNECTOR, STRAPPING OPTION AND A REFERENCE TO THE SCHEMATIC.				
SIGNAL TYPE	LINE ADP. CONNECTOR----->	L3(#Y)	L2(\$Y)	L1(#X)	LO(\$X)	
PIN-24	STANDBY SELECT DRIVER FOR DATA OUTPUT	FROM>> TO >>	H8A6 H8A7 [S!	GOA6 GOA7 [S!	D7A6 D7A7 [S!	B9A6 B9A7 [S!
	SCHEMATIC LOCATION		12D2	11D2	10D2	09D2

[S! = PINS SHORTED

[O! = PINS OPENED

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2233 4858 REVISION AE

QUAD LINE ADAPTER STRAPPABLE OPTIONS

*-----*		
TABEL 0200	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW FOR RS232 OR WIDEBAND	APPLIES TO LINE-0 ONLY
SIGNAL TYPE	LINE ADP. CONNECTOR----->	LO(\$X) ONLY   INPUT   OUTPUT
PIN=05	CLEAR TO SEND SELECT RS232 REC. CHIP (QLRN)	FROM>> TO >>   B2A7   A0D0   B2A6   A0D1   [S!   [S!
EIA=CB CCITT =106	CLEAR TO SEND SELECT W/B REC. CHIP (LRPN)	FROM>> TO >>   B2A7   A2D0   B2A8   A2D1   [S!   [S!
		SCHEMATIC LOCATION   09A4   09C4
-----		
TABEL 0201	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW FOR RS232 OR WIDEBAND	APPLIES TO LINE-0 ONLY
SIGNAL TYPE	LINE ADP. CONNECTOR----->	LO(\$X) ONLY   INPUT   OUTPUT
PIN=08	CARRIER DETECT RS232 REC. CHIP (QLRN)	FROM>> TO >>   B1A7   A0D6   B1A6   A0D7   [S!   [S!
EIA=CF CCITT =109	CARRIER DETECT W/B REC.CHIP )LRPN)	FROM>> TO >>   B1A7   A2D6   B1A8   A2D7   [S!   [S!
		SCHEMATIC LOCATION   09A4   09C4
-----		
TABEL 0202	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW FOR RS232 OR WIDEBAND	APPLIES TO LINE-0 ONLY
SIGNAL TYPE	LINE ADP. CONNECTOR----->	INPUT   OUTPUT
PIN=15	TRANSMIT CLOCK (DSE) RS232 REC. CHIP (QLRN)	FROM>> TO >>   BOA7   A0C2   BOA6   A0C3   [S!   [S!
EIA=DB CCITT =114	TRANSMIT CLOCK (DSE) W/B REC. CHIP (LRPN)	FROM>> TO >>   BOA7   A2C2   BOA8   A2C3   [S!   [S!
		SCHEMATIC LOCATION   09A4   09C4
*-----*		

[S! = PINS SHORTED

[O! = PINS OPENED

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2233 4858 REVISION AE

QUAD LINE ADAPTER STRAPPABLE OPTIONS

*-----*				
TABLE 0203	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW FOR RS232 OR WIDEBAND	APPLIES TO LINE-0 ONLY		
SIGNAL TYPE	LINE ADP. CONNECTOR----->	LO(\$X)	INPUT	OUTPUT
PIN=17	RECEIVE CLOCK (DSE)	FROM>>	A9A7	A0C5
	RS232 REC.CLOCK (QLRN)	TO >>	A9A6 [S!]	A0C6 [S!]
EIA-DD	RECEIVER CLOCK (DSE)	FROM>>	A9A7	A2C5
CCITT =115	W/B REC. CLOCK (LRPN)	TO >>	A9A8 [S!]	A2C6 [S!]
	SCHEMATIC LOCATION		09A3	09B3
-----				
TABLE 0204	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW FOR RS232 OR WIDEBAND	APPLIES TO LINE-0 ONLY		
SIGNAL TYPE	LINE ADP. LOCATION----->		INPUT	OUTPUT
PIN=06	DATA SET READY (DSR)	FROM>>	A4A7	A0B4
	RS232 REC. CHIP (QLRN)	TO >>	A4A6 [S!]	A0B5 [S!]
EIA-CC	DATA SET READY (DSR)	FROM>>	A4A7	A2B4
CCITT =107	W/B REC CHIP (LRPN)	TO >>	A4A8 [S!]	A2B5 [S!]
	SCHEMATIC LOCATION		09A7	09C7
-----				
TABLE 0205	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW FOR RS232 OR WIDEBAND	APPLIES TO LINE-0 ONLY		
SIGNAL TYPE	LINE ADP. LOCATTION----->		INPUT	OUTPUT
PIN=03	RECEIVE DATA (RD)	FROM>>	A6A7	----
	RS232 REC CHIP (QLRN)	TO >>	A6A6 [S!]	----
EIA-BB	RECEIVE DATA (RD)	FROM>>	A6A7	----
CCITT =104	W/B REC. CHIP (LRPN)	TO >>	A6A8 [S!]	----
	SCHEMATIC LOCATION		09A7	09C7
-----				

[S! = PINS SHORTED

[O! = PINS OPENED

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2233 4858 REVISION AE

QUAD LINE ADAPTER STRAPPABLE OPTIONS

*-----*				
TABLE 0300	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW FOR FREQUENCY SOURCE FOR CLOCK GENERATOR	PUSH PINS MUST BE INSTALLED TO SELECT THE CONTROL INPUT FOR THE CLOCK CONTROL LOGIC		
CLOCK CONT. LOGIC	CRYSTAL IS SOURCE OF CK84A FREQUENCY INPUT	FROM>> TO >>		A1I5 A1I6 [S!
SIGNAL INPUT TO CK. GEN.	OSCILLATOR IS SOURCE OF CK84A FREQUENCY INPUT	FROM>> TO >>	(SEE TABLE 301 TO SELECT ONBOARD OR EXTERNAL SOURCE)	A1I5 A1I6 [O!
CHIP PIN 14 SCHEMATIC LOCATION				01A6
-----				
TABLE 0301	SELECT ONE(1)OR TWO(2) OPTIONS LISTED BELOW FOR DETERMINING MICRO- PROCESSOR WAIT STATE FOR MEMORY ACCESS	PUSH PIN MUST BE INSTALLED TO SELECT THE CORRECT INPUT FOR THE CLOCK CONTROL LOGIC		
WAIT. STATE CONT. LOGIC	8MHZ:WAIT STATE ADDED WHEN READING OR WRITING ROM OR MEMORY MAPPED I/O	FROM>> TO >>		A1F4 A1F5 [S!
SCHEMATIC LOCATION				01B8
*-----*				

[S! - PINS SHORTED

[O! - PINS OPENED

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2233 4858 REVISION AE

QUAD LINE ADAPTER STRAPPABLE OPTIONS

TABLE 0302	IF TABLE 300 IS SET FOR OSCILLATOR INPUT CK84A PIN 14 ACTIVE THEN SELECT OSCILLATOR OR BACKPLANE INPUT	PUSH PINS MUST BE INSTALLED TO SELECT THE CORRECT INPUT FOR THE CLOCK CONTROL LOGIC.	
CLOCK CONT. LOGIC	ON BOARD OSCILLATOR IF PRESENT, IS SELECTED BY THIS OPTION	FROM>> TO >>	A7H7 A7H8 [S!
EXT. FREQ. INPUT	BACKPLANE INPUT FOR AN EXTERNAL CLOCK FREQUENCY IS SELECTED BY OPTION	FROM>> TO >>	A7H6 A7H7 [S!
SCHEMATIC LOCATION			01B7
TABLE 0303	SELECT ONE(1) OR TWO(2) OPTION LISTED BELOW TO CREATE A 1.832MHZ CLOCK FOR USARTS AND TIMERS	PUSH PINS MUST BE INSTALLED TO SELECT THE CORRECT INPUT FOR THE CLOCK CONTROL LOGIC	
USART/TIMER CLOCK DIV. CONT.	8MHX: DIVIDES XTAL FREQ BY 12 TO GIVE 1.8 MHZ	FROM>> TO >>	A1G2 A1G3 [S!
SCHEMATIC LOCATION			01B8
TABLE 0304	SELECT ONE(1) OR TWO(2) OPTIONS LISTED BELOW TO CONTROL THE TTL INTERFACE TO THE "H9" CARD FOR REMOTE LINK	PUSH PINS ALLOW ENABLING THE TTL DRIVER CHIPS FOR XMIT DATA, REQUEST TO SEND AND DATA TERMINAL READY.	
REMOTE LINK CONT.	REMOTE LINK INTERFACE IS ENBLED BY "H9" CARD BY CONNECTION THRU THE CABLE INTERFACE	FROM>> TO >>	G9A6 G9A7 [S!
	REM. LINK IS DISABLED IF TTL DRIVERS ARE FORCED TO TRI-STATE BY PULLING UP THE ENABLE PIN.	FROM>> TO >>	G9A6 G9A7 [O!
SCHEMATIC LOCATION			12A5

[S! = PINS SHORTED

[O! = PINS OPENED



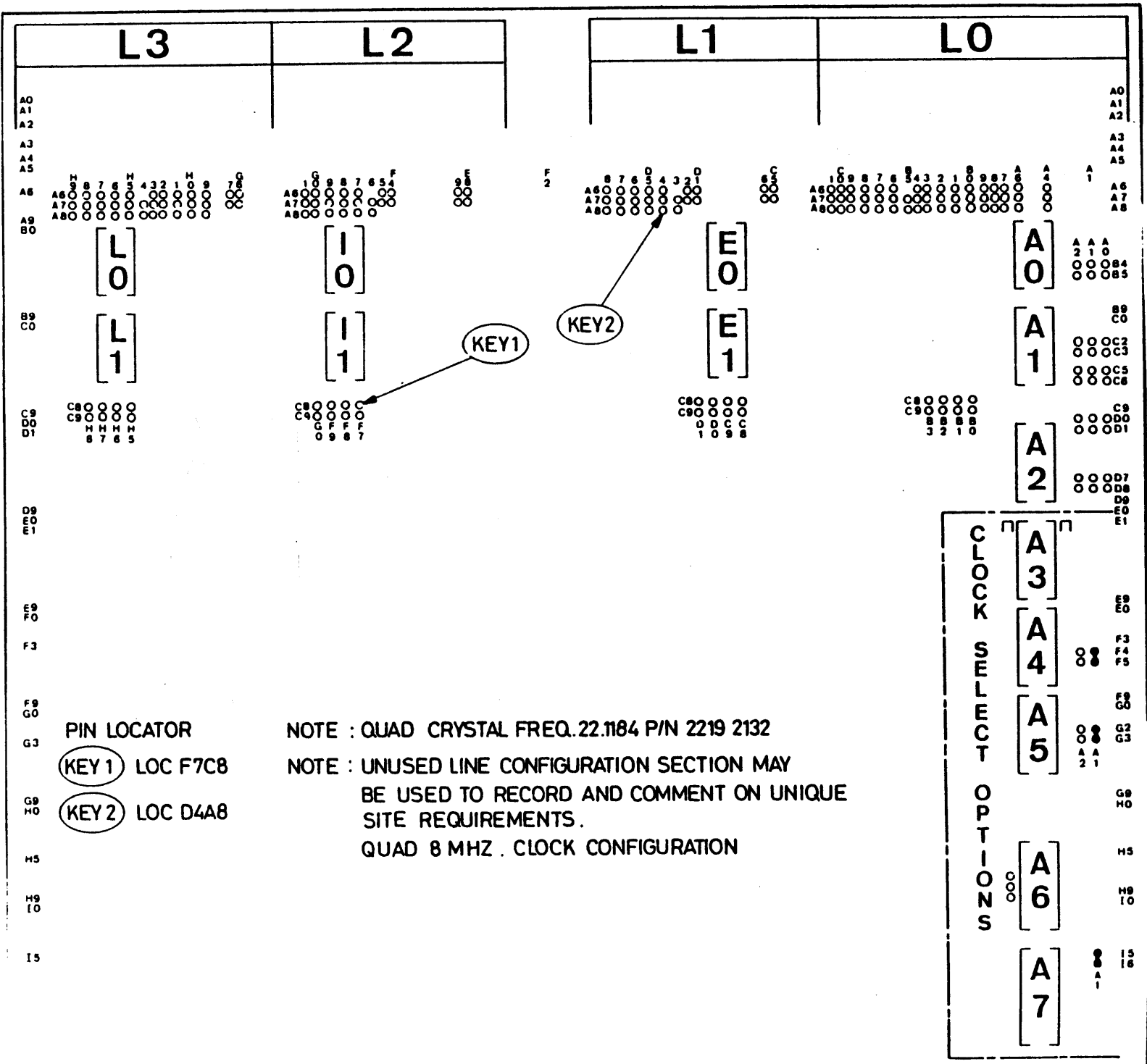
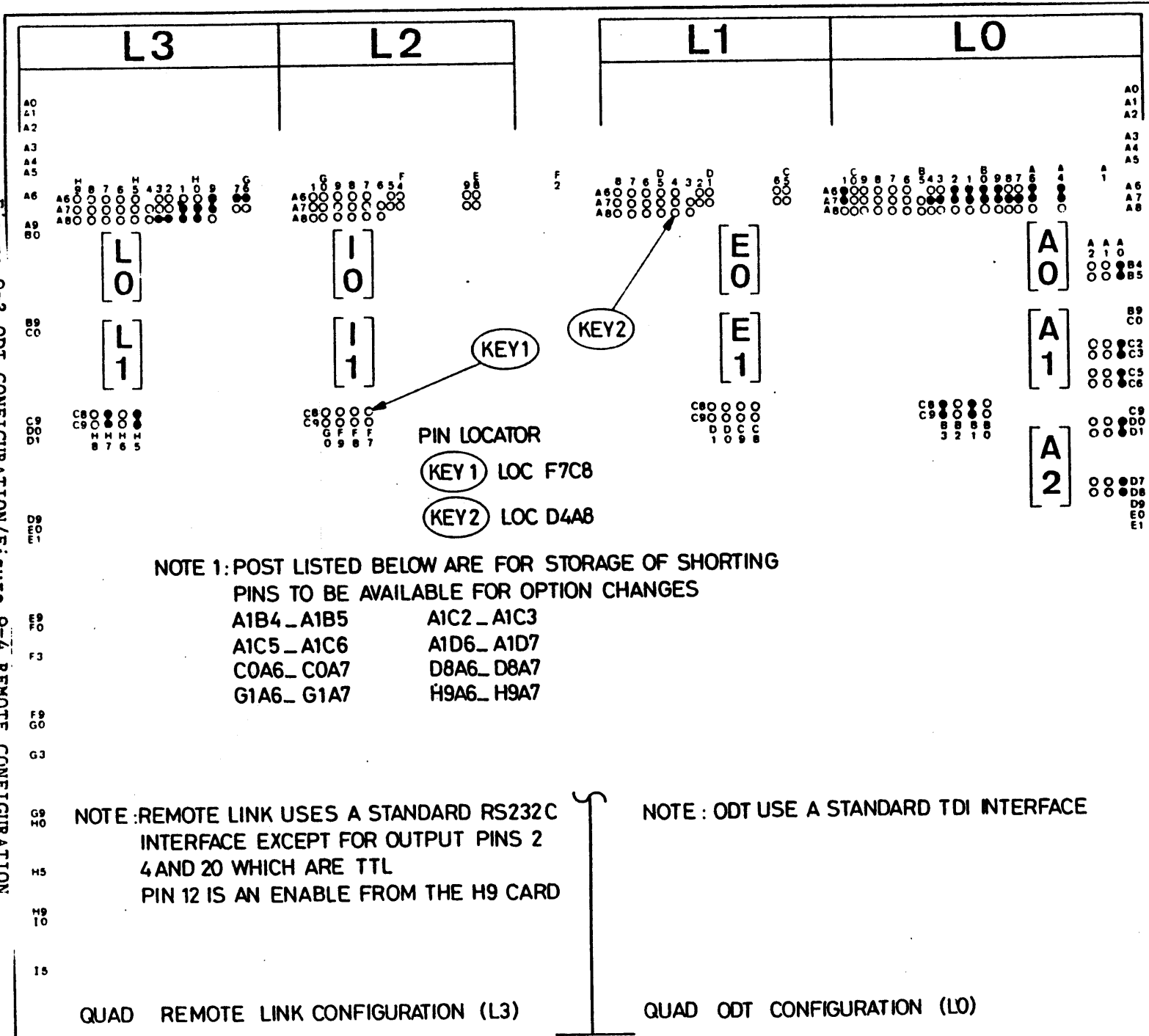


Figure 9-2 8 Mhz CLOCK CONFIGURATION

PIN LOCATOR  
 (KEY 1) LOC F7C8  
 (KEY 2) LOC D4A8

NOTE : QUAD CRYSTAL FREQ. 22.1184 P/N 2219 2132  
 NOTE : UNUSED LINE CONFIGURATION SECTION MAY  
 BE USED TO RECORD AND COMMENT ON UNIQUE  
 SITE REQUIREMENTS.  
 QUAD 8 MHZ . CLOCK CONFIGURATION

Figure 9-3 ODI CONFIGURATION/figure 9-4 REMOTE CONFIGURATION



PIN LOCATOR  
 (KEY 1) LOC F7C8  
 (KEY 2) LOC D4A8

NOTE 1: POST LISTED BELOW ARE FOR STORAGE OF SHORTING PINS TO BE AVAILABLE FOR OPTION CHANGES

A1B4_ A1B5	A1C2_ A1C3
A1C5_ A1C6	A1D6_ A1D7
COA6_ COA7	D8A6_ D8A7
G1A6_ G1A7	H9A6_ H9A7

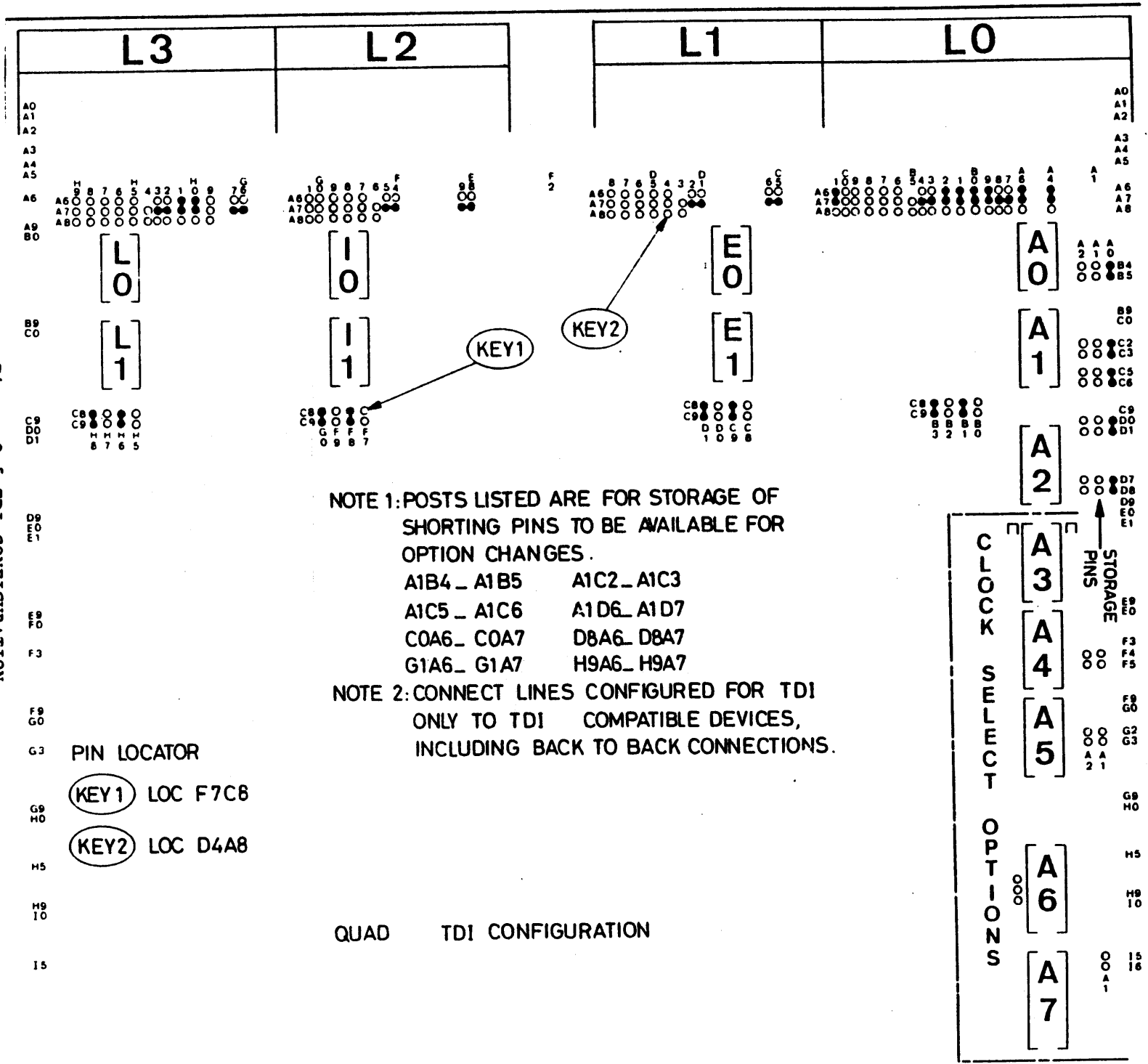
NOTE :REMOTE LINK USES A STANDARD RS232C INTERFACE EXCEPT FOR OUTPUT PINS 2 4 AND 20 WHICH ARE TTL  
 PIN 12 IS AN ENABLE FROM THE H9 CARD

NOTE : ODT USE A STANDARD TDI INTERFACE

QUAD REMOTE LINK CONFIGURATION (L3)

QUAD ODT CONFIGURATION (L0)

Figure 9-5 TDI CONFIGURATION



PIN LOCATOR

(KEY1) LOC F7C8

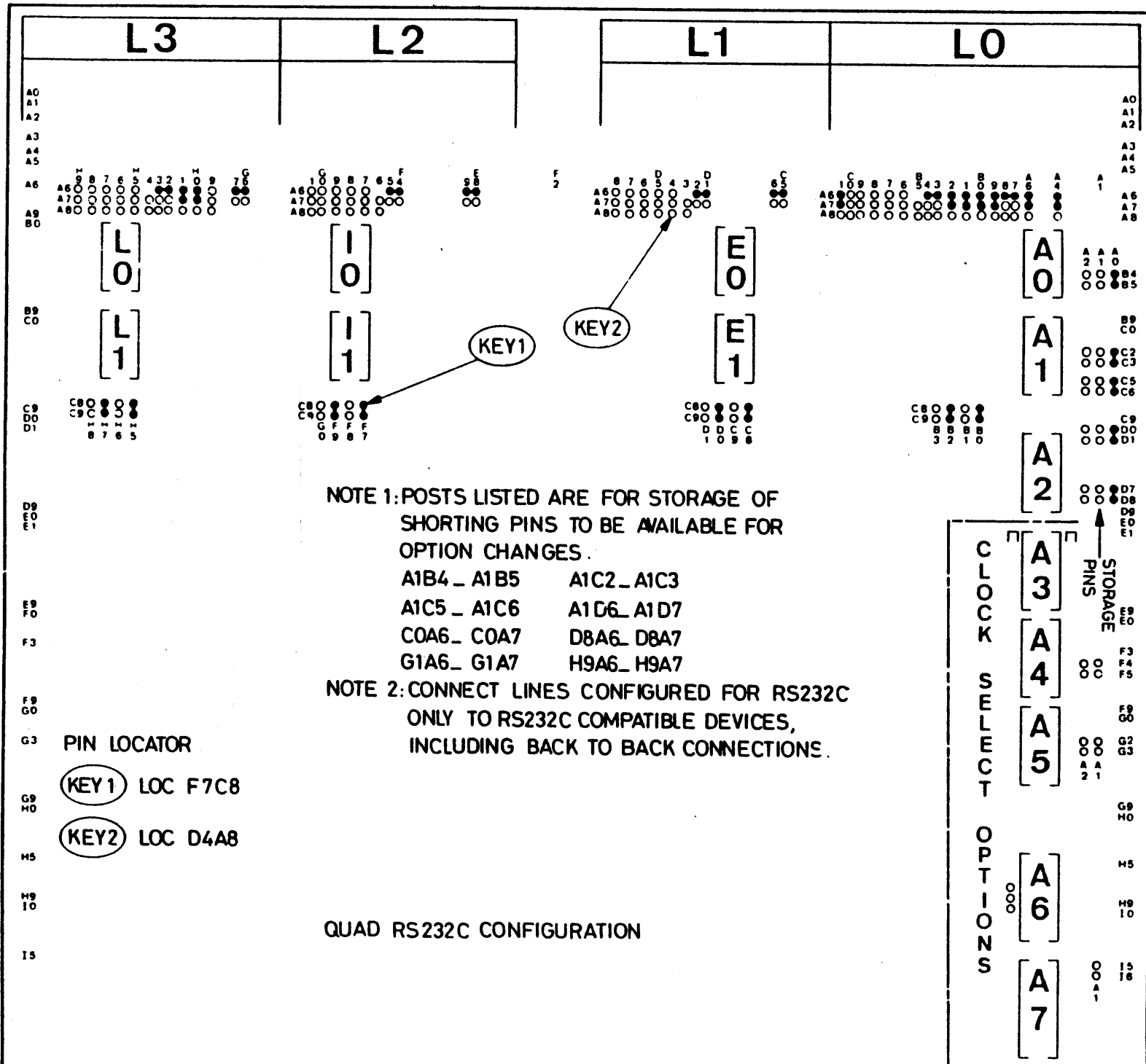
(KEY2) LOC D4A8

NOTE 1: POSTS LISTED ARE FOR STORAGE OF SHORTING PINS TO BE AVAILABLE FOR OPTION CHANGES.

- A1B4 \_ A1B5      A1C2 \_ A1C3
- A1C5 \_ A1C6      A1D6 \_ A1D7
- COA6 \_ COA7      D8A6 \_ D8A7
- G1A6 \_ G1A7      H9A6 \_ H9A7

NOTE 2: CONNECT LINES CONFIGURED FOR TDI ONLY TO TDI COMPATIBLE DEVICES, INCLUDING BACK TO BACK CONNECTIONS.

QUAD TDI CONFIGURATION



NOTE 1: POSTS LISTED ARE FOR STORAGE OF SHORTING PINS TO BE AVAILABLE FOR OPTION CHANGES.

- A1B4\_ A1B5      A1C2\_ A1C3
- A1C5\_ A1C6      A1D6\_ A1D7
- COA6\_ COA7      D8A6\_ D8A7
- G1A6\_ G1A7      H9A6\_ H9A7

NOTE 2: CONNECT LINES CONFIGURED FOR RS232C ONLY TO RS232C COMPATIBLE DEVICES, INCLUDING BACK TO BACK CONNECTIONS.

PIN LOCATOR

- (KEY1) LOC F7C8
- (KEY2) LOC D4A8

QUAD RS232C CONFIGURATION

Figure 9-6 RS232C CONFIGURATION

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## DATA COMMUNICATION PROCESSOR 4

## 1. DCP-4 UNPACKING

- a. Remove the DCP-4 from the shipping container. There should be one or two card, T&F documents, cables, and the Unit Travel Log. Verify these and all other items on the Packing List are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical condition of each logic card, if any card appears damaged do not install it in the system. Take the appropriate action to effect repairs before use in the system.

## 2. INSTALLATION INSTRUCTIONS

DCP-4 is a one or two cards control which can be installed in the processor backplane (I/O area) or in an I/O Extension backplane. The control implements several data communication disciplines depending on the "Line Module Board" plugged into the "Mother Board".

One or two "Line Module Boards" may be plugged on the first card called "DCP-4 BASE" card whereas one to four "Line Module Boards" may be plugged on the second card called "DCP-4 EXTENSION" card.

The DCP-4 installed in the processor backplane is of the TTL interface type. All other DCP4s in the system must be of the CTL interface type.

See CMS configuration and card location diagram in the system T & F documents for correct card locations.

3. CHANNEL STRAPPING INSTRUCTIONS

DCP-4 channel number and service request mask bit must be strapped on the DCP-4 BASE card according to the following figures.

B 1965 / B 1995 INSTALLATION MANUAL

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JUMPER A9 CONFIGURATION - For channel 08 to 15, see also next page

<pre> /----- 01- --- -16 02-  "  -15 03-  "  -14 04-  "  -13 05-  "  -12 06-  "  -11 07-  "  -10 08-  "= -09           </pre> <p>0</p>	<pre> /----- 01- --- -16 02-  "  -15 03-  "  -14 04-  "  -13 05-  "  -12 06-  "  -11 07- * "= -10 08- *   -09           </pre> <p>1</p>	<pre> /----- 01- --- -16 02-  "  -15 03-  "  -14 04-  "  -13 05-  "  -12 06- * "= -11 07-   -10 08- *   -09           </pre> <p>2</p>	<pre> /----- 01- --- -16 02-  "  -15 03-  "  -14 04-  "  -13 05-  "= -12 06- *   -11 07- *   -10 08- *   -09           </pre> <p>3</p>
<pre> /----- 01- --- -16 02-  "  -15 03-  "  -14 04-  "= -13 05- *   -12 06-   -11 07-   -10 08- *   -09           </pre> <p>4</p>	<pre> /----- 01- --- -16 02-  "  -15 03-  "= -14 04-   -13 05- *   -12 06- *   -11 07- *   -10 08- *   -09           </pre> <p>5</p>	<pre> /----- 01- --- -16 02-  "= -15 03-   -14 04-   -13 05- *   -12 06- *   -11 07- *   -10 08- *   -09           </pre> <p>6</p>	<pre> /----- 01- ----- -16 02-   -15 03-   -14 04-   -13 05- *   -12 06- *   -11 07- *   -10 08- *   -09           </pre> <p>7</p>
<pre> /----- 01-   -16 02-   -15 03-   -14 04- * -13 05-   -12 06-   -11 07-   -10 08- * -09           </pre> <p>8 : See Note</p>	<pre> /----- 01-   -16 02-   -15 03-   -14 04- * -13 05-   -12 06-   -11 07- * -10 08- * -09           </pre> <p>9 : See Note</p>	<pre> /----- 01-   -16 02-   -15 03-   -14 04- * -13 05-   -12 06- * -11 07-   -10 08- * -09           </pre> <p>10 : See Note</p>	<pre> /----- 01-   -16 02-   -15 03-   -14 04- * -13 05-   -12 06- * -11 07- * -10 08- * -09           </pre> <p>11 : See Note</p>
<pre> /----- 01-   -16 02-   -15 03-   -14 04- * -13 05- * -12 06-   -11 07-   -10 08- * -09           </pre> <p>12 : See Note</p>	<pre> /----- 01-   -16 02-   -15 03-   -14 04- * -13 05- * -12 06-   -11 07- * -10 08- * -09           </pre> <p>13 : See Note</p>	<pre> /----- 01-   -16 02-   -15 03-   -14 04- * -13 05- * -12 06- * -11 07-   -10 08- * -09           </pre> <p>14 : See Note</p>	<pre> /----- 01-   -16 02-   -15 03-   -14 04- * -13 05- * -12 06- * -11 07- * -10 08- * -09           </pre> <p>15 : See Note</p>

\* = CONNECTED TOGETHER

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2233 4858 REVISION AE

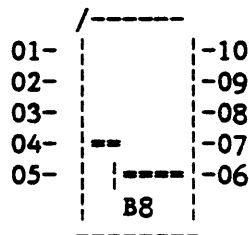
\*br bp

NOTE : For channels 08 thru 15 solder a wire from jumper B8, pin 06 to pin 1,2,3,4,5,8,9, or 10 of the same jumper as described.

STRAPPING TABLE - B8

Channel #	Connect B806 to..
15	B801
14	B802
13	B803
12	B804
11	B805
10	B808
9	B809
8	B810

CONFIGURATION EXAMPLE FOR CHANNEL 12 :

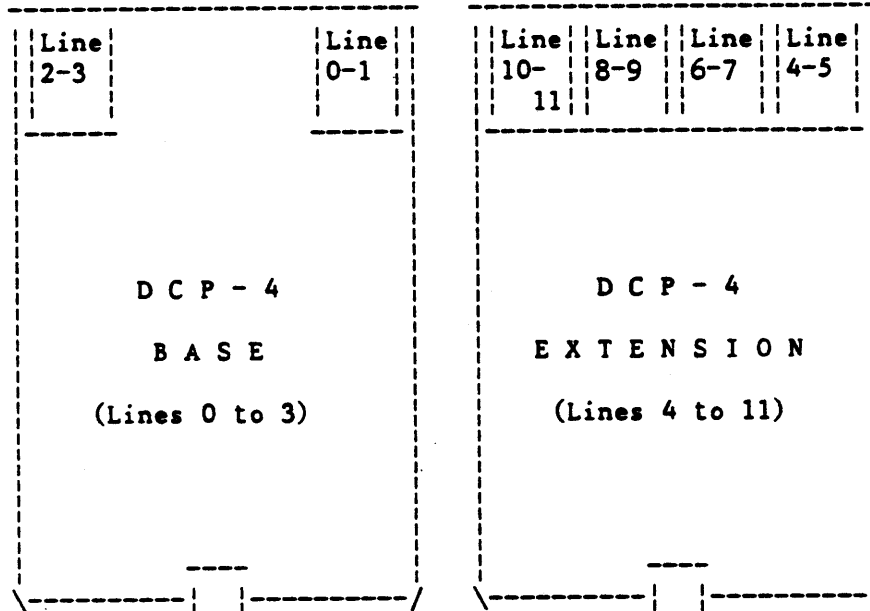


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4. LINE ADAPTER INSTRUCTIONS

The DCP-4 is capable to control 1 to 12 lines distributed as follows:



When installing a Line Adapter, three major units have to be dealt with:

- the Mother Board (refer to 4.1)
- the Line Module (refer to 4.2)
- the Line Adapter cable (refer to 4.3)



## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.1 Mother Board Instructions

When installing or removing a Line Adapter, the following operations have to be considered:

- "DHMI" Kit insertion or removal
- Mother board modifications.

Line adapters MUST be installed by increasing line number, with no gaps allowed. For instance, line adapter for lines 6-7 may not be installed unless all previous line adapters, i.e 0-1 to 4-5 included are installed.

In this document only installation is considered. It is obvious that to remove line adapters, the inverse operations have to be done. See possible exception under 4.1.2.2

4.1.1 "DHMI" Kit Installation

When installing a Line Adapter on the DCP-4 Base and/or DCP-4 Extension cards, please first insert the related "DHMI" Kit (5 components) on the Mother board.

Refer to Figure 9-7 for DCP-4 Base card drawing and Figure 9-8 for DCP-4 Extension card drawing.

4.1.2 Mother Board Modifications

Depending on the card (Base or Extension), strapping or minor modifications must be performed.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.1.2.1 DCP-4 Base Card Strapping

- Line 0: Add a strap between pin 01 and 10 of location M2 for all Line Adapters, if not already present.  
Lift pin 10 of PTMR at location FZ if a "SINGLE D/S AC L/M" or a "SINGLE NRZI D/S AC L/M" must be installed.
- Line 2: Add a strap between pin 01 and 10 of location Z2 for all Line Adapters, if not already present.  
Lift pin 10 of PTMR at location H1 if a "SINGLE D/S AC L/M" or a "SINGLE NRZI D/S AC L/M" must be installed.

NOTE: M2 and Z2 are located below Line Modules.

4.1.2.2 DCP-4 Extension Card Modifications

These modifications need to be done only if one of the following Line Modules has to be installed:

- "SINGLE Data Set AC"      Line Module
- "SINGLE NRZI D/S AC"      Line Module

- Line 4: - Add wire between following locations:  
- C3 pin 27 to XA pin 34.  
(If present, this wire needs not be removed if a dual line Line Module must be installed)  
- Lift pin 10 of PTMR at location C5.
- Line 6: - Add wire between following locations:  
- E3 pin 27 to XB pin 34.  
(If present, this wire needs not be removed if a dual line Line Module must be installed)  
- Lift pin 10 of PTMR at location E5.
- Line 8: - Add wire between following locations:  
- I3 pin 27 to XC pin 34.  
(If present, this wire needs not be removed if a dual line Line Module must be installed)  
- Lift pin 10 of PTMR at location I5.
- Line 10:- Add wire between following locations:  
- K3 pin 27 to XD pin 34.  
(If present, this wire needs not be removed if a dual line Line Module must be installed)  
- Lift pin 10 of PTMR at location K5.

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#### 4.2 Line Module Instructions and Installation

Depending on the Line Adapter, the setups that are required to be performed on the line module concern:

- the Line Module Identification (refer to 4.2.1)
- the Data Set Interface (refer to 4.2.2)
- the Automatic Calling Equipment Interface (refer to 4.2.3)

When all the setups required have been performed on the Line Module (Baby-Board), please plug the line module into the mother board according to figure 9-7 (Base Card) or figure 9-8 (Extension Card).

##### 4.2.1 Line Module Identification Set Up

The following Line Modules have to be configured manually:

- Dual Half Duplex Data Set Line Module  
(refer to 4.2.1.1)
- Single Data Set with Automatic Calling Line Module  
(refer to 4.2.1.2).
- TDI/Half Duplex Data Set Line Module  
(refer to 4.2.1.3)
- Single "NRZI" Data Set with Automatic Calling  
Line Module (refer to 4.2.1.4)

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2233 4858 REVISION AE

4.2.1.1 Dual Half Duplex Data Set Line Module

If no Automatic Dial Out operation is required, please solder wires as follows at solder side of Line Module board:

- "ODD" line: post header # 16 to # 18.
- "EVEN" line: post header # 49 to # 47.

Refer to Figure 9-10

If Automatic Dial Out operation is required, please solder wires as follows at solder side of Line Module board:

- "ODD" line: post header # 16 to # 17.
- "EVEN" line: post header # 49 to # 48.

Refer to Figure 9-11

Note that post headers are marked at component side of L/M.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.2.1.2 Single Data Set with Automatic Calling Line Module

If neither Automatic Calling nor Automatic Dial Out operations are required, please solder wires as follows at solder side of Line Module board:

- post headers # 16, # 17, # 47, # 48, # 49 to Ground,
- post header # 18 to + 5 V.

Refer to Figure 9-17.

If no Automatic Calling Equipment is attached but Automatic Dial Out operation is required, please solder wires as follows at solder side of Line Module board:

- post headers # 17, # 47, # 48, # 49 to Ground,
- post headers # 16, # 18, to + 5 V.

Refer to Figure 9-18.

If an Automatic Calling Equipment is attached and Automatic Dial Out is not required, please solder wires as follows at solder side of Line Module board:

- post headers # 16 and # 17 to Ground,
- post headers # 18, # 47, # 48, # 49 to + 5 V.

Refer to Figure 9-19.

If Automatic Calling Equipment is attached and Automatic Dial Out is required, please solder wires as follows at solder side of Line Module board:

- post header # 17 to Ground,
- post headers # 16, # 18, # 47, # 48, # 49 to + 5 V.

Refer to Figure 9-20.

Note that post headers are marked at components side of L/M.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.2.1.3 TDI/Half Duplex Data Set Line Module

For the "TDI" connection, please solder wires as follows at solder side of the Line Module board:

- post header # 16 to + 5 V,
- post headers # 17 and # 18 to Ground.

Refer to Figure 9-14.

For the "HDX D/S" connection, if no Automatic Dial Out operation is required, please solder wires as follows at solder side of Line Module board:

- post header # 48 to + 5 V,
- post headers # 47 and # 49 to Ground.

Refer to Figure 9-14.

For the "HDX D/S" connection, If Automatic Dial Out operation is required, please solder wires as follows at solder side of Line Module:

- post headers # 48 and 49 to + 5 V.
- post header # 47 to Ground.

Refer to Figure 9-15.

Note that post headers are marked at component side of L/M.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.2.1.4 Single "NRZI" Data Set with Automatic Calling Line Module

If no Automatic Calling Equipment is attached, please solder wires as follows at solder side of Line Module board:

- post headers # 16, # 47, # 48, # 49 to Ground,
- post header # 17, # 18 to + 5 V.

Refer to Figure 9-21.

If an Automatic Calling Equipment is attached, please solder wires as follows at solder side of Line Module board:

- post header # 16 to Ground,
- post headers # 17, # 18, # 47, # 48, # 49 to + 5 V.

Refer to Figure 9-22.

Note that post headers are marked at component side of L/M.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.2.2 Data Set Interface Set Up

When used, the Data Set interface is defined, by default, as follows:

signal	metal plate connector pin #	Line Module frontplane pin #	
		ODD line	EVEN line
AA	01	01	26
BA	02	03	28
BB	03	05	30
CA	04	07	32
CB	05	09	34
CC	06	11	36
AB	07	13	38
CF	08	15	40
--	09	17	42
--	10	19	44
CH *	11	21	46
--	12	23	48
--	13	25	50
NS *	14	02	27
DB	15	04	29
LC *	16	06	31
DD	17	08	33
DM *	18	10	35
--	19	12	37
CD	20	14	39
--	21	16	41
CE	22	18	43
CH *	23	20	45
SS *	24	22	47
SI	25	24	49

\* Default position (may be changed)

If your Data Set interface does not conform to the above list, set proper interface by moving, or removing if necessary, straps at Line Module (solder side) of marked signals.



B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

The following Line Modules may be configured manually:

- Dual Half Duplex Data Set Line Module  
(refer to 4.2.2.1)
- Single Data Set with Automatic Calling Line Module  
(refer to 4.2.2.2)
- TDI/Half Duplex Data Set Line Module  
(refer to 4.2.2.3)
- Single "NRZI" Data Set with Automatic Calling  
Line Module (refer to 4.2.2.4)

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.2.2.1 Dual Half Duplex Data Set Line Module

The following list gives the strappable signals and the front-plane pins to which they may be connected.

signal	ODD line	EVEN line
NS	02 *	27 *
LC	06 *	31 *
CH	20*,21*	45*,46*
DM	10*,16	35*,41
SS	20,22*	45,47*

\* Default Position

Refer to Figure 9-12

4.2.2.2 Single D/S (also NRZI) with Automatic Calling Line Module

The following list gives the strappable signals and the front-plane pins to which they may be connected.

signal	pin #
NS	27 *
LC	31 *
CH	45*,46*
DM	35*,41
SS	45,47*

\* Default Position

Refer to Figure 9-13 for "SINGLE D/S AC" Line Module.

Refer to Figure 9-23 for "SINGLE NRZI D/S AC" Line Module.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.2.2.3 TDI/Half Duplex Data Set Line Module

The following list gives the strappable signals and the front-plane pins to which they may be connected.

signal	pin #
NS	02 *
LC	06 *
CH	20*,21*
DM	10*,16
SS	20,22*

\* Default Position

Refer to Figure 9-16.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

4.2.3 Automatic Calling Equipment Interface Set Up

When used, the A.C.E. interface is defined, by default, as follows:

signal	metal plate connector pin #	L/M frontplane pin #
AA	01	01
DPR	02	03
ACR	03	05
CRQ	04	07
PND	05	09
PWI *	06	11
AB	07	13
--	08	15
--	09	17
--	10	19
--	11	21
--	12	23
COS	13	25
NB1	14	02
NB2	15	04
NB4	16	06
NB8	17	08
--	18	10
--	19	12
--	20	14
--	21	16
DLO	22	18
--	23	20
--	24	22
COS	25	24

\* See 4.2.3.1 and 4.2.3.2

The following Line Modules may be configured manually:

- Single Data Set with Automatic Calling Interface.  
(refer to 4.2.3.1)
- Single "NRZI" Data Set with Automatic Calling Interface  
(refer to 4.2.3.2)

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

#### 4.2.3.1 Single Data Set with Automatic Calling Interface

If the Single D/S AC Line Module must be used in FDX mode without an ACE or with the ACE powered off, please strap PWI signal at "FORCED" position as described in Figure 9-13.

If an ACE exists and should report its POWER ON status, please strap "ACTIVE" as described on the same figure. Also strap this way if the MTR test must be run.

#### 4.2.3.2 Single "NRZI" Data Set with Automatic Calling Interface

If the Single NRZI D/S AC Line Module must be used in FDX mode without an ACE or with the ACE powered off, please strap PWI signal at "FORCED" position as described in Figure 9-23.

If an ACE exists and should report its POWER ON status, please strap "ACTIVE" as described on the same figure. Also strap this way if the MTR test must be run.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

#### 4.3 Cable Instructions

Fill labels called out in P/L of the concerned Line Adapter.

Proceed then to the connection of the Line Adapter to the mounting plate by executing following steps:

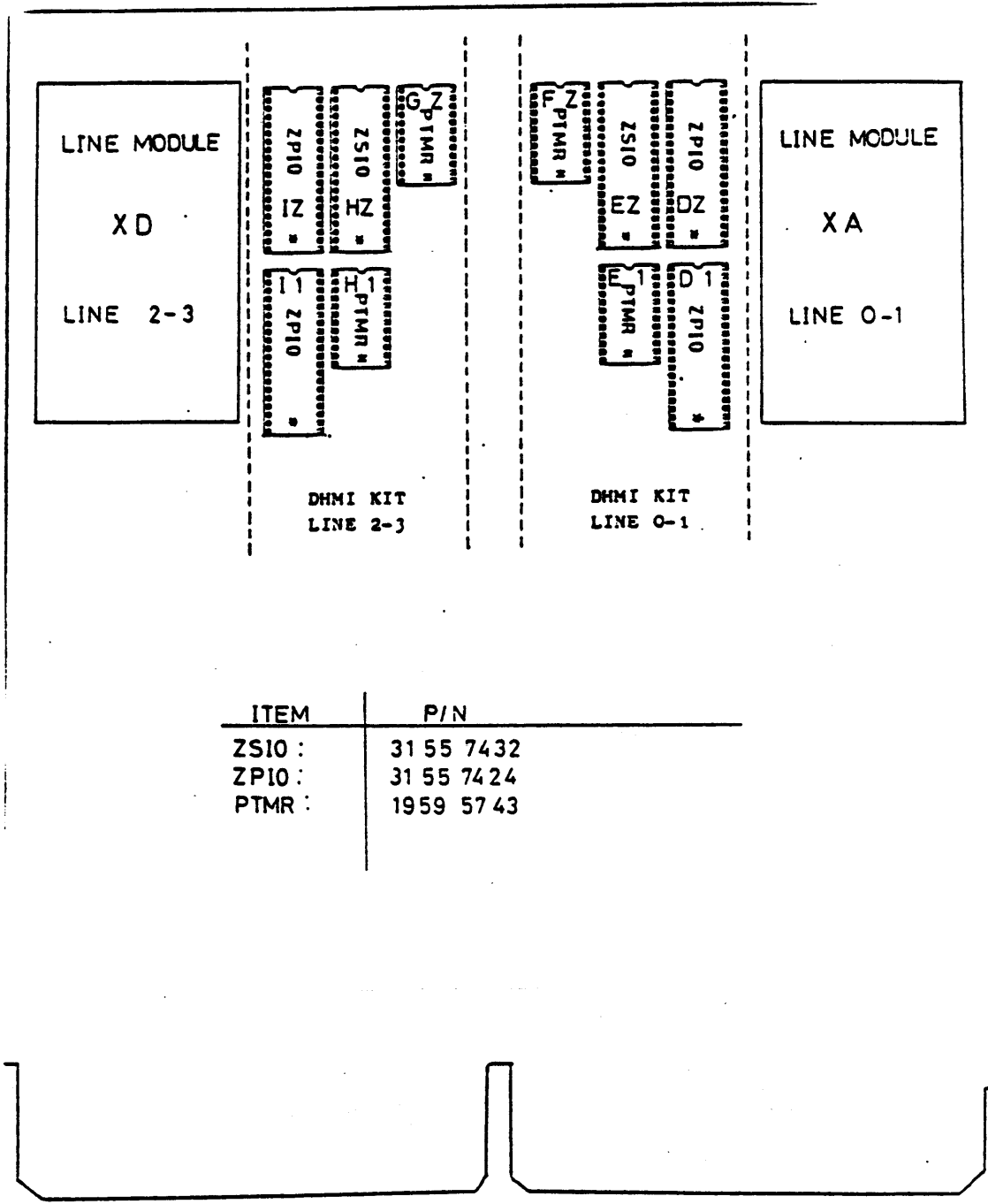
Determine the correct mounting plate cut-out for each Line Adapter. Connect each connector to its cut out as shown in fig.9-9. Note that the connector flange is on the top side of the mounting plate.

The label called out in the P/L of the Line Adapter interface cable should be affixed to the mounting plate for EACH installed Line Adapter. The label should be marked in permanent black ink with appropriate line number.

Route the cable to the appropriate DCP4 line module connector.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE



ITEM	P/N
ZS10 :	31 55 7432
ZP10 :	31 55 7424
PTMR :	1959 5743

figure 9 - 7

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

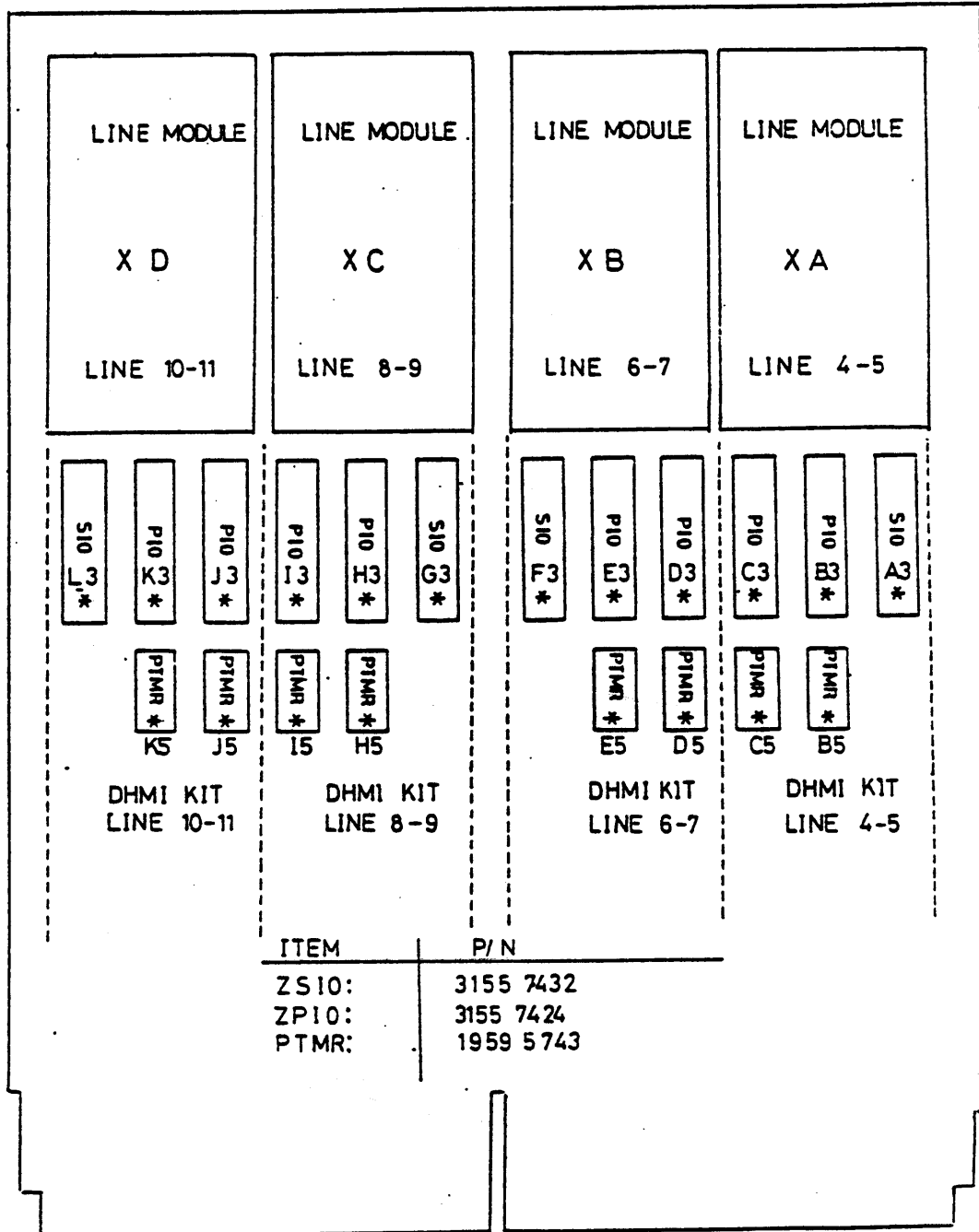


figure 9 - 8



TOP VIEW

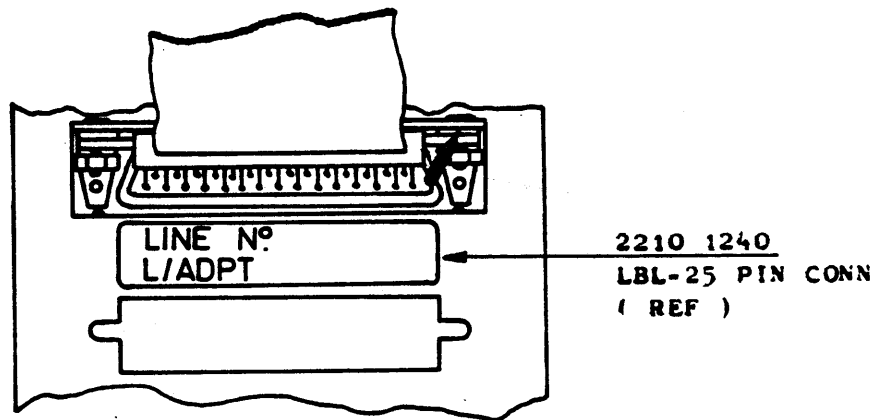
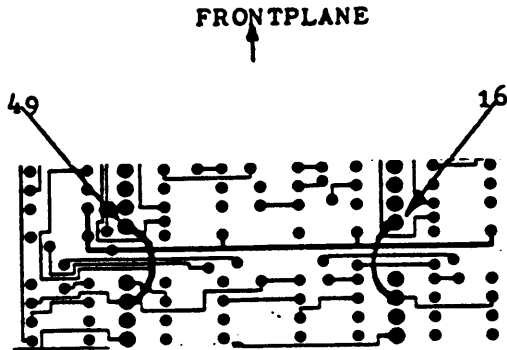
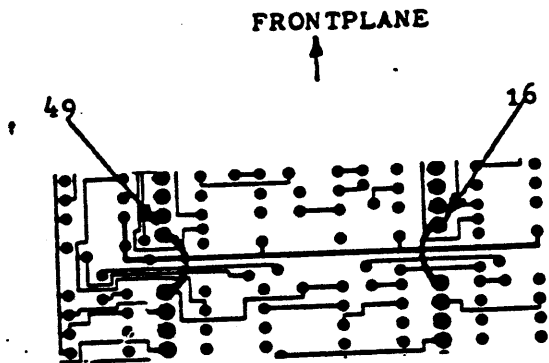


figure 9 - 9



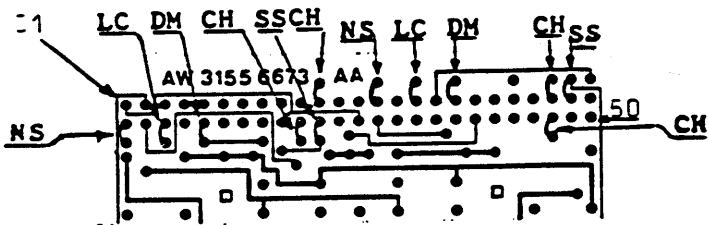
"DUAL HDX D/S"  
LINE MODULE BOARD,  
SOLDER SIDE

figure 9 - 10



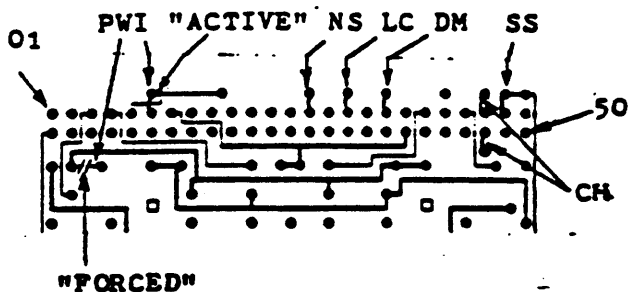
"DUAL HDX D/S"  
LINE MODULE BOARD,  
SOLDER SIDE

figure 9-11



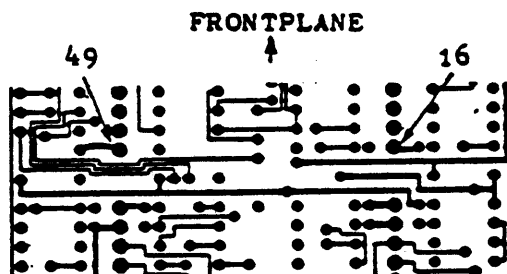
"DUAL HDX D/S"  
LINE MODULE FRONTPLANE,  
SOLDER SIDE

figure 9 - 12



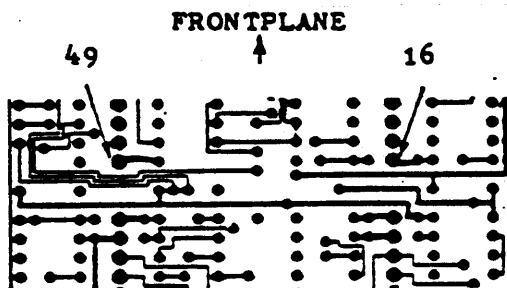
"SINGLE D/S AC"  
LINE MODULE FRONTPLANE  
SOLDER SIDE

figure 9 - 13



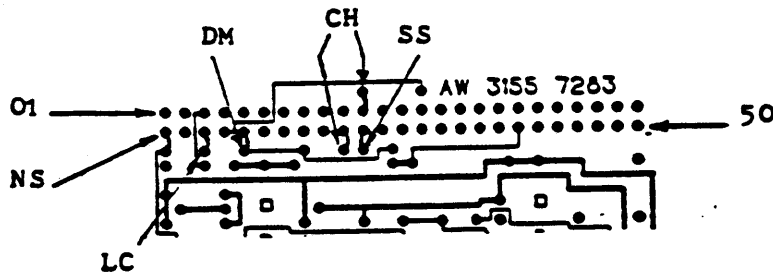
"TDI-HDX D/S"  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 14



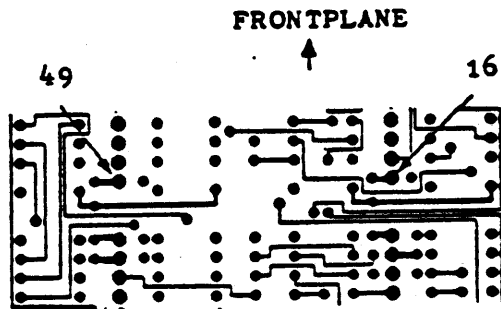
"TDI-HDX D/S"  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 15



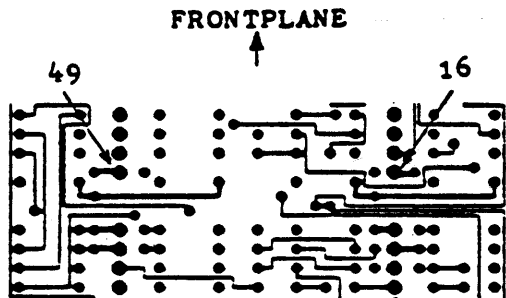
"TDI-HDX D/S"  
LINE MODULE FRONTPLANE  
SOLDER SIDE

figure 9 - 16



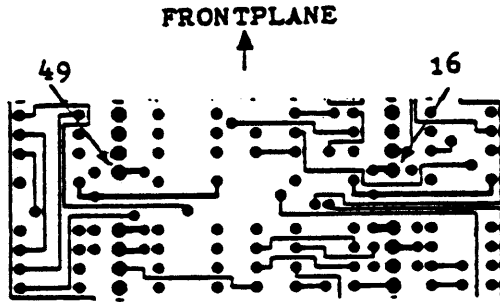
"SINGLE D/S AC"  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 17



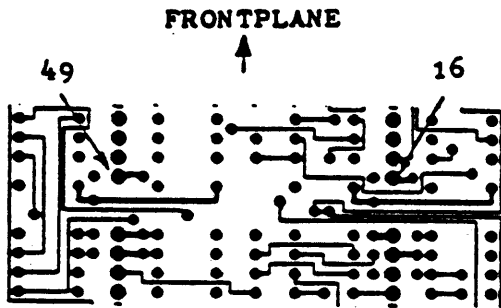
"SINGLE D/S AC"  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 18



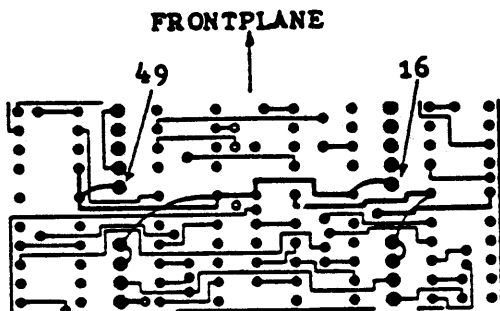
"SINGLE D/S AC"  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 19



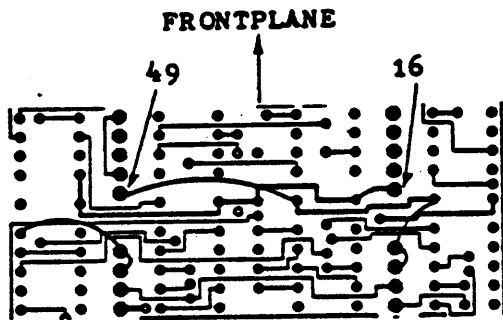
"SINGLE D/S AC"  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 20



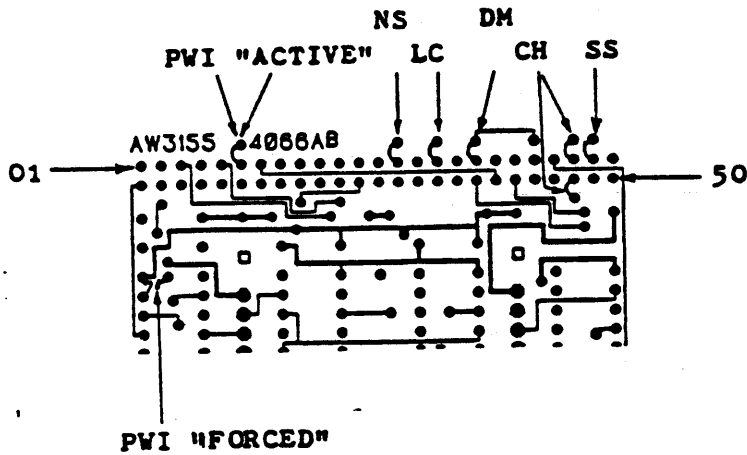
" SINGLE NRZI D/S AC "  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 21



" SINGLE NRZI D/S AC "  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 22



" SINGLE NRZI D/S AC "  
LINE MODULE BOARD  
SOLDER SIDE

figure 9 - 23

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 10. COLD START

This section of the Installation Manual outlines, in detail, the procedures to follow to COLD START a B 1965/1995 system. At this time more of the system resources will be used than the individual tests have exercised.

a. MCP II MODE

The Cold Start procedures are divided into three steps. Depending on system resources you may skip one or more of these steps. The first step may be skipped if an initialized disk is available, otherwise perform step one to initialize a system disk. If no tape is available on the system then a Disk Cold Start must be performed by following step two (2) below. Otherwise, if a tape subsystem is available then either a Tape or Disk Cold Start can be done, see step two (2) or three (3).

1. Load the stand-alone utility PACK/INIT, then follow the procedures in the B1000 System Software Operator Guide, volume 2 to initialize a disk as a system disk. Be prepared to wait awhile.
2. Load the stand-alone utility program COLDSTART/DISK, mount the source disk in disk drive 0 (DPA). Follow the procedures outline in the B1000 System Software Operator Guide and complete the Cold Start. Note, a complete copy should be performed to load all system software.
3. Load the stand-alone utility program COLDSTART/TAPE, mount the "SYSTEM" tape on any tape drive. Follow the procedures outlined in the B1000 System Software Operator Guide, volume 2 and complete the Cold start.

b. CMS MODE

The Cold Start procedures are divided into two steps. Depending on system resources you may skip one of these steps. The first step may be skipped if an initialized disk is available, otherwise perform step one to initialize a system disk.

1. Load the stand-alone utility PACK/INIT, then follow the procedures in the Computer Management Systems (CMS) System Software Operation Guide, to initialize a disk as a system disk. Be prepared to wait awhile.
2. Load the stand-alone utility program COLDSTART, mount the "System" tape on any tape drive. Follow the procedures outlined in the CMS Software Operation Guide and complete the Cold start.

## 11. CLEAR START & ON-LINE TESTING

### a. MPCII Mode

This is the final section of the Installation Manual. The system will now be Clear Started and all remaining programs loaded if a Tape Cold Start was accomplished in section ten (10). Additionally the On-Line Test will be loaded and all peripheral subsystems tested and exercised. If a Tape Cold Start was performed in step ten (10) then perform step two (2) below, otherwise proceed to step three (3) after step one (1).

1. Place the Clear Start cassette in the Cassette Drive. Enter CLEAR MTR GO on the ODT. The Clear Start tape will be loaded and the Clear Start program execution begun. After the Clear start message is displayed, set the TIME and DATE using the "DR" and "TR" commands.

2. Mount the SYSTEM tape on any tape drive and enter the following message to load the remaining system programs.

COPY AND COMPARE =/= FROM SYSTEM

3. Mount the <BOLT.tape> tape on any tape drive and enter the following message to load these tests to the System disk.

COPY AND COMPARE =/= FROM <BOLT.tape>

4. Execute the <BOLT.TEST> program for each peripheral subsystem on the system. Refer to the <BOLT.REF> documents for operating instructions for each test.
5. If the system is a dual processor system, then repeat steps one (1) and four (4) above, using the other processor as master.

This completes the installation and verification of the B 1965/1995 system. If any problems arise during the On-Line testing or operations, refer to the System Maintenance Guide for corrective action. Complete the Arrival Quality Report for the system and send it to the LIEGE PA&S activity.



## B.1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

b. CMS Mode.

This is the final section of the Installation Manual. The system will now be Clear Started.

1. Place the Clear Start cassette in the Cassette Drive.  
Enter MTR GO on the ODT. The Clear Start tape will be loaded and the Clear start program execution begun. At end a Date message is displayed.

This completes the installation and verification of the B 1965/1995 system. If any problems arise during operations, refer to the System Maintenance Guide for corrective action. Complete the Arrival Quality Report for the system and sent it to the LIEGE PA&S activity.

APPENDIX AFIELD INSTALLABLE OPTIONS1. EXPANSION CABINET INSTALLATION

- a. Perform the steps detailed on page 4-1 under Processor unpacking (cabinet-12 & cabinet-7) to remove the Expansion cabinet from its shipping container.
- b. Perform the steps detailed below.
  1. Open rear and front doors on mainframe, using an allen wrench.
  2. Remove the right side panel, loosen 5 captive fasteners (TOP), remove 5 screws 10-32 (BOTTOM).
  3. Remove white screw above cassette panel, remove 4 screws 10-32 in front of cassette panel, remove 2 screws 10-32 underneath the front of top cover. Remove top door hinge, by removing 2 screws 10-32 under top hinge.  
Be careful when removing the screws under the hinge as the front panel will fall. Remove front door.
  4. Remove rear door by removing the 2 screws 10-32 under the top hinge. Remove top cover by loosening the 2 screws 10-32, located on the rear underneath the top cover. Standing at rear of cab. slide top panel forward, lift and remove.
  5. In a similar manner, remove front door in the expansion cab-7, by removing 2 screws 10-32 located under the top hinge.
  6. Remove door rear exp cab-7 by removing 2 screws 10-32, located under the top hinge. To remove top cover loosen 2 screws 10-32, located on the rear underneath the top cover. Remove 2 screws 10-32 under front of the top cover standing at rear of cabinet, slide the top cover forward, lift and remove.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

7. Place bracket top exp cab (2233 7067) on main cabinet. Don't tighten bracket at this time.
8. Place bracket bottom exp cab (2233 7075) on expansion cabinet. Slide cabinet expansion next to the main cabinet. Secure brackets 2233 7067 and 2233 7075 when cabinets are together. Do not tighten at this time.
9. Remove 8 screws 10-32, 4 in right side card housing main cabinet, 4 in left side card housing cabinet expansion. Install front bracket striker 1991 7897 (8 screws)  
Place hardware on front bracket striker  
washer plain 1256 8051 3 places  
washer 1k 1256 7467 3 places  
nut 10-32 1256 5289 3 places  
  
Install front bracket (2233 6796)  
screw 10-32 bottom 2 places  
screw 10-32 top 2 places.
10. Install rear bracket striker 1991 7905 on left corner in main cabinet and right corner in expansion cabinet.  
screw 10-32 2225 9931 6 places.  
Install rear bracket 2233 6804  
2 screws 10-32 bottom  
2 screws 10-32 top  
Place hardware on rear bracket screws.  
washer plain 1256 8051 3 places.  
washer LK 1256 7467 3 places.  
nut 10-32 1256 5289 3 places.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## 11. Connections (see fig A-2 for reference)

DL1 cabinet = cabinet containing 2 power control boards  
(Air Loss board and Over Temperature board)

DL2 cabinet = cabinet containing 1 power control board  
(Air Loss / OVT board)

## a. connect 2 DL1 cabinets .

Remove jumper P28 in board ay thermal control (main cabinet)

Place harness ac exp 2232 0477 between J18 (main cabinet) and J12 (exp cabinet).

Install jumper P28 in thermal control board exp cab-7 at J18.

## b. connect 2 DL2 cabinets.

Remove jumper P28 in main cabinet.

Place harness ac exp 3158 3479 between J18 (main cabinet) and J12 (exp cabinet)

Install jumper P28 at J18 in exp cabinet.

## c. Connect 1 main DL1 cabinet and 1 exp DL2 cabinet.

Remove and discard jumper P28 (2231 3779) in board ay thermal control(main cabinet).

Place harness ac exp 3158 3917 between J18 (main cabinet) and J12 (exp cabinet).

Install jumper P28 (3158 3487) at J18 in AL/OT board (exp cabinet)

## d. Connect 1 main DL2 cabinet and 1 exp DL1 cabinet.

Remove and discard jumper P28 (3158 3487) in board AL/OT in main cabinet.

Place harness ac exp 3158 3925 between J18 (main cabinet) and J12 (exp cabinet).

Install jumper P28 (2231 3779) at J18 in thermal control board exp cabinet.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

12. Adjust the height of the expansion cabinet to match mainframe cabinet height top to floor 30.00 inches.  
Tighten all the screws and nuts already installed.
13. Reinstall the top cover panels, cassette panel (use side panel from cab-12 and install in cab-7) Reinstall rear and front panels.  
Adjust hinges and doors.
14. Install front door lock 1990 8094, 2 places on items 1991 7897 (4 screws 10-32).  
Install rear door lock, 2 places on items 1991 7905 (4 screws 10-32).  
Adjust hinges and doors.
15. Refer to M-processor 9 clock alignment for proper system timing. Refer to card and cable locator 22335137 for logic cable connections.

APPENDIX A continued

FIELD INSTALLABLE OPTIONS

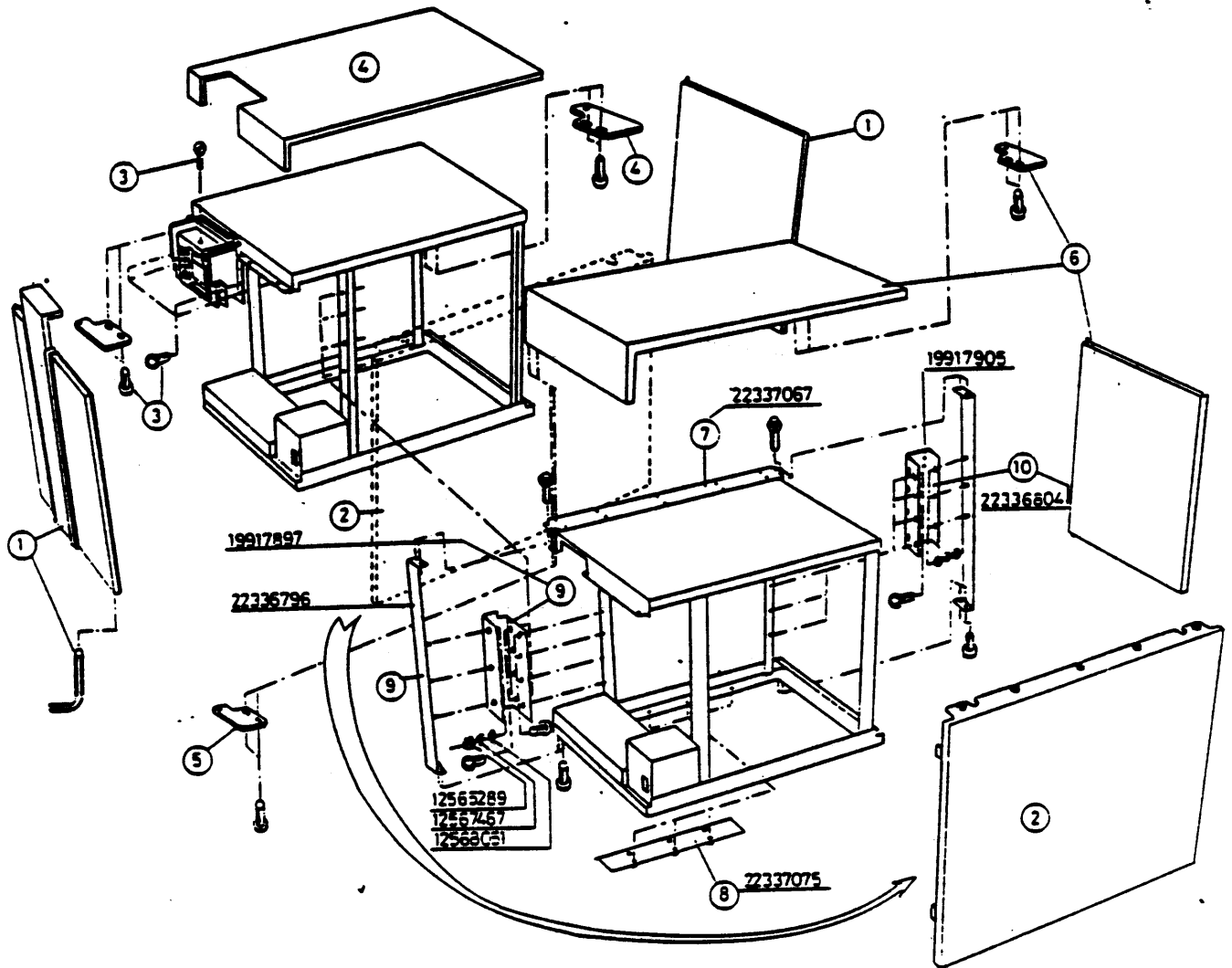


Figure A-1 exp cab-7

APPENDIX A continued

FIELD INSTALLABLE OPTIONS

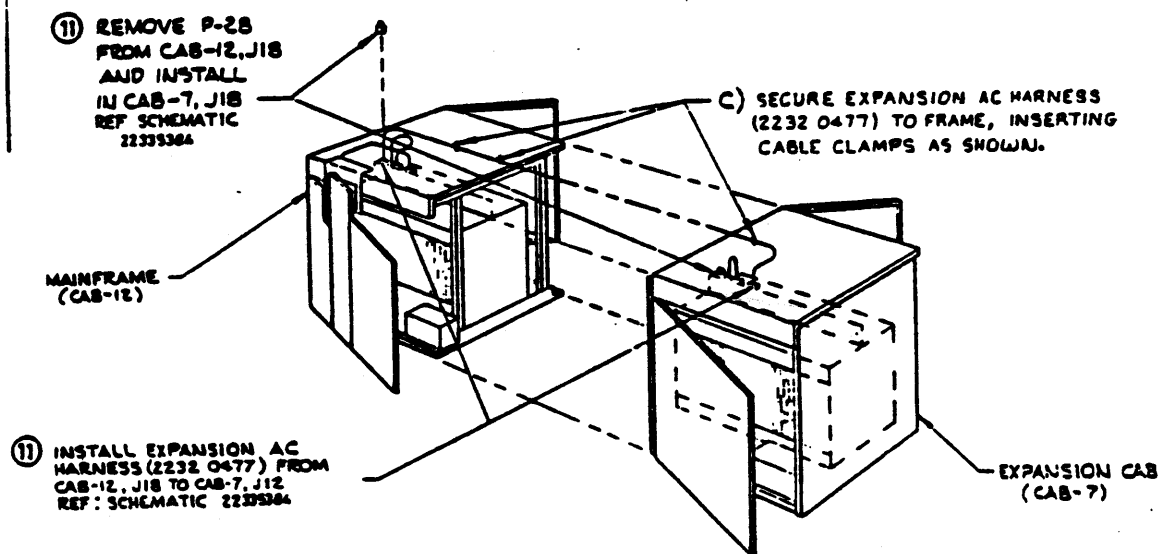


Figure A-2 exp cab-7 connections

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

2. TABLE INSTALLATION

- a. Perform the steps detailed on page 4-4 for table top unpacking and assembly.
- b. Perform the step detailed on page 4-19 to install the table top.

3. SECOND PROCESSOR

The second Processor may be installed in the Expansion cabinet-7 with the following additional backplanes only.

- a. A second DSC-2 and/or a I/O Expansion-5.
- b. A second DSC-2 and/or a second MLC-4. (MCPII mode only)
- c. A second MLC-4 and/or a I/O Expansion-5. (MCPII mode only)

A. PROCESSOR UNPACKING & INSTALLATION

- a. Remove the processor [eight (8) Logic cards!, the processor backplane and cables from the shipping container. Verify these and all other items on the packing list are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical condition of each logic card and the processor backplane, if any card or the backplane appears damaged do not install it in the system. Take the appropriate action to effect repairs before use in the system.
- c. Open the front and rear doors to the Expansion Cabinet-7 refer to figures 4-5, 4-6. Turn off the AC breakers before proceeding



B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

- d. Lower the Power supplies, by removing the retaining bolts then swing the supplies down. This allows access to the backplanes.
- e. Remove the third from the left, six (6) card wind screen, and the two (2) card wind screen adjacent to it from the backplane. It may be necessary to remove the Terminal Block at the top of the backplane.
- f. Install the Processor backplane using the #8-32 hardware supplied with the backplane. Replace the Terminal Block removed in the step above
- g. Connect the +12 and -12 volts power busses to the Terminal block at the top of the backplane.
- h. Install the Logic cards sequentially starting with card "A" in the right most position and ending with the "H" card in the left most position.
- i. Install the frontplane jumpers, logic cables and clock cables between the "MASTER" processor in the main cabinet and the second processor, refer to the Card Location/Interconnection diagram in the System T & F documents for the correct installation of the cables. Verify that the I/O daisy chain and termination for the "H9" card are correct, that is the termination is installed correctly.
- j. Perform the POWER ON CHECKS in section seven (7).
- k. Perform the CENTRAL PROCESSOR TESTING in section eight (8).
- l. Reinstall the Power supplies, close both front and rear doors.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

FIELD INSTALLABLE OPTIONS

DSC-2	I/O	MLC-4 (MCPII mode only)	or PROCESSOR	BLANK	ALWAYS
(6)	(6)	(6)	(2)	(6)	(6)

Cabinet-7 Wind Screens  
Frontplane view

PROCESSOR	MBU	I/O
	(6)	(6)

Cabinet-12 Wind Screens  
Frontplane view

figure A-3

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

4. SECOND DSC-2

A second DSC can be installed in the Expansion Cabinet-7. It consists of a six (6) card backplane (DSC EXT-1), five (5) Logic card (DSC-2), and a Sub-Distribution card. Note: the DSC-2 backplane MUST be installed in the six (6) right most card slots in the Expansion Cabinet-7, as viewed from the backplane side.

## A. DSC-2 UNPACKING

Perform steps 1-a through 1-e under "DSC-2 UNPACKING & INSTALLATION" in section 9.

## B. DSC-2 INSTALLATION

- a. Open the front and rear doors to the Expansion Cabinet, refer to figure 4-4. Turn off the AC breakers before proceeding
- b. Remove the Power Busses from the Power Supplies at the backplane buss bar end, bend supply buss bars down and out of the way.
- c. Remove the right hand wind screen from the backplane.
- d. Install the DSC-2 backplane, lowering the bottom part of the backplane into the slot, then tilting the backplane forward.
- e. Install the #8-32 hardware into the buss bars through the backplane. Insure all hardware is tightened.
- f. Install the Logic cards into the backplane, refer to diagram in the System T & F documents for correct card installation.
- g. Perform steps 1-f through 1-h, and step 2 under "DSC-2 UNPACKING & INSTALLATION" in section nine (9).

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

- h. Install the Sub-Distribution card in the DSC-2 Extension, refer to section nine (9) "SUB-DISTRIBUTION CARD UNPACKING&INSTALLATION.
- i. Reinstall the Power supply Busses removed in step "b" above.
- j. Perform step 3 under "DSC-2 UNPACKING & INSTALLATION" to complete the DSC-2 installation.

## NOTE:

I/O Termination and I/O Interface Daisy Chain is very important for correct system operation. Review the I/O Interface Daisy Chain Instruction in section 9, page 9-17, before Testing.

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 RÉVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

5. I/O EXTENSION-5

The I/O Extension-5 can be installed in the Expansion Cabinet-7. A maximum of three CTL controls is allowed. Two (2), two (2) card controls and one (1), one (1) card control.

The I/O extension-5 can also be installed in Cabinet-12. Only one (1) CTL control is allowed, one (1) one (1) card control or one (1) two (2) card control.

Only ONE I/O ext-5 is allowed by system.

These controls MUST be all CTL type controls.

## A. I/O EXTENSION UNPACKING &amp; INSTALLATION

- a. Remove the I/O Extension-5 backplane and mounting hardware from the shipping container. Verify these and all other items on the packing list are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical condition of the backplane. If it appears damaged do not install it in the system. Take appropriate action to effect repair before using.

## B. I/O EXTENSION INSTALLATION

- a. Open the front and rear doors to the Expansion Cabinet-7, refer to figure 4-4. Turn off the AC breakers before proceeding
- b. Lower the Power supplies, by removing the retaining bolts then swing the supplies down. This allows access to the backplane.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

- c. In expansion cabinet remove the second wind screen from the right, next to the slot for the DSC-2. (see fig A-3).

In Cabinet-12 install I/O Extension-5 next to the slot for MBU.

Note: it may be necessary to remove the terminal block at the top of the backplane.

- d. Install the I/O Extension-5 backplane in the backplane slot and install the #8-32 screws, reinstall the terminal block if removed in the step above. Insure all hardware is tightened.
- e. Connect the +12 and -12 volts power busses to the Terminal Block at the top of the backplane.
- f. Reinstall the Power supplies removed in step "b" above.
- g. Install the Sub-Distribution card and I/O controls into the backplane, refer to the appropriate sections of this manual for installation and test procedures.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

6. SECOND MULTI LINE CONTROL (MCPII mode only)

The second MLC-4 is installed in the Expansion Cabinet-7 to allow a maximum of 32 lines of Data Comm, or more than eight lines without using an I/O Expansion-5 for I/O controls.

## A. MLC-4 UNPACKING

- a. Remove the MLC-4 Logic card and Line Adapters, the MLC-4 backplane, cables, and hardware from the shipping container. Verify these and all other items on the packing list are present. In case of discrepancy at a domestic installation, refer to Field Marketing Manual, section 2.8.5. If the installation is at an International site, local branch management should refer any discrepancy to their Head Office Product Distribution representative.
- b. Note the physical condition of each Logic card and the MLC-4 backplane. If any card or the backplane appears damaged, do not install it in the system. Take the appropriate action to effect repairs before use in the system.

## B. MLC-4 INSTALLATION

- a. Open the front and rear doors to the Expansion Cabinet-7 refer to figure 4-4. Turn off the AC breakers before proceeding.
- b. Lower the Power supplies, by removing the retaining bolts then swing the supplies down. This allows access to the backplane.
- c. Remove the third from the left, six (6) card wind screen, adjacent to the card slots for the I/O Extension-5. It may be necessary to remove the Terminal Block at the top of the backplane.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

- d. Install the MLC-4 backplane using the #8-32 hardware supplied with the backplane. Replace the Terminal Block removed in the step above.
- e. Connect the +12 and -12 volts power busses to the Terminal Block at th top of the backplane.
- f. Perform steps 1.a through 1.g in the "MULTI LINE CONTROL UNPACKING & INSTALLATION" portion of section 9.

## C. MLC-4 TESTING

Refer to MLC-4 Test in section 9



B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX A continued

## FIELD INSTALLABLE OPTIONS

7. REMOTE MAINTENANCE LINK INSTALLATION (MCPII mode only)

The Remote Maintenance Link requires the exclusive use of the Quad L/A zero, line three(3) installed in the MLC-4 in port 1. This is the same L/A card used for the System ODT(line 0). If the system is currently using this line, the system will have to be reconfigured to free this line for the Remote Maintenance Link.

## A. INSTALLATION

- a. Remove the Quad L/A and reconfigure line 3 for Remote Maintenance, see section 9(MLC-4 installation) for jumper instruction
- b. Re-install the Quad L/A.
- c. Install the cable W34(#2233 5988) from Quad L/A line 3, to the Cable Interconnect Board J6.
- d. Install the cable W16(#2233 8255) from the Cable Interconnect Board J5 to the Data Comm I/O Plate reserved for the Remote Maintenance Link.
- e. Install the Data Set Cable to the modem. This completes the installation.

APPENDIX B

PHYSICAL CHARACTERISTIC

Refer to figure B-1 for cabinetry drawings.

Dimensions

	HEIGHT	WIDTH	DEPTH	WEIGHT
Cabinet-12	30"/76.2cm	22.5"/57.2cm	29"/73.7cm	280lb/127Kgm
Expansion-7	30"/76.2cm	22.5"/57.2cm	29"/73.7cm	280lb/127Kgm
Table	30"/76.2cm	30"/76.2cm	29"/73.7cm	40lb/19Kgm

Clearances

Clearances given apply to single or dual cabinet systems.

FRONT	REAR	LEFT SIDE	RIGHT SIDE
36"/91.4cm	36"/91.4cm	0	0

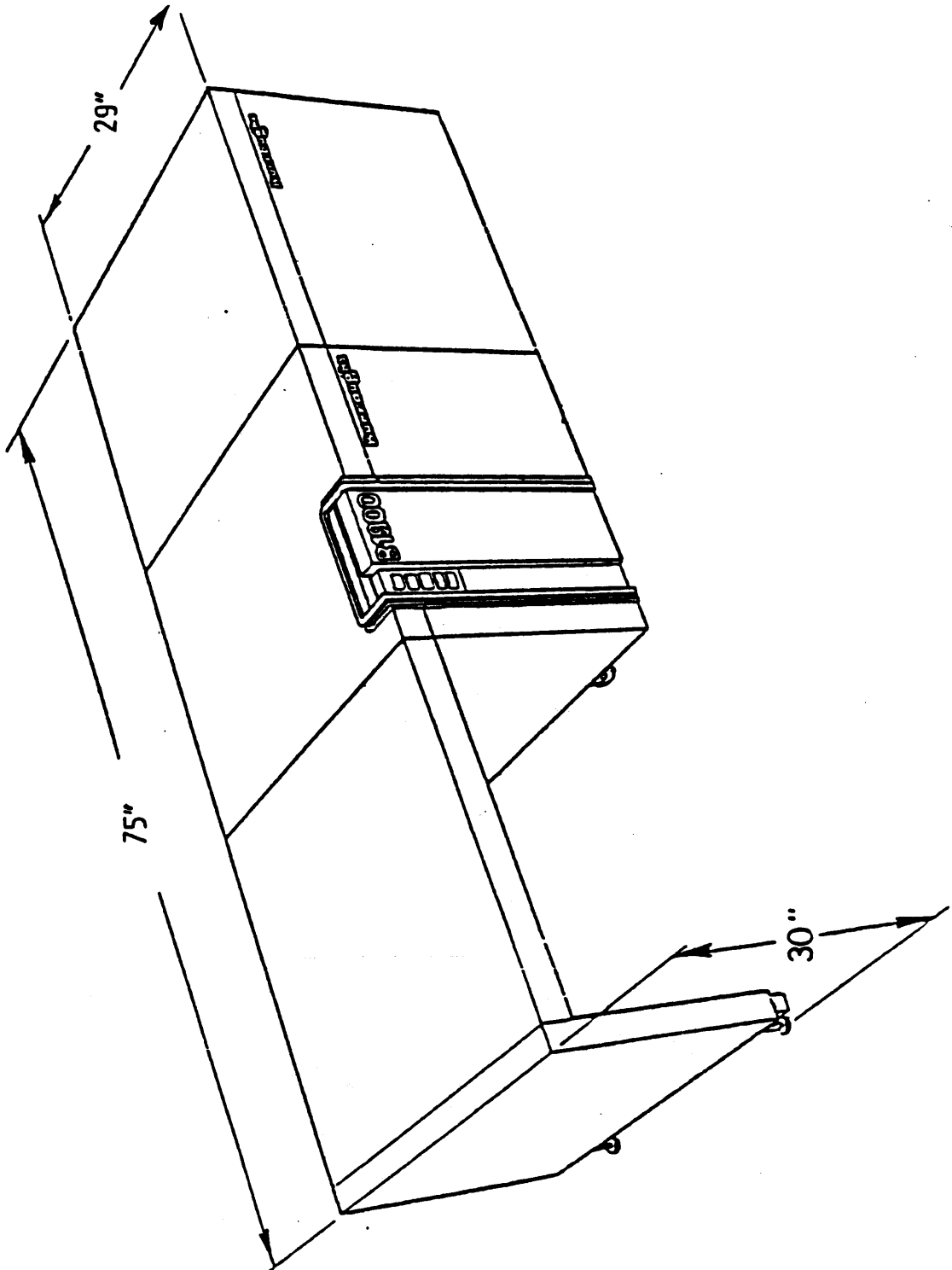


Figure B-1

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX CCROSS REFERENCE TO DOCUMENTSINITIAL RELEASE OF DIAGNOSTIC TEST

TEST NAME	CT-NUMBER
SYSTEM TEST	2231 3233
PROC. TEST	2231 3258
MBU-9 TEST	2231 3274
DSC-2 TEST	2228 3915
DSC-2 RAM DUMP	2233 4981
MLC-4 TEST	2229 0308
DCP-4 TEST	3156 0303
PRINTER-7 TEST	2228 3931
MAG TAPE 5/6 TEST	2233 5053
CARD READ TEST	2232 1418
R/S-2B TEST	2233 4601

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

-----  
 CROSS REFERENCE FOR TEST & FIELD DOCUMENTS  
 -----

The follow is a list of Test & Field documents used in this Installation Manual, cross referenced by name and by documents number.

## CROSS REFERENCE BY NAME

DOCUMENT NAME	DOCUMENT NUMBER
M-Proc CD A9 Jumper chip Instruction	A-1990 1974
Jumper chip instruction MEM-CONT-1 CD S9	A-2230 2509
M-Processor-9 Clock Alignment Spec	A-2233 3686
DSC-2 CD-1 JUMPER CHIP INSTRUCTION	A-2229 8145
JUMPER CHIP INSTRUCTIONS DSC-2 CD 5 (ETCH)	A-2229 7576
IN STL INSTR MTC-6T	A-2233 3652
INSTRUCTIONS, INSTALLATION MAG TAPE CONTROL-5	A-2233 8701
MTC 5 CONTROL CARD JUMPER CHIP INSTRUCTIONS	A-2229 9689
MAG TAPE CONT-5 DATA CARD JUMPER CHIP INSTRUCTIONS	A-2229 9945
JUMPER CHIP INSTRUCTIONS CARD READER CONTROL-1T	A-1988 8015
IN STL. INSTR. CR-1T	A-3158 1655

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B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## CROSS REFERENCE BY NAME (continued)

INSTL. INSTR. PC-7	A-2233 8693
INSTRUCTIONS - JUMPER CHIP CONFIGURATION PC-7	A-2230 0982
INSTRUCTIONS, INSTALLATION READER/SORTER CONT-2	A-2233 8487
SORTER READER CARD 1 INSTRUCTION JUMPER CHIP CONFIGURATION	A-2230 0701
MICR/OCR ADAPTER JUMPER CHIP INSTRUCTION	A-2233 8503
MLC-4 BASE JUMPER CHIP INSTRUCTIONS	A-1988 8114
I/O SUB DISTRIBUTION CD JUMPER CHIP INSTRUCTIONS	A-1988 7256

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## CROSS REFERENCE BY NUMBER

DOCUMENT NUMBER	DOCUMENT NAME
A-1988 7256	I/O SUB DISTRIBUTION CD JUMPER CHIP INSTRUCTIONS
A-1988 8015	JUMPER CHIP INSTRUCTIONS CARD READER CONTROL-1T
A-1988 8114	MLC-4 BASE JUMPER CHIP INSTRUCTIONS.
A-1990 1974	M-PROC CD A9 JUMPER CHIP INSTRUCTIONS
A-2229 7576	JUMPER CHIP INSTRUCTIONS DSC-2 CD 5 (ETCH)
A-2229 8145	DSC-2 CD-1 JUMPER CHIP INSTRUCTIONS
A-2229 9689	MTC 5 CONTROL CARD JUMPER CHIP INSTRUCTIONS
A-2230 0701	SORTER/READER CARD 1 INSTRUCTION JUMPER CHIP CONFIGURATION
A-2230 0982	INSTRUCTIONS - JUMPER CHIP CONFIGURATION PC-7
A-2230 2509	JUMPER CHIP INSTRUCTIONS MEM-CONT-1 CD S9
A-2233 3652	INSTL INSTR MTC-6T

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B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## CROSS REFERENCE BY NUMBER (continued)

A-2233 3686	M-PROCESSOR-9 CLOCK ALIGNMENT SPEC
A-2233 7810	MAG TAPE CONT-5 DATA CARD JUMPER CHIP INSTRUCTIONS
A-2233 8487	INSTRUCTIONS, INSTALLATION READER/SORTER CONT-2
A-2233 8503	MICR/OCR ADAPTER JUMPER CHIP INSTRUCTION
A-2233 8693	INSTR. INSTALLATION PC-7
A-2233 8701	INSTRUCTIONS, INSTALLATION MAG TAPE CONTROL-5
A-3158 1655	INSTR. INSTALLATION CR-1T



B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX D

## I/O &amp; MEMORY TERMINATION LOCATION

I/O DAISY CHAIN TERMINATION CARD/CHIP LOCATION

## I/O Sub-Distribution Card

On the I/O Sub-Distribution card which is at the end of the Daisy Chain follow the instructions on page 3 of the "I/O Sub Distribution Card Jumper Chip Instruction document # 1988 7256". Also see page 9-17

## Processor Card H9

If the Processor is at the end of the Daisy Chain then install jumper straps between pins "A-P", "B-N", "C-M", and "D-L" on the JUMPER CHIP at B0, also move the terminator resistor packs from storage at A5 and A6 to location B9 and D9.

MEMORY DAISY CHAIN TERMINATION CARD/CHIP LOCATION

## Processor Card A

If the Slave Processor is at the end of the memory daisy chain, then Processor card A must have Resistor pack (RRn1 P/N 2228 6777) installed at chip location B0, E0 and H0.

## Processor Card D

If the Slave Processor is at the end of the memory daisy chain, then Processor card D must have Resistor pack (RRn1 P/N 2228 6777) installed at chip location C1 and B1.

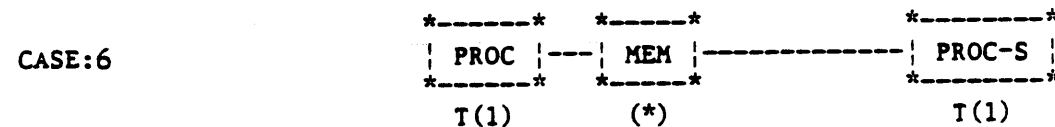
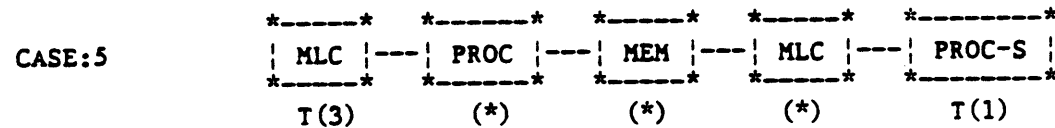
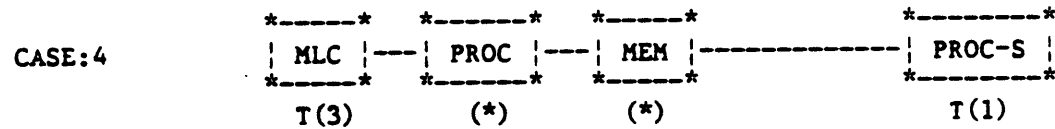
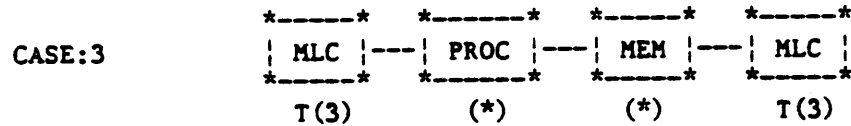
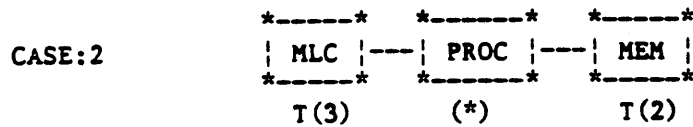
## Multi-Line Control-4 (MCP11 mode only)

If the Multi-Line Control-4 is at either end of the memory daisy chain, then the Base card must have Resistor pack (RRn1 P/N 2228 6777) installed at chip locations B0, C0, E0 and G1.

## Memory Base Unit-9

If the MBU is at the end of the memory daisy chain, then the S9 card must have Resistor pack (RRn1 P/N 2228 6777) installed at chip locations F1, G1, C1 and A1.

EXAMPLES:



NOTE: TERMINATE ONLY THOSE CARDS INDICATED

T(1) TERMINATE PROCESSOR CARDS "A" AND "D"

T(2) TERMINATE MBU CARDS "S"

T(3) TERMINATE MLC BASE CARD

(\*) NO TERMINATION.  
REMOVE RESISTOR PACKS IF INSTALLED.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX E

SYSTEM CONFIGURATION

A. MCP II SYSTEM CONFIGURATION

CABINET-12 (CARD CONFIGURATION)

CARD COUNT:

5	5	8	2	2	2	6
DISK-PRINTER CONTROL (DSC-2)	MULTILINE + ADAPTERS OR TTL I/O CONTROLS	PROCESSOR-9	MEM- ORY CTRL	MEM- ORY CARDS	B L A N K	CTL I/O CTRL *

B1965

EXPANSION CABINET-7 (CARD CONFIGURATION)  
( BACKPLANE MUST BE ORDERED )

CARD COUNT:

6	6	6
DISK-PRINTER CONTROL (DSC-2) (SECOND) OR CTL I/O CONTROLS	CTL I/O CONTROLS  OR MULTILINE CTRL + ADAPTERS	MULTILINE CONTROL + ADAPTERS (SECOND)
		B L A N K

B1995

EXPANSION CABINET-7 (CARD CONFIGURATION)  
(BACKPLANE MUST BE ORDERED)

CARD COUNT:

6	6	8
DSC-2 OR CTL I/O CONTROLS	CTL I/O CONTROLS OR MULTILINE CTRL + ADAPTERS	PROCESSOR - 9S
		B L A N K

\* One I/O Control is permitted in this six-card backplane.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## I/O CONTROLS - CARD COUNT - TYPE

<u>CONTROL</u>	<u>CARDS</u>	<u>TYPE</u>
DSC-2	5	TTL
MLC-4	1	TTL
QLA	1	TTL
BDLC (DUAL)	1	TTL
MTC-6T	1	TTL
CRC-1T	1	TTL
RSC-2B	2	CTL
MTC-5B	2	CTL
PC-7B	1	CTL
PC-3	1	CTL
PC-4	1	CTL

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

B1965/B1995 CONFIGURATION TABLES AND DIAGRAMS (MCP II SYSTEM)

B1965 SIGNAL CABLE MATRIX

CONFIGURATION NUMBER:  
(REFERANCE FIGURE E-1)

CABLE KIT:	1	2	3	4	5	6	7	8	9
-----									
MEMORY CABLE KIT 1 . . . . . - 22287932	1	1	1	1	-	1	-	-	-
MEMORY CABLE KIT 2 . . . . . - 1989 3650	-	-	-	-	1	-	1	1	1
M9 PROCESSOR CABLE . . . . . KIT 1-1989 9194	1	1	1	1	1	1	1	1	1
PROCESSOR TO I/O CABLE . . . . . KIT 1-1989 9210	-	1	1	1	-	1	1	1	1
I/O TO I/O CABLE . . . . . KIT 1-1989 9228	-	-	-	-	-	1	-	-	1
6 CARD FILLER KIT. . . . . - 1989 9384 -MAIN CAB	1	-	1	1	1	1	1	1	1
2 CARD FILLER KIT. . . . . - 1989 9392 -MAIN CAB	1	1	1	1	1	1	1	1	1
6 CARD FILLER KIT. . . . . - 1989 9384 -EXP BAB	-	-	2	2	2	1	1	1	-
2 CARD FILLER KIT. . . . . - 1989 9392 -EXP CAB	-	-	1	1	1	1	1	1	1

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

B1965 BACKPLANE CONFIGURATION

FIGURE E-1

CONFIGURATION #

V	MAIN CAB B/P POSITIONS					EXP CAB B/P POSITIONS		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)
1	DSC	MLC*	PROC-9	MEM				
2	DSC	MLC*	PROC-9	MEM	I/O			
3	DSC	MLC*	PROC-9	MEM		DSC		
4	DSC	MLC*	PROC-9	MEM		I/O		
5	DSC	MLC*	PROC-9	MEM			MLC	
6	DSC	MLC*	PROC-9	MEM		DSC	I/O	
7	DSC	MLC*	PROC-9	MEM		DSC	MLC	
8	DSC	MLC*	PROC-9	MEM		I/O	MLC	
9	DSC	MLC*	PROC-9	MEM		DSC	I/O	MLC

\* THIS B/P MAY INCLUDE TTL I/O CONTROLS

Figure E-1



B1995 BACKPLANE CONFIGURATION

FIGURE E-2

CONFIGURATION #

V	MAIN CAB B/P POSITIONS					EXP CAB B/P POSITIONS		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)
1	DSC	MLC*	PROC-9	MEM				PROC-9S
2	DSC	MLC*	PROC-9	MEM		DSC		PROC-9S
3	DSC	MLC*	PROC-9	MEM		I/O		PROC-9S
4	DSC	MLC*	PROC-9	MEM			MLC	PROC-9S
5	DSC	MLC*	PROC-9	MEM		DSC	I/O	PROC-9S
6	DSC	MLC*	PROC-9	MEM		DSC	MLC	PROC-9S
7	DSC	MLC*	PROC-9	MEM		I/O	MLC	PROC-9S
8	DSC	MLC*	PROC-9	MEM	I/O	DSC	MLC	PROC-9S

\* THIS B/P MAY INCLUDE TTL I/O CONTROLS

Figure E-2



B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX E (continued)

B. CMS SYSTEM CONFIGURATION

CABINET-12 (CARD CONFIGURATION)

CARD COUNT:

5	4	1	8	2	2	2	6
DISK-PRINTER CONTROL (DSC-2)	TTL I/O CONTROLS **	D C P : 4	PROCESSOR-9	MEM- ORY CTRL	MEM- ORY CARDS	B L A N K	CTL I/O CTRL *

B1965

EXPANSION CABINET-7 (CARD CONFIGURATION)  
( BACKPLANE MUST BE ORDERED )

CARD COUNT:

6	6	
DISK-PRINTER CONTROL (DSC-2) (SECOND) OR CTL I/O CONTROLS	CTL I/O CONTROLS	B L A N K

B1995

EXPANSION CABINET-7 (CARD CONFIGURATION)  
(BACKPLANE MUST BE ORDERED)

CARD COUNT:

6	6	8	
DSC-2 OR CTL I/O CONTROLS	CTL I/O CONTROLS	PROCESSOR - 9S	B L A N K

\* One I/O Control is permitted in this six-card backplane.

\*\* Only the right most position may contain the DCP-4 Extension (B4 cd)

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## I/O CONTROLS - CARD COUNT - TYPE

<u>CONTROL</u>	<u>CARDS</u>	<u>TYPE</u>
DSC-2	5	TTL
DCP-4 Base	1	TTL or CTL
DCP-4 Extention (B4)	1	TTL
MTC-6T	1	TTL
CRC-1T	1	TTL
RSC-2B	2	CTL
MTC-5B	2	CTL
PC-7B	1	CTL
PC-3	1	CTL
PC-4	1	CTL

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

B1965/B1995 CONFIGURATION TABLES AND DIAGRAMS (CMS SYSTEM)

B1965 SIGNAL CABLE MATRIX

CONFIGURATION NUMBER:  
(REFERANCE FIGURE E-3)

CABLE KIT:	1	2	3	4	5
CMS MEMORY CABLE KIT 1 . . . . .	1	1	1	1	1
- 3158 0095					
M9 PROCESSOR CABLE . . . . .	1	1	1	1	1
KIT 1-1989 9194					
PROCESSOR TO I/O CABLE . . . . .	-	1	1	1	1
KIT 1-1989 9210					
I/O TO I/O CABLE . . . . .	-	-	-	-	1
KIT 1-1989 9228					
6 CARD FILLER KIT. . . . .	1	-	1	1	1
- 1989 9384 -MAIN CAB					
2 CARD FILLER KIT. . . . .	1	1	1	1	1
- 1989 9392 -MAIN CAB					
6 CARD FILLER KIT. . . . .	-	-	2	2	1
- 1989 9384 -EXP BAB					
2 CARD FILLER KIT. . . . .	-	-	1	1	1
- 1989 9392 -EXP CAB					

B1965 BACKPLANE CONFIGURATION

FIGURE E-3

CMS CONFIGURATION #

V	MAIN CAB B/P POSITIONS					EXP CAB B/P POSITIONS		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)
1	DSC	I/O+DCP	PROC-9	MEM				
2	DSC	I/O+DCP	PROC-9	MEM	I/O			
3	DSC	I/O+DCP	PROC-9	MEM		DSC		
4	DSC	I/O+DCP	PROC-9	MEM		I/O		
5	DSC	I/O+DCP	PROC-9	MEM		DSC	I/O	

\* TTL I/O CONTROLS ONLY

Figure E-3

CONFIGURATION TABLES AND DIAGRAMS

B1995 SIGNAL CABLE MATRIX

CONFIGURATION NUMBER:  
(REFERANCE FIGURE E-4)

CABLE KIT:	1	2	3	4
CMS MEMORY CABLE KIT 2 - 3158 0103	1	1	1	1
M9 PROCESSOR CABLE KIT 2-1989 9202	1	1	1	1
PROCESSOR TO I/O CABLE KIT 1-1989 9210	-	1	1	1
I/O TO I/O CABLE KIT 1-1989 9228	-	-	-	1
I/O TO PROCESSOR CABLE KIT 1-1989 9236	-	1	1	1
PROC TO PROC CABLE KIT 1-1989 9244	1	-	-	-
6 CARD FILLER KIT. - 1989 9384 -MAIN CAB	1	1	1	1
2 CARD FILLER KIT. - 1989 9392 -MAIN CAB	1	1	1	1
6 CARD FILLER KIT. - 1989 9384 -EXP BAB	2	1	1	-
2 CARD FILLER KIT. - 1989 9392 -EXP CAB	-	-	-	-

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

B1995 BACKPLANE CONFIGURATION

FIGURE E-4

CONFIGURATION #

V	MAIN CAB B/P POSITIONS					EXP CAB B/P POSITIONS		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)
1	DSC	I/O+DCP	PROC-9	MEM				PROC-9S
2	DSC	I/O+DCP	PROC-9	MEM		DSC		PROC-9S
3	DSC	I/O+DCP	PROC-9	MEM		I/O		PROC-9S
4	DSC	I/O+DCP	PROC-9	MEM		DSC	I/O	PROC-9S

\* TTL I/O CONTROLS ONLY

Figure E-4

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX E (continued)C. HYBRID SYSTEM CONFIGURATION

A B1965/B1995 combining the MCPII mode and CMS mode is denoted "HYBRID SYSTEM" as opposed to "MCPII SYSTEM" and "CMS SYSTEM".

HYBRID SYSTEM DESCRIPTION

Typically a "HYBRID SYSTEM" is a "MCPII MODE SYSTEM" with the addition of a CMS Datacomm Controller.

This installation is reflected in the installation of one or several DCP-4 CTL in an additional I/O Extension-5, which is ever required in each "HYBRID SYSTEM". This I/O Extension-5 continue to remain unique, and may be installed either in the main cabinet or in an extension cabinet.

In that configuration the number of I/O control and Datacomm line available remains the same as described in MCPII SYSTEM CONFIGURATION, the DCP-4 is considered as an I/O control and the number of Datacomm lines represents the total of MCPII lines and CMS lines.

If it is obvious that the use of the DCP-4 TTL is impossible, the locations reserved for DCP-4 TTL being used by the MLC-4 in the processor backplane.

ODT-SYSTEM CONSOLE ORGANISATION.

To avoid changing in the ODT cables, two (2) ODT terminals are required, one (1) for MCPII mode one (1) for CMS mode.

The MCPII mode ODT will be connected as in the "MCPII MODE SYSTEM", that is, connected to the Cable Interconnect board.

The CMS ODT will be directly connected to the DCP-4.

Consequently only the MCPII mode ODT will serve as processor console when the system is halted.

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

CABINET-12 (CARD CONFIGURATION)

CARD COUNT:

5	5	8	2	2	2	6
DISK-PRINTER CONTROL (DSC-2)	MULTILINE + ADAPTERS OR TTL I/O CONTROLS	PROCESSOR-9	MEM- ORY CTRL	MEM- ORY CARDS	B L A N K	CTLI/O CTRL * or DCP-4C *

B1965  
EXPANSION CABINET-7 (CARD CONFIGURATION)  
( BACKPLANE MUST BE ORDERED )

CARD COUNT:

6	6	6
DISK-PRINTER CONTROL (DSC-2) (SECOND) OR CTL I/O CTRL (I/O OR DCP-4C)	CTL I/O CONTROLS (I/O OR DCP-4C) OR MULTILINE CTRL + ADAPTERS	MULTILINE CONTROL + ADAPTERS (SECOND)

B1995  
EXPANSION CABINET-7 (CARD CONFIGURATION)  
(BACKPLANE MUST BE ORDERED)

CARD COUNT:

6	6	8
DSC-2 OR CTL I/O CONTROLS (I/O OR DCP-4C)	CTL I/O CONTROLS (I/O OR DCP-4C) OR MULTILINE CTRL + ADAPTERS	PROCESSOR - 9S

\* One I/O Control is permitted in this six-card backplane.



B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

## I/O CONTROLS - CARD COUNT - TYPE

<u>CONTROL</u>	<u>CARDS</u>	<u>TYPE</u>
DSC-2	5	TTL
MLC-4	1	TTL
QLA	1	TTL
BDLC (DUAL)	1	TTL
DCP-4 BASE	1	CTL
DCP-4 EXTENSION (B4)	1	TTL
MTC-6T	1	TTL
CRC-1T	1	TTL
RSC-2B	2	CTL
MTC-5B	2	CTL
PC-7B	1	CTL
PC-3	1	CTL
PC-4	1	CTL

B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

APPENDIX F  
-----MISCELLANEOUSA. DATACOMM CABLES MECHANICAL FITTING STANDARDIZATION

One hood connector (delivery with each line adapter) is to be used to update on site existing B1000 Modem cables or TDI cables, for use with B1965/1995. Two screwlocks female (stand-off, delivery with each datacomm modem cable) are to be used to update a B1965/1995 system equipped with sliding lock (early build).

A. UPDATE TO B1000 Modem cables or TDI cables. (fig F-1).

(only for cables without jackscrews).

1. Remove and discard the screws (1) and cover (2) from cable. (cut cover if necessary).
2. Install the two flanges (3&4). Using the 2 screws (5) and nuts (6).
3. Place the 2 end brackets (8) and the 2 jackscrews (7) in the connector.

B. UPDATE OF B1965/1995 MANUFACTURED WITH SLIDING LOCK. (fig F-2).

1. Separate the connector plate from the system.
2. Remove and discard the sliding lock (2) and the 2 screws (1).
3. Insert each stand off (4) along with its lock washer (5) into the position occupied previously by the 2 screws (1).
4. Reinstal the connector plate on the system.

APPENDIX F continued

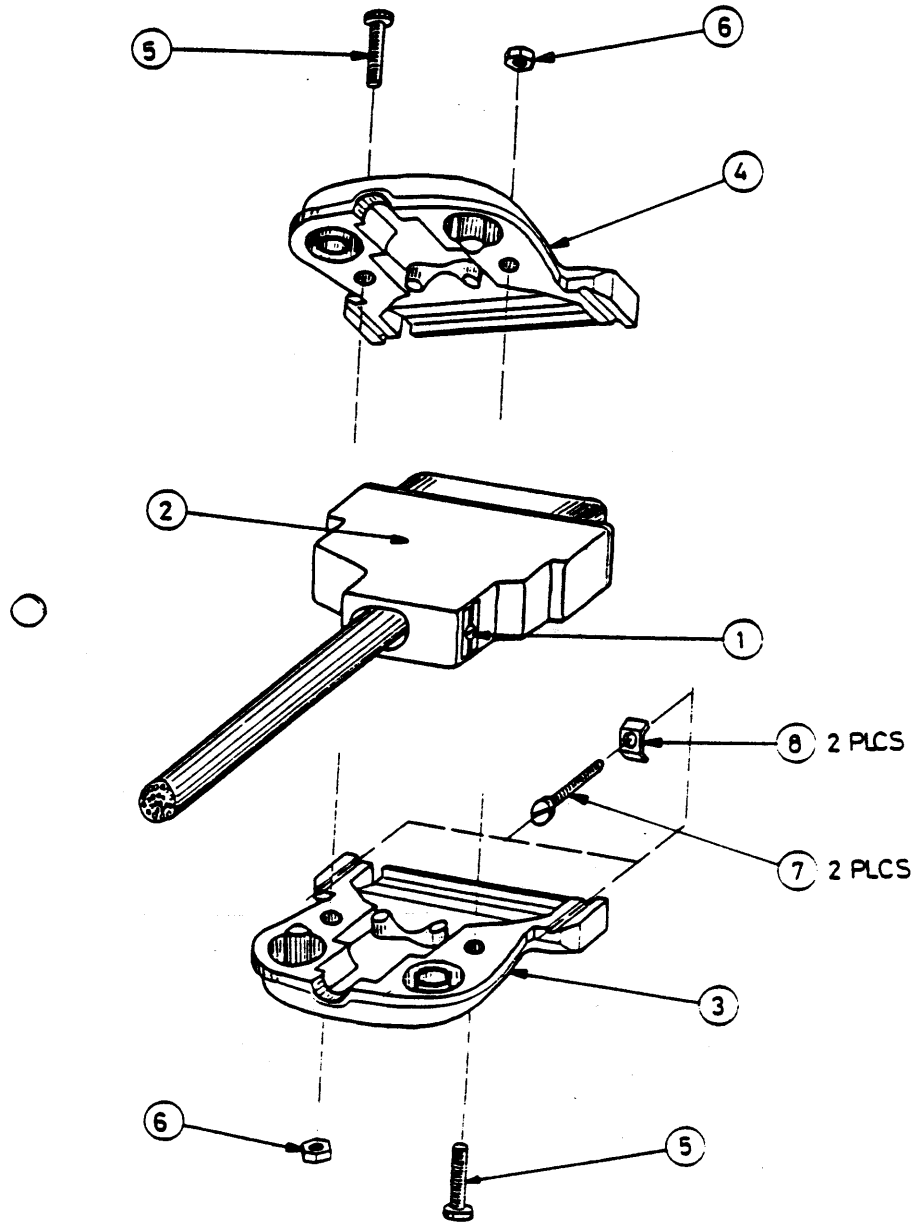


figure F-1

APPENDIX F continued

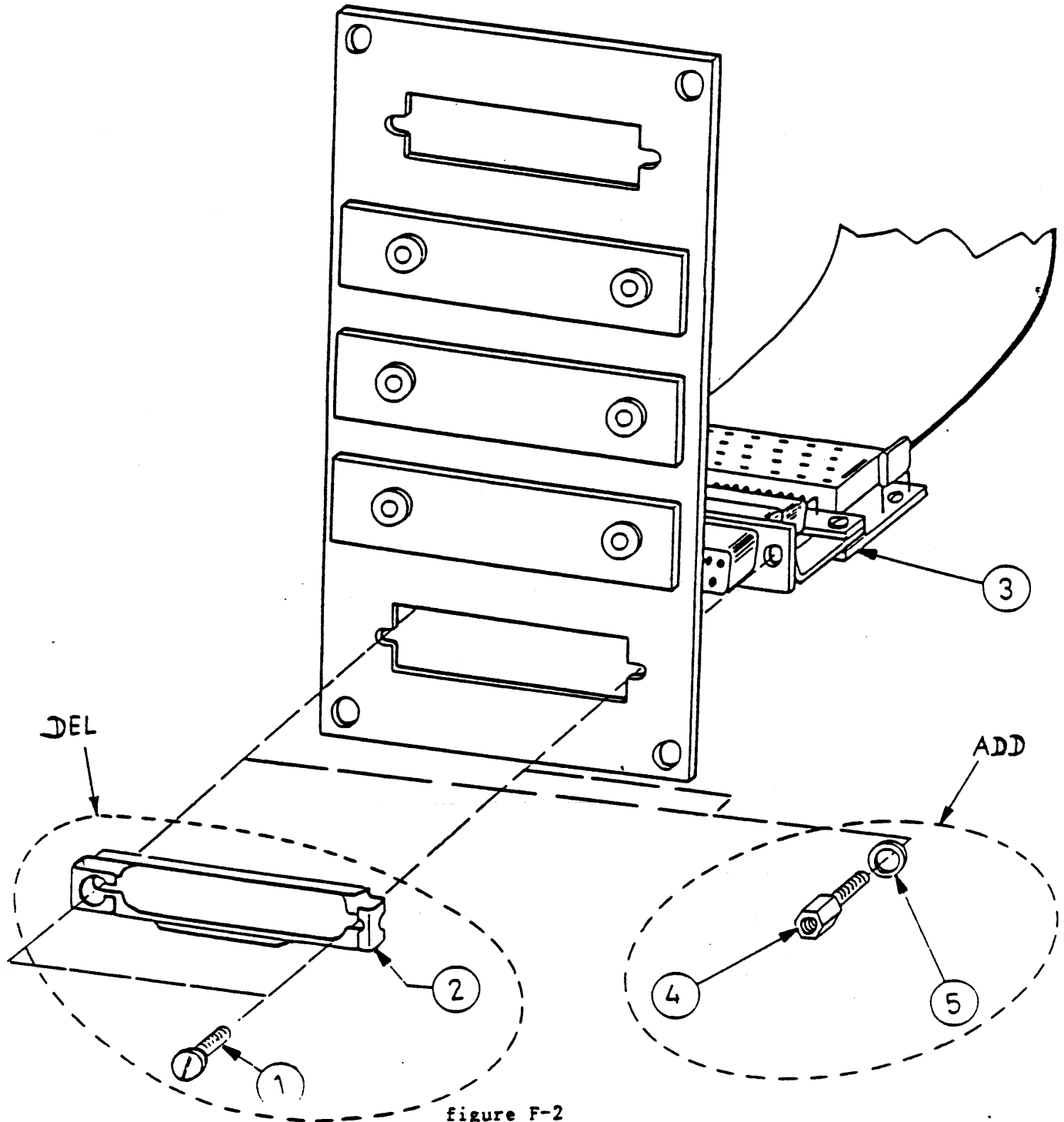


figure F-2

## B 1965 / B 1995 INSTALLATION MANUAL

2233 4858 REVISION AE

B. KIT VDE INSTALLATION.

This kit is mandatory to install system in countries requiring DVE regulation compliance.

This kit contain a VDE REAR DOOR and a DISK CABLE ADAPTER. One kit is necessary by cabinet.

## INSTALLATION.

1. Remove NON VDE rear door from each cabinet and replace by VDE REAR DOOR .(see fig A-1).
2. Insert the CABLE DISK ADAPTER between the DSC card 5 and the disk drive interface cable (see fig F-3).
  - a. Remove the 4 screws (item 1) from the frame at the left of the DSC card 5 .
  - b. Plug the adapter on the front plane of the DSC card 5
  - c. Secure the adapter with the 4 screws removed in a.
  - d. Attach the Disk Drive Interface cable from drive 0 through 3 to the lower connector on adapter.

Attach the Disk Drive Interface cable from drive 4 through 7 to the upper connector on adapter.

NOTE:

It was determined that conducted interference from the expansion cabinet exceeded the VDE limit when the expansion cabinet had only two cards installed and the L-H power module was used. The expansion cabinet was compliant if more than two cards was installed, or the L-H power module was replaced by a Coral Spring or Pioneer power module. One of the above two conditions must be met in order that the VDE sticker be placed on the B1965/1995 system.

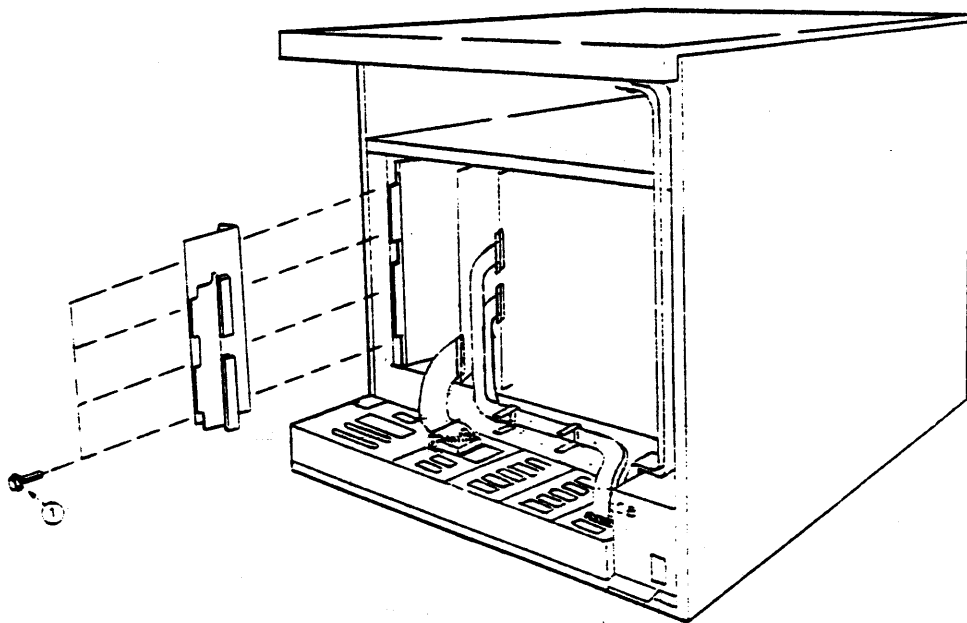


fig F - 3