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FIELD MAINTENANCE PRINT SET

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A-PL-MNCAA-Ø-SH	SHIP LIST MNCAA
D-UA-MNCAA-Ø-Ø	MNCAA UNIT ASSY
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**UNIT VARIATIONS
COVERED BY THIS
PRINT SET**

MNCAA

Field Maintenance Print Set

Digital Equipment Corporation

PRINT SET ORDER NO.

MP00590

REVISIONS	REV.			USED ON OPTION/MODEL	DRN.	DATE	TITLE:	digital		
	CHG. NO.	DATE	MNCAA	CHK'D	PROJ. ENG.	FIELD SERV.		SIZE	CODE	NUMBER
				MNCAA	<i>B. Vawka</i>	29-FEB-78				
					<i>C. Thacker</i>	15 MAY 78				
					<i>JCP</i>	23 MAY 78	B	TC	MNCAA-0-1	
					<i>F. Williams</i>	25 May 78	DIST.			
				SHEET 1 OF 1						

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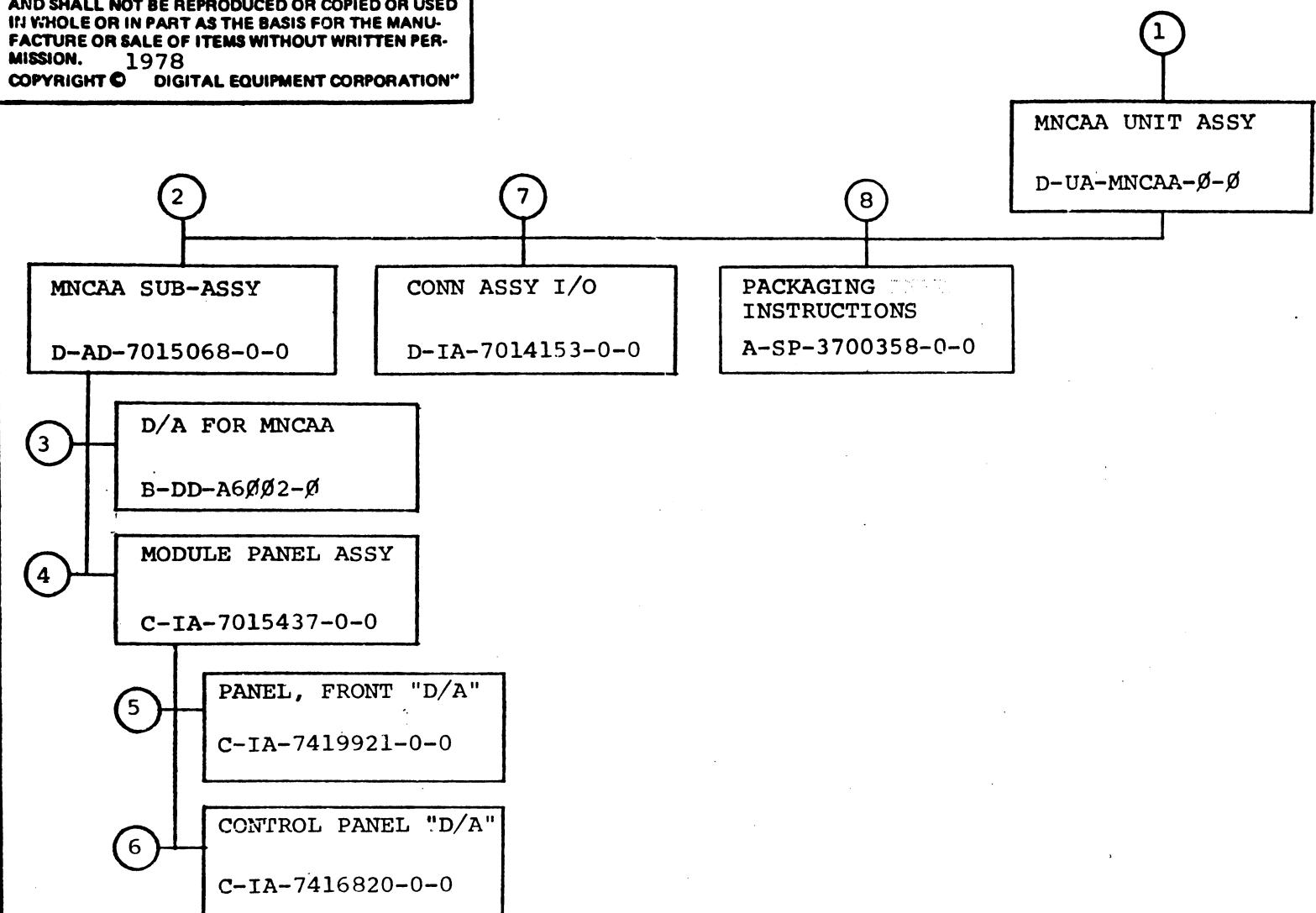
DRAWING DIRECTORY

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UNIT VARIATIONS

REVISIONS	USED ON OPTION/MODEL			DRN.	DATE	TITLE
	CHK	CHANGE NO.	REV.	<i>M. Andra</i>	29 Dec 77	
STC	MNCAA - 1	A	MNCAA	CHK'D.	DATE	MNCAA UNIT ASSY
RDP	MNCAA - 2	B		<i>L. Holloman</i>	13 Feb 78	
				PROJ. ENG.	DATE	NUMBER MNCAA-Ø
				<i>O. C. Eng</i>	3/21/78	
				PROD.	DATE	REV B
				<i>K. G. DeWitt</i>	3/21/78	
			SHEET 1 OF 3	DIST.		

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TITLE	SHEET 2 OF 3	SIZE CODE	NUMBER	REV
MNCAA UNIT ASSY		B DD	MNCAA-Ø	B

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE	FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
1	MP00590	FIELD MAINTENANCE PRINT SET	-	5	C-IA-7419921-0-0	PANEL, FRONT "D/A"	M
	B-TC-MNCAA-0-1	FIELD MAINTENANCE PRINT SET	-		C-PS-4830032-0-0	EXTRUSION FRONT PANEL "D"	M
	D-UA-MNCAA-0-0	MNCAA UNIT ASSY	E/M				
	C-MD-7419869-0-0	PLATE, COMP SIDE	M				
	C-MD-7419868-0-0	PLATE, ETCH SIDE	M				
	A-DC-3615260-0-0	DECAL, I/O SCHEMATIC	E/M				
	A-DC-3615264-0-0	DECAL, INFORMATION (MNCAA)	E/M				
	A-PL-MNCAA-0-5	PARTS LIST MNCAA	E/M				
	A-PL-MNCAA-0-SH	SHIP LIST MNCAA	E/M				
	A-SP-MNCAA-0-2	MNCAA ENGINEERING SPEC.	E/M				
	A-SP-MNCAA-0-3	CHECKOUT & ACCEPTANCE PROCEDURE	E/M				
	A-SP-MNCAA-0-4	INSTALLATION & ACCEPTANCE PROCEDURE	E/M				
2	D-AD-7015068-0-0	MNCAA SUB-ASSY	E/M				
	C-IA-7419862-0-0	SUB-PANEL	M				
	B-MD-7420242-0-0	SPACER, MODULE	M				
3	B-DD-A6002-0	D/A FOR MNCAA	E/M				
	A-PL-A6002-0-0	D/A FOR MINC	E/M				
	D-UA-A6002-0-0	D/A	E/M				
	D-CS-A6002-0-1	4 CHANNEL D/A	E/M				
4	C-IA-7015437-0-0	MODULE PANEL ASSY (MNCAA)	M				

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

digital

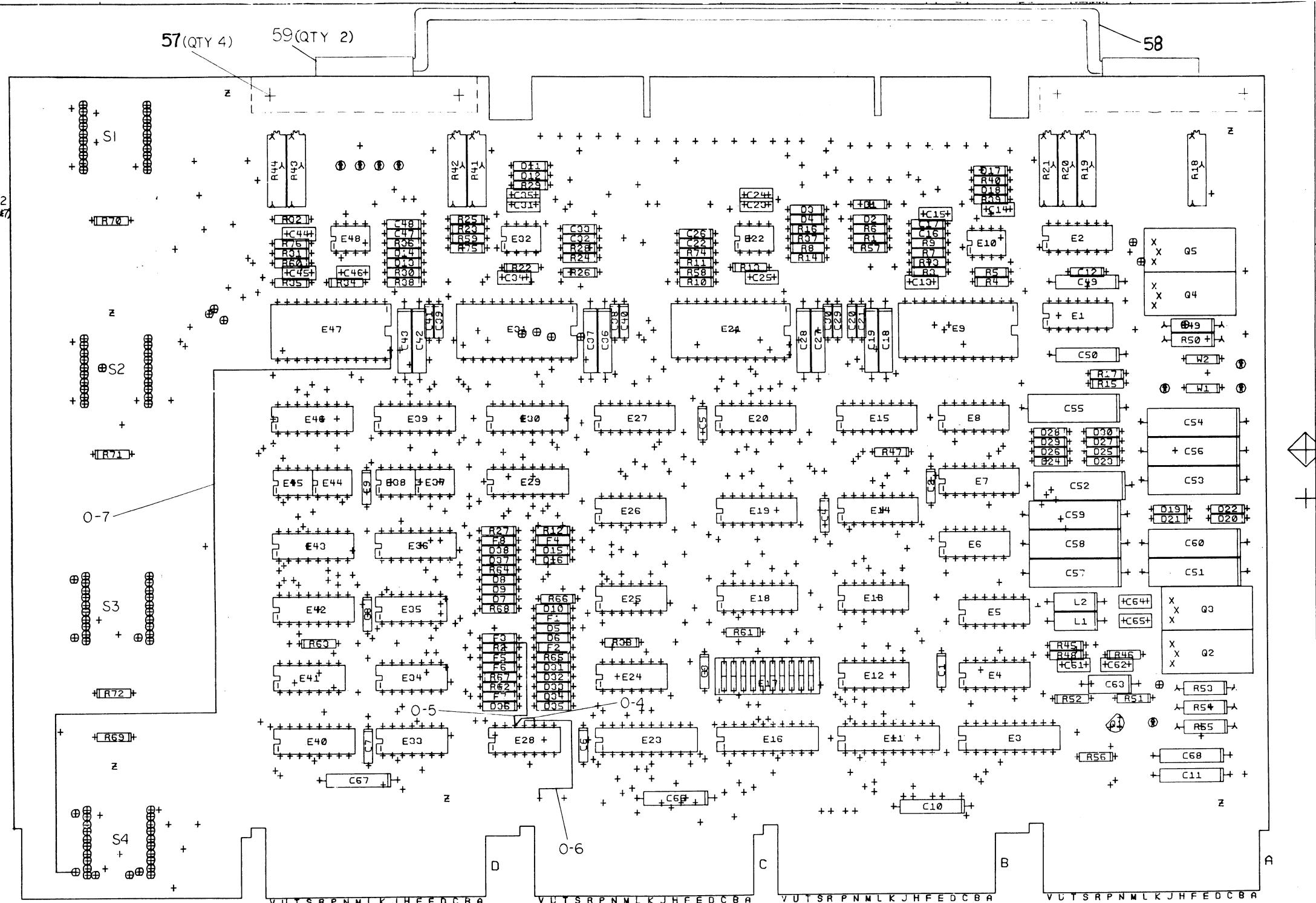
TITLE: MNCAA UNIT ASSY SHEET 3 OF 3 SIZE: B CODE: DD NUMBER: MNCAA-0 REV: B

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REWORK INSTRUCTIONS
FIRST RELEASE

ETCH CUTS, SIDE 1, AS SHOWN
O-180-2 AT BOTH SIDES OF E28(12)
O-3 AT E28(11)

WIRE ADDS, SIDE 1, AS SHOWN
O-4 FROM E28(12) TO E28(10)
O-5 FROM E28(12) TO PTH BETWEEN F3&R2
O-6 FROM E28(11) TO PTH BETWEEN E28&E7
O-7 FROM PTH ABOVE AND TO THE RIGHT
OF E47(24) TO S4

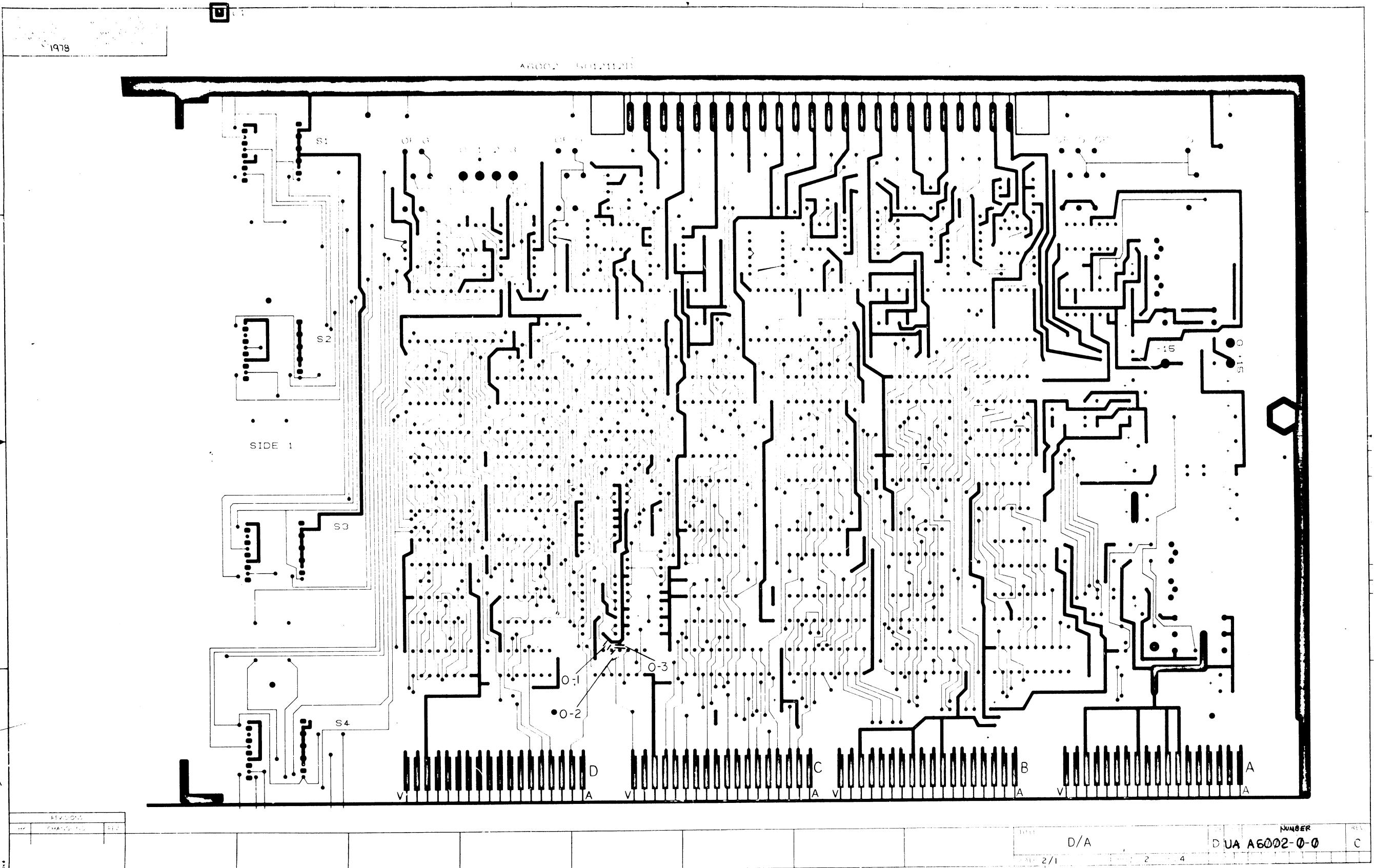


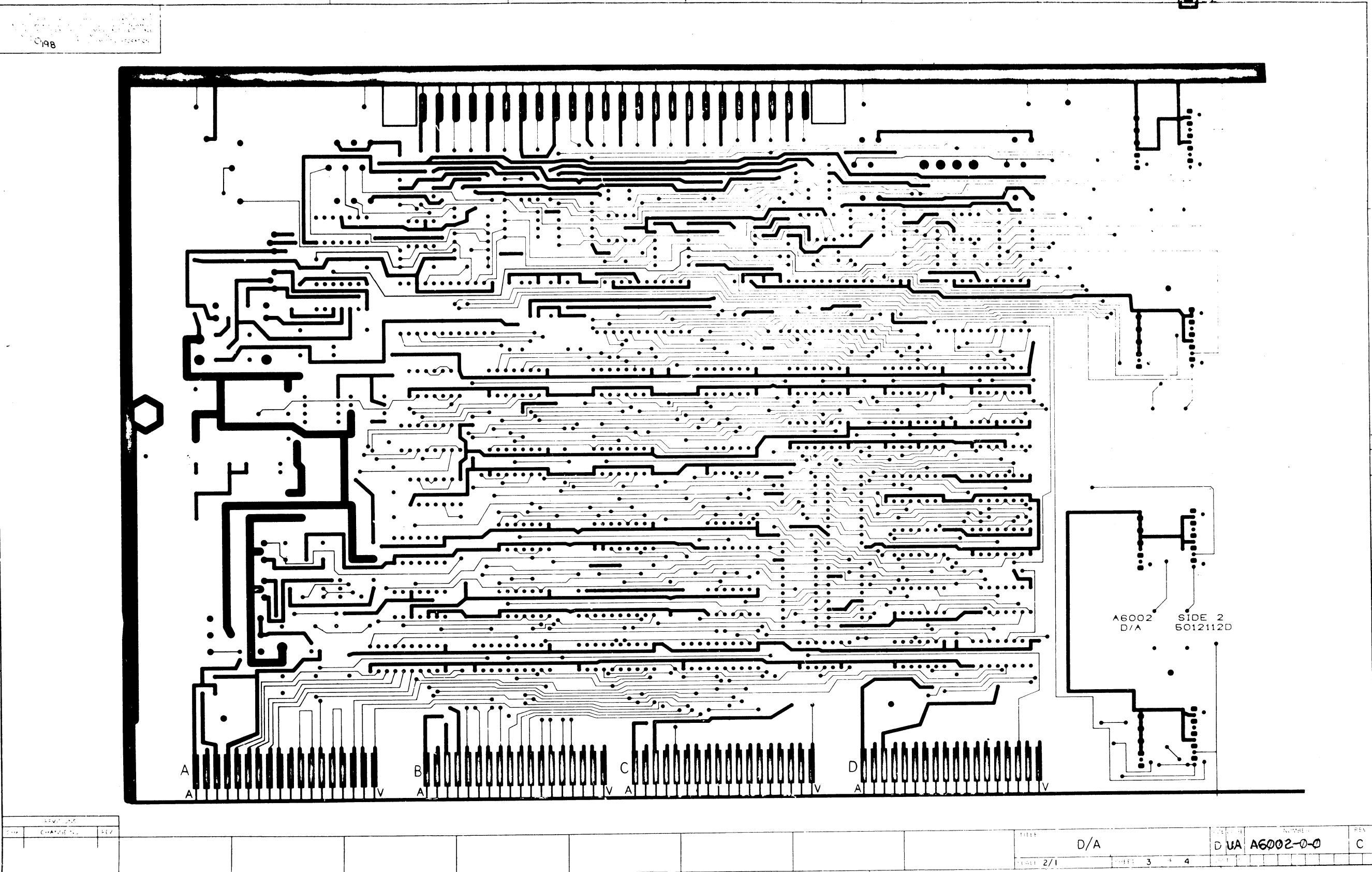
NOTES: I DO NOTE INSERT R73 THRU
R76, SPARES

CHG	NO	REV

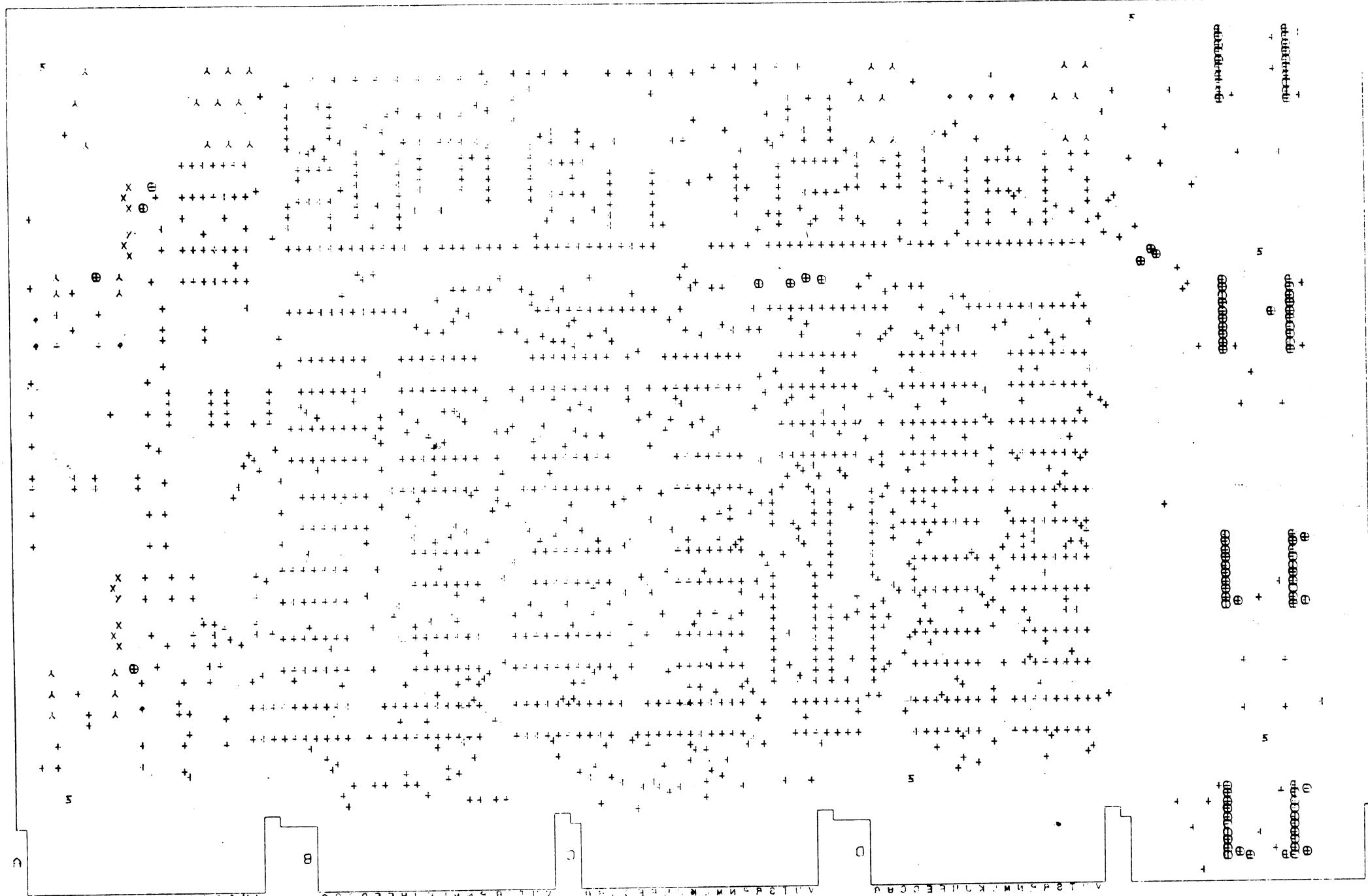
SIGNATURES	DATE
DRA.	3/1/78
CHY'D.	3/1/78
ENG.	3/1/78
PROJ. ENG.	3/1/78
PROD.	3/1/78
ETCH REV.	D
P.C. DESIGN DATA BASE REV.	D

SIGNATURES		DATE	digital
DRA.	3/1/78	3/1/78	
CHY'D.	3/1/78	3/1/78	
ENG.	3/1/78	3/1/78	
PROJ. ENG.	3/1/78	3/1/78	
PROD.	3/1/78	3/1/78	
ETCH REV.	D		
P.C. DESIGN DATA BASE REV.	D		
SCALE	2/1		
SHT.	1	OF	4
SIZE	0	CODE	A6002-0-0
NUMBER		REV	C
NEXT HIGHER ASSY. B-DD-A6002-0-0			





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1978



REVISIONS	CHK	CHANGE NO	REV	TITLE				SIZE CODE	NUMBER	REV.
								D U A	A6002-0-0	C

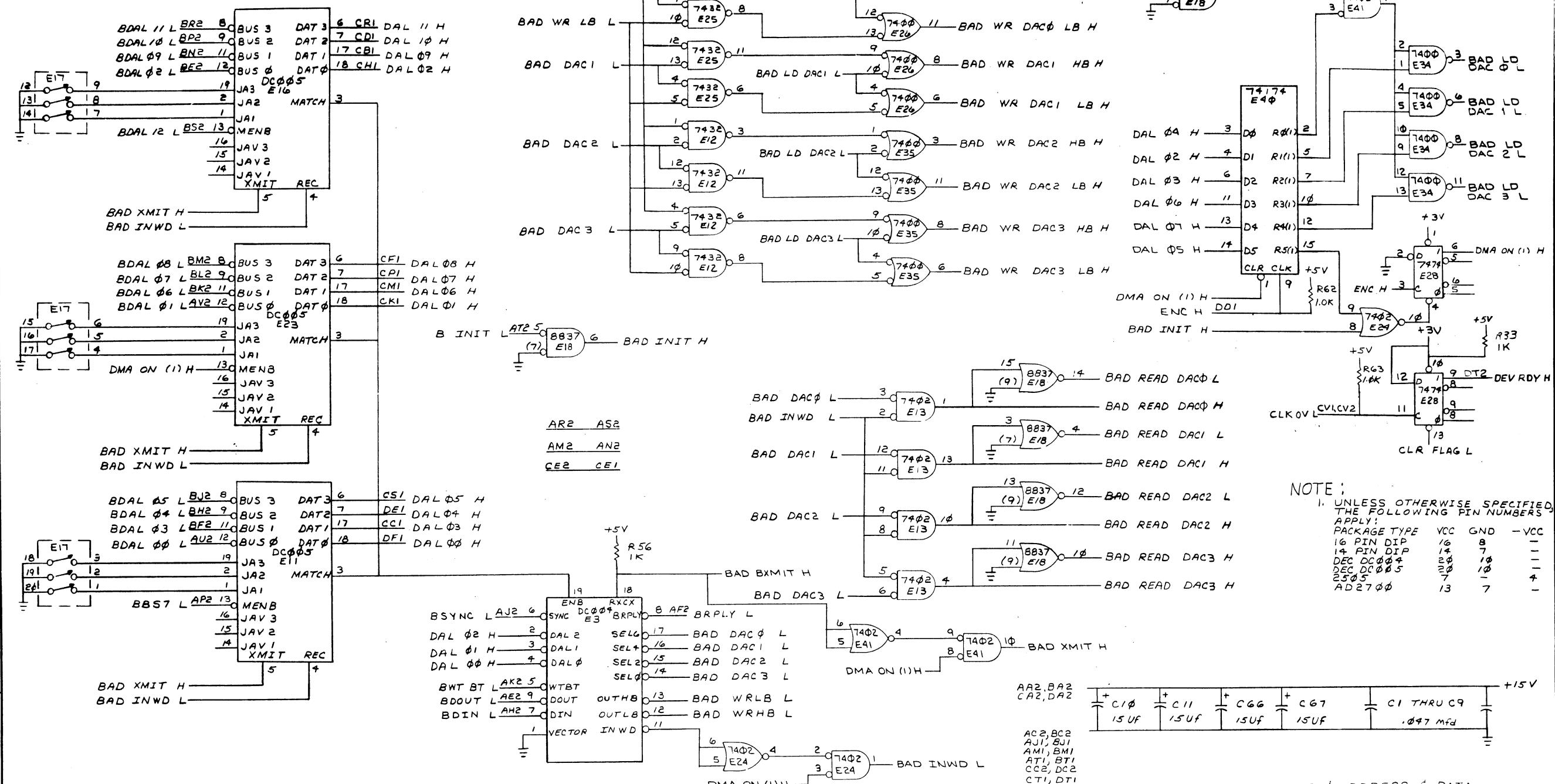
LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
1	1	D-MD-5012112-0-0	5012112-00	ETCH BD (A6002)	1	
2	2		1012784-00	.047 MFI 50V X% CER. \$	26	C1-C9,C12,C16,C17,C20,C21,C22, CONT C26,C29,C30,C32,C33,C38,C39, CONT C40,C41,C47,C48
3	3		1004812-00	15 MFI 20V 10% 150D S.TA (10-00)	15	C10,C11,C18,C19,C27,C28,C36, CONT C37,C42,C43,C49,C50,C66,C67, CONT C68
4	4		1001610-01	.01 MFI 100V OR 50V Z5U DISC/800PP MIN	10	C13,C15,C24,C25,C34,C35,C44, CONT C45,C64,C65
5	5		1000015-00	82.0 MMF 100V 5Z200PPM DM15S (10-00)	4	C14,C23,C31,C46
6	6		1002433-00	22 MFI 35V 20% 150D S.TA (10-00)	6	C51,C52,C54,C55,C59,C60
7	7		1005335-00	39 MFI 20V 10% 150D S.TA (10-00)	4	C53,C56,C57,C58
8	8		1001631-00	390.0 MMF 100V 5Z200PPM DM15S (10-00)	2	C61,C62
9	9		1001776-00	1 MFI 35V 10% 150D S.TA (10-00)	1	C63
10	10		1105275-00	D 672 TR= 15NS PIV= 60V SP	36	D1-D16,D19-D38
11	11		1109502-00	1N 4742 VZ= 12.0 10% 1W Y	2	D17,D18
12	12		1303226-00	68.1 1/4W 1% RN55D-F 100PPM (13-00)	8	R1,R10,R23,R34,R69-R72
13	13		1300365-00	1 K 1/4W 5% CC (13-00)	18	R2,R12,R27,R33,R39,R40,R45, CONT R47,R51,R56,R61-R68
14	14		1300479-00	10 K 1/4W 5% CC (13-00)	6	R3,R13,R22,R35,R46+R48
15	15		1300207-00	50 1/4W 1% RN55C-F 50PPM (13-00)	4	R4,R11,R25,R31
16	16		1311653-00	2.15 K 1/4W 1% RN55D-F 100PPM (13-00)	4	R5,R14,R28,R32
17	17		1310881-02	47 1/4W 1% FUSIBLE	4	R6,R16,R29,R36
18	18		1302398-00	470 K 1/4W 5% CC (13-00)	4	R7,R24,R30,R37
19	19		1309595-00	1 M 1/4W 5% CC (13-00)	4	R8,R9,R26,R38
20	20		1310881-00	1 K 1/4W 1% FUSIBLE	2	R15,R17
21	21		1309143-05	200 3/4W10% POT 100PPM	4	R18,R20,R41,R43
22	22		1309143-11	20 K 3/4W20% POT 100PPM	4	R19,R21,R42,R44
23	23		1309444-00	2.7 1/2W 10% CC (13-00)	2	R49,R50
24	24		1300250-00	150 1/4W 5% CC (13-00)	1	R52

REVISION HISTORY		VARIATIONS FOR THIS ASSY.		FIRST USED ON:		DIGITAL EQUIPMENT CORPORATION	
CHK	ECO NO	REV				MAYNARD, MASSACHUSETTS	
		00					
---	INIT	C		MADE BY: A STEVENS	DATE: 16-FEB-78	TITLE PARTS LIST	
				CHECKED: R.W.CAUNTER	DATE: 16-FEB-78	I/A	
				DSN.ENG.: A.E.FILZ	DATE: 29-MAR-78		
						SIZE!CODE! DOCUMENT NUMBER ! REV !	
				PROD.: R.REBELLO	DATE: 29-MAR-78	K ! PL ! A6002-0-DBP ! C !	
				RESP.ENG.: A.E.FILZ	DATE: 29-MAR-78	ASSY.NO.: D-U-A6002-0-0 ! 6 !	
						EDIT#	
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LINE ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION	QTY	REFERENCE DESIGNATORS
25	25	1300315-00	470 1/2W 5% CC (13-00)	2	R53,R54
26	26	1301781-00	82 1/2W 5% CC (13-00)	1	R55
27	27	1302873-00	261 1/4W .1% RN55D-F 100PPM (13-00)	4	R52,R58,R59,R60
28	28	1503409-00	DEC6534D PNP 310MW SI 40 90 P	1	Q1
29	29	1510414-00	D 45C6 PNP 30WT SI 45 20 Y	1	Q2
30	30	1510171-00	D 44C3 NPN 30WT SI 30 20 Y	3	Q3,Q4,Q5
31	31	1603377-00	.22UH 10% 2.7A #WEE.22	2	L1,L2
32	32	1913218-00	325 VOLT. REG.FIX +/-15V 50MA 14	1	E1
33	33	1913219-00	AD 2700/L ANALOG-SWITCH 10V-PRECISION-RE	1	E2
34	34	1912729-00	DC 004 PROTOCOL,REG. SELECTOR	1	E3
35	35	1909054-00	7493 COUNTER,ASYNCH UP,BINARY	1	E4
36	36	1909686-00	7404 INVERTER GATE-HEX 1IN	1	E5
37	37	1905576-00	7410 NAND GATE-TRIPLE 3IN	2	E6,E33
38	38	1910436-00	DEC 74123 ONE SHOT-DUAL,RETRIGGERABLE	1	E7
39	39	1910741-00	7406 INVERTER GATE-HEX 1IN,BUFFER,0	1	E8
40	40	1912401-00	AD562 DAC,12BIT,MULT	4	E9,E21,E31,E47
41	41	1911144-00	DEC 2505 OP AMP .1% SETTLE	4	E10,E22,E32,E48
42	42	1913040-00	DC 005 TRANSCEIVER 4BIT	3	E11,E16,E23
43	43	1911521-00	7432 OR GATE-QUAD 2IN, POSITIVE	2	E12,E25
44	44	1909004-00	DEC 7402 NOR GATE-QUAD 2IN	3	E13,E24,E41
45	45	1912951-00	DM 8556 COUNTER,BINARY,4BIT	12	E14,E15,E19,E20,E27,E29,E30+
			CONT		E36,E39,E42,E43,E46
46	46	1911116-00	DEC 8837 RECEIVER,BUS,HEX,UNIBUS	1	E18
47	47	1905575-00	7400 NAND GATE-QUAD 2IN	3	E26,E35,E34
48	48	1905547-00	DEC 7474 FF-D DUAL,EDGE TRIGGER,15MHZ	1	E28
49	49	1910645-00	75452 DRIVER,PERIPH,DUAL,NAND	2	E37,E44
50	50	1910406-00	75451 DRIVER,PERIPH,DUAL,AND	2	E38,E45
51	51	1910652-00	74174 FF-D HEX	1	E40
52	52	9006735-00	EYELET, FUNNEL FLANGE, .059 OD X .187 LG	8	TP1-TP8
53	53	9009122-00	FUSE, SUB-MINI, .062A, 125V, AXIAL LEAD	8	F1-F8
54	54	9009185-00	JUMPER, WIRE, INSULATED, BLACK BAND	2	W1,W2
55	55	1211164-06	SW,DIP 1P 1A 10POS \$	1	E17
56	56	1214354-00	SW,ROT 3P 4A 2 SECTION	4	S1-S4
57	57	9006732-00	EYELET, ROLLED FLANGE, .121 OD X .219 LG	4	
58	58	C-MD-7420191-0-0	7420191-00 HANDLE	1	
59	59	C-MD-7420192-0-0	7420192-00 HANDLE RETAINER	2	

TITLE	PARTS LIST	SIZE	CODE	DOCUMENT NUMBER	REV
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	D/A	K	PL	A6002-0-DBP	IC

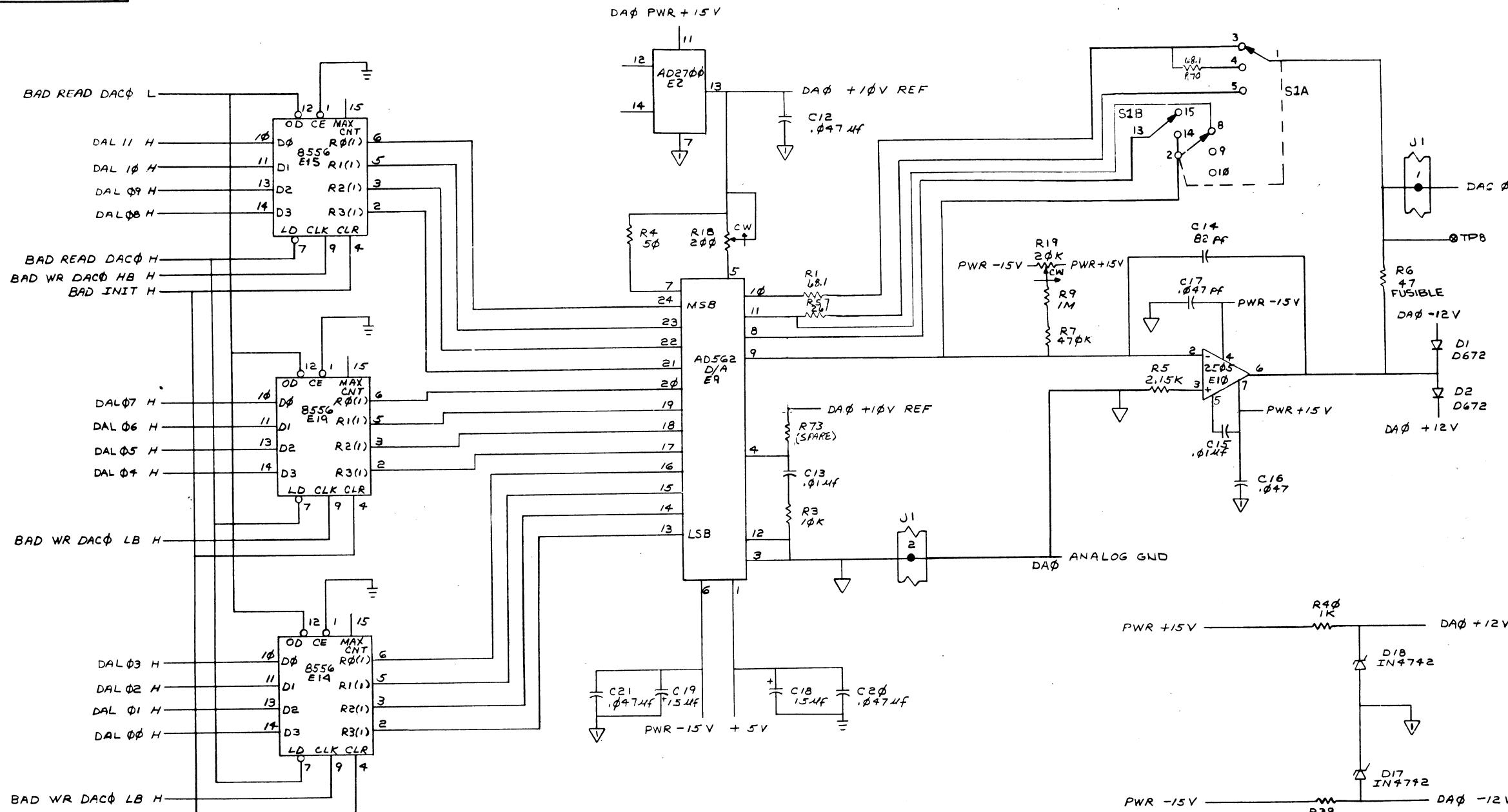
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1. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:			
PACKAGE TYPE	VCC	GND	-VCC
16 PIN DIP	16	8	-
14 PIN DIP	14	7	-
DEC DC ϕ 4	20	18	-
DEC DC ϕ 5	20	10	-
2505	7	10	4
AD27 ϕ	13	7	-

DRN: 50072	FIRST USED ON: digital
CHK'D: 10/10/76	TITLE: 4 CHANNEL D-A
ENG: CLC13	(BAD)
PROD: 10/10/76	REV. C
NEXT HIGHER ASSY:	
B-DD-A6002-0	
SCALE NONE	SIZE CODE: DCS
SHEET 1 OF 7	NUMBER: A6002-0-1
DIST.	

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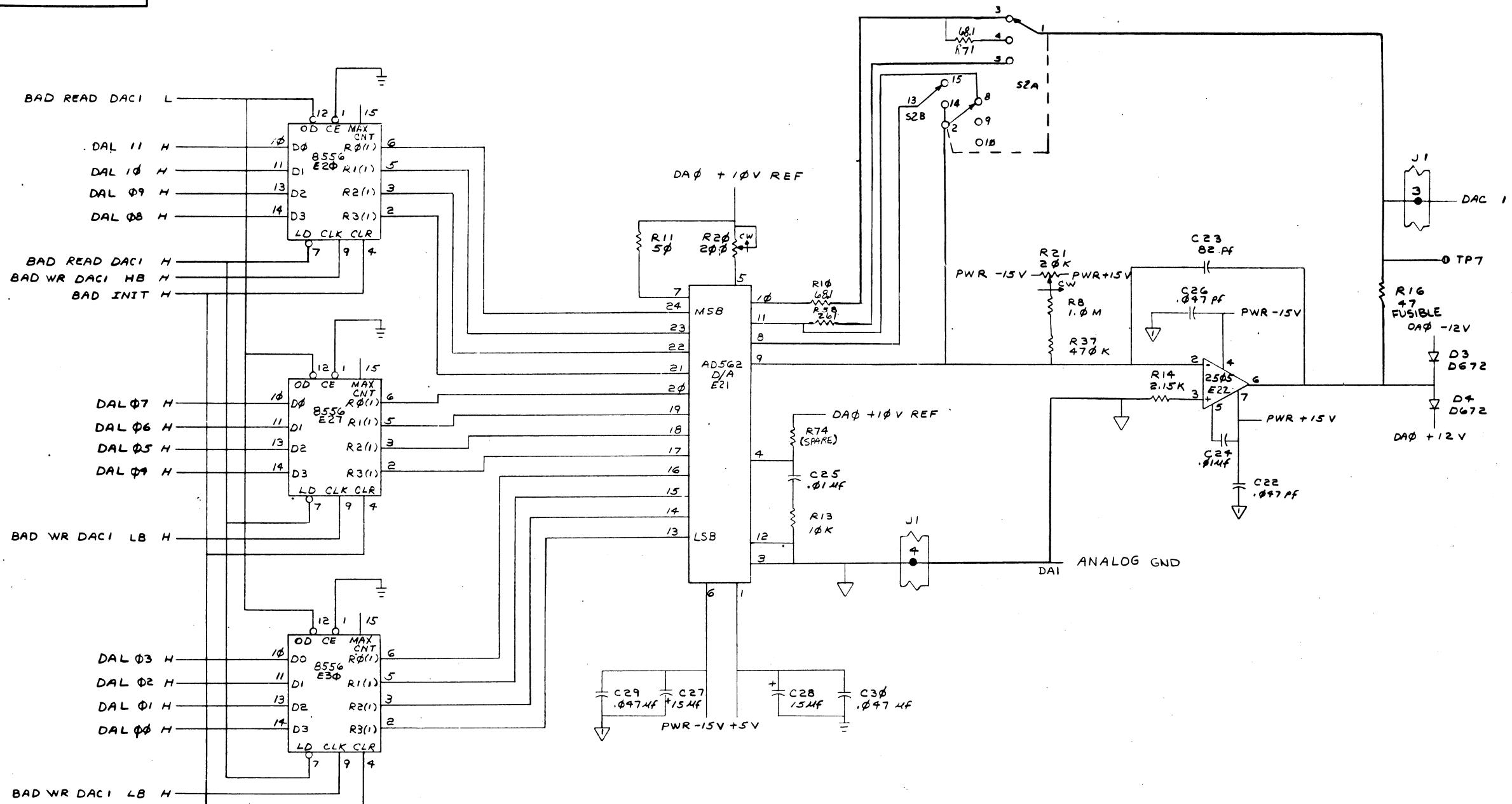


REVISIONS		
CHK	CHANGE NO.	REV.

DAφ
TITLE 4 CHANNEL
D-A (DADI)
SCALE → SHEET 2 OF 7 DIST. ████

SIZE CODE DCSA6φφ2-φ-1 NUMBER REV. C

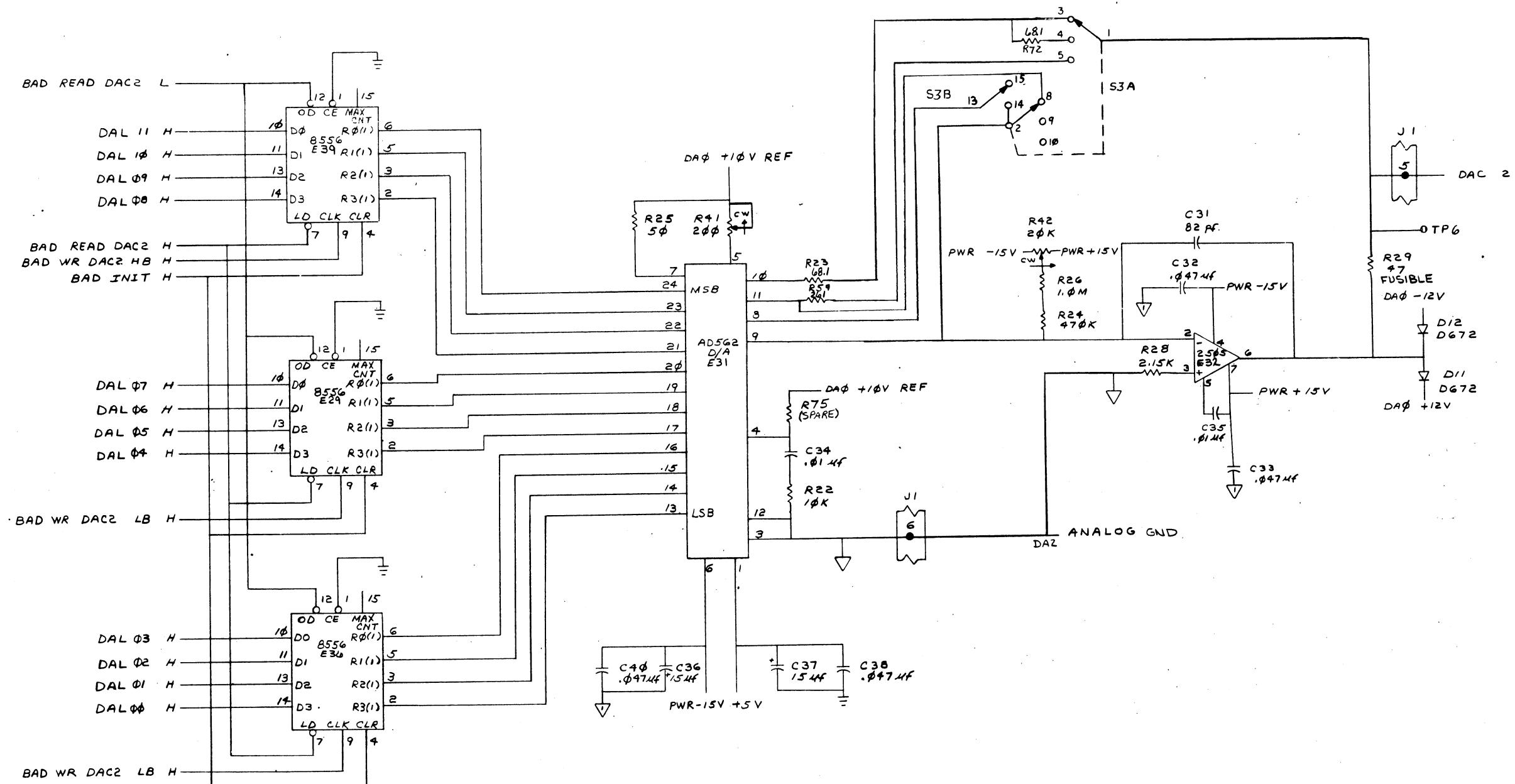
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REVISIONS		
CHK	CHANGE NO	REV.

TITLE	SIZE CODE	NUMBER
4 CHANNEL D-A (DAD2)	DGS	A6002-0-1
SCALE ← → SHEET 3 OF 7 DIST.		C

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REVISIONS		
CHK	CHANGE NO	REV.

DEC FORM NO. 100-10000-1

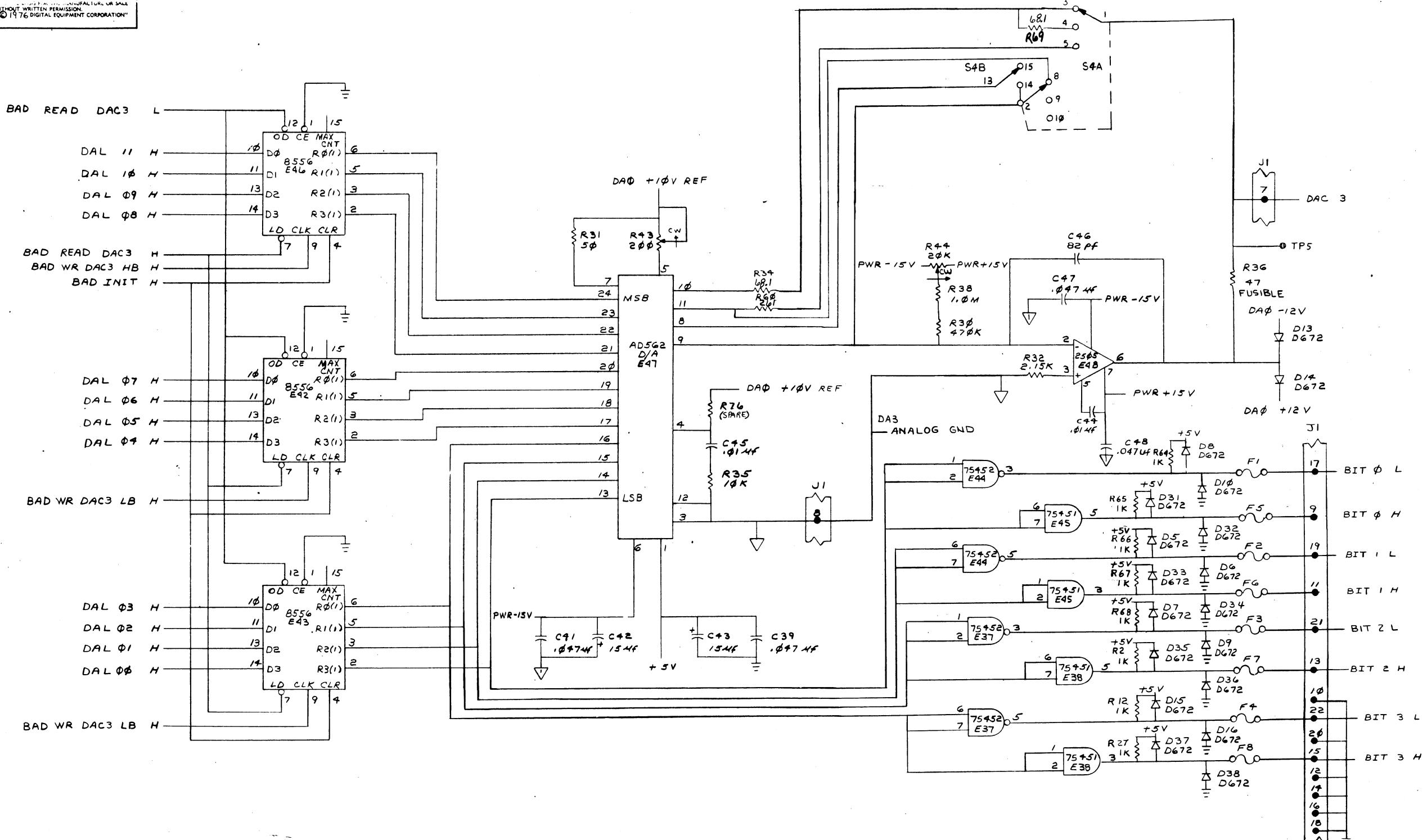
DA2

4 CHANNEL
D-A (DAYI)

SIZE CODE NUMBER REV. DCSA6002-0-1 C

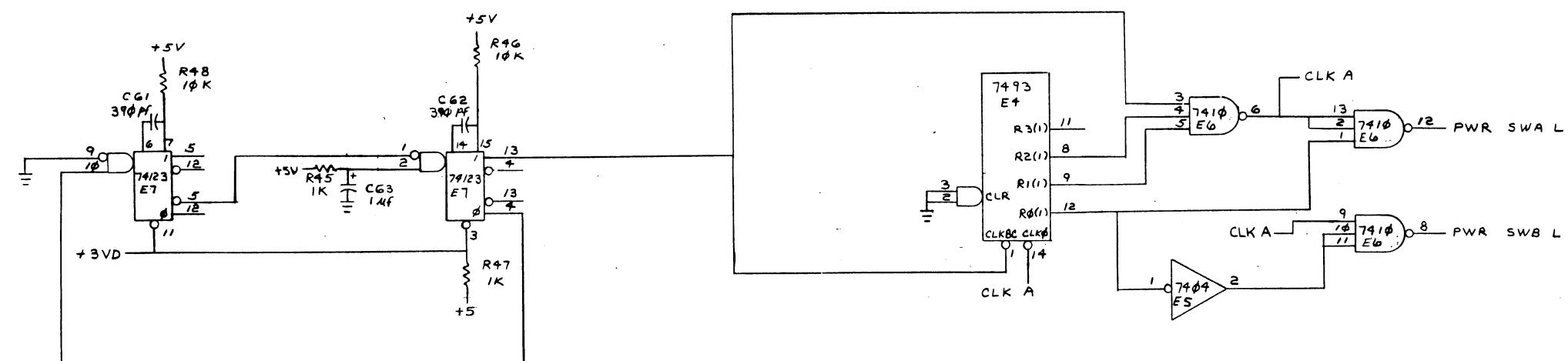
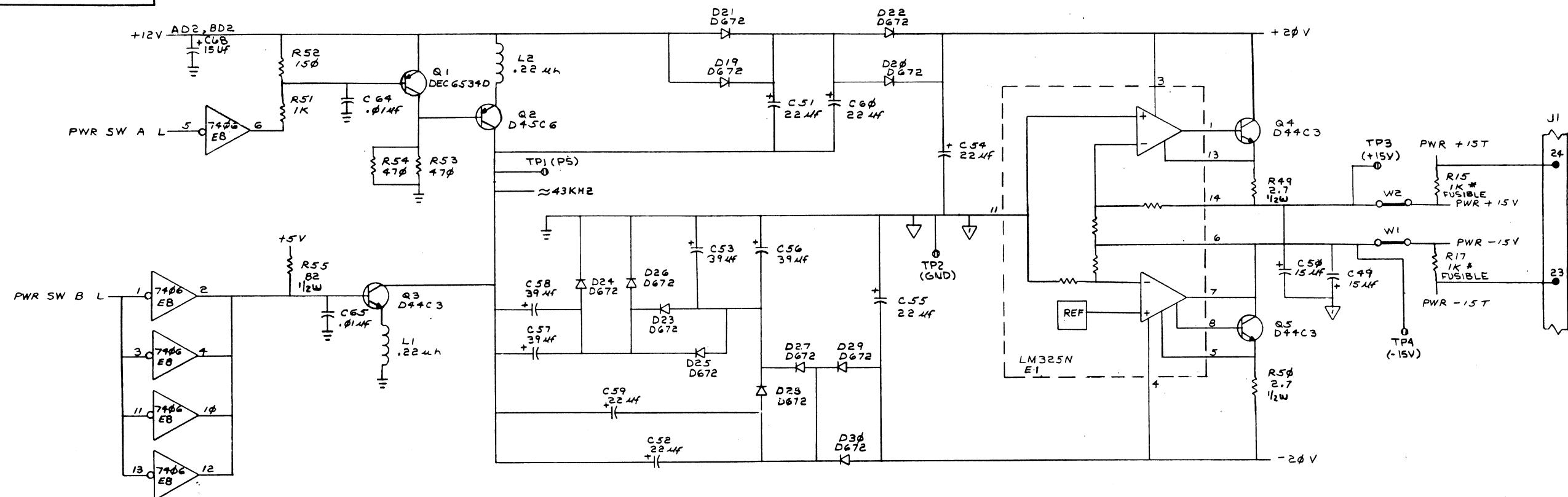
SCALE SHEET 4 OF 7 DIST.

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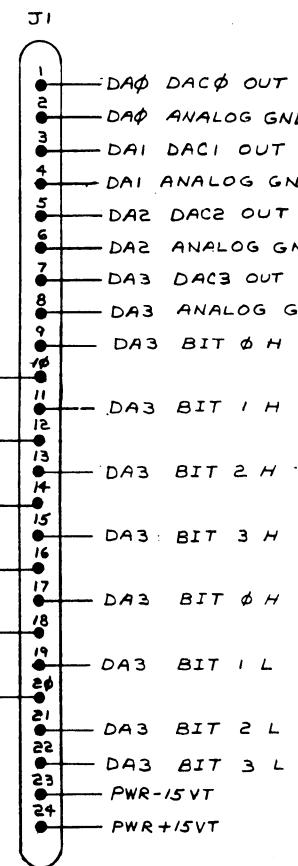
REVISIONS

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REVISIONS			PWR										TITLE 4 CHANNEL D-A			
CHK	CHANGE NO.	REV.											SIZE CODE	NUMBER	REV.	
													D C S A 6002-0-1		C	

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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE 4 CHANNEL
D-A
SIZE CODE DCS NUMBER A6002-0-1 REV. C
SCALE SHEET 7 OF 7 DIST.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY M. Archie
 DATE 7 MARCH 78

CHECKED *R. Flauder*
 DATE 19 MAY 78

SECTION
 1

ENG *A.C. Ry*
 DATE 23-MAY-78

PROD B Cerah
 DATE 23-MAY-78

ISSUED SECT.
 1

ITEM NO.

DWG NO./PART NO.

DESCRIPTION

1 D-UA-MNCAA-Ø-Ø

MNCAA UNIT ASSY

1

2 MPØØ59Ø

PRINT SET MNCAA

1

3 AA-D572A-TC

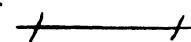
WORKING WITH MINC DEVICE

1

QUANTITY VARIATION

TITLE
 SHIP LIST MNCAA

ASSY NO.



SIZE

A

CODE

PL

NUMBER

MNCAA-Ø-SH

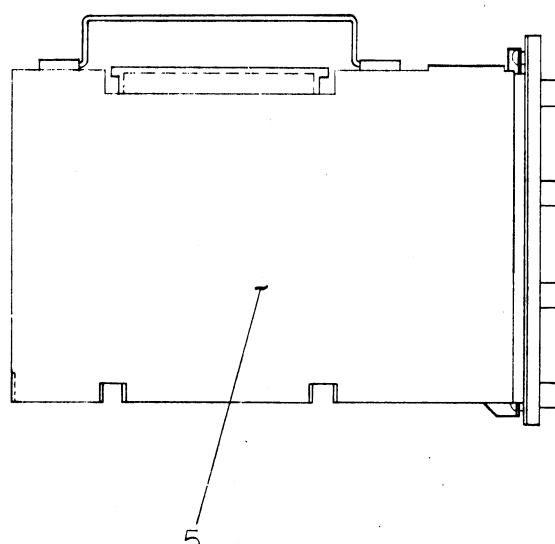
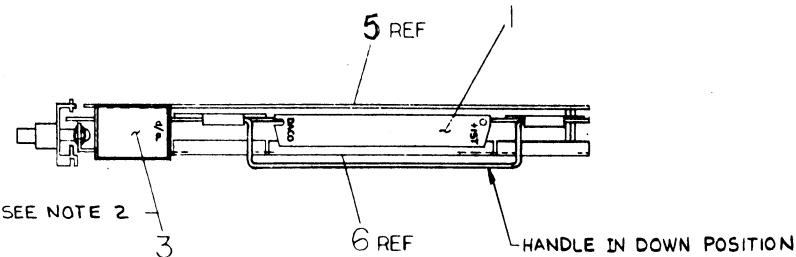
REV

ECO NO.

SHEET 1 OF 1

DIST

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- NOTES:**

 1. ITEM #11 IS PUT ON BY ALIGNING THE RIGHT HAND EDGE OF DECAL UP AGAINST HOLES AND BOTTOM EDGE JUST ABOVE MOUNTING HOLE.
 2. ITEM #3 IS PUT ON BY ALIGNING THE TOP EDGE AND RIGHT HAND EDGE EVEN WITH THE TOP EDGE AND RIGHT HAND EDGE OF ITEM #5.
 3. USING ITEM #12 ADD ONE DROP TO EACH LOCATION.

I	PACKAGING INSTRUCTIONS	A-SP-3700358-06	14
REF	CHKOUT & ACCEPT. PROCEDURE	A-SP-MNCAA-0-3	13
A/R	LOCKTITE	9009321	12
I	DECAL, INFORMATION(MNCAA)	A-DC-3615264-3-0	11
I	NUT, KEPS *6-32	9008185	10
I	WASHER, FLAT	9006653	9
5	SCR, FLAT HD*6-32x.25	9006020-02	8
3	SPACER, THREADED *6-32x.88	9006861	7
I	PLATE, COMP. SIDE	D-MD-7419869-0-0	6
I	PLATE, ETCHE. SIDE	D-IA-7419868-0-0	5
4	SPACER, THREADED *6-32x.25	9006841	4
I	DECAL, I/O SCHMETIC	A-DC-3615260-3-0	3
I	MNCAA SUB-ASSY	D-AD-7015068-0-0	2

		CONN ASSTY 1/0	D-10453-30	
		DESCRIPTION	DWG PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES				
		NOMINAL DIMENSION RANGE INCHES		
ANGLES ±0° 30'	CLASS OF ACCURACY (CHECK ONE)	OVER .020	OVER .020	OVER .020
		.020 TO .025	.020 TO .025	.020 TO .025
SURFACE QUALITY IN	TO .2	.12	.40	.120
		TO .12	.40	.120
QUANTITY &	MEDIUM	+.004	+.008	+.012
	PREFERRED	+.012	+.016	+.025
INCHES				
MICROINCHES				

VARIATION		MICROFICHES	PREFERRED	1/12	1/10	1/8	1/6	1/4	1/3	1/2
THIRD ANGLE PROJECTION		DRN. P. 1/12		FIRST USED ON						
		CHK'D		MNCAA						
		ENG. A.C.P.								
REMOVE BURRS AND BREAK SHARP CORNERS		PROJ. ENG. C	3/24/8	TITLE						
		PRCD. D	3/24/8	MNCAA						
DO NOT SCALE DWG		UNIT ASSY								
		NEXT HIGHER ASSY.								
MATERIAL SEE PARTS LIST		B-00-MNCAA - Ø		SIZE	CODE	NUMBER		REV.		
		SCALE 1/2		D	UA	MNCAA - Ø - Ø		A		
FINISH NONE		SHEET 1 OF 1		DIST.						

DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS					
ENGINEERING SPECIFICATION			DATE 6/30/78		
TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE					
REVISIONS					
REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY

ENG *J.C. Shimer* 5-July-78 APPD *A. Shimer* 10-Jul-78 SIZE A CODE SP NUMBER MNCAA-0-4 REV

DEC FORM NO EN-01022-16-N370(381)
DRA 107

sheet 1 of 14 MR

ENGINEERING SPECIFICATION CONTINUATION SHEET					
TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE					
Table of Contents					
1.0 General 1.1 Scope 1.2 Equipment 1.3 Documentation 1.4 Flow Diagram 2.0 Installation 2.1 Address 2.2 Location 2.3 Test Module 2.4 Power Up 2.5 Diagnostics 3.0 Acceptance With Test Module 3.1 General Information 3.2 Logic Test 3.3 Output Test 3.4 Ramp Test 3.5 Calibration Test 3.6 Dynamic Test 4.0 Acceptance Without Test Module					
	SIZE	CODE	NUMBER	REV	
	A	SP	MNCAA-0-4		

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ENGINEERING SPECIFICATION CONTINUATION SHEET																			
TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE																			
1.0 GENERAL 1.1 Scope <p>This document describes the procedures for the installation and field acceptance of the MNCAA (4 Channel D/A Converter) option for the MINC-11 System. This procedure will be used for in-house FA&T, field add-on and new system installation, and periodic verification testing.</p> 1.2 Equipment <table> <tr> <td>MINC-11</td> <td>System</td> </tr> <tr> <td>MNCAA-TA</td> <td>Test Module (optional)</td> </tr> <tr> <td>7014153-3-0</td> <td>I/O Connector</td> </tr> <tr> <td>Reference</td> <td>Precision Digital Voltage Meter</td> </tr> </table> 1.3 Documentation <table> <tr> <td>MAIN DEC-11-DVMND-A</td> <td>Diagnostic Program</td> </tr> <tr> <td>MP00590</td> <td>Print Set</td> </tr> <tr> <td>AA-D572A-TC</td> <td>Working with MINC Devices</td> </tr> </table>						MINC-11	System	MNCAA-TA	Test Module (optional)	7014153-3-0	I/O Connector	Reference	Precision Digital Voltage Meter	MAIN DEC-11-DVMND-A	Diagnostic Program	MP00590	Print Set	AA-D572A-TC	Working with MINC Devices
MINC-11	System																		
MNCAA-TA	Test Module (optional)																		
7014153-3-0	I/O Connector																		
Reference	Precision Digital Voltage Meter																		
MAIN DEC-11-DVMND-A	Diagnostic Program																		
MP00590	Print Set																		
AA-D572A-TC	Working with MINC Devices																		
	SIZE	CODE	NUMBER	REV															
	A	SP	MNCAA-0-4																

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TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE					
1.4 Flow Diagram <pre> graph TD ADDRESS[ADDRESS] --> INSERT[INSERT OPTION] INSERT --> DWARF{DWARF?} DWARF -- NO --> PLUG[PLUG IN DWARF] DWARF -- YES --> POWER[POWER UP] PLUG --> POWER POWER --> LOAD[LOAD DIAGNOSTIC] LOAD --> START[START 200] START --> LOGIC[LOGIC TEST] LOGIC --> PASS{PASS?} PASS -- NO --> RAMP[RAMP TEST] PASS -- YES --> A(()) RAMP --> B(()) </pre>					
	SIZE	CODE	NUMBER	REV	
	A	SP	MNCAA-0-4		

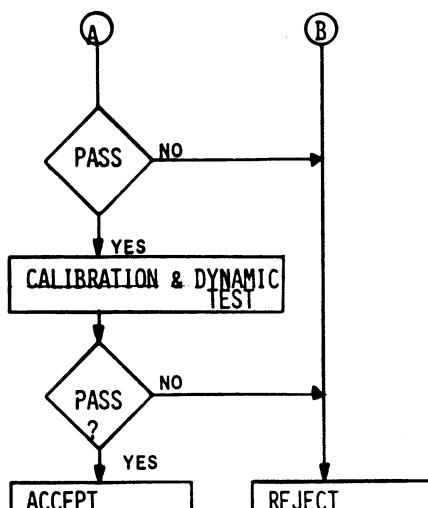
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TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE



	SIZE A	CODE SP	NUMBER MNCAA-0-4	REV
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TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

2.0 INSTALLATION

2.1 Address

The four DAC addresses are selected through the single switch pack mounted on the PC board and accessible through the component side cover.

The four addresses are consecutive and are set by selecting the first address on the 10 position switch pack. Each remaining address is always 2 octals higher than the previous address.

Base Address:

DAC0 Octal Address 17WXY0
DAC1 Octal Address 17WXY2
DAC2 Octal Address 17WXY4
DAC3 Octal Address 17WXY6

Select and set the Base Address, refer to decal on component side cover.

BIT	3	4	5	6	7	8	9	10	11
-----	---	---	---	---	---	---	---	----	----

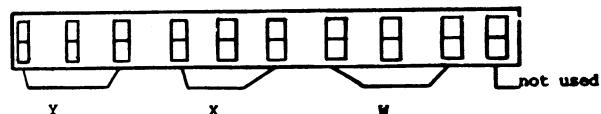


Figure 2.1 Address Switch Pack

	SIZE A	CODE SP	NUMBER MNCAA-0-4	REV
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CONTINUATION SHEET

TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

2.2 Location

The MNCAA is considered a digital option and can be inserted into any of the 8 available MINC slots. Up to 8 MNCAA options can be plugged into the MINC-11 system. With power off insert the MNCAA option into the selected slot.

If any MNCAD option is in the MINC-11 system then the MNCAA option must be inserted to the right of the MNCAD option.

2.3 Test Module

If the MNCAA test module is available, it should be plugged into the I/O connector fingers on the top of the MNCAA; at this point before power to the MINC-11 is applied.

2.3.1 No Test module

If no test module is available, plug the standard I/O connector into the I/O fingers.

2.4 Power Up

All other options to be tested and any of their test modules should be mounted in the system, then power may be applied.

2.5 Diagnostics

The MNCAA Diagnostic (DVMND-A) should now be loaded into memory (refer MAINDEC11-DVMND-A). There are 2 starting locations. Starting location 200 is used for initial start up, and location 204 is used for restarting program after a halt.

	SIZE A	CODE SP	NUMBER MNCAA-0-4	REV
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CONTINUATION SHEET

TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

3.0 ACCEPTANCE

3.1 General Information

Upon loading the diagnostic and starting at 200, the diagnostic will type out the old software switch register and what the new software switch register should be. Refer to DVMND-A for explanation of software switches. After inputting the desired switch settings and pressing a carriage return the program will then type the following menu:

L = LOGIC TEST
R = RAMP OUTPUT TEST
S = STATIC CALIBRATION TEST
D = DYNAMIC CALIBRATION TEST
B = BASE ADDRESS CHANGE
O = OUTPUT DWARD LED LOOP
G = GET NEW SWITCH REGISTER VALUE
H = HELP THE OPERATOR AND RETYPE THIS LIST

A CNTRL C is used to abort the run of any of the above tests and get the user back to the statement "Type the Test Character" then depress "return key".

A CNTRL G is used at any time during the running of a test to change the software switch register.

3.2 Logic Test

Type "L" to start the Logic Test. The following message will be typed:

PROGRAM DETECTED "X" MNCAA(D/A)'S

At this point X will be a numeric value from 1 to 8 depending on how many MNCAAs are in the MINC-11 system. If no errors are detected then the following will be typed:

END PASS # A; TOTAL ERROR COUNT = Y
A = Pass Number
Y = Total Errors Detected

	SIZE A	CODE SP	NUMBER MNCAA-0-4	REV
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CONTINUATION SHEET

TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

A minimum of 10 passes should be run to ensure that the Logic section of the MNCAA is working properly.

3.3 Output Test

Upon completion of Logic Test type a CNTRL C. The following message will then be typed out:

"TYPE THE "TEST CHARACTER" THEN DEPRESS "RETURN KEY"

3.3.1 Type "0" and carriage return. This will check out the 4 data bits of DAC3 that are brought out to the I/O converter.

There are 8 LED's mounted on top of the MNCAA module. See Figure 1 below.

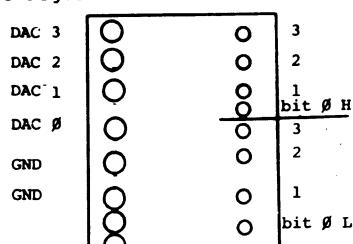


Figure 1 test module

3.3.2 The diagnostic will turn Bit Ø L off and Bit Ø H on. The program will then go to Bit 1 then 2 then 3 and then repeat itself. After running this test and insuring the 4 data bits High and Low are working properly, type CNTRL C.

3.4 Ramp Test

Type "R" and carriage return. The program is now ready to run the Ramp Output Loop.

3.4.1 Set all front panel switches, large knob to 5 and small knob to ±.

SIZE	CODE	NUMBER	REV
A	SP	MNCAA-0-4	

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TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

3.4.2 The program generates a ± 5 volt ramp on all four D/A's. To observe the ramp connect an oscilloscope to DACØ (yellow plug) and the gnd strap to gnd (black plug). The ramp should look as shown -

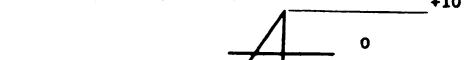


repeat this step for DAC1, DAC2, and DAC3.

3.4.3 Set large knob to "2.5" small knob to "±" repeat 3.4.2. The ramp should look as shown.



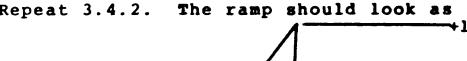
3.4.4 Set large knob to "10" small knob to "±" repeat 3.4.2. The ramp should look as shown.



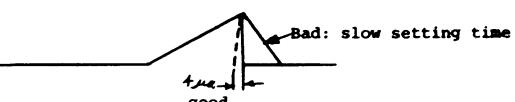
3.4.5 Set large knob to "0-5", set small knob to "+". Repeat 3.4.2. The ramp should look as shown.



3.4.6 Set large knob to "0-10". Set small knob to "+". Repeat 3.4.2. The ramp should look as shown.



3.4.7 Example of a bad ramp.



SIZE	CODE	NUMBER	REV
A	SP	MNCAA-0-4	

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TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

TABLE 1

Signal Name	I/O Connector
DAC Ø	1
Analog Gnd	2
DAC 1	3
Analog Gnd	4
DAC 2	5
Analog Gnd	6
DAC 3	7
Analog Gnd	8
Bit Ø H	9
Logic Gnd	10
Bit 1 H	11
Logic Gnd	12
Bit 2 H	13
Logic Gnd	14
Bit 3 H	15
Logic Gnd	16
Bit Ø L	17
Logic Gnd	18
Bit 1 L	19
Logic Gnd	20
Bit 2 L	21
Bit 3 L	22
-15T	23
+15T	24

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TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

3.4.8 Set all front panel switches; large knob to "5"; small knob to "±".

3.5 Calibration Test

After completing the ramp test to insure that all channels are working properly, type a "CNTRL C". Type a "S" carriage return in response to the question type on the terminal.

This test loads the octal number generated in the software switch register, by use of CNTRL G, into the 4 D/A's. To monitor the D/A output range use a five digit DVM, (refer to Figure 1 for proper connection to DAC outputs), to measure the DAC output.

NOTE: All voltages monitored at test jack on test module (if test module is not available refer to Table 1 for pin assessment).

3.5.1 To adjust the D/A converter, type CNTRL G, then type the appropriate octal number as shown in Table 2 and adjust the proper potentiometer to the desired voltage as shown.

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A	SP	MNCAA-0-4	

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SIZE	CODE	NUMBER	REV
A	SP	MNCAA-0-4	

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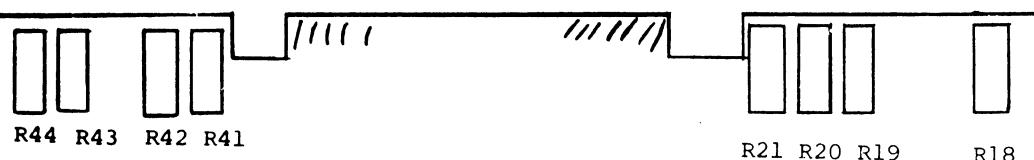
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TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

TABLE 2

IN	LOAD	DACØ	ADJUST	DAC1	DAC2	DAC3	FOR.
Offset	Adj	0000	R19	R21	R42	R44	-5.1200
Gain	Adj	7777	R18	R20	R41	R43	+5.1175



The output should be adjusted to the desired voltage with a tolerance better than $\pm 1\text{mV}$.

3.6 Dynamic Test

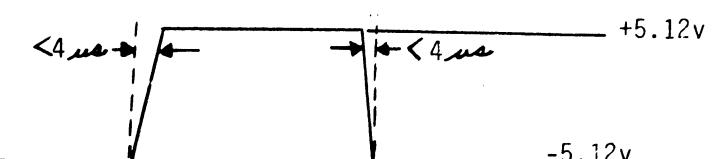
After completing the Calibration Test type a "CNTRL C". Type "D" carriage return in response to the question typed on the terminal.

3.6.1 This test checks for settling errors of the 4 D/A's.

3.6.2 Type "CNTRL G" - type 7777 in response to question and then a carriage return.

3.6.3 Connect an oscilloscope to the output of the D/A's (refer to Figure 1).

3.6.4 The output signal should be switching from -5.12V to +5.12V.



	SIZE A	CODE SP	NUMBER MNCAA-0-4	REV
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TITLE MNCAA INSTALLATION/ACCEPTANCE PROCEDURE

4.0 ACCEPTANCE WITHOUT TEST MODULE

If MNCAA-TA Test Module is not available, use the I/O connector 7014153-3-0 supplied with option. Refer to Table 1 for correct pin locations. Repeat Section 3.0 using the I/O connector.

4.1 When implementing Section 3.3.1 use an oscilloscope to check that the data bits at switching.

	SIZE A	CODE SP	NUMBER MNCAA-0-4	REV
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