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Electronics

BancTec ESeries Panel

CONVERSION KIT

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Section One

Introduction

1.1 INTRODUCTION

This publication describes the Model 91690 Document Processor (DP), a product manufactured by BTI Systems Inc., (BTI), Oklahoma City, Oklahoma, U.S.A.

This manual is intended to provide sufficient information necessary for field service personnel to install, maintain, repair, and de-install the system; and includes a functional description of the systems characteristics, operating procedures, interface, theory of operation, installation, maintenance, parts, reference drawings and wiring information.

For convenience in use, this manual is divided into sections as indicated by the table of contents. All information in each section is itemized in the table of contents.

1.2 PRODUCT DESCRIPTION

The DP consists of a Mainframe, Option Module(s), and one or more six pocket Stacker Output Modules. The Mainframe includes feeder, transport mechanism, and provisions for reader, endorser, and printer options. In its primary operational configuration, the DP provides:

- Master with Operator Control Panel
- Standard OEM Interface
- One Six Output Pocket Stacker Module
- Auxiliary Pocket
- Provisions for expansion via numerous available options

Refer to Figures 1.2-1 and 1.2-2 for product appearance. Figure 1.2-3 shows locations of safety labels and interlock switches.

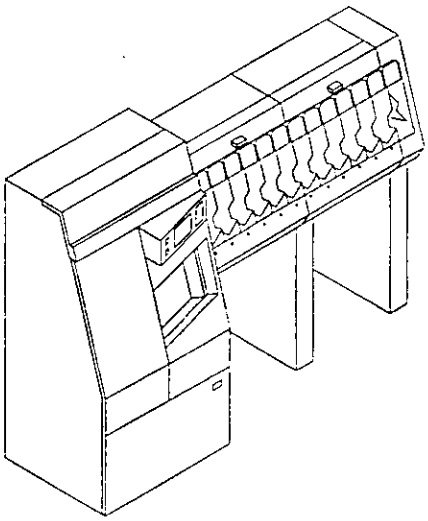


Figure 1.2-1 DP with Two Stacker Modules

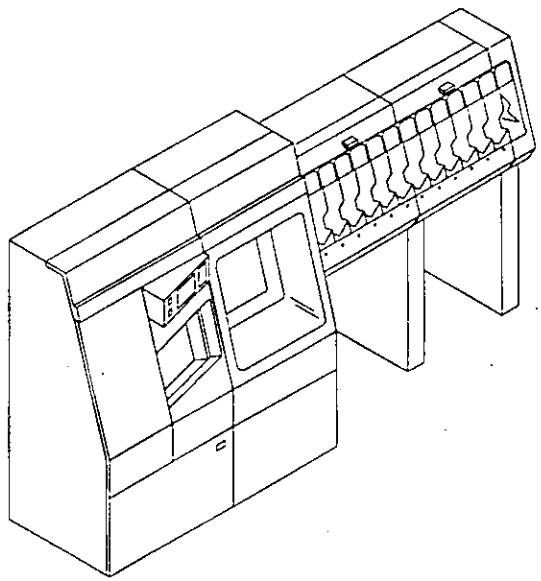
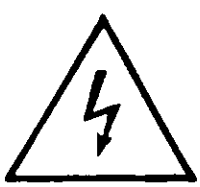


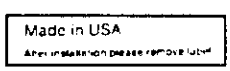
Figure 1.2-2 DP with Microfiler and Two Stackers

-A-



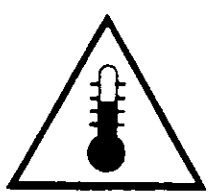
340-7500032-008

-B-



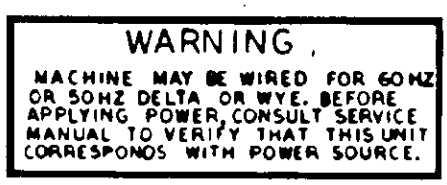
340-7500029-109
(INSTALL ON OUTSIDE UPPER LEFT CORNER OF READER DOOR.)

-C-



59701523-001

-D-



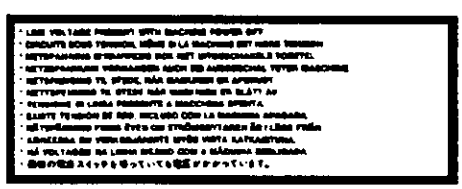
75884169

-E-



75883446

-F-



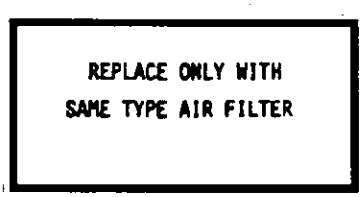
340-7500032-004

-G-



59B300159P3

-H-



77721080

-I-



59700746-001

Figure 1.2-3 Safety Label and Interlock Switch (1 of 3)

-J-

CAUTION!

VERIFY TB2-1 CONNECTS TO TI-1.
INSURE TB2-2 CONNECTS TO TI-
PER ONE OF THE POWER SOURCE
CONNECTIONS SHOWN BELOW:

POWER SOURCE	CONNECTIONS
60HZ,208V	TB2-2 TO TI-4
50HZ,200V	TB2-2 TO TI-4
60HZ/50HZ,220V	TB2-2 TO TI-5
60HZ/50HZ,240V	TB2-2 TO TI-5
50HZ,380V	TB2-2 TO TI-5
50HZ,415V	TB2-2 TO TI-5

340-7500032-002

-K-

>18 kg (40 lb)

340-7500032-006

-L-

CAUTION

DAMAGE TO INK ROLL AND OVER-INKING MAY BE CAUSED BY EXCESSIVE INK ROLL PRESSURE ON ENDORSER ROTOR ASSEMBLY.

CORRECT ADJUSTMENT OF A NEW INK ROLL IS 20 DETENT CLICKS BEYOND INITIAL ROLL-TO-ROTOR CONTACT. INCREASED CONTACT PRESSURE MAY BE USED (MAX. 100 CLICKS) AS ENDORSEMENTS LIGHTEN.

77610309-5

-M-

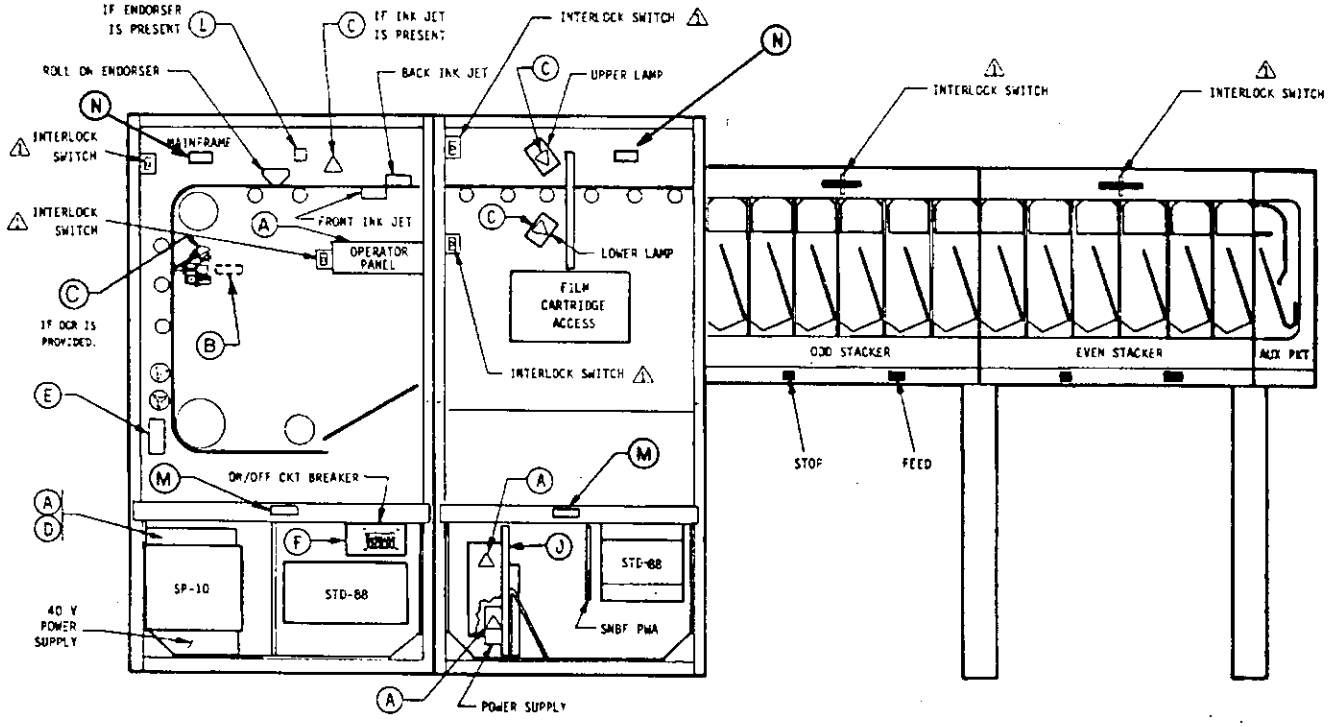
HAZARDOUS AREA TRAINED SERVICE PERSONNEL ONLY
ZONE DANGEREUSE RESERVEE AU PERSONNEL AUTORISE
GEFÄHRL. BEREICH. NUR FÜR FACHPERSONAL!
PERICOLO! SOLO PERSONALE ADDESTRATO
AREA PELIGROSA SOLO PERSONAL MANTENIMIENTO

340-7500032-005

-N-

CAUTION
Paper dust is detrimental to machine operation.
Use vacuum to remove dust daily. DO NOT BLOW DUST.

340-7500032-019



⚠ CHECK ALIGNMENT OF INTERLOCK SWITCHES FOR PROPER OPERATION. ADJUST AS NEEDED.

NOTE: THIS VIEW DOES NOT INCLUDE ALL PRODUCT LABELS; ONLY THOSE LABELS WHICH ARE IMPORTANT TO PERSONNEL AND/OR PRODUCT SAFETY ARE INCLUDED.

FRONT

Figure 1.2-3 Safety Label and Interlock Switch (2 of 3)

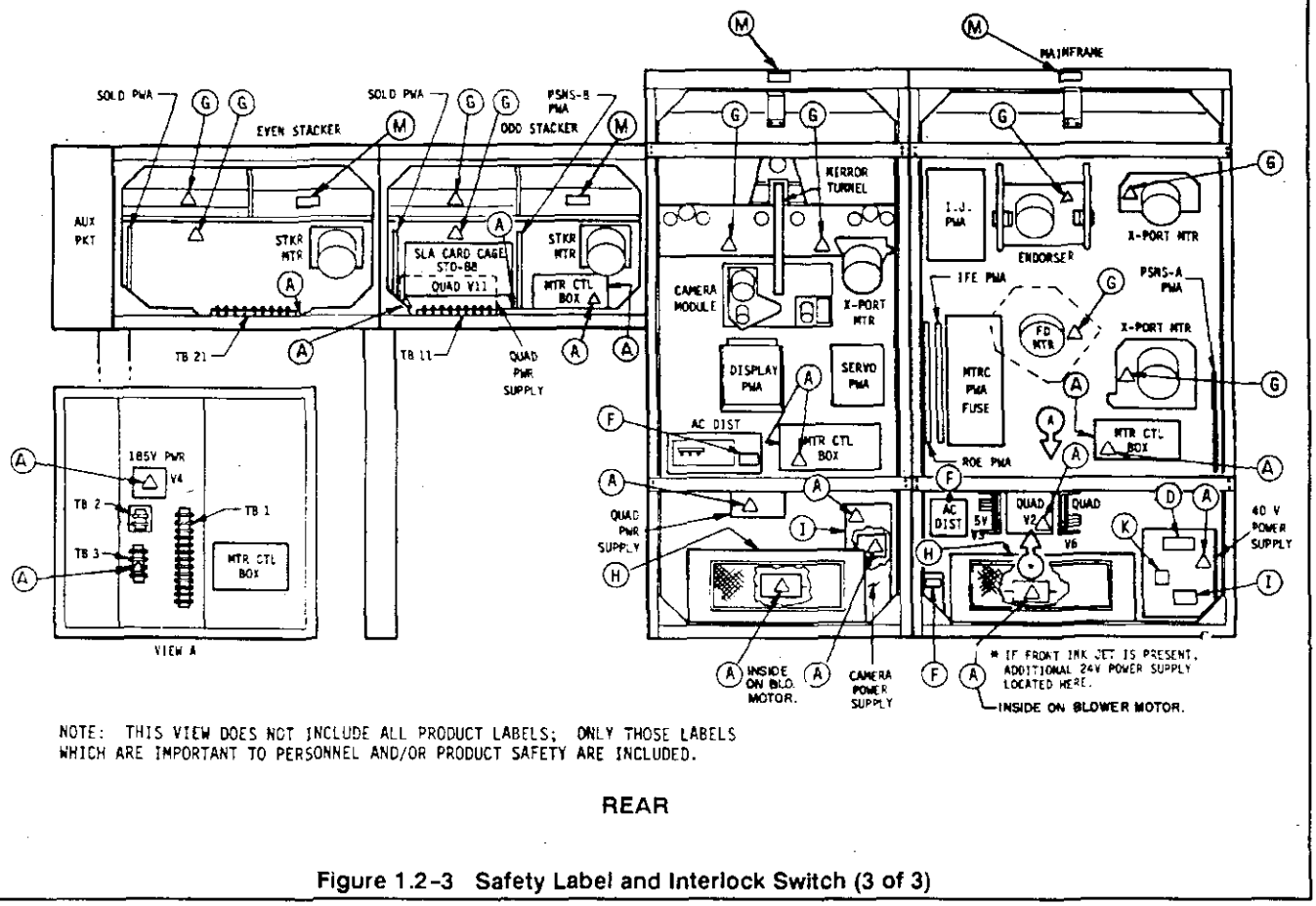


Figure 1.2-3 Safety Label and Interlock Switch (3 of 3)

1.2.1 Purpose and use of Product

The DP is designed as a medium speed, multipurpose device for reading and sorting paper products of a unit record class.

With appropriate read options installed, the DP is capable of Magnetic Ink Character Recognition (MICR), Optical Mark Recognition (OMR), and/or Optical Character Recognition (OCR) in a variety of character fonts.

1.2.2 Model and Options

The availability of any specific model or option is subject to local marketing policies. Contact a marketing representative or BTI Systems Inc. business office if any questions arise.

1.2.3 Performance Characteristics

Table 1.2-1 provides a brief summary of performance characteristics of the Document Processor.

Table 1.2-1 Performance Characteristics

DOCUMENT WEIGHT: MINIMUM: 20 POUNDS (LONG GRAIN ONLY) MAXIMUM: 43 POUNDS 24 POUNDS
DOCUMENT DIMENSIONS: LENGTH - 152 TO 222 MM (6.00 TO 8.75 IN.) HEIGHT - 70 TO 107 MM (2.75 TO 4.25 IN.) CALIPER - 0.0762 TO 0.2286 MM (0.003 TO 0.009 IN.)
NOMINAL FEED RATE: - 1,000 DPM (DOCUMENTS PER MINUTE) NOMINAL SIX INCH DOCUMENTS INPUT HOPPER - 330 MM 915.0 IN.) STACKER CAPACITY OUTPUT HOPPER - 64 MM (2.5 IN.) STACKER CAPACITY
READ OPTIONS: MICR / OMR / OCR (1 OR 2 LINES) E13B, CMC-7 / OCR1 NUMERIC AND ALPHANUMERIC, OCR2 NUMERIC AND ALPHANUMERIC, MULTIPLE FONT SELECTION SELF-CLEAN OCR E13B, MICR AND OCR COMPARE
OTHER OPTIONS: REFER TO SECTIONS 4 OF THIS MANUAL.

1.2.4 Input Power

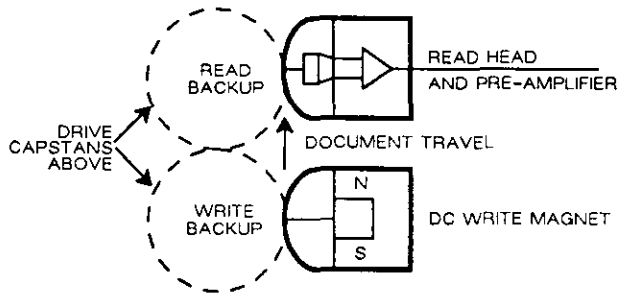


Figure 4.3.4-2 MICR Read Head Assembly

Special care is taken in the construction of the read station to minimize extraneous magnetic noise. Rotating parts are made of non-magnetic material, and the read head area is magnetically shielded.

A spring-tensioned metal strip lightly presses against the DC Write magnet, and another such strip presses against the read head gap at the tangent line. These deflect to permit document passage, but hold each document firmly against the corresponding head as it passes. The strip at the write head is wired to frame ground to prevent electrostatic charge accumulation. A ground wire connects the strip to the read head.

The read head itself is connected to DC ground by means of the cable shield, but is otherwise electrically isolated from frame ground. The pre-amplifier cover and read head mount are connected to frame ground. All metal parts along the transport, except for the read head and its backup strip, are electronically connected to frame ground to prevent accumulation of electrostatic charge.

4.3.5 CMC-7 Character Recognition

The format of CMC-7 characters (according to ECMA Standards) prescribes that each character consists of seven vertical strokes separated by spaces of 0.3 or 0.5 millimeters. Numeric characters and special symbols contain two wide spaces (0.5 millimeters) and alpha characters contain either one or three wide spaces. Character recognition of the CMC-7 font is accomplished by processing the read head signal through analog to digital amplifiers to produce seven pulses per character separated in time by the spacing between character strokes, and producing a seven bit binary code representation of the character.

4.3.6 OCR1 Description

The description for the OCR1 PWA and the total OCR Reader is contained in the Self-Scan OCR Maintenance Manual.

4.3.7 Dual Read Description

The description of the Dual Read is contained in the Self-Clean OCR Maintenance Manual.

4.3.8 OMR Description

The Optical Mark Recognition Option is implemented on two PWB's (see Figure 4.3.8-1), identified as MK/S (Mark Sense Input), MK/T (Mark Sense Timing and Output), and also includes the read head assembly containing mark sensing devices and a 384 by 8-bit buffer contained on the MK/T PWB.

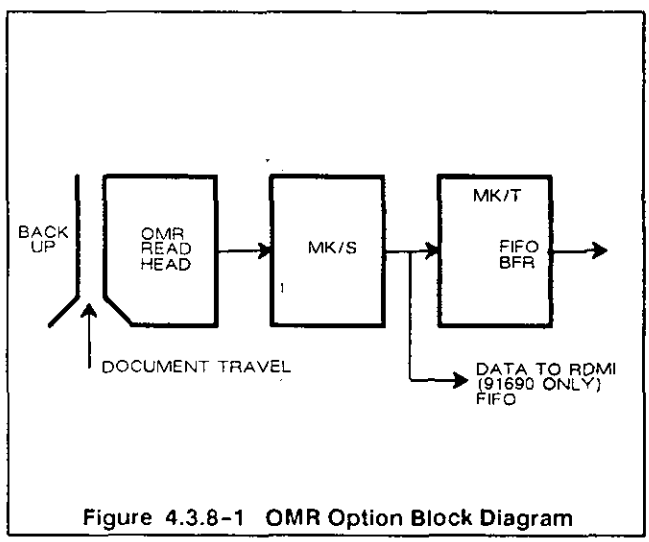


Figure 4.3.8-1 OMR Option Block Diagram

4.3.8.1 Read Head Mark Sensing

The OMR read head is located along the vertical section of the DP transport following the MICR reader position. It contains 14 mark sensing devices arranged in three columns of five, four and five devices, respectively. Spacing between columns (horizontally) is 6.25 mm(0.246 in) and between devices (vertically) is 19.1mm (0.750 in). The columns are vertically staggered so a sensor is associated with each of fourteen 6.35 mm (0.250 in) row positions. Reading by the first two columns is electrically delayed to be effectively in phase with reading by the third column.

The read head uses light emitting diodes (LED's) as light sources (see Figure 4.3.8-2). Two LED's are directed through a cylindrical lens to provide efficient illumination of each row head area. Diffused light reflected from the document returns through the lens to a silicon photo sensor.

Power for the LED's (MK/S-LED-SOURCE) is provided by two current regulator circuits which provide a current of approximately 60 milliamperes. The LED's are wired in two series strings of 14 diodes each. During test mode operation the LED power signal source is switched on and off (MK/T-TEST-$) to allow determination of OMR reader option integrity.

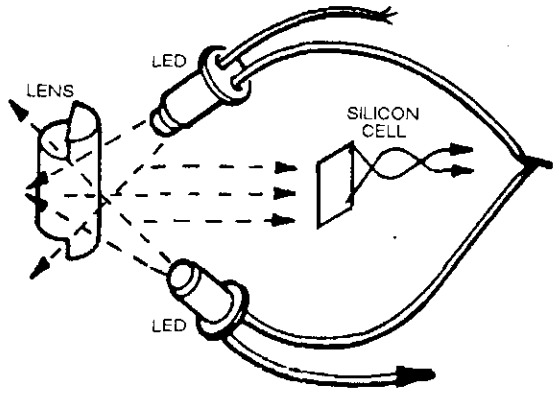


Figure 4.3.8-2 Read Head Mark Sensing Device

The read head backplate (and the read head) is black. Therefore, when no document is present under the read head minimum light is reflected back to the sensor. Thus, the sensor output is minimum. When a document is under the read head, and no mark is present under a sensor, maximum light is reflected back to the sensor. Thus, the sensor output is maximum. Sensor output (both signal and return leads) is applied to an Automatic Gain Control circuit through a coaxial cable to connector J1 on the MK/S PWB.

4.3.8.2 Mark Sense Mode Switches

Mounted in I.C. locations 5A on the MK/T board is a group of seven miniature rocker switches. These switches are numbered from right to left (as board is viewed from the front) and named as follows:

1. MK/T-READ-NO-T-MARK
2. MK/T-12-ROWS
3. MK/T-WIDE-COLUMN
4. MK/T-DUAL-READ-DATA
5. MK/T-TEST-GENERATE
6. MK/T-HOLLERITH-MODE (Not used should always be OPEN).
7. MK/T-SEND-MODE-BYTE

These switches are closed when the side with the black dot is down.

4.4 OPERATOR PANEL SUBSYSTEM

4.4.1 Overview

The Operator Panel Subsystem is comprised of the OPNL board, KPAD board, FEED and STOP switches, and plasma display all located on the Operator Panel assembly, and the 185-volt power supply (V4) located on the power supply module in the first frame. An optional auxiliary display panel may be installed on the last stacker module. See Mainframe Wiring Diagram, Figure 7.3-1 for component interconnection information.

4.4.2 Communication

The System Manager communicates with the OPNL board via a serial port (RS232) provided by the BUST board installed in the STD-88 card cage in the first frame. System Manager sends messages to be displayed on the display panel which OPNL receives, processes and passes to the display. OPNL scans the keyboard and Feed and Stop switches and reports key closures to System Manager. OPNL does not, on it's own, react to key closures except to pass them along to System Manager.

4.4.3 Display Panel

The display panel is comprised of the display itself and a driver board and control board which are attached to the back of the display. These components make up replaceable assembly which should not be disassembled by field personnel. The OPNL board sends the display the character position and ASCII character code for each character to be displayed. The display converts the ASCII code into the proper dot-matrix format and displays the indicated character in the indicated location.

4.4.4 OPNL Board

The microprocessor-based OPNL board is responsible for communications with the System Manager, communications with the display panel and scanning the keyboard and Feed and Stop switches for key closures. Refer to Figure 7.1-16 for schematic of the OPNL board.

Port 0 of the 8031 microprocessor (U24) is used as both the address bus and data bus for the processor. The other ports are used to control various discrete

functions. Program storage for the processor is provided by PROM U20.

A one-shot (U28) generates power-on clear for the processor and also provides the "watchdog timer" function. Port 1, Bit 4 is pulsed on a regular basis if the processor is functioning properly. This pulse is applied to the input of the one-shot which is operating in retriggerable mode. As long as the pulses continue, the output of the one-shot stays low, but if the pulses cease, the one-shot output goes high causing the processor to malfunction.

Interface to the RS232 serial bus is provided by U27 (receiver) and U21 (driver). These devices are line drivers and receivers only. Bus protocol and baud rate are controlled by the processor.

All signals which go to the display panel are buffered by optoisolators U1 thru U13. This is to prevent the 185 volts which is present on the display from feeding back to OPNL in case of a malfunction of the display.

Priority encoder U16 compresses keyboard and switch signals from seven lines down to three. The encoded lines are output to the processor's data bus when the encoder is enabled (EN-KEY is low).

The DIP switches (S1) are non-functional in this application. The position of the switches does not matter.

4.4.5 Remote Display Panel

An optional remote display may be installed on the last stacker module. This display is comprised of an OPNL board and a display assembly identical to those described above, but does not have a keyboard. The serial communication bus from BUST is extended to the remote panel, so it displays exactly the same information as the operator panel display.

4.4.6 Power-Up

On power-up the processor performs some internal tests, and then if these tests are completed successfully, waits for System Manager to send a special code on the RS232 bus which is echoed back to signify that the Operator Panel Subsystem is operational. If this code is not echoed back, System Manager halts the power-up sequence and flashes the LED on the STDM board. If the Operator Panel Subsystem is functioning, but the BUST board or RS232 cable are faulty, the same indication is given. The problem may be isolated further by performing the Operator Panel Self Test. See Diagnostic section of this manual.

4.4.7 Operation

During normal operation, the processor scans the keyboard and switches at regular intervals and reports any key closures to System Manager via the serial bus. Any messages coming from System Manager on the serial bus cause an interrupt to the OPNL processor. In response to this interrupt, the OPNL immediately processes the message and updates the display with the new information.

4.5 LOGIC AND DISCRETE FUNCTION CONTROL PWA'S

4.5.1 STDM Module

4.5.1.1 Overview

The STDM module is an 8088-based microprocessor PWA. The PWA contains up to 32K of PROM memory and up to 8K of RAM memory. The STDM also has an 8253 Timer and an 8259 Interrupt controller on the board. The STDM module can operate in one of two modes, either as a full STD bus controller capable of accessing a megabyte of memory or as a STD bus controller with only 64k, all on the board. When operating with only 64k of address space, the only devices that may be accessed over the STD bus are I/O devices. Part of the processor data and address bus is connected to a 34 pin connector, which permits an external I/O device to be controlled by the processor without communicating over the STD bus. This connector follows the Intel SBx connector specifications. A second connector is provided at the top of the PWA for interrupt connection. Refer to STDM Block Diagram, Figure 4.5.1-1.

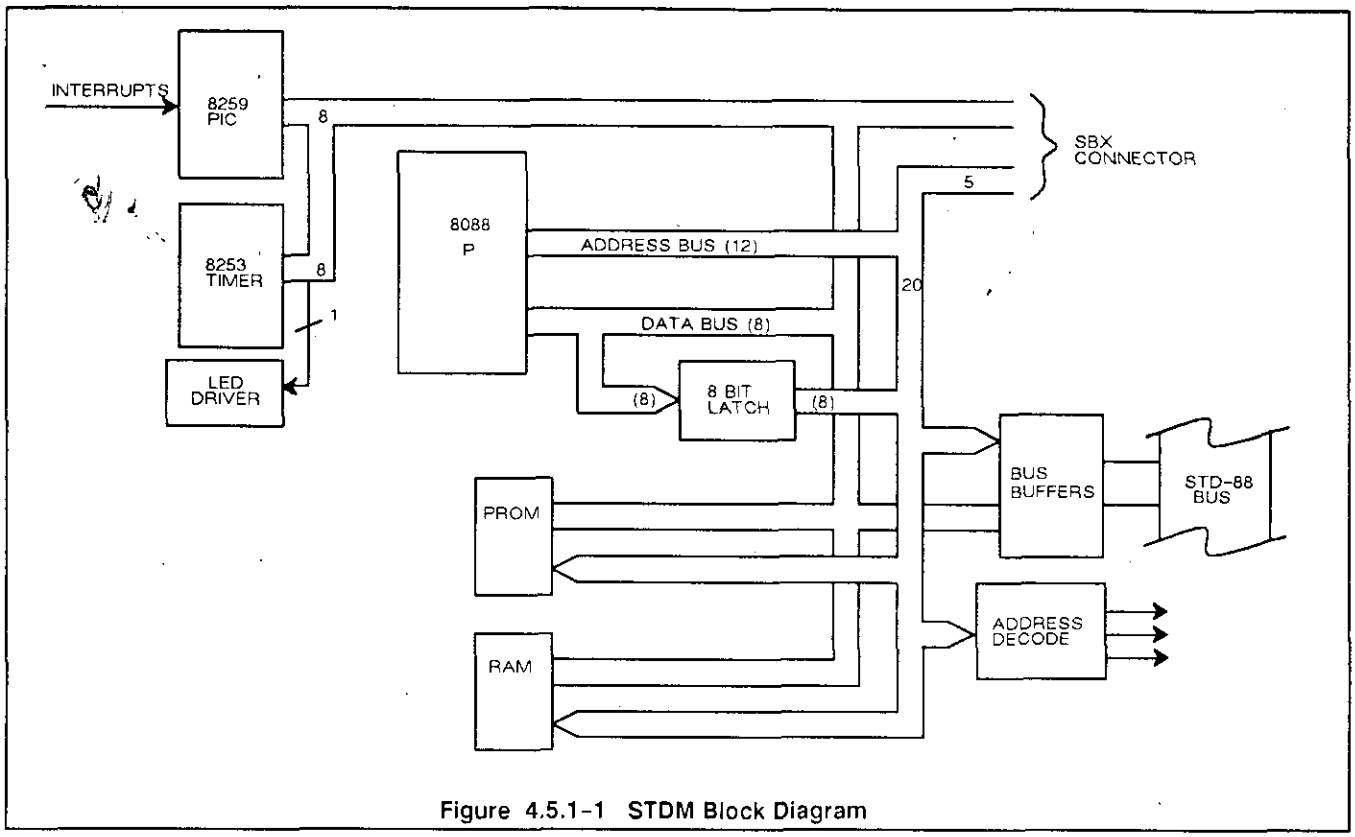


Figure 4.5.1-1 STDM Block Diagram

4.5.1.2 Processor Description

The microprocessor is an 8088. The 8088 is capable of accessing up to one megabyte of memory and up to 64k I/O ports, but only the first 256 ports are available in the STDM design.

4.5.1.3 Interrupts

Interrupts are controlled by an 8259 Programmable Interrupt Controller. This controller will accept and prioritize up to eight interrupts. The interrupts are labeled IR0 to IR7. They are connected as follows:

IR0	Connected to the STD bus interrupt
IR1	Jumper selectable; may be connected to either the interrupt connector or to the SBx interrupt 0.
IR2	Jumper selectable; may be connected to either the interrupt connector or to the SBx interrupt 1.
IR3-IR5	Connected to the interrupt connector.
IR6	Connected to the 8253 timer output.
IR7	Connected to the interrupt connector.

The 8529 is addressed at I/O ports 04 and 05.

4.5.1.4 Timer

The 8253 timer is addressed at ports 00-03, and includes 3 timer/counters. Only 2 of the timers may be used on the STDM design. The timer clock is 100 KHz, and is derived from a 10 MHz crystal oscillator. The two timers used are timers 1 and 2. The input of timer 1 is connected to the 100 KHz clock. The output of timer 1 is connected to the input of timer 2 and the output of timer 2 is connected to IR6 of the 8259 PIC. Timer 0 is not used. The 8253 is provided with a jumper which, when removed, disconnects the chip select. When the jumper is removed, all accesses to ports 00-03 will be routed to the STD bus, effectively disabling the timer on this PWA.

4.5.1.5 Led

The LED is addressed at port 08. Writing a value of 01 will light the LED, and writing a 0 will turn the LED off.

4.5.1.6 SBx Connector

The SBx connector provides the following 8088 signals to an external board:

AD0-AD7	WR
RD	A0-A4

A. function of test,

B. components/subsystems tested,

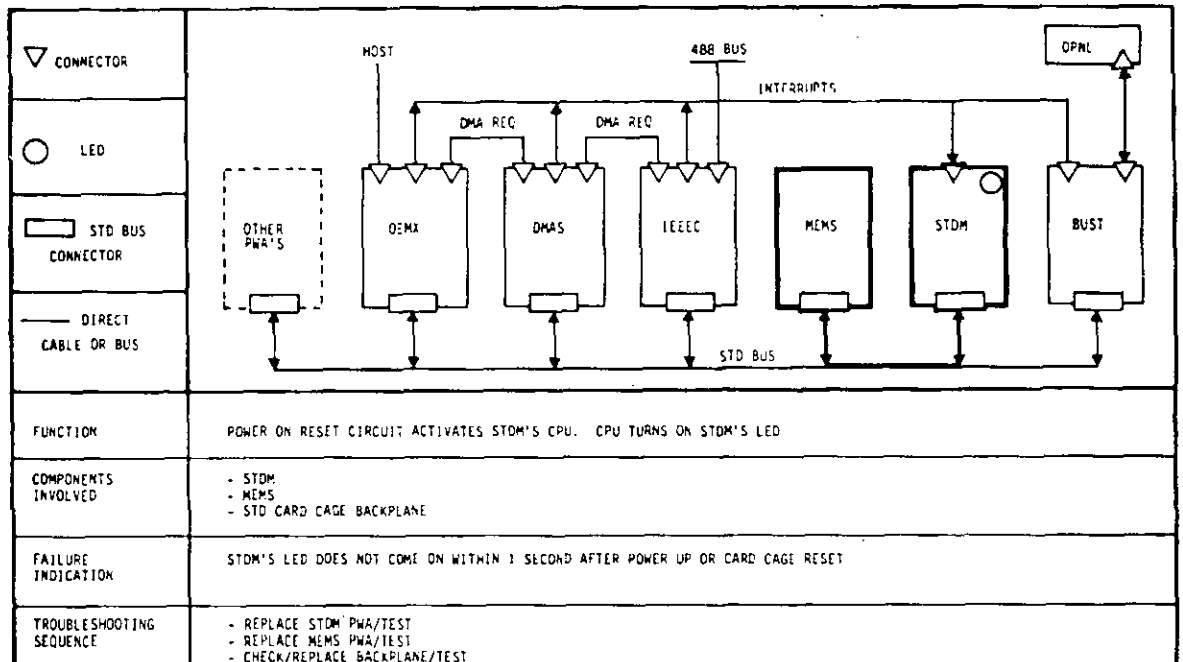
C. failure indication,

D. troubleshooting sequence.

Each Figure contains areas highlighted in "bold" and "bold dashed" lines. The components/subsystems with a "bold" outline are being tested. Components/subsystems with "bold dashed" outlines are required to perform the test. If the test fails, items with "bold" outlines are suspected first, items with "bold dashed" outlines are suspected second. Finally, all components/subsystems not outlined should be removed selectively and power-up test re-run, as failures in these components/subsystems may affect tests not related to them.

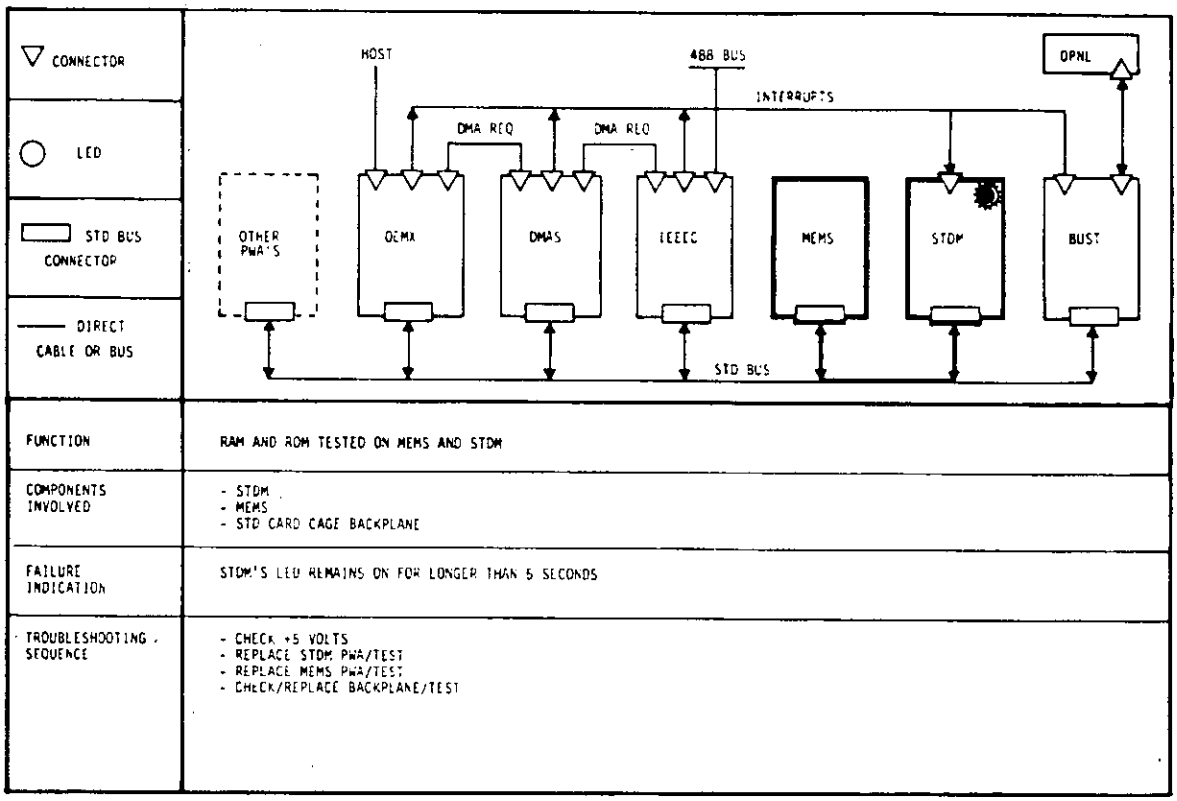
Figures 5.6.1-1 through 5.6.1-16 contain a block marked "other PWA's". These are subsystems that perform self tests and will be tested for status by the System Manager later in the test sequence.

Sections 5.6.1.6, 5.6.1.7 and 5.6.1.8 define special failure codes for tracker, reader and ink jet controllers. It is recommended that these sections be reviewed to ensure understanding of how these codes relate to the DP diagnostics.



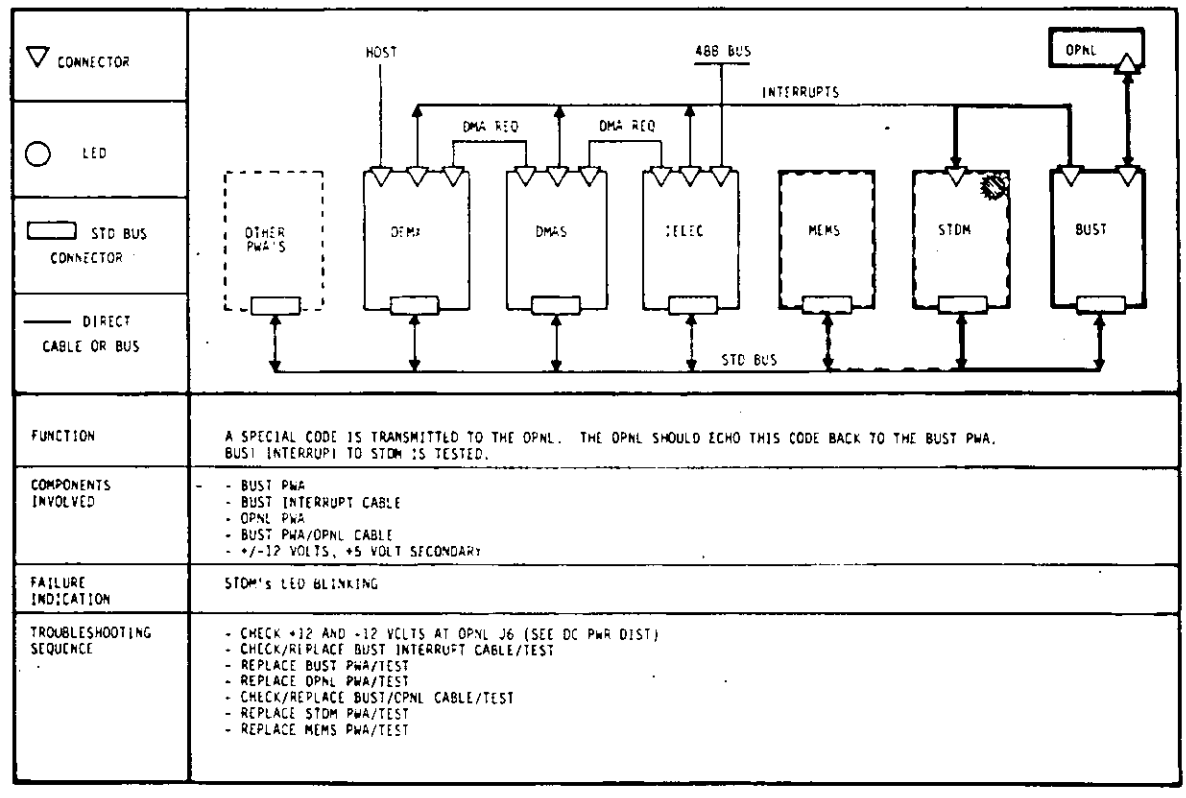
FUNCTION	POWER ON RESET CIRCUIT ACTIVATES STDM'S CPU. CPU TURNS ON STDM'S LED
COMPONENTS INVOLVED	- STDM - MEMS - STD CARD CAGE BACKPLANE
FAILURE INDICATION	STDM'S LED DOES NOT COME ON WITHIN 1 SECOND AFTER POWER UP OR CARD CAGE RESET
TROUBLESHOOTING SEQUENCE	- REPLACE STDM PWA/TEST - REPLACE MEMS PWA/TEST - CHECK/REPLACE BACKPLANE/TEST

Figure 5.6.1-1 Power On - STDM Activated



FUNCTION	RAM AND ROM TESTED ON MEMS AND STDM
COMPONENTS INVOLVED	- STDM - MEMS - STD CARD CAGE BACKPLANE
FAILURE INDICATION	STDM'S LED REMAINS ON FOR LONGER THAN 5 SECONDS
TROUBLESHOOTING SEQUENCE	- CHECK +5 VOLTS - REPLACE STDM PWA/TEST - REPLACE MEMS PWA/TEST - CHECK/REPLACE BACKPLANE/TEST

Figure 5.6.1-2 RAM and ROM Tested



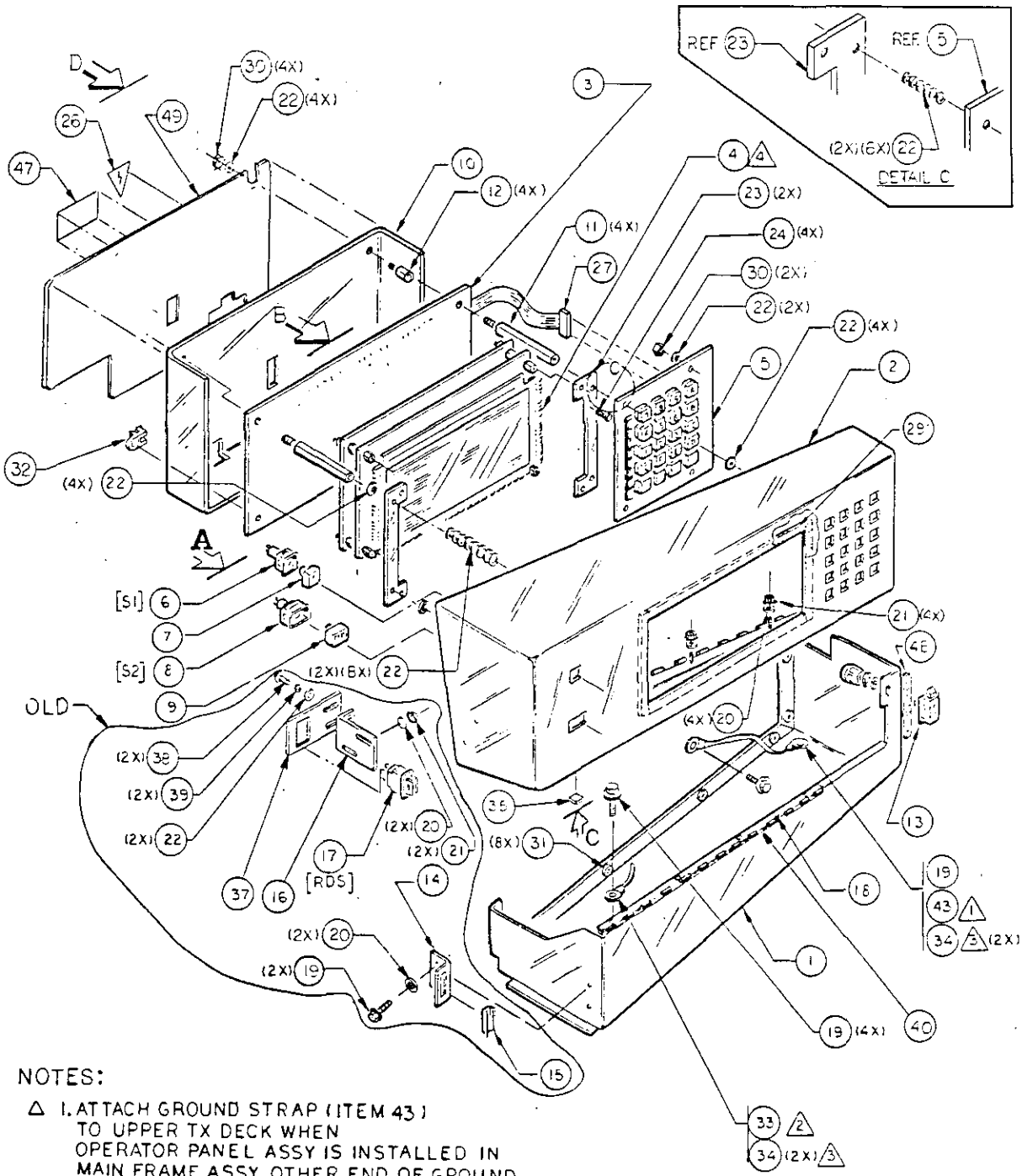
FUNCTION	A SPECIAL CODE IS TRANSMITTED TO THE OPNL. THE OPNL SHOULD ECHO THIS CODE BACK TO THE BUST PWA. BUST INTERRUPT TO STDM IS TESTED.
COMPONENTS INVOLVED	- BUST PWA - BUST INTERRUPT CABLE - OPNL PWA - BUST PWA/OPNL CABLE - +/-12 VOLTS, +5 VOLT SECONDARY
FAILURE INDICATION	STDM's LED BLINKING
TROUBLESHOOTING SEQUENCE	- CHECK +12 AND -12 VOLTS AT OPNL J6 (SEE DC PWR DIST) - CHECK/REPLACE BUST INTERRUPT CABLE/TEST - REPLACE BUST PWA/TEST - REPLACE OPNL PWA/TEST - CHECK/REPLACE BUST/OPNL CABLE/TEST - REPLACE STDM PWA/TEST - REPLACE MEMS PWA/TEST

Figure 5.6.1-3 OPNL Test Code

PARTS LIST NUMBER: 103-7001987-001 REV. M (CONTINUED)

TITLE: LOWER XPORT DECK ASM

ITEM	PART NUMBER	REV.	PART NAME	QTY.
124	N80P16036B	A	SCREW #10 PN HD 21/4	4
125	N405P39B	ZZ	WASHER LOCK STEEL	11
127	75894142	A	BUSHING	1
128	12A1571P17	AD	BALL BEARING	1
129	43B126148P22	C	SCREW	1
130	77720376	A	BELT V-RBBED J-4 TYP	1
131	77720377	A	POLY-V BELT	1
132	77757167	A	IDLER ADJ FEED TIRE	1
133	N14P250012B	ZZ	L SCREW CAP	2
134	N402P43B	ZZ	WASHER PLAIN 6	2
135	53777910	A	NUT & WASHER	1
136	43C142270P21	H	CLAMP,CABLE	3
137	N80P16006B	ZZ	SCREW PH PHIL #10-32X3/8	2
139	43A168062P15	F	ADHESIVE 222	AR
140	43C142270P8	H	CLAMP,CABLE	AR
142	N405P42B	ZZ	WASHER LOCK SPRING 5/16	6
143	77756354	E	HARN FEED MOTOR	1
144	75898066	F	HANDLE	1
145	N83P13006V	A	SCREW MACHINE BRASS	3
146	77757255	A	RIB EXTRUSION	3
147	N84P5004B	A	SCREW MACHINE STEEL	15
148	N80P16012B	ZZ	SCREW PH PHIL #10-32X3/4	1
149	77757258	A	SPRNG ANCHR FD MTR	1
150	77757214	F	GUIDE ASSY READER	REF
151	N402P39B	A	WASHER	REF
152	77758967	A	MTRC-KIT	1
153	00860303	E	SCREW, SELF LOCKING	6
154	95125322	P	LOCTITE 242	AR
155	201-7000482-002	A	SHIM	2
157	59741756-001	H	CAPSTAN	2
158	77756009	L	POLY V PULLEY	3
159	202-7003408-001	B	SPACER IDLER	2
160	N14P25016B	01	SCREW 3/8-16x1	2
161	77720383	C	BLT V-RIB J-4 94.0IN	1
162	00860326	E	SCREW, SELF-LOCKING	2



NOTES:

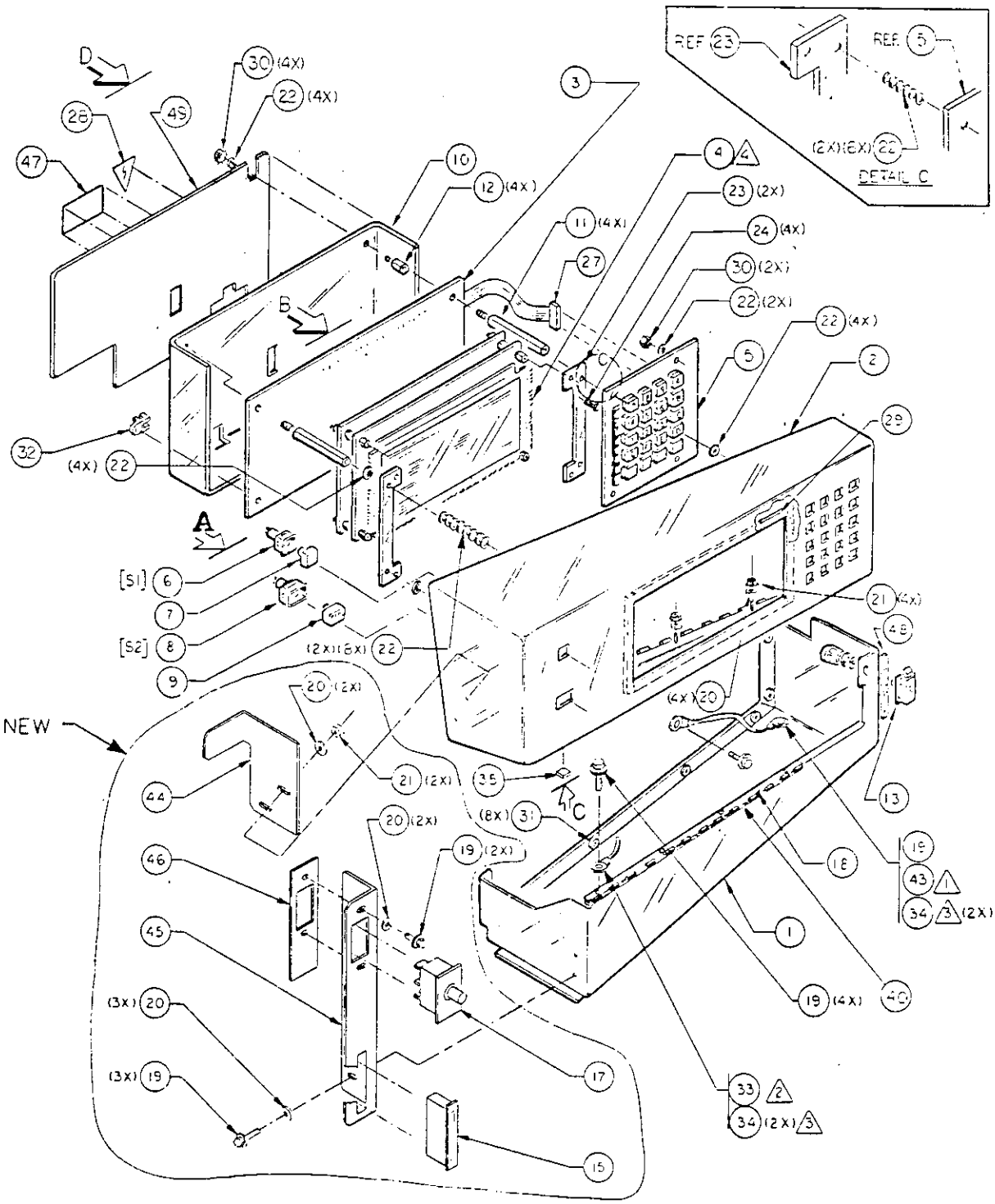
△ 1. ATTACH GROUND STRAP (ITEM 43) TO UPPER TX DECK WHEN OPERATOR PANEL ASSY IS INSTALLED IN MAIN FRAME ASSY. OTHER END OF GROUND STRAP IS ATTACHED TO SCREW HOLDING PANEL, FEED CHUTE TO OPERATOR PANEL BASE.

△ 2. MOUNT GROUND STRAP (ITEM 33) TO ITEM 1 AND 2 USING HINGE (ITEM 18), MOUNT HARDWARE AT LOCATION SHOWN.

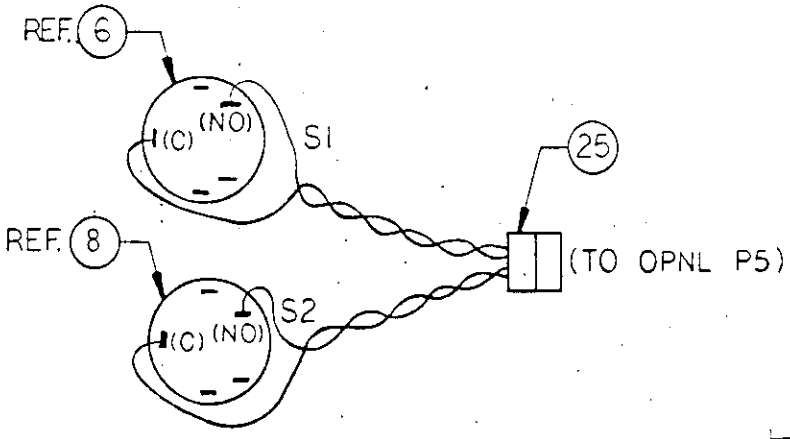
△ 3. INSTALL GROUNDING WASHERS (ITEM 34) BETWEEN TERMINALS OF GROUND STRAPS (ITEMS 33 AND 43) AND PAINTED SURFACES SO THAT WASHER TEETH CUT THROUGH PAINT.

△ 4. FOR SPARES REPLACEMENT ORDER ITEM 42 DISPLAY KIT.

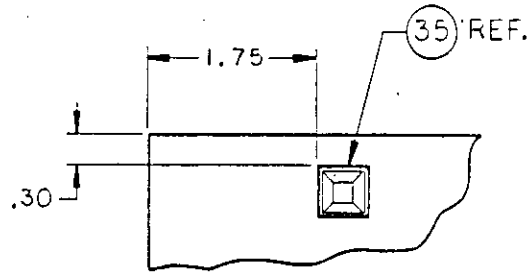
77757052 OPERATOR PANEL ASSY (1 OF 3)



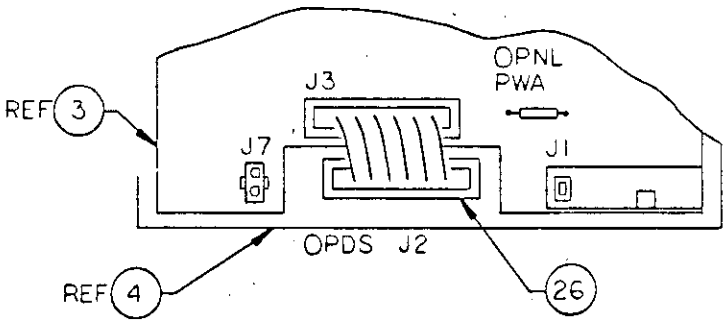
77757052 OPERATOR PANEL ASSY (2 OF 3)



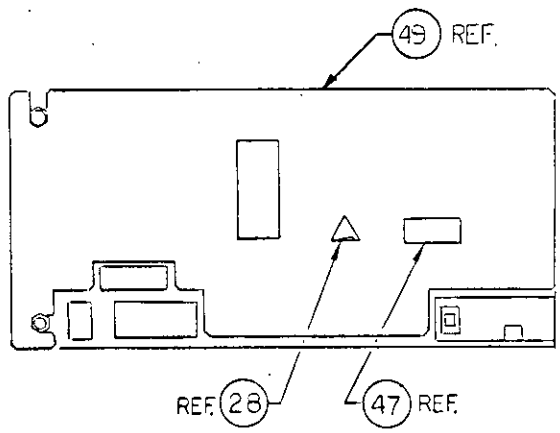
VIEW A



VIEW C



VIEW B



VIEW D

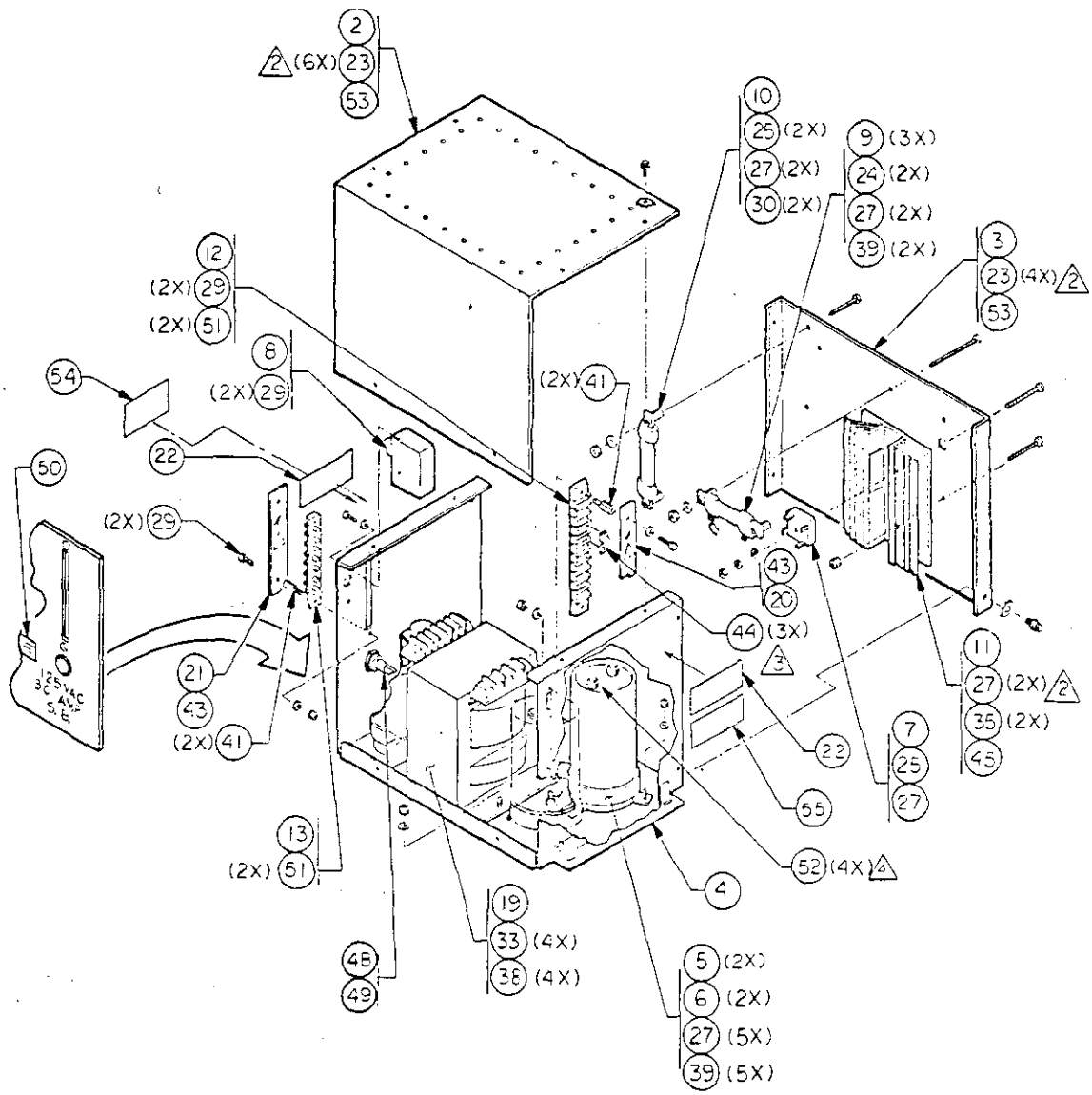
77757052 OPERATOR PANEL ASSY (3 OF 3)

PARTS LIST NUMBER: 77757052 REV. AG

TITLE: OPERATOR PANEL ASSY

ITEM	PART NUMBER	REV.	PART NAME	QTY.
1	200-7006152-001	B	OP PANEL BASE	1
2	77756222	L	OPERATOR PANEL	1
3	500-7601060-002	C	PCA, OPNL	REF
4	77720187	B	DISPLAY PANEL PLASMA	1
*4	77720186	A	DISPLAY PANEL PLASMA	1
5	77755350	C	PWA KPAD	1
6	77720190	B	SWITCH MOM ILLUM	1
7	77720195	A	SWITCH CAP STOP AMBER	1
8	77720191	A	SWITCH MOM ILLUM	1
9	77720193	B	CAP SWITCH FEED	1
10	77756286	E	OP PANEL PWA COVER	1
11	43C168722P45	F	STANDOF 1.70LG	4
12	43C168722P32	F	STANDOFF	4
13	77720530	3	OPER.PANEL LATCH	1
14	77756215	B	LATCH BRKT READ DOOR	REF
15	59700409-006	A	CATCH MAG	1
16	201-7000532-001	A	OPER PNL SW BRKT MNT	REF
17	77727771	02	SWITCH LINE-INTERUPT	1
18	77756223	A	HINGE OPERATOR PANEL	1
19	00860324	E	SCREW SELF LOCKING	11
20	N402P39B	A	WASHER	11
21	N238P16B	A	NUT & WASHER ASSY	6
22	N402P38B	A	WASHER FLAT #8	44
23	77756220	D	DISPLAY MOUNT	2
24	91976218	ZZ	M4 X 6MM SCREW	4
25	77756348	G	CABLE, OP PAN SW	1
26	77753060	H	RIBBON CABLE ASSY 16	1
27	77753061	G	RIBBON CABLE ASSY 16	1
28	340-7500032-008	A	LABEL ELEC HAZARD	1
29	43A168049P5	E	FOAM TAPE	22
30	N238P15B	ZZ	NUT & WASHER ASSY	6
31	77720550	03	RUBBER GROMMET	8
32	43C142270P16	H	CLAMP,CABLE	1
33	77756396	C	GND JUMPER 2.5 IN	1
34	09040204	B	WASHER, LOCK	4
35	43A168065P7	H	BUMPER	1
36	507-7600114-003	C	F/W KIT, OPNL	1
37	201-7000530-001	B	SWITCH BRACKET	REF
38	N80P15006B	ZZ	SCR PAN HD PH #8-32X.38	REF
39	N405P38B	A	WASHER LOCK SPRING #8	REF
40	201-7000611-001	A	SPACER, O.P.	1
42	103-7002531-001	B	DISPLAY PANEL KIT	REF
43	75949346	N	GROUND JUMPER	1
44	201-7003932-001	A	DOOR TAB, OPERATOR PANEL	1
45	201-7003933-001	B	LATCH/SWITCH BRACKET	1
46	200-7003934-001	B	SWITCH LOCATING PLATE	1
47	340-7500075-001	01	LABEL	1
48	43A168049P3	E	FOAM TAPE	6

* Indicates interchangeable item.



NOTES:

1. EXCEPT AS NOTED, TORQUE PER 59A301125.

△2. TORQUE TO 9-12 IN-LBS.

△3. INSTALL JUMPERS (ITEM 44) ON TERMINAL BLOCK (ITEM 12) AT POSITIONS SILK SCREENED ON CHASSIS (ITEM 4).

△4. REPLACE SCREWS SUPPLIED WITH CAPS (ITEM 5) WITH ITEM 52 (4X).

77757054 DC POWER SUPPLY 40V

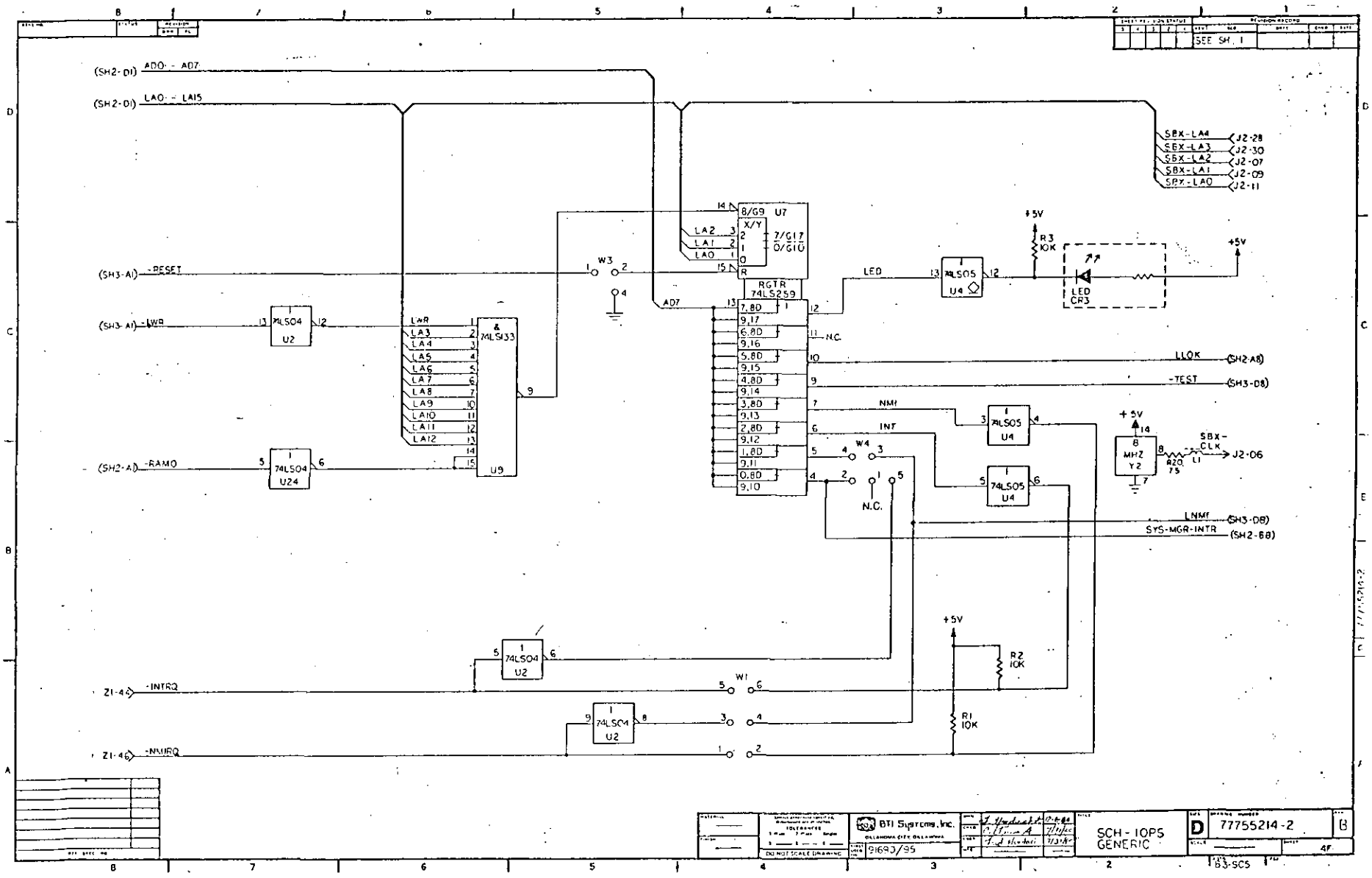


Figure 7.2-8 IEEE PWA (6 OF 6)

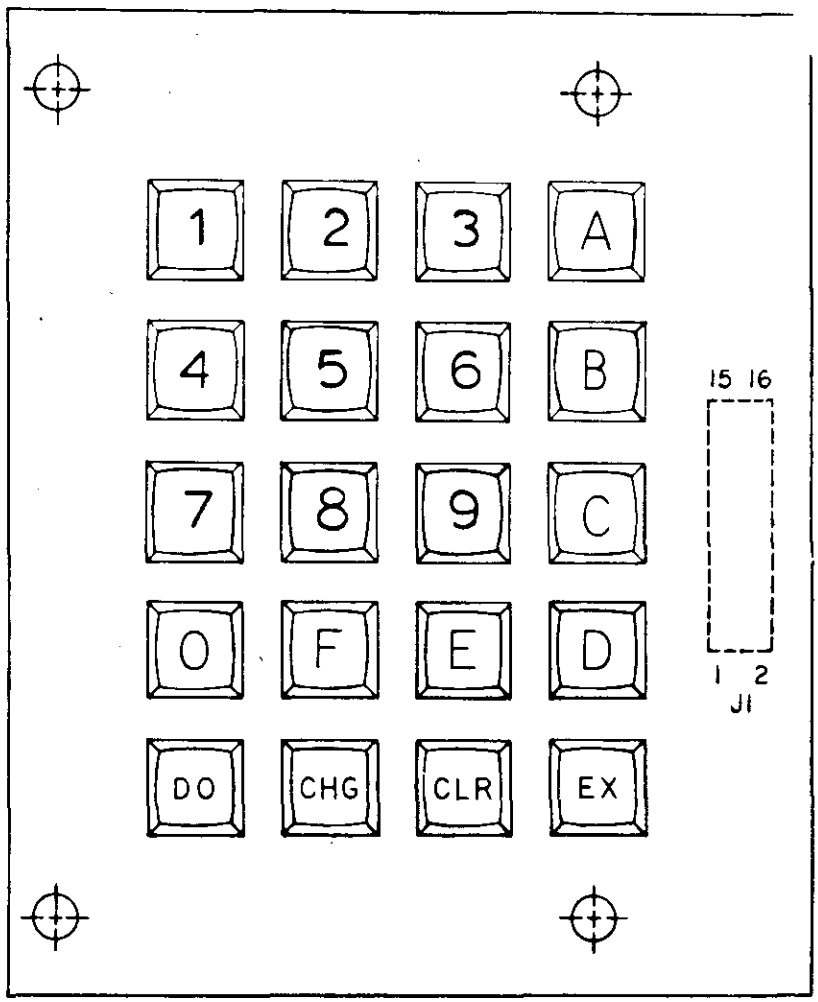


Figure 7.2-9 KPAD PWA (1 OF 2)

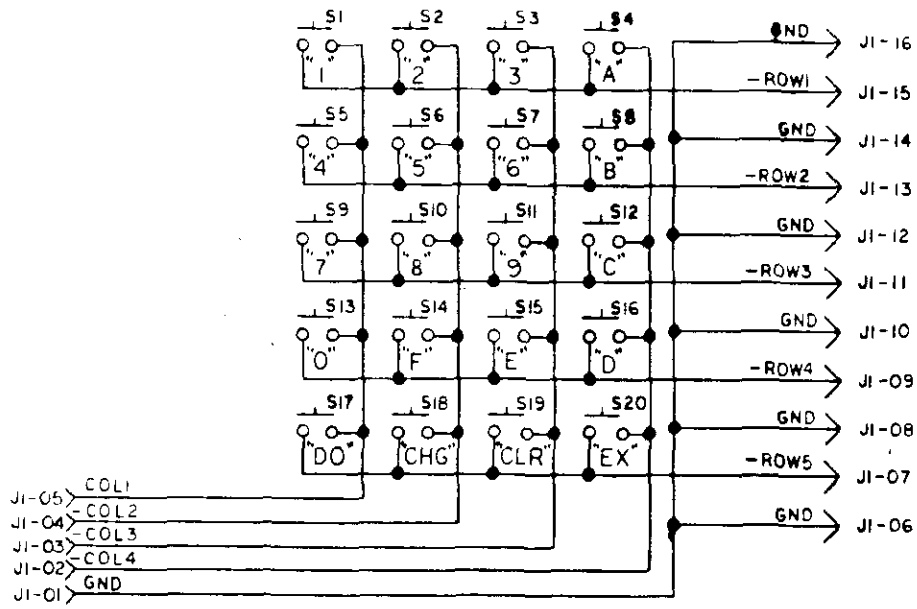


Figure 7.2-9 KPAD PWA (2 OF 2)

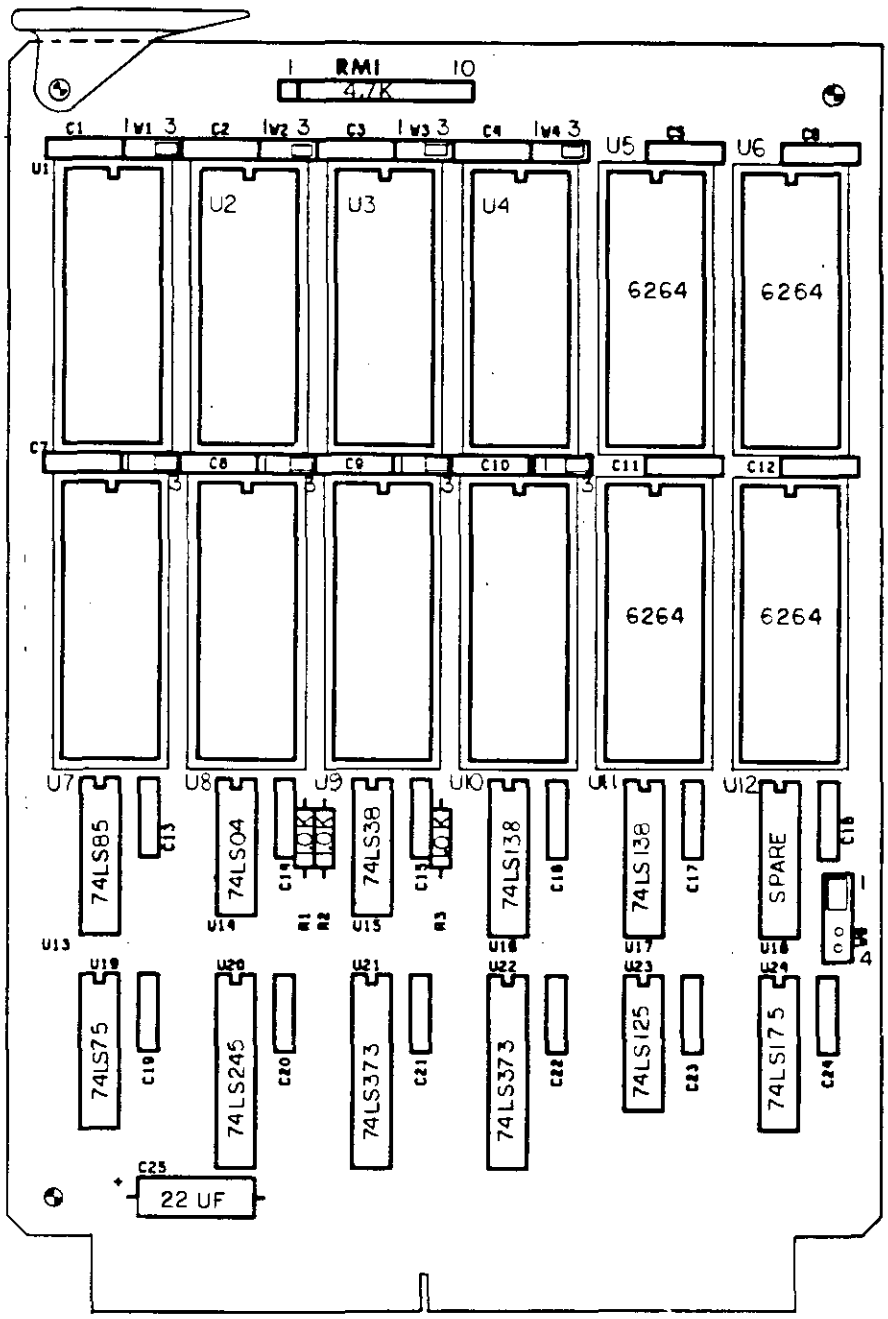


Figure 7.2-10 MEMS PWA (1 OF 6)

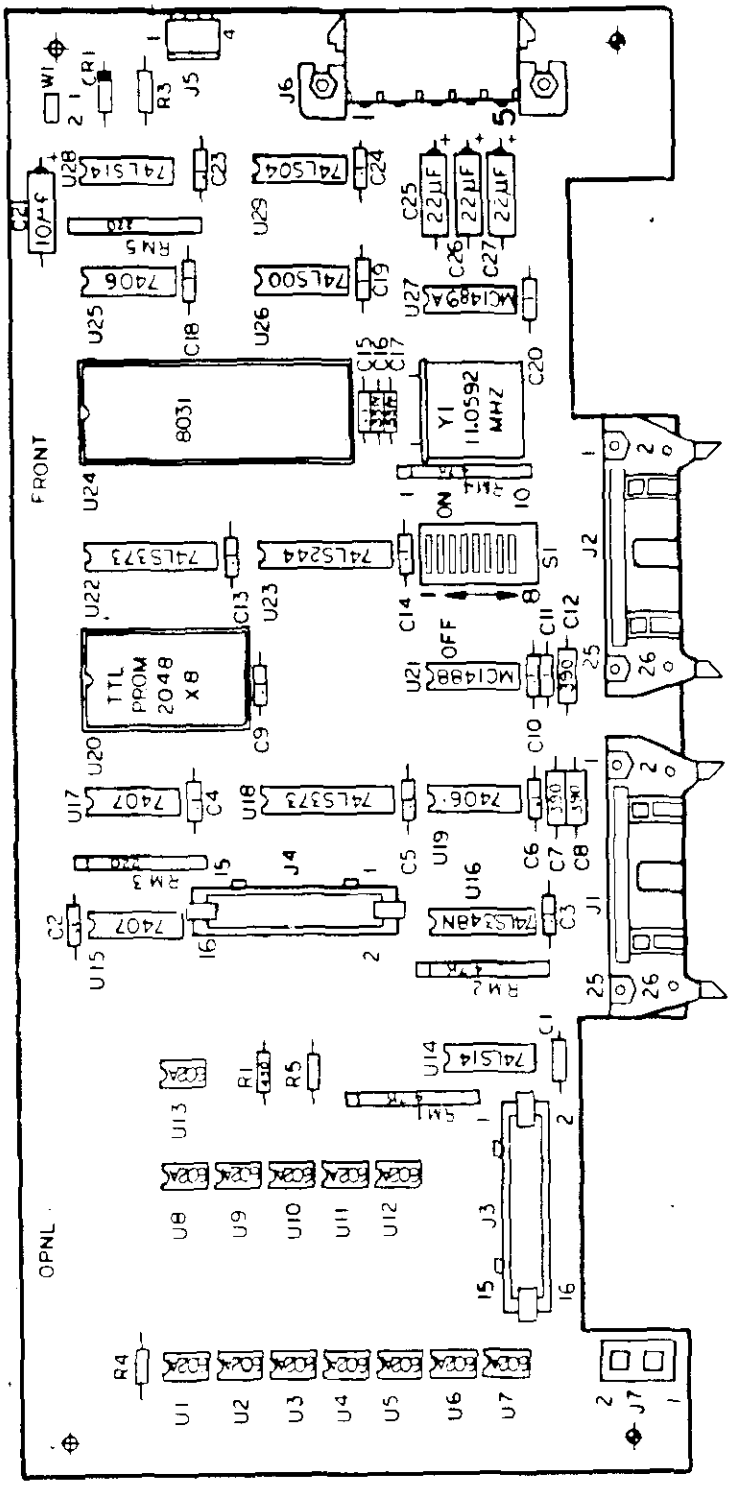


Figure 7.2-18 OPNL PWA (1 OF 4)

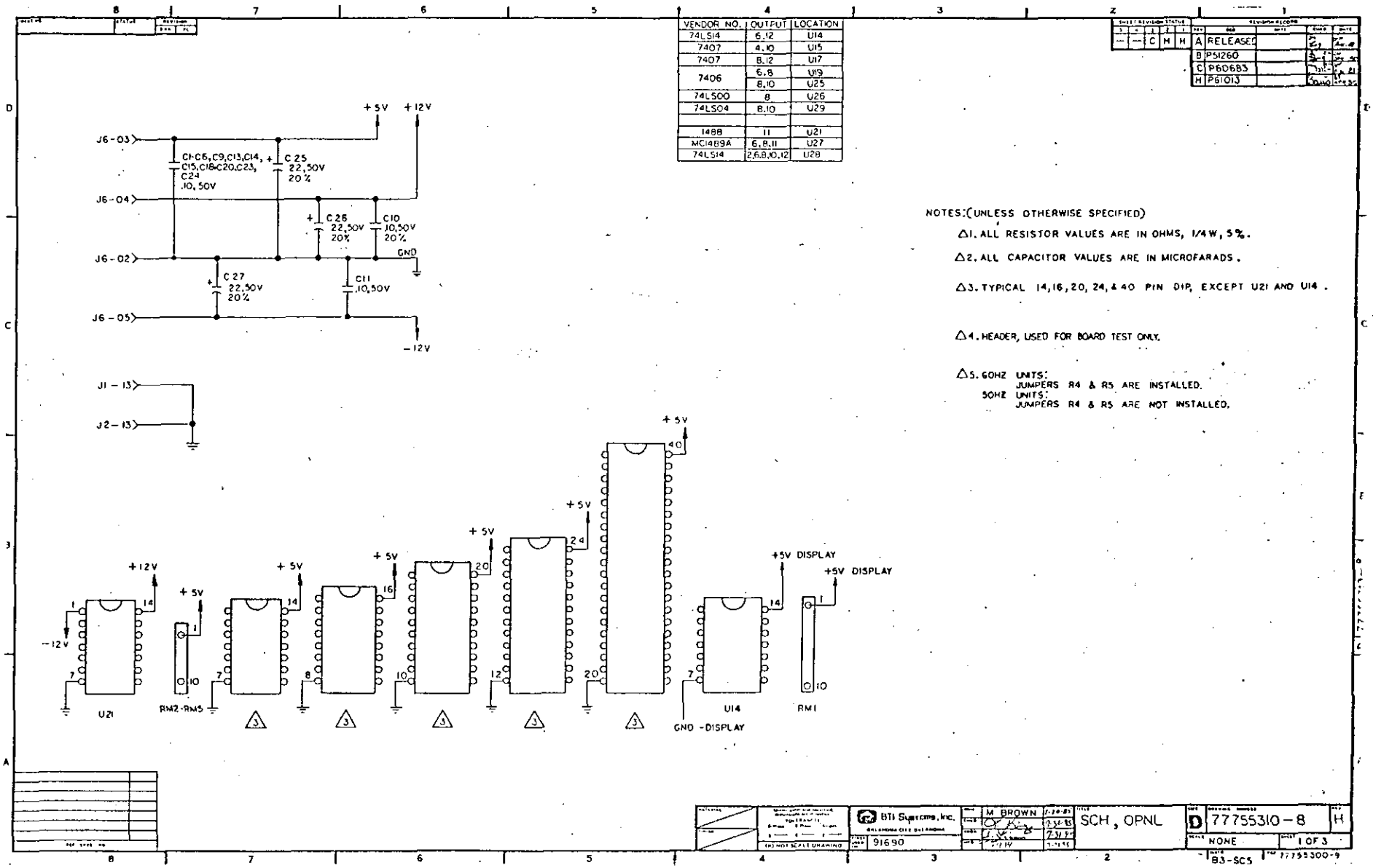


Figure 7.2-18 OPNL PWA (2 OF 4)

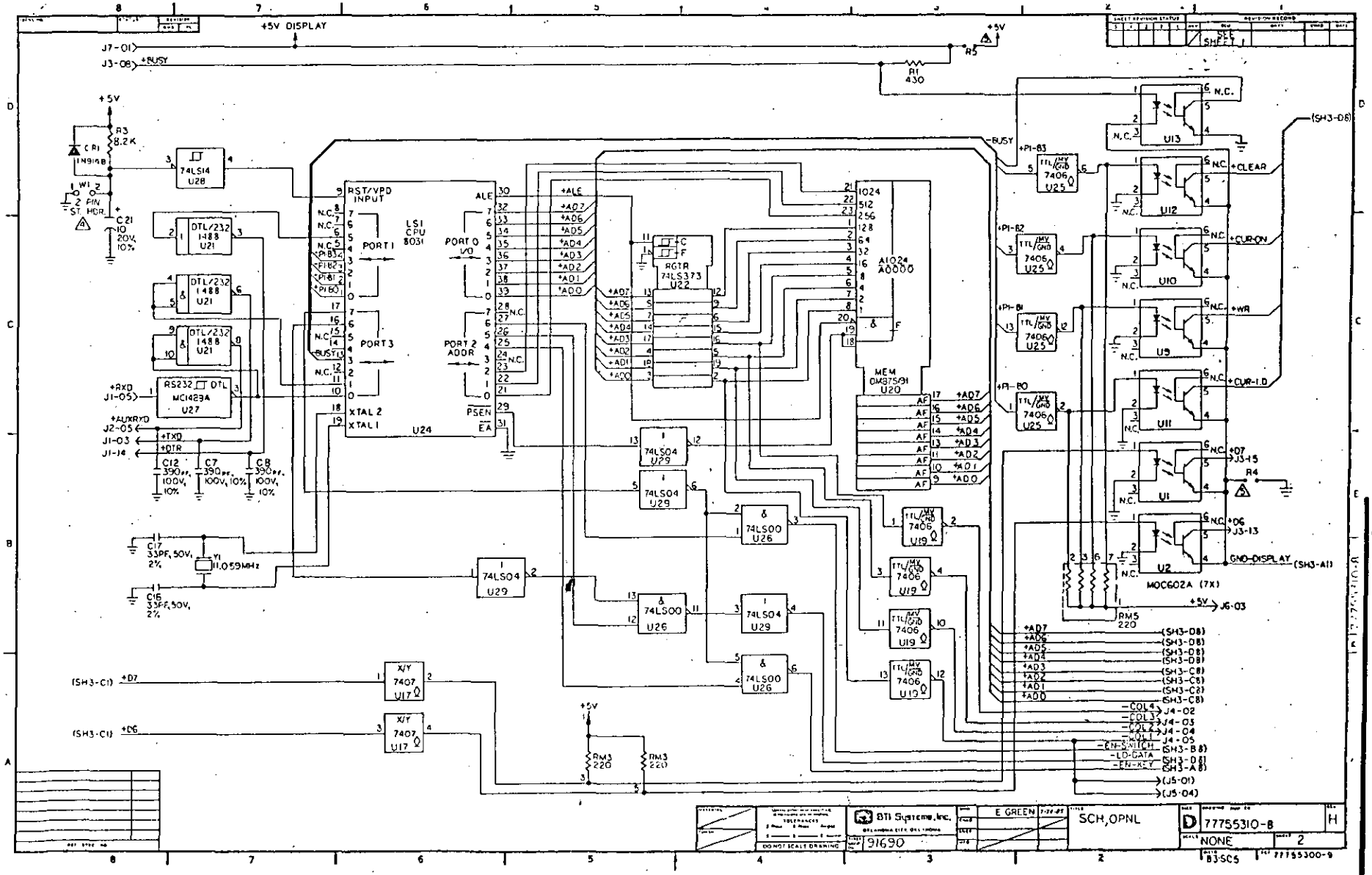


Figure 7.2-18 OPNL PWA (3 OF 4)

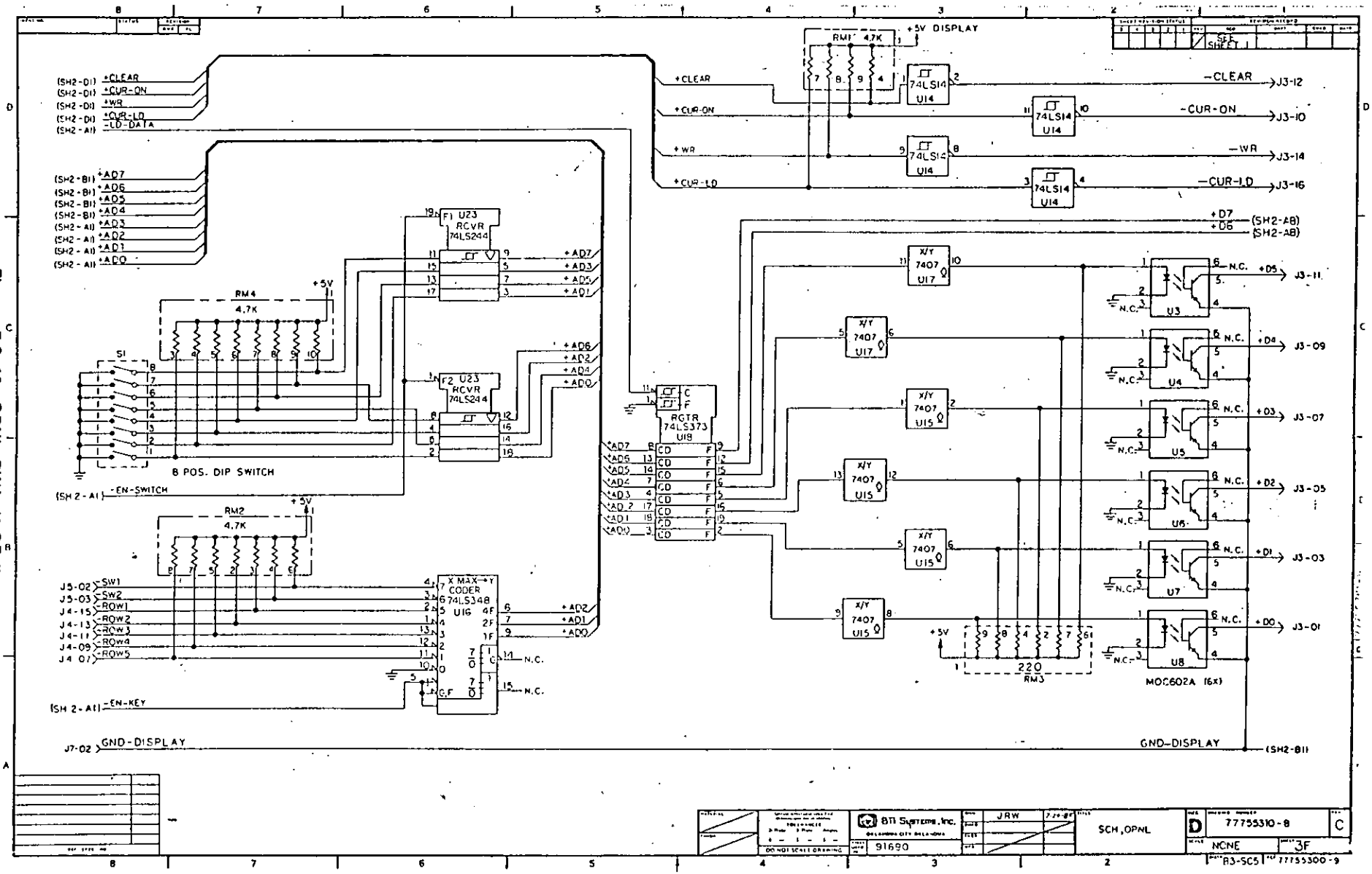


Figure 7.2-18 OPNL PWA (4 OF 4)

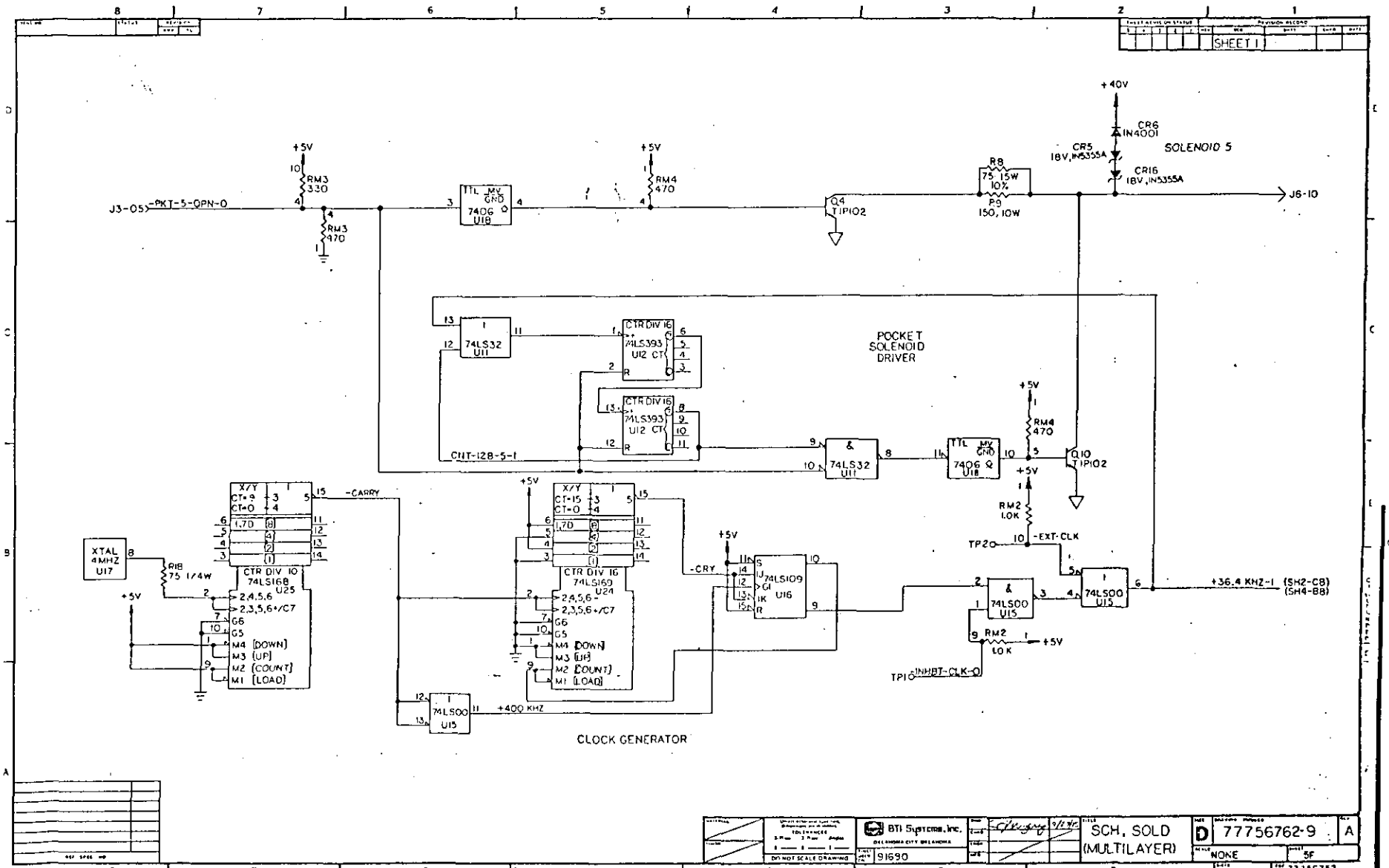


Figure 7.2-26 SOLD PWA (6 OF 6)

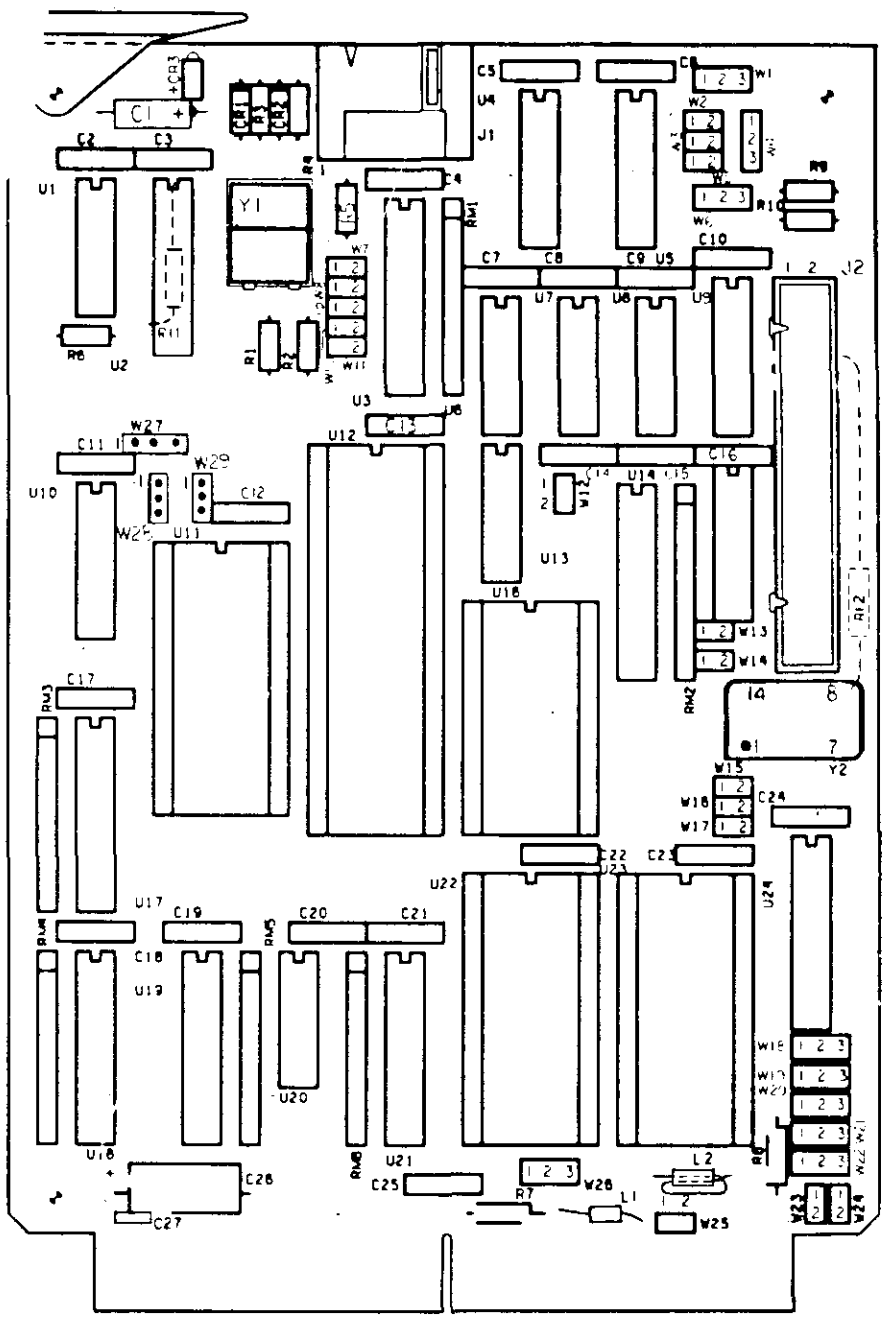


Figure 7.2-27 STDM PWA (1 OF 7)

TABLE 1A

PERSONALIZED	PWA	OPTION CONVERSION CHART				
IF GENERIC IS 77755101	IF GENERIC IS 77755102		U 22	U 23	Y1	PERSONALITY KIT
77758537	77758538	STDM-A		B	C	77758595
505-7600619-001	505-7600620-001	STDM-B		D	F	77758596
505-7600621-001	505-7600622-001	STDM-C		D	C	77758990

TABLE 1B

PART NUMBER	TITLE	SYMBOL KEY
77727798	NVRAM2KK8	B*
77727833	14.7546 MHZ	C
77727722	6264P-15	D
77721075	24 MHZ	F

*NVRAM MUST BE INSTALLED IN SOCKET PINS 3 THROUGH 26 LEAVING SOCKET PINS 1, 2, 27, 28 VACANT. PIN 1 OF I.C. IN SOCKET PIN 3, ETC.

TABLE 2

SHUNT JUMPER PLACEMENT																
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16
STDM-A	2-3	3	3	1-2	3	2-3	1-2	---	1-2	---	1-2	1-2	---	---	---	---
STDM-B	1-2			2-3		1-2	---	1-2	---	---	---	1-2	1-2	1-2	---	1-2
STDM-C	1-2			1-2		1-2	---	1-2	---	---	---	1-2	1-2	1-2	---	1-2

SHUNT JUMPER PLACEMENT														
	W17	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27 W30 I.C.	W27 I.D.	W28	W29
STDM-A	---	2-3	2-3	1-2	1-2	---	1-2	1-2	1-2	1-2	W27-1 W30-1	1-2	2-3	1-2
STDM-B	---	1-2	2-3	2-3	1-2	2-3	1-2	1-2	1-2	---	W27-2 W30-1	2-3	2-3	1-2
STDM-C	---	1-2	2-3	2-3	1-2	2-3	---	1-2	1-2	---	W27-2 W30-1	2-3	1-2	2-3

NOTES:

1. STDM GENERIC PWA PART NO. IS 77755101. THIS PWA MUST HAVE ONE "PERSONALITY" KIT INSTALLED DEPENDING ON USAGE WITHIN SYSTEM.
   - A) INSTALL COMPONENTS LISTED IN TABLE 1B AT LOCATIONS LISTED IN TABLE 1A, SHEET 2. SECURE CRYSTAL (V1) TO PWA AS FOLLOWS:
     1. IF CRYSTAL HAS HOLD-DOWN WIRE AT TOP OF CASE SOLDER IT IN CORRESPONDING HOLE IN PWB.
     2. IF CRYSTAL DOES NOT HAVE HOLD-DOWN WIRE USE PIECE OF HOOK-UP WIRE (APPROX. 24AWG) LOOPED OVER CRYSTAL AND SOLDERED IN HOLES EITHER SIDE OF CRYSTAL.
   - B) INSTALL SHUNT ASSEMBLIES (77727747) PER TABLE 2, SHEET 2.
   - C) REFER TO FIGURE 1 FOR COMPONENT LOCATIONS WHEN USING M/P 77755120-B, AND USE WIRE JUMPER P.N. 77753800.
   - D) REFER TO FIGURE 2 FOR COMPONENT LOCATIONS WHEN USING M/P 77755121-A, AND USE SHUNT JUMPER P.N. 77727747.
2. MARK PWA WITH ASSEMBLY NO. AS SHOWN IN COLUMN 1, TABLE 1A PER 12A1099P19.
3. PIN 1 AND 2 OF LOCATIONS W2, W3, AND W5 ARE CONNECTED BY ETCHES ON PWB.

TITLE STDM PERSONALITY INSTRUCTIONS			
SIZE	DRAWING NUMBER	CD	REV
A	77758951	6	F

Figure 7.2-27 STDM PWA (2 OF 7)

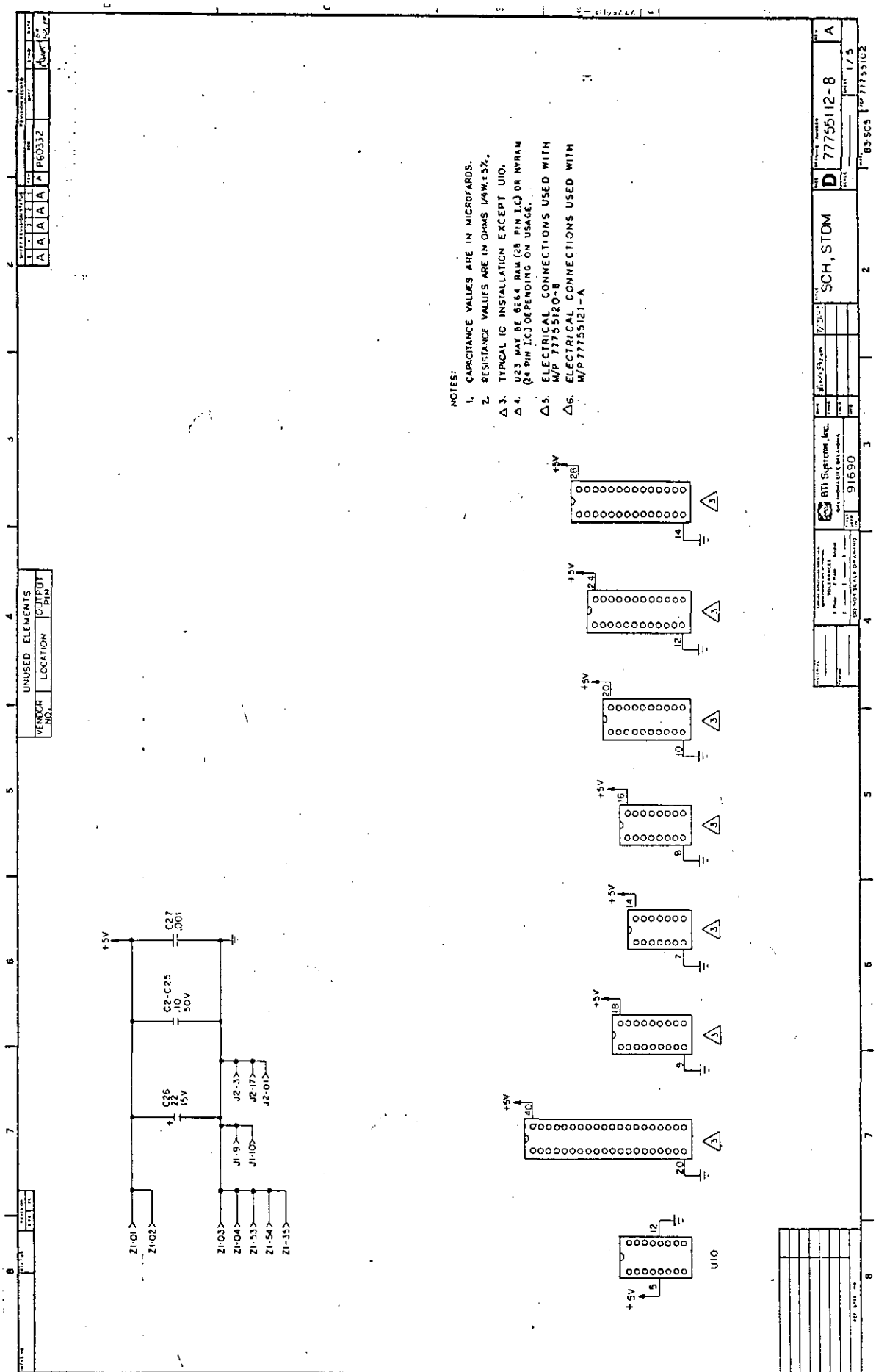


Figure 7.2-27 STDM PWA (3 OF 7)

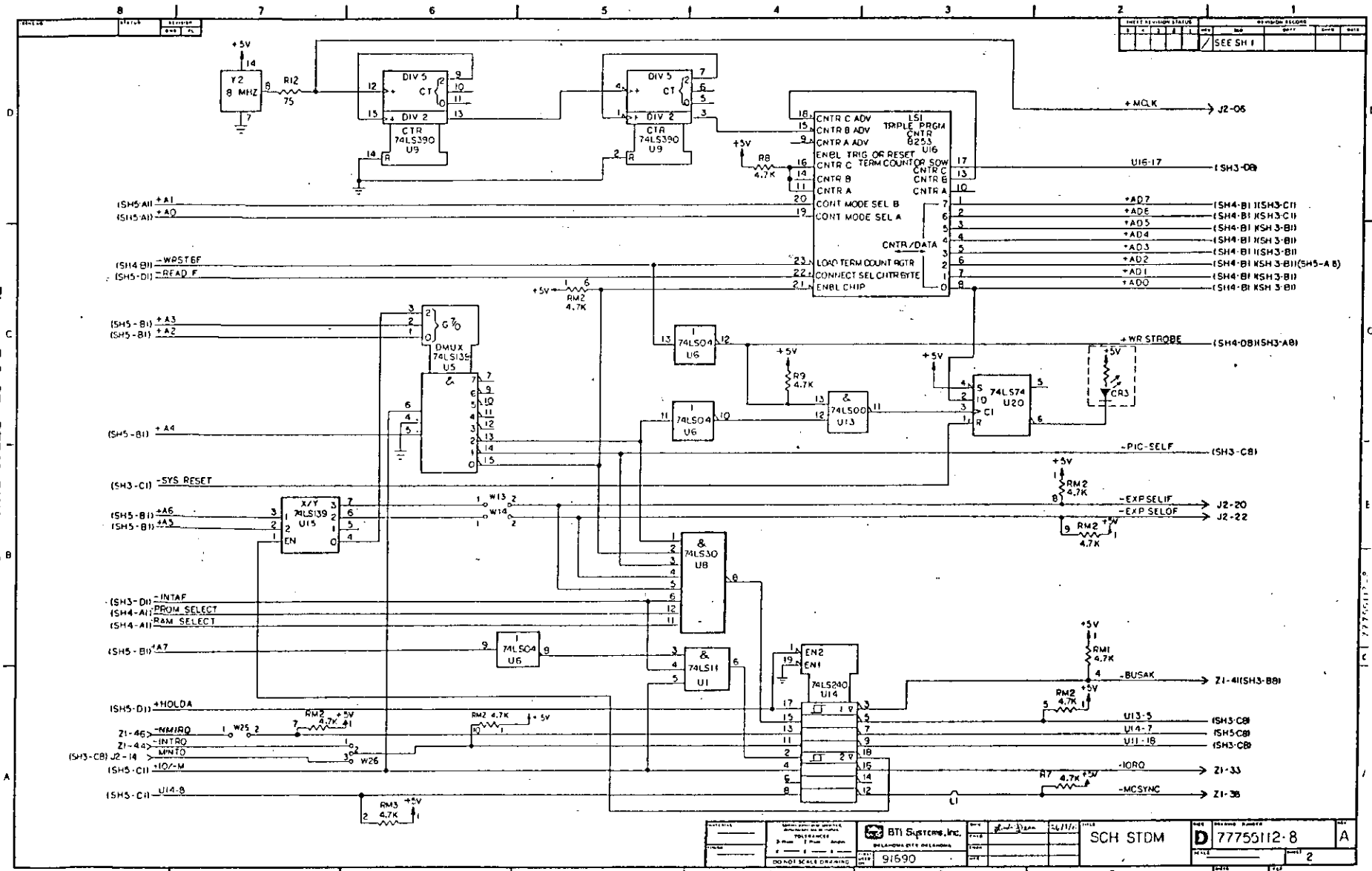


Figure 7.2-27 STDM PWA (4 OF 7)

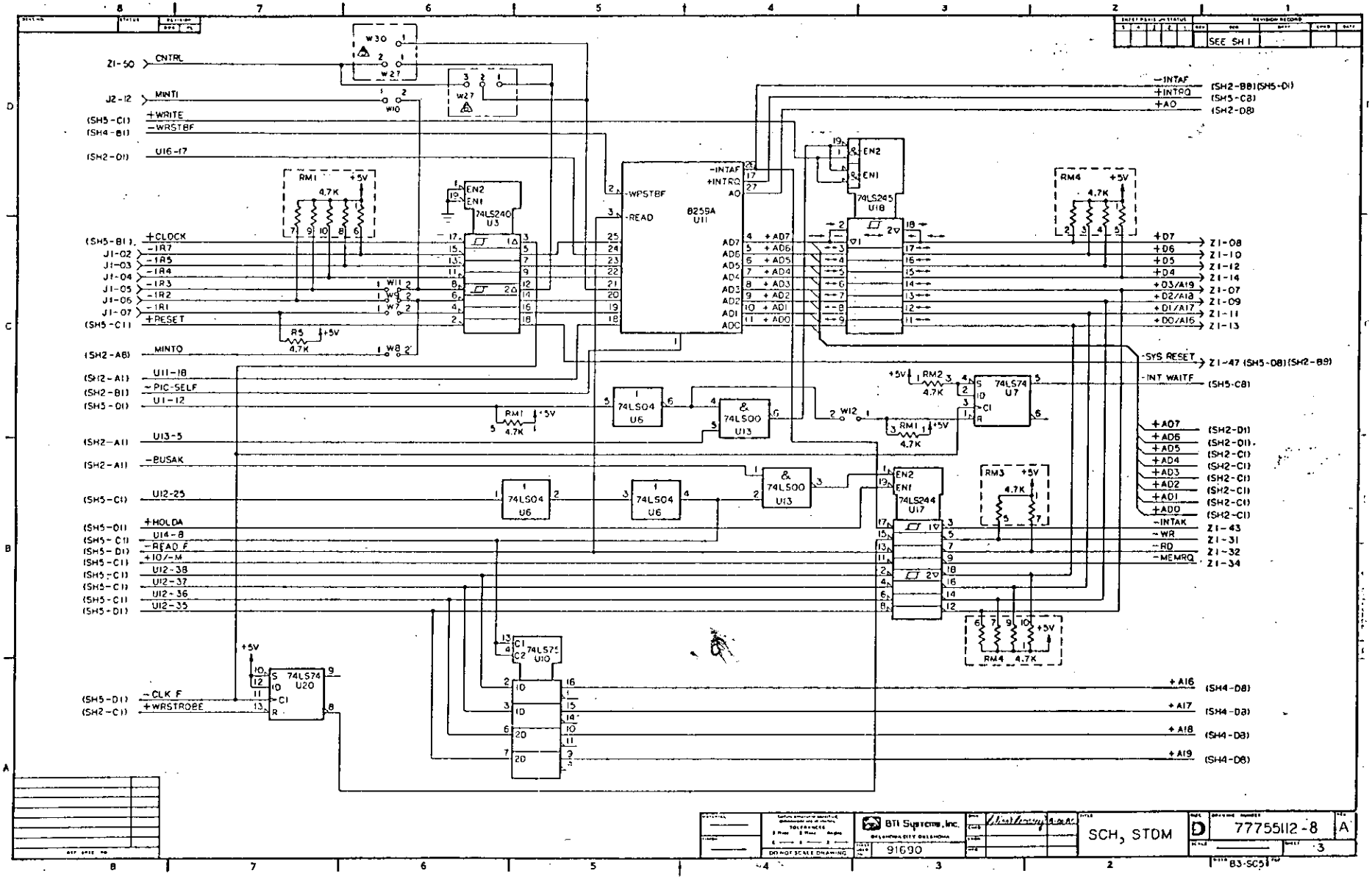


Figure 7.2-27 STDM PWA (5 OF 7)

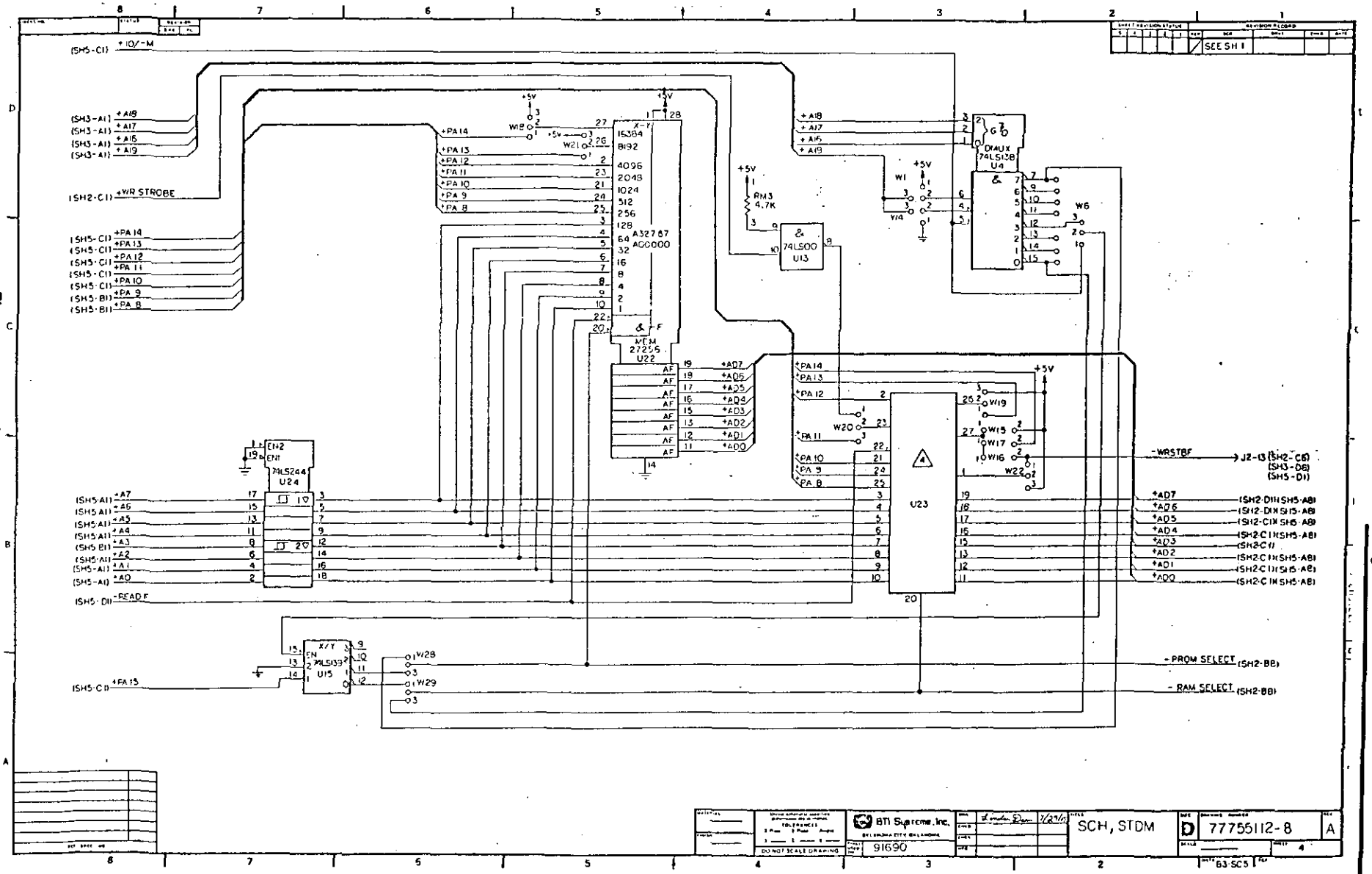


Figure 7.2-27 STDM PWA (6 OF 7)

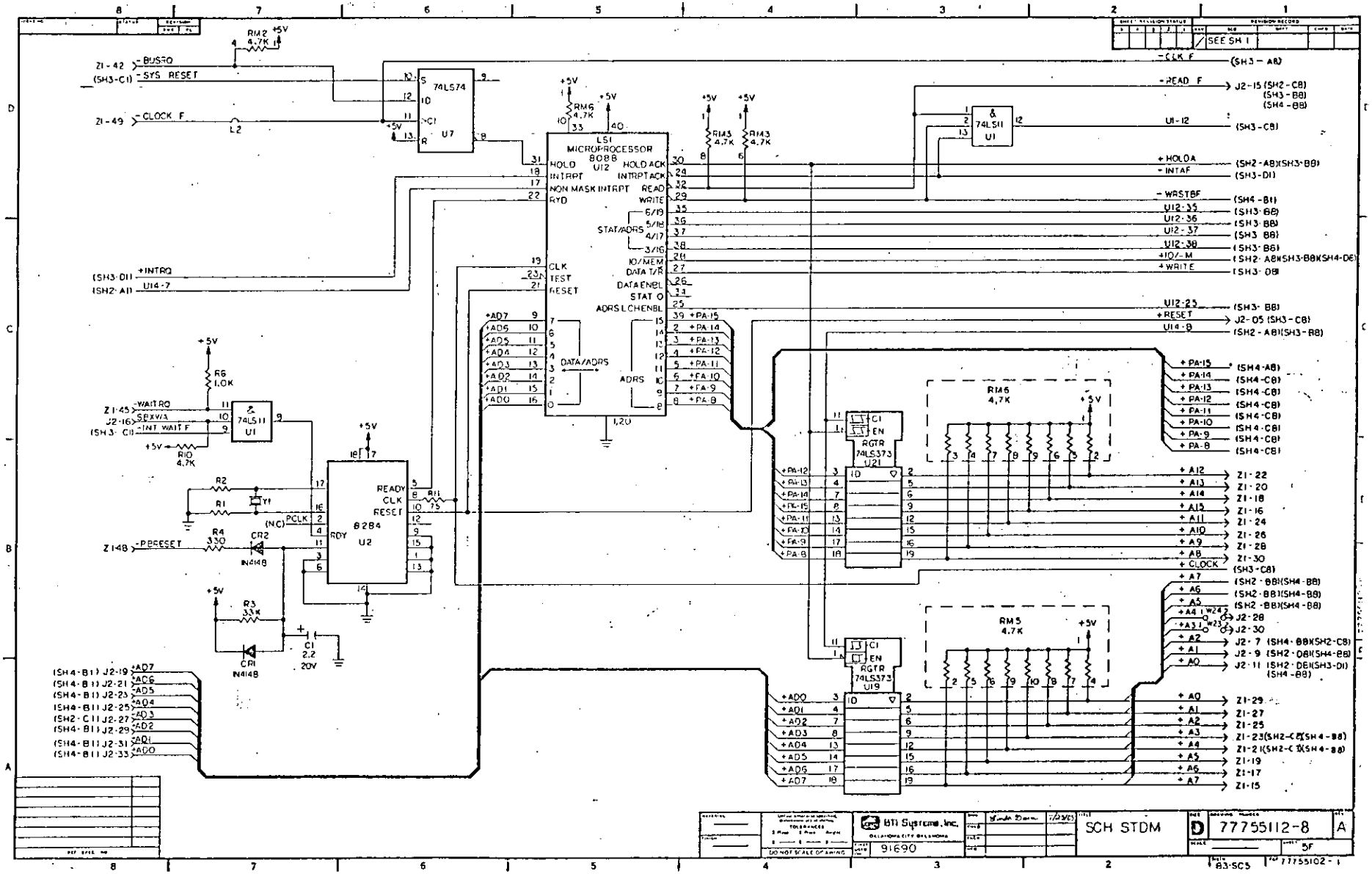


Figure 7.2-27 STDM PWA (7 OF 7)

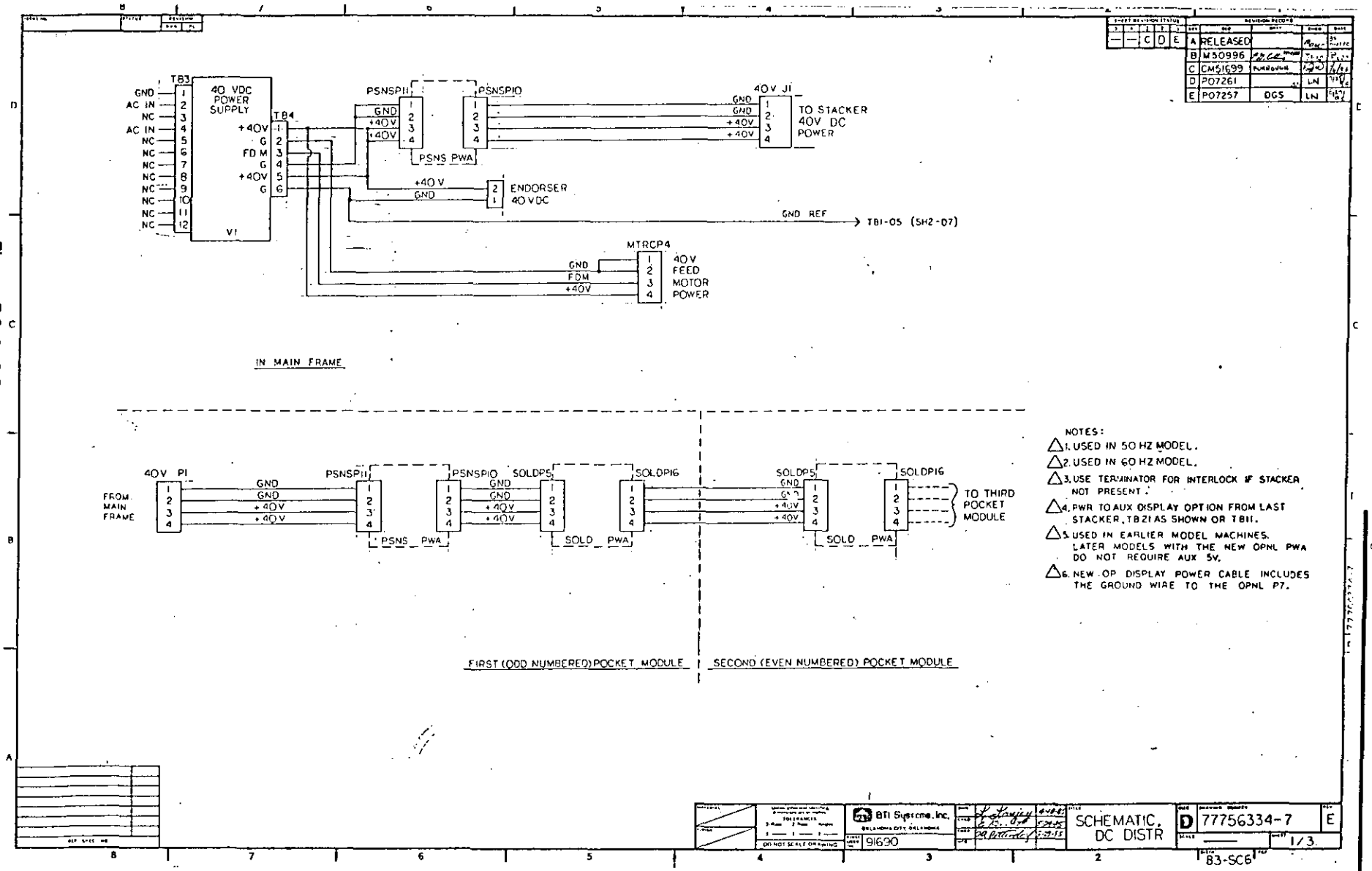


Figure 7.3-2 DC Power Distribution (1 OF 3)

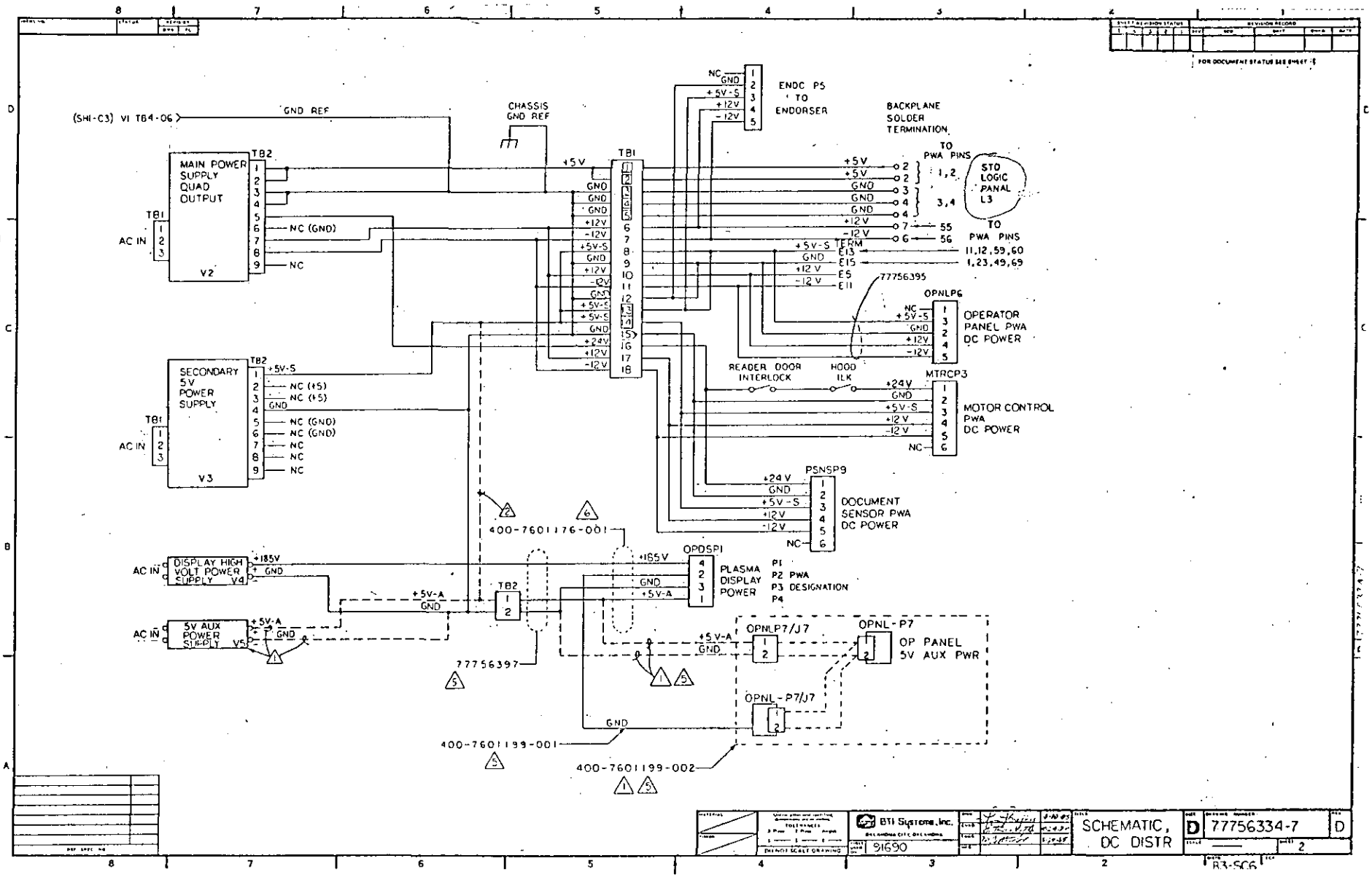


Figure 7.3-2 DC Power Distribution (2 OF 3)

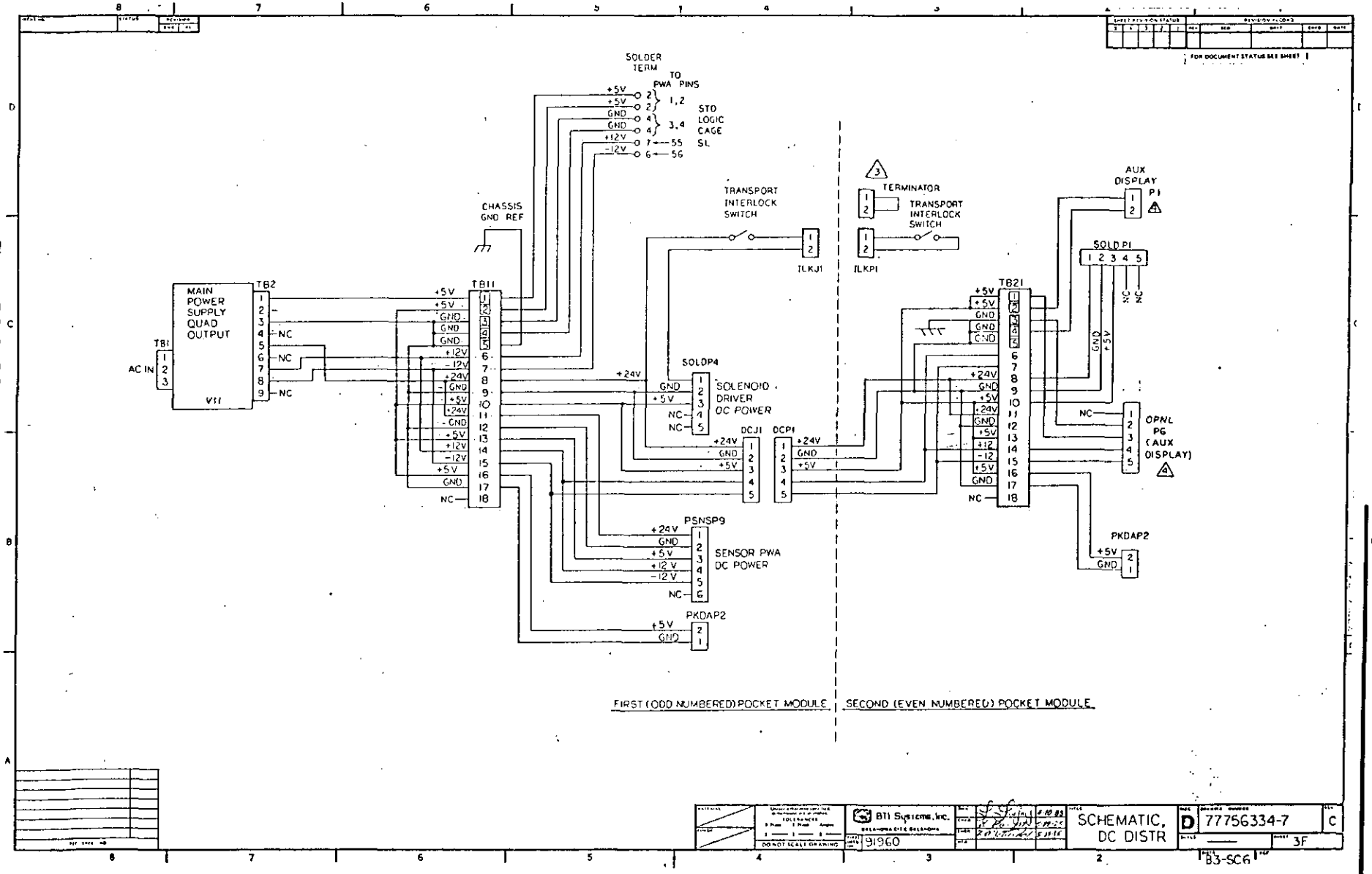


Figure 7.3-2 DC Power Distribution (3 OF 3)

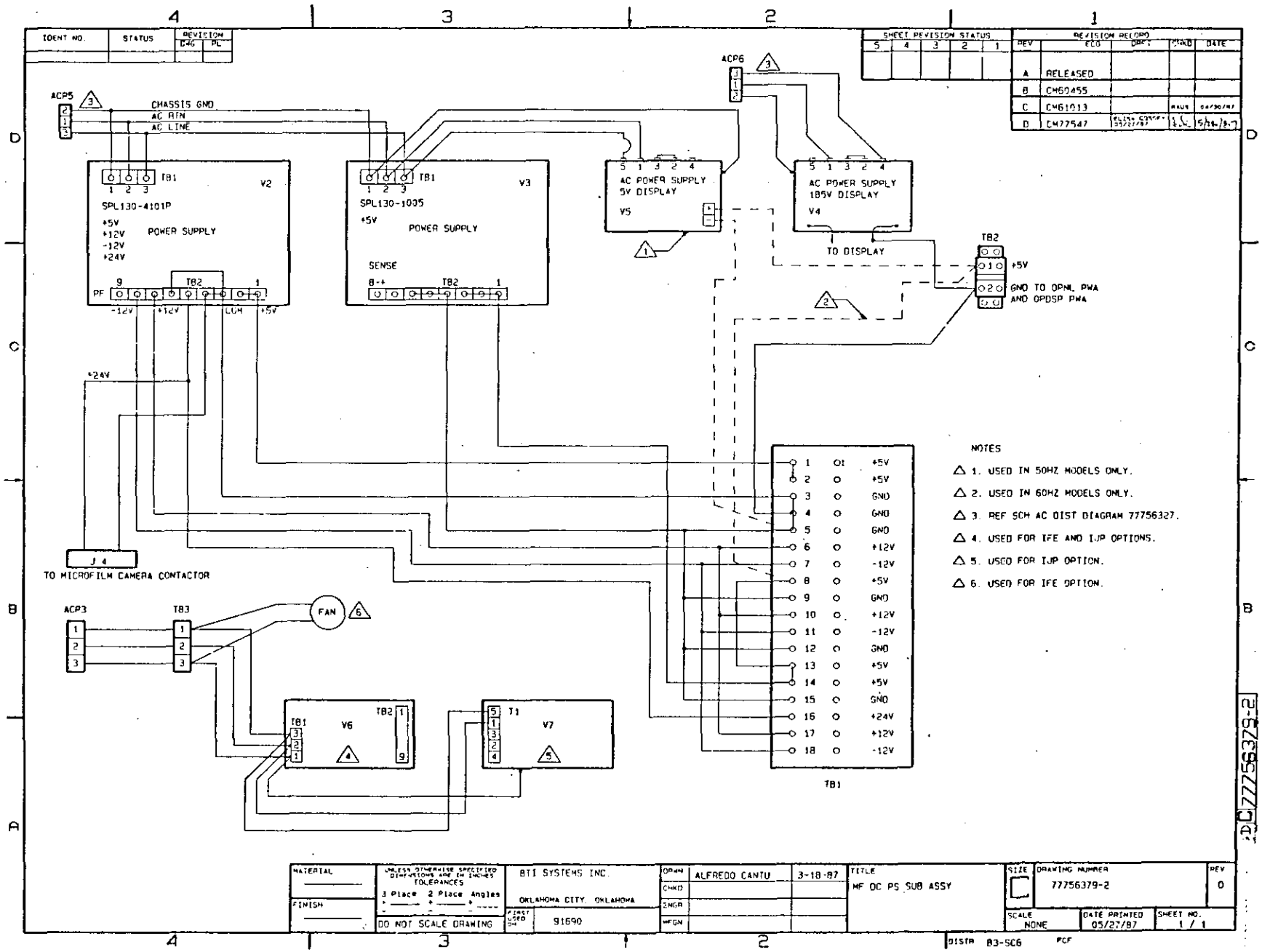


Figure 7.3-3 MF DC Power Supply Subassembly

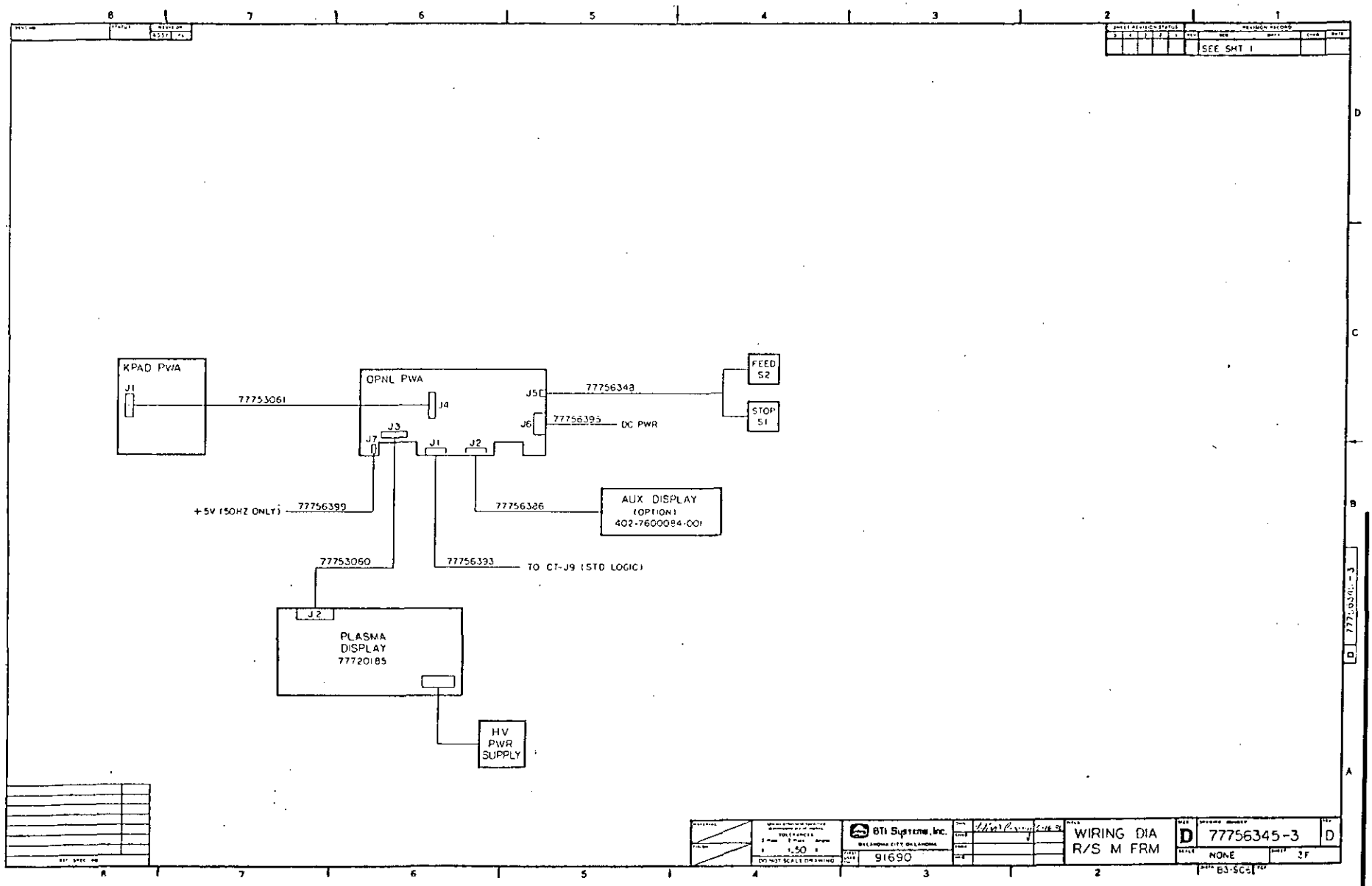


Figure 7.4-1 Main Frame Wiring Diagrams (3 OF 3)

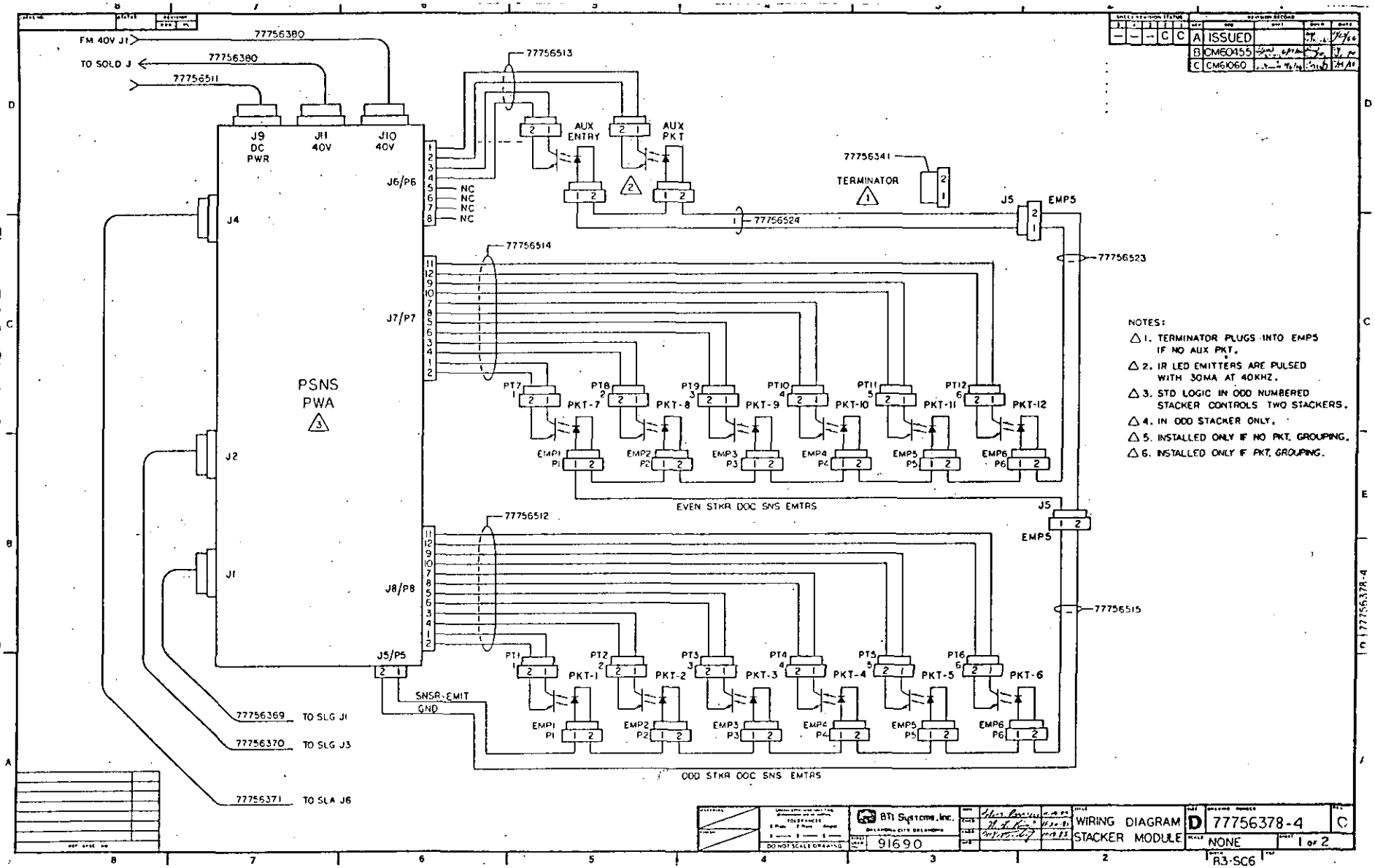
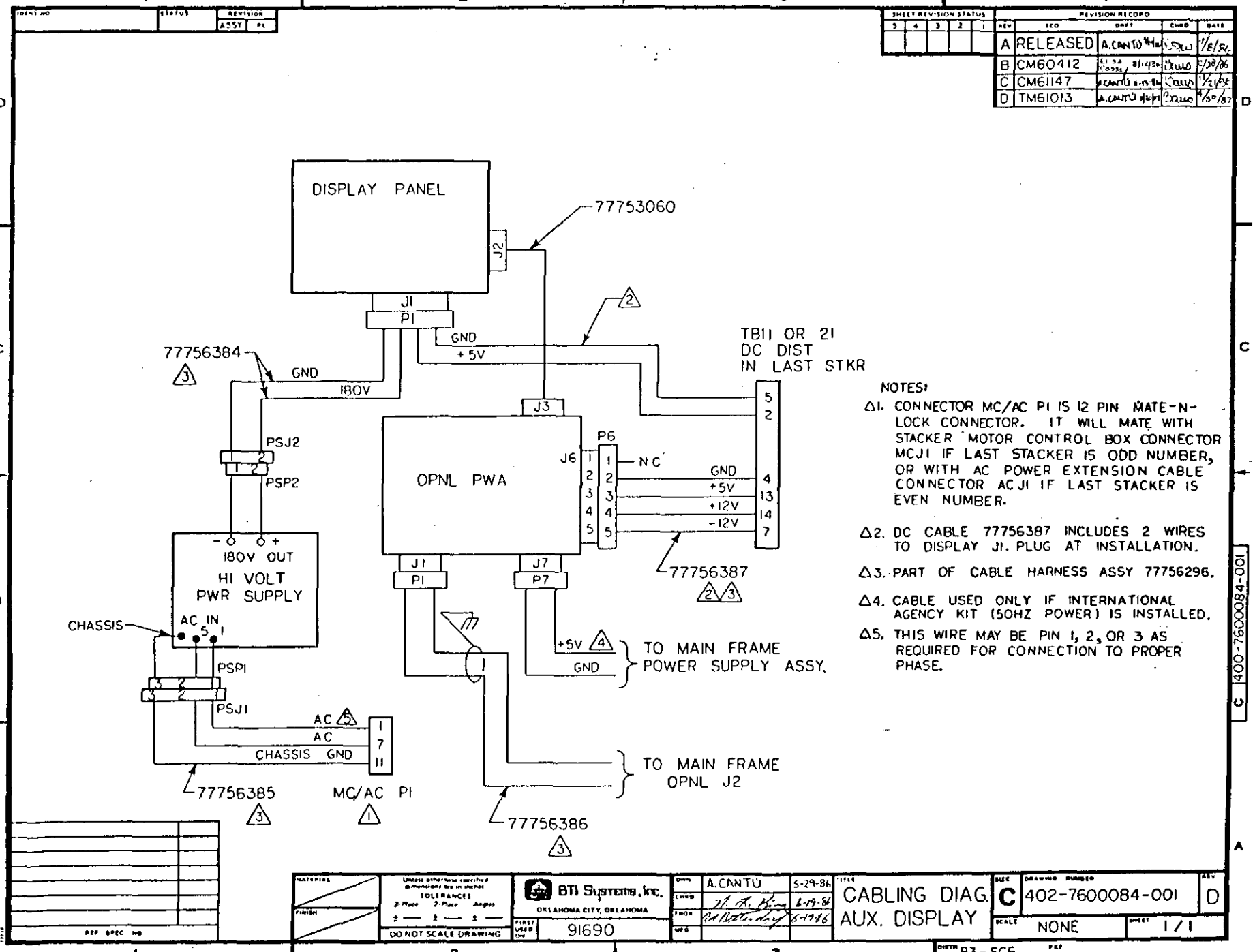


Figure 7.4-2 Stacker Module Wiring Diagram (1 OF 2)



REV	ECO	DESCRIPTION	CHKD	DATE
A	RELEASED	A. CANTU		7/8/86
B	CM60412			5/30/86
C	CM61147			1/21/87
D	TM61013	A. CANTU		4/16/87

NOTES:

Δ1. CONNECTOR MC/AC P1 IS 12 PIN MATE-N-LOCK CONNECTOR. IT WILL MATE WITH STACKER MOTOR CONTROL BOX CONNECTOR MCJ1 IF LAST STACKER IS ODD NUMBER, OR WITH AC POWER EXTENSION CABLE CONNECTOR ACJ1 IF LAST STACKER IS EVEN NUMBER.

Δ2. DC CABLE 77756387 INCLUDES 2 WIRES TO DISPLAY J1. PLUG AT INSTALLATION.

Δ3. PART OF CABLE HARNESS ASSY 77756296.

Δ4. CABLE USED ONLY IF INTERNATIONAL AGENCY KIT (50HZ POWER) IS INSTALLED.

Δ5. THIS WIRE MAY BE PIN 1, 2, OR 3 AS REQUIRED FOR CONNECTION TO PROPER PHASE.

100-7600084-004 C

BTI Systems, Inc. OKLAHOMA CITY, OKLAHOMA	DRWN A. CANTU 5-29-86	TITLE CABLING DIAG. AUX. DISPLAY	SIZE C DRAWING NUMBER 402-7600084-001 REV D
DO NOT SCALE DRAWING	CHKD 6-19-86		SCALE NONE SHEET 1/1
91690	ENGR 6-19-86		

Figure 7.4-12 Cabling Diagram, Auxiliary Display

Use this page for notes

Section One

General Description

1.1 INTRODUCTION TO MANUAL

This publication describes the Model 91690 Document Processor (DP), a product manufactured by BTI Systems Inc., Oklahoma City, Oklahoma, U.S.A.

This manual provides sufficient information for the user to operate the DP and maintain its operator accessible components in optimum working condition. Refer to appendices for operation with certain options not covered elsewhere in the manual.

1.2 PRODUCT DESCRIPTION

The DP is a medium speed, multipurpose device for reading and processing paper documents. It will process up to 1000 six inch documents per minute. It operates either online under user program control or offline in stand alone mode.

The DP consists of a mainframe, option module(s), and one to six six-pocket stacker Output Modules. The mainframe includes a control panel, a feeder, a transport mechanism, and provisions for reader, endorser, and printer options. In its basic configuration, the DP provides:

Mainframe
Standard OEM interface
One six-pocket stacker output module
Auxiliary pocket
Provisions for expansion via numerous available options.

A system may be custom tailored to meet specific requirements by selection of the appropriate options.

Refer to Figures 1.2-1 and 1.2-2 for product appearance.

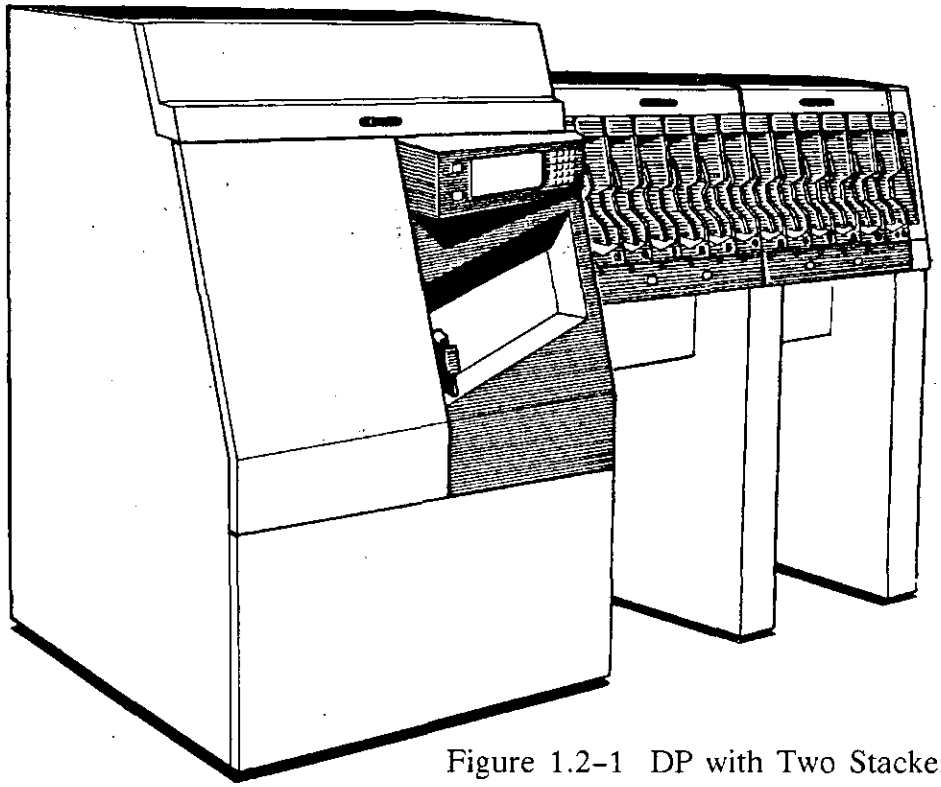


Figure 1.2-1 DP with Two Stacker Modules

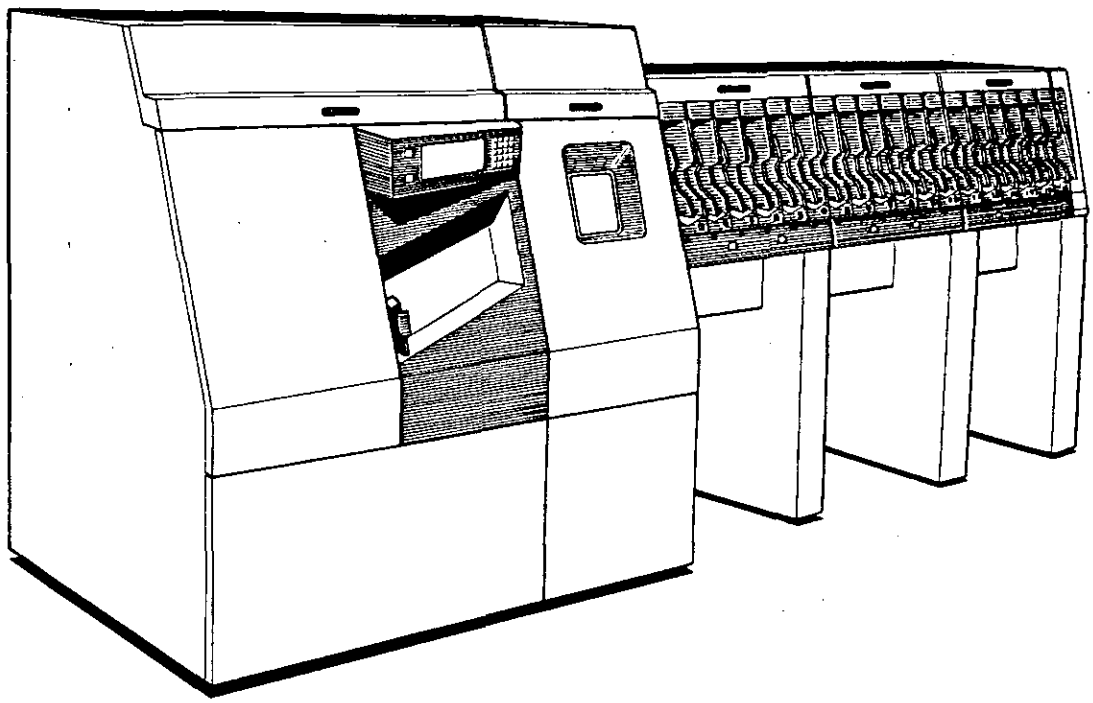


Figure 1.2-2 DP with Option Module and Three Stacker Modules

1.3 AVAILABLE OPTIONS

The following options are available.

- MICR (Magnetic Ink Character Recognition) Reader; E-13B or CMC-7
- Duo Duplex Microfilmer
- Cinemode Microfilmer
- Output Modules (six pocket)
- OMR (Optical Mark Recognition) Reader
- Pocket Grouping
- International Power Kits
- OCR (Optical Character Recognition) Reader
- International Agency Kits
- Self-clean OCR Auxiliary Read (E-13B Dual Read MICR and OCR compare)
- International Shipment Packaging Kit
- Auxiliary Display Panel
- Logo/Date Endorser
- Special Character Displays
- Variable Alphanumeric Printer (front and/or back)
- Dress Panels
- Encoder
- Image Module
- Merge Feeder

1.4 OPERATOR ACCESS AREAS

Because of the reliability/maintainability characteristics of the DP, and its self diagnostic and menu driven operation, operator access is limited to the areas shown in Figure 1.4-1 for the operational configuration described in paragraph 1.2. Refer to the appropriate appendix for operator access areas for certain options.

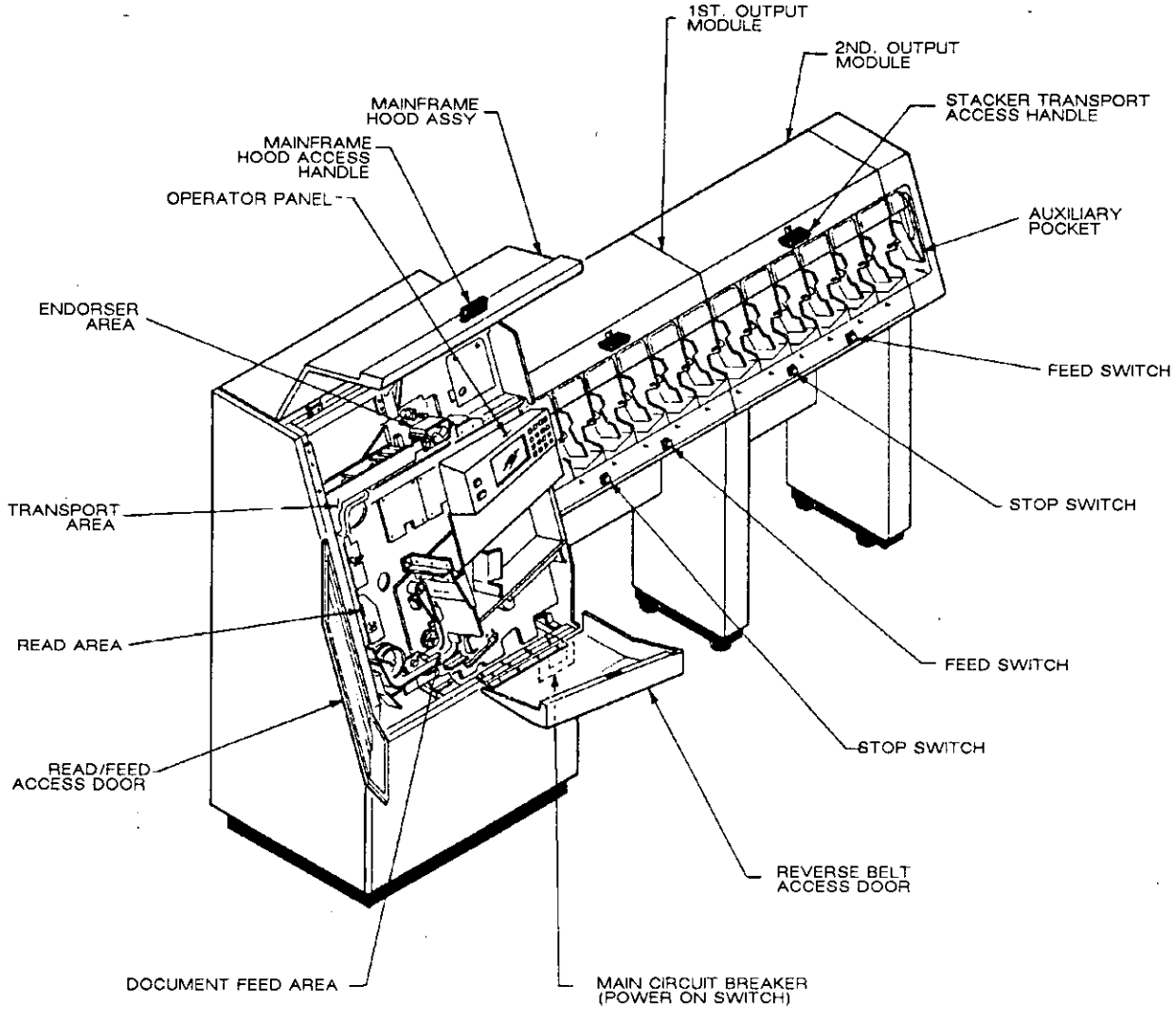


Figure 1.4-1 Operator Access Areas

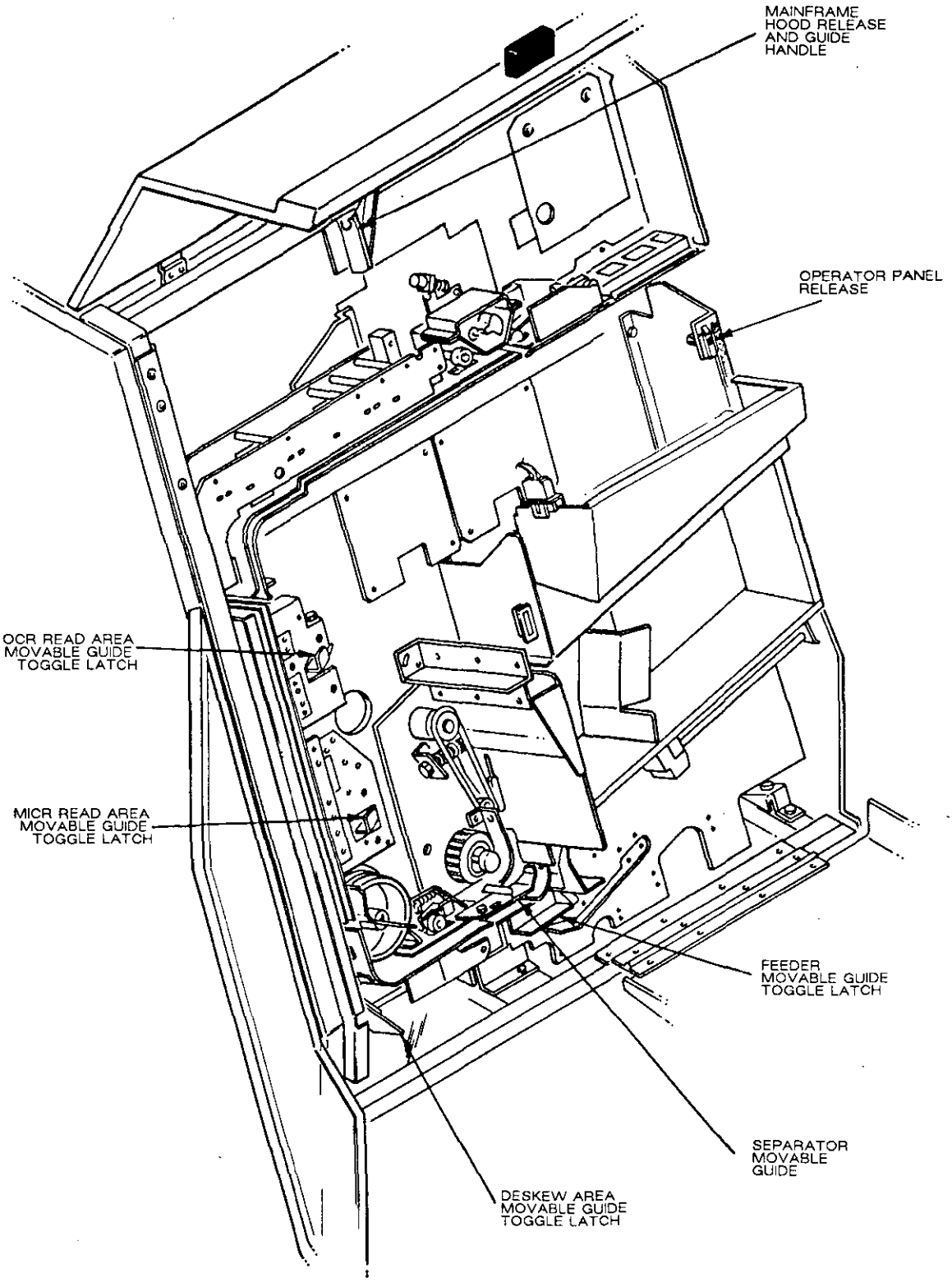


Figure 1.4-2 Read/Feed Area Controls

Use this space for notes.

Section Two

Operator Controls and Indicators

2.1 GENERAL

This section describes the operator accessible controls and indicators for the 91690 Document Processor (DP). All job, diagnostic, and maintenance control functions are performed using the display screen and keypad on the operator panel. See Figure 2.2-1.

2.2 OPERATOR PANEL

The operator panel consists of a display screen, keypad, and STOP and , FEED control switches. See Figure 2.2-1.

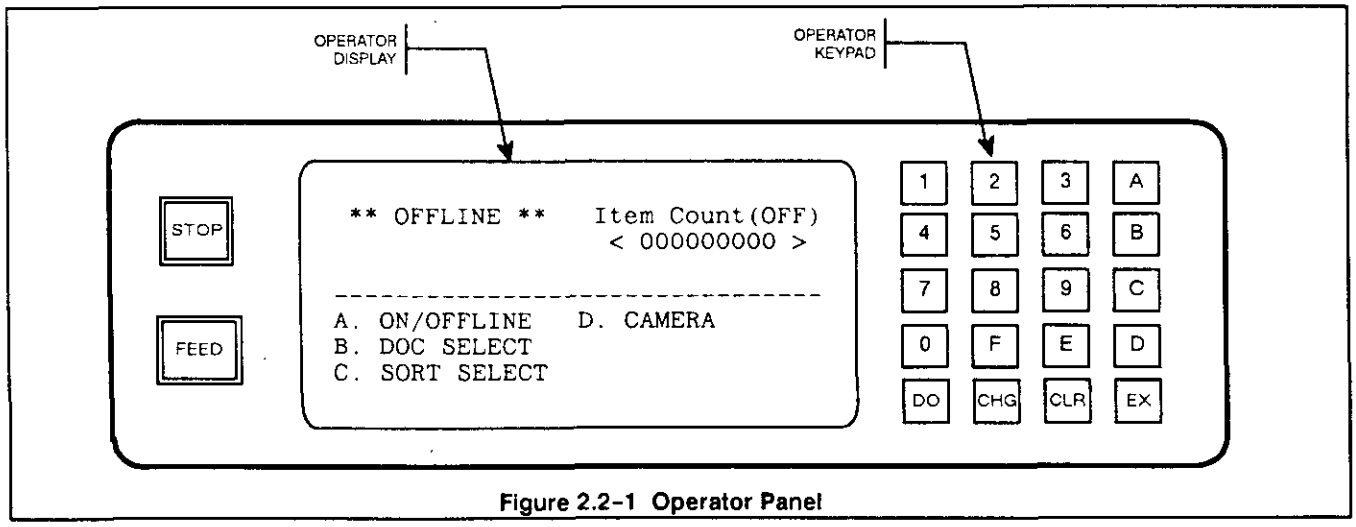


Figure 2.2-1 Operator Panel

The FEED switch starts all transport motors, then starts and stops document feeding. The STOP switch stops all feed and transport motors. Aside from these two switches, the DP is completely menu driven.

Messages to the operator are displayed on the display screen, and data and commands are entered using the keypad. The higher level menus will display a list of letters, each of which is followed by the name of another menu. Pressing a letter key (A-F) selects

the associated menu, which is then displayed. Pressing the EX key will exit the current menu and return to the preceding higher level menu.

Some menus will show letters and a function, followed by the word ON or OFF. Pressing the letter will toggle the function between ON and OFF. Some of the menus will show items with numeric values. For these items, pressing the associated letter key will cause the item to be incremented to its next legal value. The desired value may also be entered directly, using the numeric portion of the keypad (keys 0–9), after first selecting the item by pressing the associated letter key.

For a detailed description of Control Panel use, menus, and functions, refer to Section 3.

2.3 STACKER MODULE CONTROLS AND INDICATORS

2.3.1 Standard

There are orange pocket indicators located on each stacker module under each pocket. Refer to Figure 2.3-1. Each stacker module also has a FEED and STOP switch. These FEED and STOP switches duplicate the functions of the FEED and STOP switches on the operator panel. The pocket indicators indicate one of three conditions:

1) The indicators will light and feed will stop within two seconds when a pocket is full,
2) the indicators will blink individually and feed will stop when the host determines that a pocket needs to be emptied, even if it is not full, and
3) all six of the indicators in a stacker module will blink when a jam has been detected in that module.

When feed has been stopped because of a full pocket, emptying that pocket will cause feed to automatically resume. The operator must press the FEED switch to resume feed after emptying a pocket with a blinking indicator.

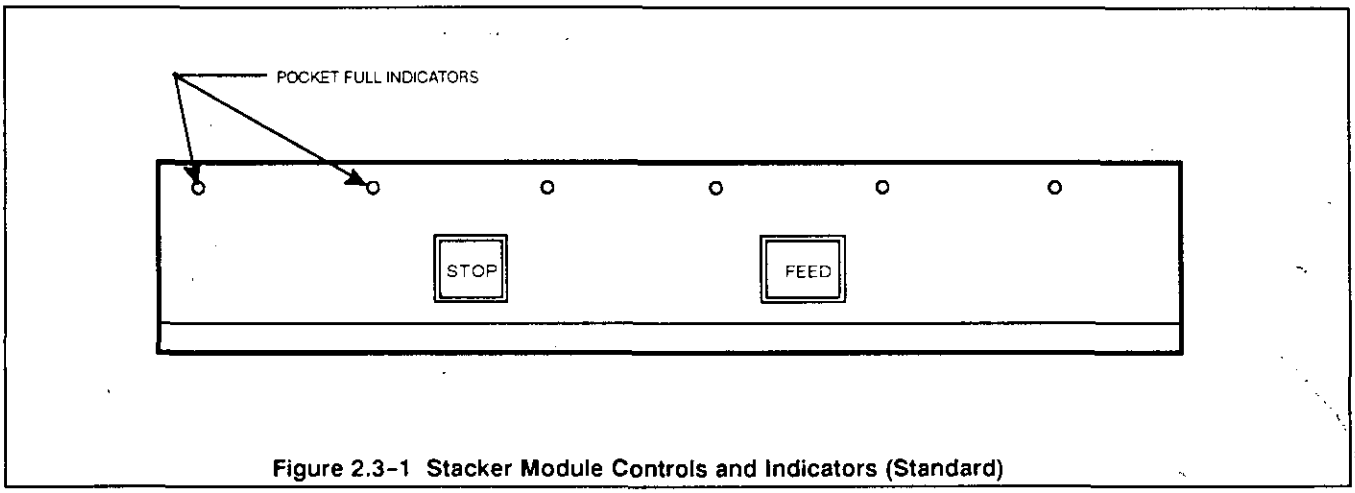


Figure 2.3-1 Stacker Module Controls and Indicators (Standard)

2.3.2 Pocket Grouping

Figure 2.3-2 illustrates the stacker module controls and indicators with the pocket grouping option installed. The FEED and STOP switches duplicate the functions of the FEED and STOP switches on the operator panel. The orange and yellow indicators below each pocket identify priority for emptying full pockets. The two digit alphanumeric display below each pocket provides pocket identification, with grouped pockets having identical nomenclature. Pockets may be identified and grouped in any combination, with pockets of any one group always being contiguous. Non-grouped pockets operate as described in Section 2.3.1. Jams are indicated as in Section 2.3.1. Grouped operation is described in Section 4.4.2.